



# 2011

## L'ANNEE TERRIBLE

*Compilation d'articles anglophones  
de la presse japonaise  
après la catastrophe nucléaire  
de Fukushima*

**Odile Girard**



### **Référence bibliographique**

Odile GIRARD, 2011, *l'année terrible. Compilation d'articles anglophones de la presse japonaise après la catastrophe nucléaire de Fukushima*, Éditions de Fukushima, 2024, 1878 p.

*E-book édité par Les Éditions de Fukushima – <http://www.editionsdefukushima.fr/>*

*ISBN : 978-2-487581-07-4*

*Cette œuvre est mise à disposition selon les termes de la Licence Creative Commons :  
Attribution – Pas d'utilisation commerciale – Partage dans les mêmes conditions 4.0 International.*



# Sommaire

Introduction .....	3
MARS 2011 .....	4
AVRIL 2011 .....	18
MAI 2011 .....	107
JUIN 2011 .....	210
JUILLET 2011.....	364
AOÛT 2011 .....	508
SEPTEMBRE 2011 .....	630
OCTOBRE 2011 .....	774
NOVEMBRE 2011.....	931
DECEMBRE 2011 .....	1059
JANVIER 2012 .....	1240
FEVRIER 2012 .....	1370
Annexes .....	1557

# Introduction

Ce recueil de documents concernant la catastrophe qui a frappé Fukushima en mars 2011 ne fait pas, à proprement parler, partie des archives du blog *Fukushima-is-still-news* publiées séparément aux Editions de Fukushima (Collection Fukushima-is-still-news, volumes 1 à 16). Le site Internet n'avait en effet été lancé qu'en février 2012. Toutefois, dès les premiers jours, j'avais collecté une certaine quantité d'articles tirés en grande partie de la presse anglophone japonaise. Les articles sont présentés dans cette nouvelle publication « en l'état », sans mise en forme, mais constituent une archive importante des événements de la première année qui a suivi l'accident de la centrale de Fukushima Daiichi. Certains articles se limitent à des liens que j'ai quand même laissés dans le texte, car il doit toujours être possible de demander un accès aux archives des journaux. En annexe, je propose aussi quelques documents et dossiers de l'époque provenant de différentes sources, institutionnelles ou non, qui montrent bien la gravité des événements et le ressenti des auteurs.

Odile Girard

*NDE : Dans les articles, les textes de couleur rouge ont été mis en évidence ou écrits par l'auteure.*

# **MARS 2011**

## First estimates of total radioactive cesium and iodine emissions from Fukushima plant - March 22, 2011

[http://blogs.nature.com/news/thegreatbeyond/2011/03/first\\_estimates\\_of\\_radioactive.html](http://blogs.nature.com/news/thegreatbeyond/2011/03/first_estimates_of_radioactive.html)

The amount of the long-lived radioactive isotope cesium-137, and the shorter-lived iodine-131, which have already escaped from the troubled Fukushima power plant in Japan may be significant, **approaching emissions of these isotopes from the Chernobyl accident in 1986**. The [estimates](#) come from Austria's weather service, the **Central Institute for Meteorology and Geodynamics in Vienna**.

Fukushima is no Chernobyl, however, cautions Gerhard Wotawa, a researcher at the centre involved in the study. Crucially, he points out, only a few highly volatile elements, such as iodine, cesium and xenon, have escaped from the Fukushima plant, whereas at Chernobyl the greater damage to the core caused substantial quantities of many other less-volatile isotopes to be released, leading to far higher total radiation levels. It was also "good luck" that prevailing wind patterns pushed much of the radioactive cesium out over the Pacific Ocean away from land, he notes. Even on the days when wind blew material inland, rain close to the plant quickly washed out radioactive material. Little of the plume reached Tokyo, he says, noting also that reported radioactive dose levels in the affected area beyond the immediate area of the plant are low, and falling.

The model's results were calculated by inputting measurements of radioisotope levels at different distances from the plant and then modelling weather patterns and other factors to estimate the amounts released at the source. This model run used measurements of radioisotopes in detector stations in Takasaki in Japan and in Sacramento, California, part of a sophisticated global network of stations created to monitor for nuclear weapons tests – the Comprehensive Nuclear-Test-Ban Treaty Organization (see my long article [last week](#) about the CTBTO network's role in responding to the accident).

**The researchers estimate that  $3 \times 10^{15}$  becquerels of Cs-137 (which has a half-life of 30 years) were released during the first two days following the disaster on 11 March. A further  $3 \times 10^{16}$  was released over the next two days, totalling 50% of the Cs-137 emitted in the Chernobyl accident.  $4 \times 10^{17}$  becquerels of I-131, with a half-life of 8 days, were likely released over the same period, roughly 20% of I-131 released from Chernobyl. Wotawa says he was "surprised at the cesium levels, but less so with respect to iodine, as its highly volatile."**

Jim Smith, an environmental physicist at the University of Portsmouth, UK, who was not involved in the study, says that the figures are high, and should they prove to be correct "could be of very significant concern". He adds that the modelling was only for the 137 isotope of cesium, but that he'd expect similar amounts of cesium-134 (which has a half-life of two years) to have been released.

Smith agrees with Wotawa that the fact that the prevailing winds on the first two days blowing the plume away from land was "a best case scenario". It could cause significant marine contamination, but the ocean's enormous diluting capacity would reduce any doses, he says, adding that nonetheless fishing bans might be needed near to the Fukushima plant.

Smith says a major caveat to the estimates is that such modelling is "pretty difficult". He says that he hasn't seen enough details to assess how accurate the work is, but that he himself has been surprised by

the high levels of iodine that have been detected in spinach sampled at significant distances from the site. "This suggests that there was a fairly major release of iodine," he says. "This is exactly the sort of modelling we should be doing," he adds. "I'm a bit surprised that we haven't seen similar modelling results from the Japanese; they ought to have an accident response model in place."

To confirm whether the Austrian centre's estimates are accurate Smith says he would like to see the Japanese authorities publishing more radiation measurements, and in particular maps of cesium deposition in the region. "I would have expected that by now they would flying gamma ray spectrometry over the area," he says, adding that a problem is that there is not sufficient data coming out of Japan, in particular on the immediate 20-30 km zone around the plant.

Posted by Declan Butler on March 22, 2011

## **URGENT: Radiation 1,600 times normal level 20 km from Fukushima plant: IAEA**

VIENNA, March 22, Kyodo

Radiation 1,600 times higher than normal levels has been detected in an area about 20 kilometers from the crippled Fukushima Daiichi nuclear power plant, International Atomic Energy Agency officials said Monday.

Data collected by an IAEA team show that radiation levels of 161 microsievert per hour have been detected in the town of Namie, Fukushima Prefecture, the officials said.

The government has set an exclusion zone covering areas within a 20-km radius of the plant and has urged people within 20 to 30 km to stay indoors.

<http://www.criirad.org/actualites/dossier2011/japon/sommaire.html>

[http://www.criirad.org/actualites/dossier2011/japon/11\\_03\\_21\\_France\\_AIR.pdf](http://www.criirad.org/actualites/dossier2011/japon/11_03_21_France_AIR.pdf)

risques attendus pour la France 22.03.2011

<http://english.kyodonews.jp/news/2011/03/80227.html>

état des lieux 22.03.2011

<http://www.cnic.jp/english/topics/safety/earthquake/fuku20mar11.html>

[http://www.lemonde.fr/planete/article/2011/03/22/nucleaire-le-japon-avait-ete-alerte-d-irregularites-a-fukushima\\_1496991\\_3244.html#ens\\_id=1493258](http://www.lemonde.fr/planete/article/2011/03/22/nucleaire-le-japon-avait-ete-alerte-d-irregularites-a-fukushima_1496991_3244.html#ens_id=1493258)

<http://www.bloomberg.com/news/2011-03-23/fukushima-engineer-says-he-covered-up-flaw-at-shut-reactor.html>

## **Fukushima Engineer Says He Covered Up Flaw at Shut Reactor No. 4**

<http://english.kyodonews.jp/news/2011/03/80354.html>

....” If a person eats 100 grams of the vegetable with the largest detected amount of radioactive materials for about 10 days, it would be equal to ingesting half the amount of radiation a person typically receives from the natural environment in a year, the ministry said.

If a person keeps eating the vegetable at the same pace, the amount of radiation intake could exceed the amount deemed safe, the ministry said.

The ministry detected 82,000 becquerels of radioactive cesium, 164 times the limit under the food sanitation law, in "kukitachina" leaves from Motomiya, along with 15,000 becquerels of radioactive iodine, which is more than seven times the limit, it said.

The ministry also detected a level of cesium drastically exceeding the limit in some of the other vegetables, it said. ....” etc etc

---

[http://www.irsn.fr/FR/Actualites\\_presse/Actualites/Documents/IRSN\\_Seisme-Japon\\_Point-situation-23032011-06h.pdf](http://www.irsn.fr/FR/Actualites_presse/Actualites/Documents/IRSN_Seisme-Japon_Point-situation-23032011-06h.pdf)

The information note from IRSN is still online on their site

[http://www.criirad.org/actualites/dossier2011/japon/11\\_03\\_23\\_Volet1der.pdf](http://www.criirad.org/actualites/dossier2011/japon/11_03_23_Volet1der.pdf)

chiffres du CTBTO non disponibles pour le public

<http://www.actu-environnement.com/ae/news/fukushima-consequence-impacts-long-terme-radioactivite-12214.php4#xtor=EPR-1>

<http://www.actu-environnement.com/ae/news/industrie-nucleaire-francaise-assemblee-nationale-12169.php4#xtor=EPR-1>

autosatisfecit de l'industrie nucléaire....

[http://www.lemonde.fr/japon/article/2011/03/23/fukushima-le-refroidissement-de-la-centrale-pourrait-prendre-plusieurs-semaines\\_1497545\\_1492975.html#ens\\_id=1493258](http://www.lemonde.fr/japon/article/2011/03/23/fukushima-le-refroidissement-de-la-centrale-pourrait-prendre-plusieurs-semaines_1497545_1492975.html#ens_id=1493258)

...Une fois les systèmes de refroidissement entièrement rétablis, les six réacteurs ne seront plus jamais utilisés. Ils seront en situation "d'arrêt à froid". Mais le travail sera loin d'être terminé. [Le démantèlement de Fukushima prendra des décennies.](#)

<http://english.kyodonews.jp/news/2011/03/80810.html> : Radioactive iodine 146.9 times higher in seawater near nuke plant

<http://balisescriirad.free.fr/>

<http://www.criirad.org/actualites/dossier2011/japon/limites.pdf>

<http://english.kyodonews.jp/news/2011/03/80849.html>

....Given that the two had their feet in highly contaminated water, agency spokesman Hidehiko Nishiyama said that the incident has shown that workers should pay special attention to water in proceeding with their work, but added, "We would like to find a delicate balance of keeping delay to the minimum and ensuring the safety of the people working there."

With the three, a total of 17 workers have been exposed to radiation exceeding 100 millisieverts in the country's worst nuclear crisis. The 100 millisieverts is the limit workers are usually allowed to be exposed to in an emergency mission. The limit, however, has been raised to 250 millisieverts for the ongoing crisis....

..The government said, meanwhile, it detected 2.54 million becquerels of iodine and 2.65 million becquerels of cesium, another radioactive substance, from weed leaves in the village of Iitate in Fukushima Prefecture about 40 km northwest from the nuclear plant, far above the provisional limits for food of 2,000 becquerels for iodine and 500 becquerels for cesium.

Abnormally high levels of these materials were also detected again in the sea near the plant, TEPCO said, warning the radiation levels in seawater may keep rising....

[http://www.lemonde.fr/idees/article/2011/03/24/le-nucleaire-est-l-un-des-plus-grands-fleaux-du-xxie-siecle\\_1497895\\_3232.html](http://www.lemonde.fr/idees/article/2011/03/24/le-nucleaire-est-l-un-des-plus-grands-fleaux-du-xxie-siecle_1497895_3232.html)

<http://english.kyodonews.jp/news/2011/03/81493.html>

.. Despite warnings by an expert, however, government officials and utility company executives appear to have little sense of crisis when it comes to tsunami....

## **OPINION: Can there be a silver lining to Japan's nuclear crisis?**

By Philip White  
TOKYO, March 28, Kyodo

The most remarkable thing about the response so far to the "gempatsu shinsai" (nuclear-earthquake disaster) that has engulfed Japan is that there are still people who think nuclear power has a future. Should this be attributed more to the dependence of modern industrialized societies on massive inputs of energy, or to a collective lack of imagination?

We do not yet know how this unfolding catastrophe will end, but we can be sure that if most of the radioactivity in the Fukushima Daiichi Nuclear Power Plant remains on site, then the true believers will claim that this is as bad as it gets and that the risk is worth taking. The environmental damage of localized contamination and releases to sea will be discounted and long-term health impacts from exposure to low levels of radiation will be denied. Even those workers who suffer from acute radiation sickness will not find their way into the most commonly quoted statistics, unless they die promptly.

The truth is that even in the best-case scenario the environmental and human consequences of this disaster will be enormous. The potential impact of a worst-case scenario is beyond most people's comprehension. To give an indication of the amount of radioactive material involved, the total capacity of the three reactors that were operating at the time of the earthquake was double that of the Chernobyl number 4 reactor that exploded 25 years ago in the Ukraine. To this you have to add the radioactivity in the spent fuel pools of all 6 units and of the shared spent fuel pool.

All of this is at risk and, due to the long-term heat-generating properties of the fuel, the situation will not be stabilized any time soon. Even if the radioactivity does not travel far, the release of just a fraction would have incalculable consequences for human beings and the environment.

Besides the true believers, there are also those who regard nuclear energy as a necessary evil. They don't particularly like it, but they see no alternative. But is it true that there is no alternative? For those who can't see beyond the current centralized, supply-driven electrical power systems and who assume an eternally increasing demand for energy, then perhaps it is difficult to imagine how modern societies could survive without nuclear power. But if you allow the possibility of decentralized systems that reward the efficient provision of energy services, rather than the supply of raw energy, then hitherto unimagined options open up.

After last year's oil spill in the Gulf of Mexico and now the Fukushima Daiichi "gempatsu shinsai," people must realize that business as usual is not an option.

To claim that nuclear energy has a future represents a colossal failure of our collective imagination -- a failure to imagine the risks involved and a failure to imagine how we could do things differently. If future generations are to say that there was a silver lining to the cloud of the Fukushima Daiichi disaster, it will be because human beings now looked beyond their recent history and chose to build a society that was not subject to catastrophic risks of human making.

(Philip White is the International Liaison Officer of the Tokyo-based Citizens' Nuclear Information Center.)

<http://english.kyodonews.jp/news/2011/03/81540.html>

..Back on March 21, at TEPCO's head office in Tokyo's Chiyoda Ward, a public relations officer started a news conference by saying, "We have a supplementary remark to make."

"Yesterday, we said the dry vent of the No. 2 reactor was done March 16 to 17 but it was 15," the officer said, correcting the previous day's announcement, as if nothing has happened, trying to move onto a different topic.

A dry vent is an emergency step to release unfiltered steam containing radioactive materials from the containment vessel to the outside. It is an event that has a huge impact on the environment outside a nuclear power plant. But the officer appeared to brazen it out...

But on Saturday, it was disclosed that the company had not informed workers who suffered high levels of radiation at the No. 3 reactor unit about radiation levels of the place where they would be working. The government was also found to have not been informed.

<http://www.spiegel.de/international/germany/0,1518,753158,00.html>

<http://english.kyodonews.jp/news/2011/03/81589.html>

<http://english.kyodonews.jp/news/2011/03/81697.html>

conditions for workers

<http://english.kyodonews.jp/news/2011/03/82005.html>

safety subcontracting ?

Given the severe damage done to nuclear fuel facilities, reactors Nos. 1 to 4 are likely to be decommissioned. The man, who has for years worked at Fukushima Daiichi, said he is planning to return to the plant. "I would think it may probably take around 50 years until work to decommission them will end. I hope to continue working till the end," he said.

<http://english.kyodonews.jp/news/2011/03/81984.html>

iodine x 3.355 in seawater

... To cope with a possible situation under which the amount of pumped up contaminated water exceeds the capacity of tanks to accommodate it, a member of the Nuclear Safety Commission of Japan, a government panel, on Tuesday mentioned the need to dig a pool outside the turbine buildings.

Edano said transferring the highly radioactive water to a tanker at sea is an option being studied by the government and nuclear experts.

The top government spokesman also said the experts have been examining the possibility of covering the reactors' buildings damaged by hydrogen explosions with special sheets to reduce the amount of radioactive particles being dispersed from the facility.

Nishiyama also said TEPCO will begin Thursday spraying water containing coating agents at the site to prevent radioactive dust from being carried away by wind and rain."....

<http://balisescriirad.free.fr/> 28 mars

### **Fukushima : « le plutonium cumule tous les risques »**

- par Catherine Raizume
- 30/03/2011

<http://www.enviro2b.com/2011/03/30/fukushima-%C2%AB-le-plutonium-cumule-tous-les-risques-%C2%BB/>

**Roland Desbordes**, *physicien et président de la Commission de recherche et d'information indépendantes sur la radioactivité, laboratoire indépendant créé après la catastrophe de Tchernobyl. La Criirad est particulièrement active depuis la catastrophe de Fukushima, en réalisant ses propres mesures et interpellant les autorités de sûreté nucléaire françaises.*

**Les autorités japonaises viennent de révéler avoir découvert du plutonium dans le sol de la centrale de Fukushima. Qu'est-ce que cela implique ?**

Le fait que l'on trouve du plutonium dans le pourtour de la centrale n'est pas un scoop, c'est le contraire qui l'aurait été, dans la mesure où du plutonium se trouve dans les cœurs des réacteurs et que ces cœurs de réacteurs sont en fusion. Par ailleurs, ce plutonium étant plus ou moins volatile, aux vues des explosions des montées en températures et de l'ouverture des fissures des cuves, cela paraissait complètement irréaliste que l'on n'en trouve pas.

Cela dit, ce plutonium complique encore un peu plus le travail des salariés de Tecpo sur place. A becquerel égal, le plutonium est 100 000 plus toxique que l'iode ou le césium.

### **A vos yeux, s'agit-il déjà d'une catastrophe environnementale ?**

On y est déjà de plein pied, d'autant plus que le plutonium 239 est un métal lourd radiotoxique à vie longue, de l'ordre de 4 000 ans. Il a un cheminement dans la chaîne alimentaire catastrophique. Le plutonium cumule tous les risques.

### **Cette pollution au plutonium sera-t-elle limitée au réacteur n°3 ici en cause ?**

Non, si le réacteur n°3 en contenait dès l'origine dans une proportion comprise vraisemblablement entre 6 à 8%, les réactions de fusion ont également fabriqué du plutonium sur les autres réacteurs touchés.

### **Quelle est la radioactivité relevée autour de la centrale de Fukushima ?**

On n'a aucune information à ce sujet. On sait juste que les 20 km autour de la centrale sont une zone évacuée. Mais à mon avis, la contamination doit être importante. On sait que dans la province d'Ibaraki, une région située à plus d'une centaine de kilomètres de la centrale, on constate déjà une contamination radioactive avérée des produits alimentaires, qui dépasse les limites de commercialisation.

### **Et quelle est la situation à Tokyo ?**

Située à environ 250 km de la centrale de Fukushima, Tokyo a enregistré le passage de deux petits panaches radioactifs, un premier vers le 15 mars, et l'autre autour du 22 mars. Si ces panaches n'étaient pas très intenses, ils ont cependant suffi à polluer immédiatement l'eau du robinet, ce qui est très inquiétant, à des valeurs jusqu'à 20 becquerels par litre. Ces relevés ont d'ailleurs contraints les autorités japonaises à recommander de ne pas utiliser cette eau polluée pour les biberons.

### **Pourquoi ces panaches radioactifs japonais ont-ils contaminé aussi rapidement l'eau du robinet ?**

A partir du moment où l'on relève des particules radioactives dans l'air, elles se retrouvent obligatoirement au sol. Ce qui est surprenant ici, c'est la rapidité avec laquelle cette contamination de l'air s'est répandue dans l'eau du robinet.

### **En France, pourquoi votre laboratoire a-t-il remis en cause la transparence des autorités de sûreté nucléaire comme l'IRSN ?**

Ce que la Criirad critique, c'est la présentation des résultats de l'IRSN, notamment ceux relevés samedi matin, sur la balise dans le Puy-de-Dôme. On s'est aperçu qu'ils avaient effectué leurs relevés à partir

de filtres papier, qui ne retiennent environ que 1/5e de l'iode radioactif présent dans l'air, manquant l'iode sous forme gazeuse.

**Cela veut-il dire que les mesures d'iode présentées par l'IRSN doivent être multipliées par 5 ?**

Absolument, c'est d'ailleurs ce qu'a fait l'IRSN lui-même le soir même.

**Malgré cette correction, ces relevés de la radioactivité détectée demeurent très faibles ?**

On reste dans des taux très faibles, nous ne remettons pas ça en doute. Ce qui nous a semblé choquant, c'est la présentation de ces résultats, surtout pour un laboratoire d'Etat très compétent, ce n'est pas bien.

**Pourquoi la Criirad est-elle également récemment montée au créneau pour obtenir les mesures de radioactivité relevées par le réseau international CTBTO ?**

Parce qu'on ne les a pas. On invoque tous un tas de bonnes raisons pour ne pas les donner. Ces données sont transmises aux Etats, mais les Etats invoquent le secret défense comme en France, ce qui est totalement faux.

**Quelle est la vraie raison de ce manque de transparence selon vous ?**

On refuse de divulguer des informations obtenues grâce à des fonds publics, que nous contribuons à financer, en tant que citoyens. C'est scandaleux.

**De quoi des Etats comme la France ont-ils peur ?**

Je n'en sais rien, il faut le leur demander. En France, c'est le CEA qui est destinataire de ces mesures.

[http://news.xinhuanet.com/english2010/world/2011-03/30/c\\_13805517.htm](http://news.xinhuanet.com/english2010/world/2011-03/30/c_13805517.htm)

covering the reactors to stop radiation ?

news : smoke temporarily seen at Fukushima Daiichi turbine building (19. hr jap. time on March 30)

[http://www.lemonde.fr/japon/article/2011/03/29/fukushima-la-menace-nucleaire-perdurera-sur-le-long-terme\\_1500362\\_1492975.html](http://www.lemonde.fr/japon/article/2011/03/29/fukushima-la-menace-nucleaire-perdurera-sur-le-long-terme_1500362_1492975.html)

## De l'iode 131 détecté en Drôme-Ardèche

Posté le 30/03/2011 à 15:28 | lu 137 fois |  0 réaction |



Le laboratoire de la CRIIRAD a analysé, dans la nuit du 29 mars, un échantillon d'eau de pluie collecté du dimanche 27 mars à 10h30 au lundi 28 mars à 8h, sur la zone de Valence et représentatif de la Drôme-Ardèche. Le CRIIRAD a détecté dans l'eau un élément radioactif : l'iode 131, présent toutefois à un faible niveau. Le niveau de radioactivité a été mesuré à 0,7 becquerel (Bq) par litre. Il pourrait atteindre plusieurs centaines de Bq par mètre carré, cumulés sur les quinze prochains jours. En comparaison, le laboratoire note qu'en 1986, suite à la catastrophe de Tchernobyl, les retombées d'iode 131 sur la France, ont varié entre les régions de 1000 Bq/m<sup>2</sup> à 200.000 Bq/m<sup>2</sup>. La contamination actuelle est plus faible mais néanmoins mesurable. La CRIIRAD indique que l'iode détectée ne présente, pour le moment, aucun risque pour la santé.

<http://sciences.blogs.liberation.fr/home/2011/03/radioactivit%C3%A9-de-fukushima-lirsn-r%C3%A9pond-%C3%A0-la-criirad.html>

l'IRSM répond à la CRIIRAD

<http://www.morningstaronline.co.uk/index.php/news/content/view/full/102873>

recycle plutonium to make it go further

<http://english.kyodonews.jp/news/2011/03/82199.html>

## COMMUNIQUE CRIIRAD

[http://www.criirad.org/actualites/dossier2011/japon/30-03\\_alerte\\_sanitaire\\_japon.pdf](http://www.criirad.org/actualites/dossier2011/japon/30-03_alerte_sanitaire_japon.pdf)

30 mars 2011 - 18h

Depuis lundi 28 mars, l'attention est focalisée sur l'activité de l'eau de mer et certains médias s'inquiètent de la survenue d'une « catastrophe écologique » 1. La CRIIRAD rappelle que l'urgence concerne la protection sanitaire des habitants des zones contaminées. Depuis le 12 mars dernier, ils subissent, jour après jour, heure après heure, l'impact des rejets radioactifs de la centrale nucléaire de FUKUSHIMA DAIICHI. Toutes les voies d'exposition se cumulent :

- **Exposition aux rayonnements qu'émettent les aérosols et les gaz radioactifs que les vents transportent** vers les zones habitées, celles de la Préfecture de Fukushima, bien sûr, mais aussi bien au-delà de la ville de Sendai, à 100 km au nord et bien au-delà de Tokyo à 230 km au sud.
- **Exposition aux rayonnements émis par les produits radioactifs qui retombent progressivement au sol** (du fait de la gravitation, des pluies et de la neige) et s'accumulent sur les surfaces.

Les débits de dose sont multipliés par 10 à bien plus de 100 km de la centrale nucléaire, par 100 à quelques 60 ou 70 km de distance et quand l'on considère un périmètre d'une cinquantaine de kilomètres certaines valeurs dépassent de 1 000 fois le niveau normal. Il s'agit là de zones où les populations n'ont été ni évacuées, ni confinées. Et ces niveaux d'exposition ne correspondent pas à des élévations ponctuelles des flux de rayonnements. Rappelons qu'une valeur de 8  $\mu\text{Sv/h}$  (qui ne constitue pas un maximum) correspond à 64  $\mu\text{Sv}$  pour 8 h de présence et à 1 152  $\mu\text{Sv}$  sur 18 jours, soit une valeur supérieure à la limite de dose maximale

admissible sur 1 an (1 mSv). Et si les gaz radioactifs ont pénétré, comme nous le pensons, à l'intérieur des habitations, il faut calculer les doses d'exposition externe sur la base de 24 h/jour (on arrive alors à plus de 3 mSv/an, soit 3 fois la limite de dose maximale admissible sur 1 an).

○ **Contamination externe à cause du dépôt des particules radioactives sur la peau et les cheveux** (une contamination qui peut très facilement se transformer en contamination interne si la peau comporte des blessures ou de simples microlésions ; si les doigts sont portés à la bouche, au

nez ; si la personne manipule des aliments sans s'être lavé les mains ; si les aérosols déposés sur les cheveux sont remis en suspension et inhalés...)

○ **Contamination interne par INHALATION** des aérosols et gaz radioactifs présents dans l'air : parce que l'on ne peut pas s'arrêter de respirer, parce que les simples masques à poussières portés par la population ne procurent AUCUNE PROTECTION contre les iodes radioactifs gazeux dont l'air est chargé ; parce que le confinement à l'intérieur des bâtiments est une contre mesure de COURT TERME qui n'aurait jamais dû être

prolongée sur plus de 15 jours : soit les personnes s'asphyxient parce que le confinement fonctionne, soit il est imparfait, et elles sont alors approvisionnées en oxygène ET en produits radioactifs ! ;

○ **Contamination interne par INGESTION d'eau et d'aliments contaminés** : parce que le contrôle des aliments à risque a commencé de façon tardive ; parce que ne sont retirés de la consommation que les aliments dont le taux de radioactivité dépasse les normes, qui sont plus protectrices que les normes en vigueur en France et en Europe, mais qui restent quand très élevées.

Pour calculer la dose de rayonnement reçue par une personne, et évaluer ainsi le risque sanitaire auquel elle est exposée, **il faut tenir compte de toutes les voies d'exposition, interne et externe, de tous les radionucléides, de tous les aliments**. Ce travail est difficile à réaliser étant donné l'absence de mesure sur les débits de dose dans les zones les plus exposées pendant tout le début de la crise, la rareté des contrôles relatifs à la contamination de l'air, les interrogations sur la composition isotopique des rejets radioactifs, l'absence de résultats sur les niveaux d'exposition à l'intérieur des habitations où la population est confinée (rayon de 30 km).

... Compte tenu de l'importance de la contamination, compte tenu de l'impossibilité de prévoir quelles quantités de produits radioactifs seront encore rejetés demain, après-demain... dans l'atmosphère, la CRIIRAD réitère son appel aux autorités japonaises pour que le maximum soit fait pour évacuer la population bien au-delà du rayon de 20 km et pour apporter aux populations les plus affectées le maximum de produits alimentaires non contaminés. Elle appelle également la communauté internationale à apporter tout l'aide logistique et financière possible pour que les interventions se fassent au plus vite. Tant de jours ont déjà été perdus

<http://english.kyodonews.jp/news/2011/03/82240.html>

new high in seawater 31.03.2011

<http://english.kyodonews.jp/news/2011/03/82200.html>

<http://english.kyodonews.jp/news/2011/03/82348.html>

the vehicle drove for 10 minutes unhampered inside the Daini plant !!!!

<http://english.kyodonews.jp/photos/2011/03/80566.html>

**AVRIL 2011**

<http://english.kyodonews.jp/news/2011/04/82382.html>

r-a 10 000 times the limit in groundwater

<http://english.kyodonews.jp/news/2011/04/82390.html>

[http://www.lemonde.fr/asia-pacifique/article/2011/03/26/fukushima-silences-coupables\\_1498886\\_3216.html#ens\\_id=1493258](http://www.lemonde.fr/asia-pacifique/article/2011/03/26/fukushima-silences-coupables_1498886_3216.html#ens_id=1493258)

<http://english.kyodonews.jp/news/2011/04/82524.html>

TEPCO se serait encore trompé dans ses chiffres (on groundwater radioactivity)

...In an effort to prevent radioactive dust from being dispersed by wind and rain from the plant, TEPCO will begin a test spraying of a water-soluble resin, which has coating effects, later in the day.

As a result of hydrogen explosions, masses of debris have been strewn around the site, which was ravaged by the March 11 earthquake and tsunami. A total of 60,000 liters of resin will be sprayed over a period of two weeks.

The engineers will also start moving fresh water carried by a U.S. Navy barge to tanks at the plant, which will be injected into the reactors to cool them down.

The barge containing 300,000 gallons of fresh water is now moored at the Daiichi power station, while another ship carrying an additional 200,000 gallons is expected to arrive later Friday, according to the U.S. Navy.

## **Not enough dosimeters for all the workers**

<http://english.kyodonews.jp/news/2011/04/82534.html>

“...Some workers were sharing dosimeters while doing the same job because many of the devices were destroyed in the March 11 quake and tsunami, a situation that was not "desirable from the viewpoint of ensuring workers' safety," said Hidehiko Nishiyama, a spokesman for the agency.

But the plant operator, known as TEPCO, had been able to secure a total of 420 dosimeters **by Thursday**, sufficient for each of the workers to wear a device when working at the radiation-leaking site.

TEPCO officials said the number of dosimeters available had declined from an initial 5,000 to 320 after the tsunami damaged devices. It had been managing the workers' radiation exposure by ordering the leader of each work team to wear a dosimeter, but some workers had expressed concern about the situation.

Following the warning issued to the company on Thursday, Nishiyama said, "From today, all of the workers will wear dosimeters. And if each individual cannot get one, the work should not take place."

**Is this a joke (1<sup>st</sup> of April)? These workers have - for some of them at least - been working for x days ! How have the doses they get every time been calculated so far?**



## Work on crippled reactors

A Tokyo Electric Power Co. employee checks reactor data in a control room

Qui parlait de revenir à la bougie ?????

---

## URGENT: Gov't eyes injecting nitrogen into reactor vessels to prevent blasts

TOKYO, April 1, Kyodo

The government and Tokyo Electric Power Co. are considering injecting nitrogen into containment vessels of the Fukushima Daiichi nuclear power plant's reactors to prevent hydrogen explosions, government sources said Friday.

<http://english.kyodonews.jp/news/2011/04/82753.html>

tainted water confirmed to have swept into sea from nuke plant

**The New York Times**

---

April 2, 2011

## From Far Labs, a Vivid Picture of Japan Crisis

By [WILLIAM J. BROAD](#)

For the clearest picture of what is happening at [Japan](#)'s Fukushima Daiichi nuclear power plant, talk to scientists thousands of miles away.

Thanks to the unfamiliar but sophisticated art of atomic [forensics](#), experts around the world have been able to document the situation vividly. Over decades, they have become very good at illuminating the hidden workings of nuclear power plants from afar, turning scraps of information into detailed analyses.

For example, an analysis by a French energy company revealed far more about the condition of the plant's reactors than the Japanese have ever described: water levels at the reactor cores dropping by as much as three-quarters, and temperatures in those cores soaring to nearly 5,000 degrees Fahrenheit, hot enough to burn and melt the zirconium casings that protect the fuel rods.

Scientists in Europe and America also know from observing the explosions of hydrogen gas at the plant that the nuclear fuel rods had heated to very dangerous levels, and from radioactive plumes how far the rods had disintegrated.

At the same time, the evaluations also show that the reactors at Fukushima Daiichi escaped the deadliest outcomes — a complete meltdown of the plant.

Most of these computer-based forensics systems were developed after the 1979 partial meltdown at Three Mile Island, when regulators found they were essentially blind to what was happening in the reactor. Since then, to satisfy regulators, companies that run nuclear power plants use snippets of information coming out of a plant to develop simulations of what is happening inside and to perform a variety of risk evaluations.

Indeed, the detailed assessments of the Japanese reactors that Energy Secretary [Steven Chu](#) gave on Friday — when he told reporters that about 70 percent of the core of one reactor had been damaged, and that another reactor had undergone a 33 percent meltdown — came from forensic modeling.

The bits of information that drive these analyses range from the simple to the complex. They can include everything from the length of time a reactor core lacked cooling water to the subtleties of the gases and radioactive particles being emitted from the plant. Engineers feed the data points into computer simulations that churn out detailed portraits of the imperceptible, including many specifics on the melting of the hot fuel cores.

Governments and companies now possess dozens of these independently developed computer programs, known in industry jargon as “safety codes.” Many of these institutions — including ones in Japan — are relying on forensic modeling to analyze the disaster at Fukushima Daiichi to plan for a range of activities, from evacuations to forecasting the likely outcome.

“The codes got better and better” after the accident at Three Mile Island revealed the poor state of reactor assessment, said Michael W. Golay, a professor of nuclear science and engineering at the [Massachusetts Institute of Technology](#).

These portraits of the Japanese disaster tend to be proprietary and confidential, and in some cases secret. One reason the assessments are enormously sensitive for industry and government is the relative lack of precedent: The atomic age has seen the construction of nearly 600 civilian power plants, but according to the World Nuclear Association, only three have undergone serious accidents in which their fuel cores melted down.

Now, as a result of the crisis in Japan, the atomic simulations suggest that the number of serious accidents has suddenly doubled, with three of the reactors at the Fukushima Daiichi complex in some stage of meltdown. Even so, the public authorities have sought to avoid grim technical details that might trigger alarm or even panic.

“They don’t want to go there,” said Robert Alvarez, a nuclear expert who, from 1993 to 1999, was a policy adviser to the secretary of energy. “The spin is all about reassurance.”

If events in Japan unfold as they did at Three Mile Island in Pennsylvania, the forensic modeling could go on for some time. It took more than three years before engineers lowered a camera to visually inspect the damaged core of the Pennsylvania reactor, and another year to map the extent of the destruction. The core turned out to be about half melted.

By definition, a meltdown is the severe overheating of the core of a nuclear reactor that results in either the partial or full liquefaction of its uranium fuel and supporting metal lattice, at times with the atmospheric release of deadly radiation. Partial meltdowns usually strike a core’s middle regions instead of the edge, where temperatures are typically lower.

The main meltdowns of the past at civilian plants were Three Mile Island in 1979, the St.-Laurent reactor in France in 1980, and Chernobyl in Ukraine in 1986.

One of the first safety codes to emerge after Three Mile Island was the Modular Accident Analysis Program. Running on a modest computer, it simulates reactor crises based on such information as the duration of a power blackout and the presence of invisible wisps of radioactive materials.

Robert E. Henry, a developer of the code at Fauske & Associates, an engineering company near Chicago, said that a first sign of major trouble at any reactor was the release of hydrogen — a highly flammable gas that has fueled several large explosions at Fukushima Daiichi. The gas, he said in an interview, indicated that cooling water had fallen low, exposing the hot fuel rods.

The next alarms, Dr. Henry said, centered on various types of radioactivity that signal increasingly high core temperatures and melting.

First, he said, “as the core gets hotter and hotter,” easily evaporated products of atomic fission — like iodine 131 and cesium 137 — fly out. If temperatures rise higher, threatening to melt the core entirely, he added, less volatile products such as strontium 90 and plutonium 239 join the rising plume.

The lofting of the latter particles in large quantities points to “substantial fuel melting,” Dr. Henry said.

He added that he and his colleagues modeled the Japanese accident in its first days and discerned partial — not full — core melting.

Micro-Simulation Technology, a software company in Montville, N.J., used its own computer code to model the Japanese accident. It found core temperatures in the reactors soaring as high as 2,250 degrees Celsius, or more than 4,000 degrees Fahrenheit — hot enough to liquefy many reactor metals.

“Some portion of the core melted,” said Li-chi Cliff Po, the company’s president. He called his methods simpler than most industry simulations, adding that the Japanese disaster was relatively easy to model because the observable facts of the first hours and days were so unremittingly bleak — “no water in, no injection” to cool the hot cores.

“I don’t think there’s any mystery or foul play,” Dr. Po said of the disaster’s scale. “It’s just so bad.”

The big players in reactor modeling are federal laboratories and large nuclear companies such as General Electric, Westinghouse and Areva, a French group that supplied reactor fuel to the Japanese complex.

The Sandia National Laboratories in Albuquerque wrote one of the most respected codes. It models whole plants and serves as a main tool of the [Nuclear Regulatory Commission](#), the Washington agency that oversees the nation's reactors.

Areva and French agencies use a reactor code-named Cathare, a complicated acronym that also refers to a kind of goat's milk cheese.

On March 21, [Stanford University](#) presented an invitation-only panel discussion on the Japanese crisis that featured Alan Hansen, an executive vice president of Areva NC, a unit of the company focused on the nuclear fuel cycle.

"Clearly," he told the audience, "we're witnessing one of the greatest disasters in modern time."

Dr. Hansen, a nuclear engineer, presented a slide show that he said the company's German unit had prepared. That division, he added, "has been analyzing this accident in great detail."

The presentation gave a blow-by-blow of the accident's early hours and days. It said drops in cooling water exposed up to three-quarters of the reactor cores, and that peak temperatures hit 2,700 degrees Celsius, or more than 4,800 degrees Fahrenheit. That's hot enough to melt steel and zirconium — the main ingredient in the metallic outer shell of a fuel rod, known as the cladding.

"Zirconium in the cladding starts to burn," said the slide presentation. At the peak temperature, it continued, the core experienced "melting of uranium-zirconium eutectics," a reactor alloy.

A slide with a cutaway illustration of a reactor featured a glowing hot mass of melted fuel rods in the middle of the core and noted "release of fission products" during meltdown. The products are radioactive fragments of split atoms that can result in cancer and other serious illnesses.

Stanford, where Dr. Hansen is a visiting scholar, posted the slides online after the March presentation. At that time, each of the roughly 30 slides was marked with the Areva symbol or name, and each also gave the name of their author, Matthias Braun.

The posted document was later changed to remove all references to Areva, and Dr. Braun and Areva did not reply to questions about what simulation code or codes the company may have used to arrive at its analysis of the Fukushima disaster.

"We cannot comment on that," Jarret Adams, a spokesman for Areva, said of the slide presentation. The reason, he added, was "because it was not an officially released document."

A European atomic official monitoring the Fukushima crisis expressed sympathy for Japan's need to rely on forensics to grasp the full dimensions of the unfolding disaster.

"Clearly, there's no access to the core," the official said. "The Japanese are honestly blind."

---

<http://english.kyodonews.jp/news/2011/04/82864.html> plusieurs mois prévus par le govt

<http://english.kyodonews.jp/news/2011/04/82903.html>

illegal levels of radioactivity in Fukushima mushrooms

<http://balisescriirad.free.fr/>

<http://www.google.com/hostednews/canadianpress/article/ALeqM5hR4mQ7B3LbX0zGr44ADWrL06MvdQ?docId=6447275>

<http://english.kyodonews.jp/news/2011/04/82988.html> Japan's 25% CO2 cut goal may be reviewed

<http://english.kyodonews.jp/news/2011/04/83030.html>

release of radioactive water directly into the Pacific ?



## **Radiation-tainted water leak at Fukushima Daiichi plant**

Handout photo shows water believed to contain high levels of radiation leaking to the sea from a crack in the wall of a pit near the No. 2 reactor at the troubled Fukushima Daiichi nuclear power plant in Fukushima Prefecture on April 2, 2011, prior to emergency measures taken in an attempt to stop the flow. (Photo courtesy of Tokyo Electric Power Co.) <http://english.kyodonews.jp/photos/2011/04/82969.html>

---

<http://english.kyodonews.jp/news/2011/04/83039.html>

TEPCO to release radioactive water into Pacific (as of Monday 4<sup>th</sup> April)

## **Fukushima crisis poses challenge to IAEA members: Amano**

VIENNA, April 4, Kyodo

<http://english.kyodonews.jp/news/2011/04/83064.html>

The current nuclear crisis in Japan has enormous implications for nuclear power and poses a major challenge to all countries concerned, Yukiya Amano, head of the International Atomic Energy Agency, said Monday at the opening of a review meeting on the Convention on Nuclear Safety.

"We cannot take a business-as-usual approach," Amano said. "More needs to be done to strengthen the safety of nuclear power plants so that the risk of a future accident is significantly reduced."

He told representatives of the 72 contracting states to the convention, which took effect in 1996, that **public confidence in nuclear power has to be restored** by the most robust international safety standards and full transparency.

The participants in the review meeting, which takes place every three years, are to discuss reports on nuclear safety submitted by contracting parties, including Japan, seven months ahead of the meeting.

A seminar focusing on the accident at Fukushima Daiichi atomic plant will take place on the sidelines of the meeting later Monday. According to Amano, **specialists from Japan's Nuclear and Industrial Safety Agency, Tokyo Electric Power Co., which operates the plant, the United States and European countries will give presentations.**

Note: wouldn't that be "business as usual"?( between themselves)

---

<http://english.kyodonews.jp/news/2011/04/83076.html>

Tokyo Electric Power Co. began disposing of a total of 10,000 tons of water containing low-level radioactive substances in the Pacific Ocean on Monday from the crippled Fukushima Daiichi nuclear power plant to make room to store more highly polluted water filling the No. 2 reactor turbine building, as the water is hampering the plant's restoration work, it said.

Separately from the contaminated water kept in a waste processing building, the company also said it plans to release 1,500 tons of groundwater, also containing radioactive materials, near the No. 5 and No. 6 reactors. The government said the water disposal will pose "no major health risk" and is inevitable in order to secure safety.

....

Highly radioactive water has been filling up the basement of the No. 2 reactor turbine building and the tunnel-like trench connected to it. Meanwhile, the water in the pit is believed to have come from the No. 2 reactor core, where fuel rods have partially melted.

TEPCO has revealed that radioactive iodine-131 **more than 10,000 times the legal concentration limit** was detected in the water found in the pit.....

<http://english.kyodonews.jp/news/2011/04/83119.html>

Tokyo Electric Power Co. on Monday took the unprecedented measure of dumping 10,000 tons of low-level radioactive water in the Pacific Ocean from a facility at its crippled Fukushima Daiichi nuclear power complex to make room for the storage of more highly contaminated water, which is hampering restoration work at the plant.

With the total amount of water to reach 11,500 tons, including contaminated groundwater from near the No. 5 and No. 6 reactors, the government said the disposal was unavoidable in order to secure safety. The level of radioactive substances in the water is **up to 500 times the legal limit permitted for release in the environment.**

---

[note : A few hours earlier,one could read (see above) the following : « The total amount of contaminated water to be released will be 15,000 tons and the concentration of the waste water is estimated at **about 100 times the legal limit**, which is deemed as a relatively low level, Tokyo Electric Power Co. said.”

---

....

Nishiyama also said that it had become necessary to release 1,500 tons of groundwater, also containing radioactive materials, found near the Nos. 5 and 6 reactor turbine buildings out of concern that the water could drown safety-related equipment.

Of the six reactors at the Fukushima Daiichi plant, the Nos. 5 and 6 reactors have achieved "cold shutdown," but Nishiyama said that he is afraid their cooling functions could be lost if the water level increases inside the buildings.

## **.... San Francisco rainwater radiation spikes above US drinking water standards**

Radiation from Japan rained on Berkeley, California, during recent storms at levels that exceeded drinking water standards by 181 times. A rooftop water monitoring program managed by the University of California at Berkeley's Department of Nuclear Engineering detected substantial spikes in rain-borne iodine-131 during those torrential downpours. The levels exceeded federal drinking water thresholds, known as Maximum Contaminant Levels -- or MCLs -- by as much as 181 times or 18,100%.

## More than one in 10 nuclear power plants at risk from earthquakes

<http://www.independent.co.uk/news/science/more-than-one-in-10-nuclear-power-plants-at-risk-from-earthquakes-2260817.html>

Many stations are in countries that would be less able than Japan to cope with disasters

By Jonathan Owen  
*Sunday, 3 April 2011*

Scores of nuclear power plants worldwide are at risk from tsunamis or earthquakes similar to the natural disasters that crippled Japan's Fukushima reactors, according to new research. Many at-risk plants are in countries less able to cope with a disaster than Japan, experts have warned.

Seventy-six operating power stations in Japan, Taiwan, China, South Korea, India, Pakistan and the US are located in areas close to coastlines deemed vulnerable to tsunamis.

Of 442 nuclear power stations globally, more than one in 10 are situated in places deemed to be at high or extreme risk of earthquakes – in Japan, the US, Taiwan, Armenia and Slovenia – according to a new study by the analysts Maplecroft.

Helen Hodge, Maplecroft's natural hazards analyst, said: "Although Japanese nuclear facilities are particularly exposed, other countries could also face similar risks. South Korea, Taiwan, southern China, India, Pakistan and the west coast of the US have operating or planned nuclear facilities on tsunami-exposed coastlines, while nuclear sites in areas of high or extreme risk of earthquakes can be found in western US, Taiwan, Armenia, Iran and Slovenia."

Emeritus Professor Keith Barnham, a physicist from Imperial College London, commented: "Japan is one of the most advanced technological countries but one can see the problems they are having in coping with the aftermath. One fears for the reactors planned or operational in the environmentally unsafe areas of less technologically developed countries."

Nuclear safety experts cite the example of an ageing Russian-built nuclear reactor only 30km from the Armenian capital, Yerevan. In December 1988, a powerful earthquake, which led to the deaths of at least 25,000 people, occurred in north-west Armenia. The following year, the Metsamor nuclear plant was shut down due to safety concerns regarding "seismic vulnerability". Although one of its reactors is now being decommissioned, another remains operational. The International Atomic Energy Association (IAEA) has been involved in safety improvements at the plant for more than a decade.

But, according to the World Nuclear Association, "The present Metsamor plant is a concern to the European Union and to neighbouring Turkey, 16km away. There have been various calls to shut it down ... but Armenia is very dependent on it and has said that it will remain open until a replacement is commissioned."

The risks of future natural disasters have been recognised by the IAEA in recent years, which set up the International Seismic Safety Centre in 2008. Its safety guidelines on earthquakes and tsunamis are being revised following the incident at Japan's Fukushima Daiichi nuclear plant.

The Japanese crisis has reignited the debate over nuclear safety. As a result, several nations, including Italy, Switzerland and Germany, have put new reactor plans on hold. The nuclear plant at Fukushima was crippled after an earthquake and tsunami devastated north-east Japan last month.

James Acton, nuclear expert at the Carnegie Endowment for International Peace, commented: "The key question is whether we have correctly predicted the risk that a reactor could be hit by a disaster (natural or man-made) that is bigger than it is designed to withstand. This issue should be urgently reviewed by all states with reactors."

Jeremy Gordon, editor of World Nuclear News, predicted there would be a "step change" in efforts to improve safety. "While it's true that many, if not most countries, would be less prepared than Japan to face an unprecedented natural disaster and nuclear accident on this scale," he said, "the country involved in future would likely have a far better practical support network from other governments and practical experts in industry."

Dr Gordon Woo, an IAEA consultant, said there was already a "significant degree" of seismic technology transfer by the IAEA to less advanced nations. He predicted this would increase after the Japanese disaster.

<http://english.kyodonews.jp/news/2011/04/83221.html>

Japan Atomic Energy Commission.. (5 members)

**Commission chairman Shunsuke Kondo said the current crisis contradicts the conventional argument that nuclear power generation is safe. "We have to admit that there has been an error in the criteria of judgment in promoting the country's nuclear power policy," he said....**

After its regular meeting Tuesday, the five-member commission expressed its view on the current nuclear crisis, saying it has shaken confidence in the country's efforts to ensure the safety of nuclear power...

The Japan Atomic Energy Commission was established in 1956 to promote the country's nuclear power development systematically. It ceded its authority on safety regulation to the Nuclear Safety Commission of

Japan in 1978 after Japan's first nuclear-powered ship, the 8,242-ton Mutsu, developed a radiation leak during a test run in 1974.

<http://english.kyodonews.jp/news/2011/04/83228.html> tuesday 5th

A total of 60,000 tons of radioactive water is believed to be flooding the basement of reactor buildings and underground trenches connected to them at the crisis-hit Fukushima nuclear plant, the industry minister said Tuesday, adding its operator will later remove the liquid obstructing recovery work...

The Nuclear and Industrial Safety Agency said the 60,000 tons of water -- 20,000 tons each from the Nos. 1-3 reactor buildings and trenches -- will be stored in tanks at the units, a facility for nuclear waste disposal at the site, an artificial floating island called a "megafloat," U.S. Navy barges and provisional tanks.

The complex for nuclear waste disposal can accommodate 30,000 tons of such water but it will take a while before it can store the liquid because TEPCO will try to ensure that radioactive water will not be leaked from the facility by using coating agents, the agency said.

The provisional tanks will be shipped to the Fukushima plant by the end of this month, it added.

...he water containing radioactive iodine-131 more than 10,000 times the legal concentration limit has been leaking from a cracked seaside pit connected to the No. 2 reactor turbine building.

In a new finding, TEPCO said Tuesday a seawater sample taken Saturday near the No. 2 reactor's water intake showed the iodine-131 concentration at 7.5 million times the maximum allowable level under law....

Note: these are numbers from Saturday, today is Tuesday

---

<http://english.kyodonews.jp/news/2011/04/83292.html>

Japan defends radioactive water disposal, vows to fully inform world

..

He also said the dumping does not violate the 1986 Convention on Early Notification of a Nuclear Accident, which obligates nations to provide data such as the accident's time, location and radiation releases to affected states when harmful trans-boundary radiation release is feared...

[http://www.google.com/hostednews/afp/article/ALeqM5iUtd8qBnjSzzDmhJXslDV\\_H0CxRw?docId=CNG.bcf74a4d0a9bb29afe4e98cfe57a8c2d.1311](http://www.google.com/hostednews/afp/article/ALeqM5iUtd8qBnjSzzDmhJXslDV_H0CxRw?docId=CNG.bcf74a4d0a9bb29afe4e98cfe57a8c2d.1311)

---

## **Fukushima reviews to cause 3-month delay in UK nuclear program**

Barcelona (Platts)--5Apr2011/708 am EDT/1108 GMT

<http://www.platts.com/RSSFeedDetailedNews/RSSFeed/ElectricPower/8749355>

There will be a minimum three-month delay in new reactor construction in the UK as a result of plans for nuclear safety reviews in the wake of the nuclear accident at Tokyo Electric's Fukushima-1 nuclear power plant in Japan, UK officials said Tuesday.

The UK Health and Safety Executive said it will not publish its final conclusions on the safety of the Areva EPR and Westinghouse AP1000 reactor designs until after a nuclear safety review investigates the implications of the nuclear accident at Fukushima on the safety of UK reactors.

That review, being conducted by Chief Nuclear Inspector Mike Weightman, is **not expected to be complete until September** and the HSE had been planning to publish its conclusions under the generic design assessment, or GDA, program at the end of June. The GDA program is reviewing the safety of the reactor designs for construction in the UK.

In a statement Tuesday, HSE said that it would proceed to publish all the GDA safety issues on the two reactor designs that it had identified as of June 30, as well as the reactor vendors' resolution plans for those issues.

But it said it would not issue its final conclusions in the form of design acceptance confirmations until after the completion of the Weightman report.

Among the GDA issues to be published at the end of June will be a requirement that the reactor vendors address any issues raised by the Weightman report.

GDA issues must be resolved before the agency will issue final design acceptance confirmations for the reactors, HSE said.

Nuclear safety-related construction of new reactors cannot proceed if there are any unresolved GDA issues, HSE has said.

--David Stellfox, [david\\_stellfox@platts.com](mailto:david_stellfox@platts.com)

---

<http://english.kyodonews.jp/news/2011/04/83320.html>

..The mayor said the government and TEPCO were slow to respond to the trouble at the Fukushima plant because they had believed such an accident would not hit it.

The government and TEPCO were overconfident in their technologies and they ended up responding only after problems had occurred, he said, adding, "Nuclear power is a monster. They were caught off guard, saying nuclear power is safe."

Concerning relations between nuclear power plants and host municipalities, Murakami noted that nuclear power plants are a very large presence for host local governments which cannot easily depart from them in the aspects of finance and employment.

The mayor said the central government, utility firms and host municipalities had all been wrong in becoming mutually dependent on nuclear power without thinking about its potential threats....

<http://english.kyodonews.jp/news/2011/04/83365.html>

..

The government's Nuclear and Industrial Safety Agency told a press conference that TEPCO is expected to continue injecting the agent in the hope of completely stopping the leak of highly contaminated water.

**But the marine environment appears to be seriously contaminated already.** A seawater sample taken Saturday near the No. 2 reactor's water intake showed a radioactive iodine-131 concentration of 7.5 million times the maximum permitted level under law, TEPCO said Tuesday.

Radioactive cesium exceeding the maximum permitted limit was detected in young sand lance in the sea near the northern part of Ibaraki Prefecture, south of Fukushima. It is the first time that contamination levels in seafood have exceeded the limit.

The company said it will have to discharge a total of 11,500 tons of low-level contaminated water from the plant into the sea by this weekend.

<http://english.kyodonews.jp/news/2011/04/83451.html>

Tokyo Electric Power Co. succeeded in stopping highly radioactive water from leaking into the Pacific Ocean from the crippled Fukushima Daiichi nuclear power plant early Wednesday, while saying it is considering injecting nitrogen to prevent a possible hydrogen explosion from occurring at the No. 1 reactor.

The highly toxic water, confirmed to have been flowing from around a seaside pit located near the No. 2 reactor water intake on Saturday, stopped at 5:38 a.m. after the plant operator injected some 6,000 liters of chemical agents, including what is called water glass.

The government's nuclear agency said it ordered the utility known as TEPCO to keep monitoring the pit to check whether the water leakage has completely stopped, and noted there is the possibility that the water, which has lost an outlet, may show up from other areas inside the plant's premises.

...

Meanwhile, TEPCO said it may inject nitrogen into the No. 1 reactor's containment vessel possibly later Wednesday.

Hidehiko Nishiyama, a spokesman for the Nuclear and Industrial Safety Agency, said the move is considered with the aim to stop a possible hydrogen explosion "in advance" and that it does not mean there is an "immediate danger."

The nitrogen injection process is expected to take several days, and may lead to the release of radioactive substances in the air.....

## Japan: Radiation safety levels set for fish

AP

*Wednesday, 6 April 2011 The Independent*

The Government set its first radiation safety standards for fish yesterday after the country's tsunami-ravaged nuclear plant reported radioactive contamination in nearby seawater measuring at several million times the legal limit.

The plant operator insisted that the radiation will rapidly disperse and that it poses no immediate danger.

But an expert said exposure to the highly concentrated levels near the Fukushima Dai-ichi plant could cause immediate injury and that the leaks could result in residual contamination of the sea in the area. The new levels, coupled with reports that radiation was building up in fish, led the government to create an acceptable radiation standard, which officials said could change. Some fish caught last Friday would have exceeded the new limit.

---

<http://english.kyodonews.jp/news/2011/04/83542.html>

TEPCO to inject nitrogen in reactor no.1 to prevent explosion

Paranthèse:

The National Federation of Fisheries Cooperatives Associations lodged a protest with TEPCO and the Ministry of Economy, Trade and Industry on Wednesday, saying that the dumping of contaminated water into the sea without any prior consultation with fishermen was an "outrage."

The group also called for the dumping of contaminated water and the leakage of highly polluted water from the plant to be halted so as to prevent Japan's fishing industry from "perishing."

---

<http://english.kyodonews.jp/news/2011/04/83537.html>

evacuation of women and babies..

<http://english.kyodonews.jp/news/2011/04/83538.html>

## Gov't reviewing radiation exposure levels used for evacuation

TOKYO, April 6, Kyodo

The government is reviewing radiation exposure levels currently used to designate an evacuation zone around the Fukushima Daiichi nuclear plant, as the nuclear crisis triggered by last month's massive earthquake and tsunami continues to unfold, its top spokesman said Wednesday.

"The current standards represent safety in the event of absorbing a huge amount of radiation in a short period," Chief Cabinet Secretary Yukio Edano said at a news conference, noting that **some changes may be necessary as residents nearby the plant are at risk of absorbing radiation over an extended period.**

Currently, the government says that outside radiation levels over 50 millisieverts require evacuation, and advises residents to remain indoors when levels exceed 10 millisieverts.

Based on these figures, the government has ordered residents within a 20 kilometer-radius of the nuclear plant to evacuate and those in the 20-30 km zone to stay indoors.

---

<http://english.kyodonews.jp/news/2011/04/83604.html> :Govt reviewing exposure level for evacuation

...The Nuclear Safety Commission of Japan said it has advised the government to issue an evacuation order if there is a possibility of residents receiving a dose of 20 millisieverts over one year, up from the current limit of 1 millisievert per year.

In the event of emergencies, the International Commission on Radiological Protection is recommending that the highest planned residual dose over a year be in the range of 20 to 100 millisieverts.

Seiji Shiroya, a member of the safety commission, said at a news conference that the international organization's recommendation will be used as a reference point to possibly toughen the country's present permissible radiation exposure levels.

.. The government also decided to allow residents of areas within the zone to return home for a short time possibly around next Monday, one month after the catastrophic quake.

---

<http://english.kyodonews.jp/news/2011/04/83613.html>

Tokyo Electric Power Co. on Wednesday started work to inject nitrogen into one of the reactors at the crippled Fukushima Daiichi nuclear power complex to reduce the potential risk of a hydrogen explosion,....

According to estimates by TEPCO announced Wednesday, 25 percent of the nuclear fuel rods have been damaged at the No. 3 reactor. The company earlier said that 70 percent of the No. 1 reactor's fuel rods and 30 percent of the No. 2 reactor's fuel rods have been damaged.

Nishiyama said past hydrogen explosions have likely occurred due to hydrogen accumulation caused by the reaction of melted fuel rods' zirconium with steam from the coolant water. But now there is concern that hydrogen could accumulate in the No. 1 reactor under a different process involving radiation-induced decomposition of water into hydrogen and oxygen.

In announcing TEPCO's decision to inject nitrogen into the reactor's containment vessel, an operation approved by the government, the nuclear agency said that **radioactive leaks are "unlikely to significantly rise"** even if the pressure inside the vessel increases as a result of the injection.

**Nishiyama said that he also expects nitrogen to be injected into the Nos. 2 and 3 reactors in the future.**

---

## **Areva's German Offices Raided by Prosecutors in Bribery Probe**

*By Karin Matussek - Apr 6, 2011 1:28 PM GMT+0200 Wed Apr 06 11:28:52 GMT 2011*

<http://www.bloomberg.com/news/2011-04-06/areva-s-german-offices-raided-by-prosecutors-in-bribery-probe.html>

German offices of [Areva SA \(CEI\)](#), the world's largest supplier of nuclear equipment and services, were raided by prosecutors in a probe over possible bribery payments.

**Eight suspects, including five current and former Areva employees are being investigated over bribery and breach of trust allegations**, prosecutors in Nuremberg, [Germany](#), said in an e-mailed statement today. The suspects may have transferred company money to slush funds abroad to “get competitive advantages,” prosecutors said.

Prosecutors searched offices of the Areva NP unit in Erlangen, Germany, and an archive in the town of Offenbach yesterday, the company said in an e-mailed statement. Areva is cooperating and the probe isn't directed at the company, it said. The alleged actions may have been harmful to the company, Areva said.

Areva rivals including [Siemens AG \(SIE\)](#) and Alstom SA, have both been caught up in European bribery probes. **Siemens agreed to pay \$1.6 billion to settle bribery allegations in the U.S.** and Germany in 2008 and three U.K. Alstom executives were arrested last year in a separate probe there.

**Investigators yesterday raided 31 homes and offices in Germany and the [Czech Republic](#), prosecutors said. Three suspects are consultants who may have helped the Areva employees in the alleged actions, prosecutors said.**

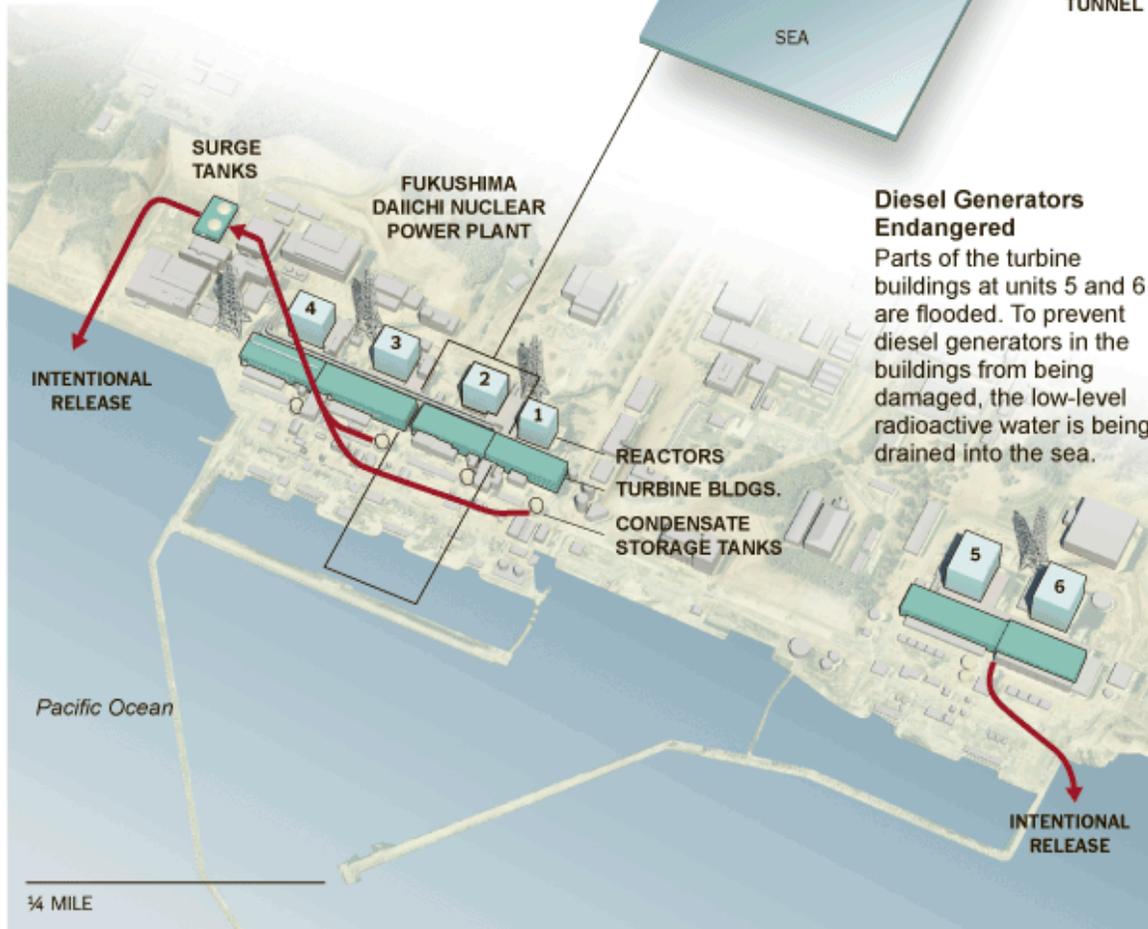
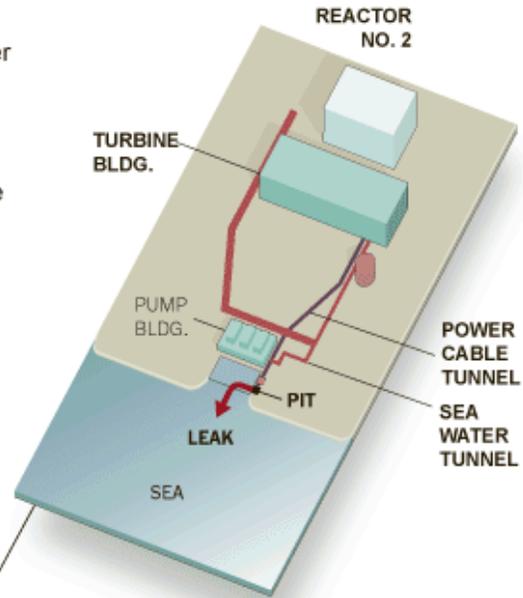
To contact the reporter on this story: Karin Matussek in Weimar via [kmatussek@bloomberg.net](mailto:kmatussek@bloomberg.net)

<http://english.kyodonews.jp/news/2011/04/83632.html> study of health effects over 2 years by the UN

<http://www.rue89.com/2011/04/06/fukushima-tchernobyl-loms-repete-les-chiffres-de-laiea-198646>  
OMS/AIEA

**No More Storage Space**  
Highly radioactive water in the basement of Reactor 2's turbine building needs to be removed, but there is no place for it. To make room, less radioactive water from the surge tanks is being drained into the sea. Last week, radioactive water from two condensate storage tanks was moved to these tanks.

**Water Pouring Into Sea From Leak**  
Highly radioactive water is pouring into the sea from a leak in a pit. Concrete and other materials poured into the pit failed to stop the leak. Dye poured into the sea water tunnel near the turbine building did not reveal the tunnel as the source of the leak.



**Diesel Generators Endangered**  
Parts of the turbine buildings at units 5 and 6 are flooded. To prevent diesel generators in the buildings from being damaged, the low-level radioactive water is being drained into the sea.

From Beyond Nuclear: **NYT reports new threats**

The [New York Times](#) has obtained a copy of a confidential document prepared by the US Nuclear Regulatory Commission's oversight team of the Fukushima Dai-Ichi nuclear power plant disaster. The nuclear hazard assessment warns of an increasingly complicated path towards restoring cooling and regaining control of the severely damaged reactor systems in four of the six units. New threats of more

hydrogen gas explosions and further damage to the reactors from water laden reactor buildings from more earthquake aftershocks may be increasing.

One of the most disturbing news story accounts taken from the NRC document states:

*"The document also suggests that fragments or particles of nuclear fuel from spent fuel pools above the reactors were blown "up to one mile from the units," and that pieces of highly radioactive material fell between two units and had to be "bulldozed over," presumably to protect workers at the site. The ejection of nuclear material, which may have occurred during one of the earlier hydrogen explosions, may indicate more extensive damage to the extremely radioactive pools than previously disclosed."*

April 6, 2011 |

[The New York Times has reported](#) that the stress from large quantities of emergency cooling water in Fukushima Daiichi reactor blocks could exacerbate the violent force exerted by powerful aftershocks, further risking breach of vital containment structures holding back the motherlode of radioactivity from escaping into the environment. Meanwhile, nearly a month after the March 11 earthquake and tsunami, police are at long last entering the 12 mile radius radiological evacuation zone, in search of 4,200 missing persons.

<http://cryptome.org/eyeball/daiichi-npp/daiichi-photos.htm>

Photos de la centrale de F. par Cryptome

<http://english.kyodonews.jp/news/2011/04/83743.html>

.. After the company successfully stopped leakage of highly radioactive water into the sea from a cracked pit Wednesday, it detected a temporary rise in the level of tainted water in an underground trench connected to the No. 2 reactor building, from which the toxic liquid is believed to originate.

Hidehiko Nishiyama, a spokesman for the nuclear regulatory body, said the water level, which rose about 4 centimeters and then returned to the previous level, suggests that **highly radioactive water may have begun leaking again from somewhere else** and said that TEPCO was expected to boost monitoring of seawater radiation levels...

---

## Problems With Radioactive Water at the Plant

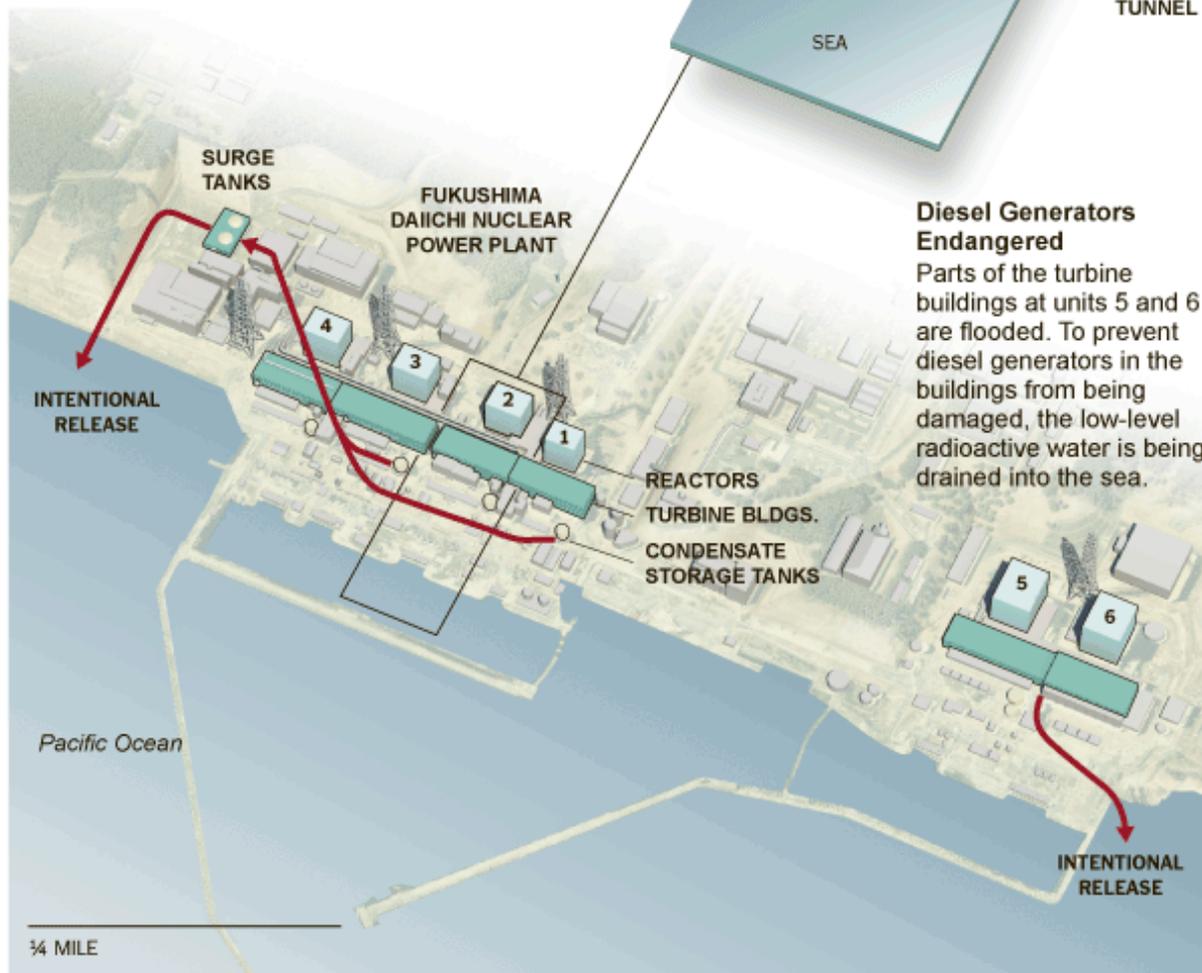
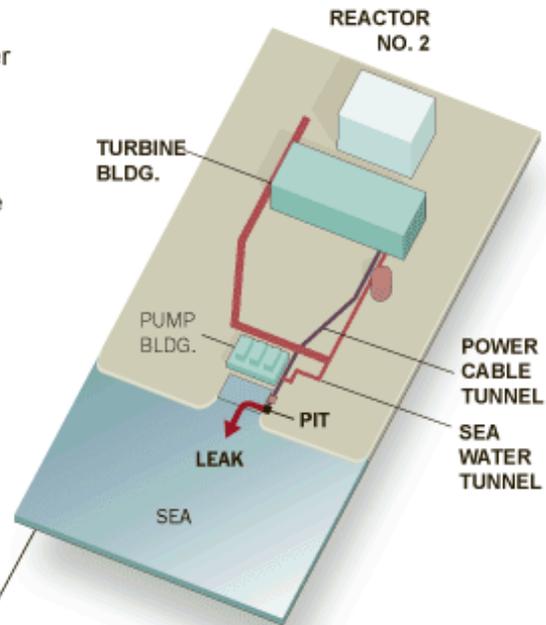
The Tokyo Electric Power Company is dealing with problems created by the buildup of radioactive water at its damaged nuclear power plant. Some of it is leaking, and the company has run out of space to store it.

### No More Storage Space

Highly radioactive water in the basement of Reactor 2's turbine building needs to be removed, but there is no place for it. To make room, less radioactive water from the surge tanks is being drained into the sea. Last week, radioactive water from two condensate storage tanks was moved to these tanks.

### Water Pouring Into Sea From Leak

Highly radioactive water is pouring into the sea from a leak in a pit. Concrete and other materials poured into the pit failed to stop the leak. Dye poured into the sea water tunnel near the turbine building did not reveal the tunnel as the source of the leak.



### Diesel Generators Endangered

Parts of the turbine buildings at units 5 and 6 are flooded. To prevent diesel generators in the buildings from being damaged, the low-level radioactive water is being drained into the sea.

After Thursday April 7 aftershock :

<http://english.kyodonews.jp/news/2011/04/84023.html>

Radioactive water spilled from pools holding spent nuclear fuel rods at the Onagawa power plant in Miyagi Prefecture following the strong earthquake late Thursday, the nuclear safety agency said Friday....

## **Toshiba proposes decommissioning 4 reactors in 10 years**

TOKYO, April 8, Kyodo

Toshiba Corp. has proposed decommissioning four troubled nuclear reactors at the Fukushima Daiichi power station in about 10 years, much shorter than the 14 years that was needed to dismantle the Three Mile Island nuclear power plant in the United States, industry sources said Friday.

Toshiba, one of the two Japanese reactor makers, filed the proposal with Tokyo Electric Power Co., the operator of the Fukushima plant, and the Ministry of Economy, Trade and Industry, after compiling it with U.S. nuclear energy firms including its subsidiary Westinghouse Electric Co., according to the sources.

Toshiba believes it can rely on the U.S. firms' expertise from the 1979 Three Mile Island accident to decommission the Fukushima reactors.

According to the proposal, it will take about 10 years to remove the fuel rods in the containers and the spent nuclear fuel rods in the storage pools from the four reactors, to demolish various facilities there and to improve soil conditions.

Another Japanese reactor maker Hitachi Ltd., in a tie-up with General Electric Co. of the United States, is expected to file its own proposal, the sources said.

Tokyo Electric and METI are expected to look into those proposals by Toshiba and Hitachi before actually moving to dismantle the reactors.

The four reactors were crippled due to the March 11 earthquake and subsequent tsunami.

In Japan, Chubu Electric Power Co. is currently working on decommissioning two reactors at the Hamaoka nuclear power plant in Omaezaki, Shizuoka Prefecture, to have it completed by March 2037.

---

## Radioactive materials spread around northern hemisphere in 2 weeks

VIENNA, April 7, Kyodo

Radioactive materials released from Japan's crippled Fukushima Daiichi nuclear power plant had spread around the entire northern hemisphere in the two weeks following the March 11 quake and tsunami disaster, a Vienna-based international nuclear watchdog said Thursday.

The Preparatory Commission for the Comprehensive Nuclear-Test-Ban Treaty Organization said minute traces of radioactive substances spread around the hemisphere by around March 25 after moving across the Pacific Ocean and other places. It said the amounts of such substances were far below levels that could affect human health.

The organization runs 63 monitoring stations around the world, including one in Takasaki, Gunma Prefecture in Japan. The Takasaki station detected radioactive substances on March 12, followed by detection in eastern Russia on March 14 and in the west coast of the United States two days later. The radioactive materials then crossed the Atlantic and reached Iceland on March 22, it said.

According to a simulation by a German research institute, a path of the radioactive materials involved moving from Fukushima to the United States on air currents before they were dispersed from northern Canada to the Arctic Sea to spread around the hemisphere.

## Some produce near Fukushima plant to be allowed for shipments

TOKYO, April 8, Kyodo

The government will allow shipments of some produce from areas near the crippled Fukushima Daiichi nuclear power plant as they have been proved to be safe enough to consume, its top spokesman said Friday.

The restrictions on raw milk from Kitakata and several other municipalities in Fukushima Prefecture, and spinach and "kakina" leafy vegetable in Gunma Prefecture will be lifted, Chief Cabinet Secretary Yukio Edano said at a news conference.

The government had restricted shipments of some farm products from four prefectures following the release of radioactive particles from the tsunami-stricken nuclear plant.

**The government, however, changed the way in which it applies such restrictions earlier this week, now imposing them on a town-by-town basis and making it a condition that each product will not be banned from being shipped if radioactivity data stay below safety limits for a third straight week. But since they keep on changing the safety limits to "suit" the situation, what is the value of such limits ?**

The government, meanwhile, will restrict farmers from planting rice near the nuclear complex, which has been facing the emergency situation since the March 11 earthquake and tsunami.

If radioactivity levels higher than tentative safe limits set by the health ministry are detected in their rice, Edano said the government plans to pay them compensation.

<http://english.kyodonews.jp/news/2011/04/84148.html>

= update nuclear facilities friday night (after latest shock)

## **TEPCO begins building steel wall, fence to prevent sea contamination**

TOKYO, April 9, Kyodo

The operator of a crippled Fukushima nuclear power station started Saturday to install a steel wall and fence to prevent more water containing radioactive substances from seeping into the Pacific Ocean.

Tokyo Electric Power Co. plans to plug a seawater intake connected to the No. 2 reactor of the Fukushima Daiichi complex with seven steel sheets and a 120-meter-wide curtain-like fence near the intake and two other locations nearby.

The company already stopped the leakage of water contaminated with radioactive materials from near the intake Wednesday. But it went with the construction of the steel sheet wall and the so-called silt fence to allay environmental concerns that have been raised domestically and internationally.

Radioactive iodine reading was 63,000 times the legal limit in seawater near the intake a day after contaminated water stopped leaking into the sea.

Along with efforts to stop the leakage of toxic water, TEPCO also released about 9,000 tons of water containing relatively low-level radioactive materials into the Pacific, saying the massive amount of such water in the premises slowed the work to get the plant under control.

<http://english.kyodonews.jp/news/2011/04/84289.html>

cesium in fish off Fukushima

<http://english.kyodonews.jp/news/2011/04/84251.html>

subcontractors refuse higher radiation dose limit

..According to Tokyo Electric, 21 workers were exposed to a cumulative dose of more than 100 millisieverts as of April 1...

## Japanese Workers Braved Radiation for a Temp Job

By HIROKO TABUCHI, New York Times, April 9 2011

<http://www.nytimes.com/2011/04/10/world/asia/10workers.html>

KAZO, Japan — The ground started to buck at the Fukushima Daiichi nuclear power plant, and Masayuki Ishizawa could scarcely stay on his feet. Helmet in hand, he ran from a workers' standby room outside the plant's No. 3 reactor, near where he and a group of workers had been doing repair work. He saw a chimney and crane swaying like weeds. Everybody was shouting in a panic, he recalled.

Mr. Ishizawa, 55, raced to the plant's central gate. But a security guard would not let him out of the complex. A long line of cars had formed at the gate, and some drivers were blaring their horns. "Show me your IDs," Mr. Ishizawa remembered the guard saying, insisting that he follow the correct sign-out procedure. And where, the guard demanded, were his supervisors? "What are you saying?" Mr. Ishizawa said he shouted at the guard. He looked over his shoulder and saw a dark shadow on the horizon, out at sea, he said. He shouted again: "Don't you know a tsunami is coming?"

Mr. Ishizawa, who was finally allowed to leave, is not a nuclear specialist; he is not even an employee of the Tokyo Electric Power Company, the operator of the crippled plant. He is one of thousands of untrained, itinerant, temporary laborers who handle the bulk of the dangerous work at nuclear power plants here and in other countries, lured by the higher wages offered for working with radiation. **Collectively, these contractors were exposed to levels of radiation about 16 times as high as the levels faced by Tokyo Electric employees last year**, according to Japan's Nuclear and Industrial Safety Agency, which regulates the industry. These workers remain vital to efforts to contain the nuclear crisis at the Fukushima nuclear plants.

They are emblematic of Japan's two-tiered work force, with an elite class of highly paid employees at top companies and a subclass of laborers who work for less pay, have less job security and receive fewer benefits. Such labor practices have both endangered the health of these workers and undermined safety at Japan's 55 nuclear reactors, critics charge.

"This is the hidden world of nuclear power," said Yuko Fujita, a former physics professor at Keio University in Tokyo and a longtime campaigner for improved labor conditions in the nuclear industry. "Wherever there are hazardous conditions, these laborers are told to go. It is dangerous for them, and it is dangerous for nuclear safety."

**Of roughly 83,000 workers at Japan's 18 commercial nuclear power plants, 88 percent were contract workers in the year that ended in March 2010**, the nuclear agency said. **At the Fukushima Daiichi plant, 89 percent of the**

10,303 workers during that period were contractors. In Japan's nuclear industry, the elite are operators like Tokyo Electric and the manufacturers that build and help maintain the plants like Toshiba and Hitachi. But under those companies are contractors, subcontractors and sub-subcontractors — with wages, benefits and protection against radiation dwindling with each step down the ladder.

Interviews with about a half-dozen past and current workers at Fukushima Daiichi and other plants paint a bleak picture of workers on the nuclear circuit: battling intense heat as they clean off radiation from the reactors' drywells and spent-fuel pools using mops and rags, clearing the way for inspectors, technicians and Tokyo Electric employees, and working in the cold to fill drums with contaminated waste.

Some workers are hired from construction sites, and some are local farmers looking for extra income. Yet others are hired by local gangsters, according to a number of workers who did not want to give their names.

They spoke of the constant fear of getting fired, trying to hide injuries to avoid trouble for their employers, carrying skin-colored adhesive bandages to cover up cuts and bruises.

In the most dangerous places, current and former workers said, radiation levels would be so high that workers would take turns approaching a valve just to open it, turning it for a few seconds before a supervisor with a stopwatch ordered the job to be handed off to the next person. Similar work would be required at the Fukushima Daiichi plant now, where the three reactors in operation at the time of the earthquake shut down automatically, workers say.

"Your first priority is to avoid pan-ku," said one current worker at the Fukushima Daini plant, using a Japanese expression based on the English word puncture. Workers use the term to describe their dosimeter, which measures radiation exposure, from reaching the daily cumulative limit of 50 millisieverts. "Once you reach the limit, there is no more work," said the worker, who did not want to give his name for fear of being fired by his employer.

Takeshi Kawakami, 64, remembers climbing into the spent-fuel pool of the No. 1 reactor at the Fukushima Daiichi plant during an annual maintenance shutdown in the 1980s to scrub the walls clean of radiation with brushes and rags. All workers carried dosimeters set to sound an alarm if exposure levels hit a cumulative dose limit; Mr. Kawakami said he usually did not last 20 minutes. "It was unbearable, and you had your mask on, and it was so tight," Mr. Kawakami said. "I started feeling dizzy. I could not even see what I was doing. I thought I would drown in my own sweat."

Since the mid-1970s, about 50 former workers have received workers' compensation after developing leukemia and other forms of cancer. Health experts say that though many former workers are

experiencing health problems that may be a result of their nuclear work, it is often difficult to prove a direct link. Mr. Kawakami has received a diagnosis of stomach and intestinal cancer.

News of workers' mishaps turns up periodically in safety reports: one submitted by Tokyo Electric to the government of Fukushima Prefecture in October 2010 outlines an accident during which a contract worker who had been wiping down a turbine building was exposed to harmful levels of radiation after accidentally using one of the towels on his face. In response, the company said in the report that it would provide special towels for workers to wipe their sweat.

Most day workers were evacuated from Fukushima Daiichi after the March 11 earthquake and tsunami, which knocked out the plant's power and pushed some of the reactors to the brink of a partial meltdown.

Since then, those who have returned have been strictly shielded from the news media; many of them are housed at a staging ground for workers that is off limits to reporters. But there have been signs that such laborers continue to play a big role at the crippled power plant.

The two workers who were injured two weeks ago when they stepped in radioactive water were subcontractor employees. As of Thursday, 21 workers at the plant had each been exposed to cumulative radiation levels of more than 100 millisieverts, or the usual limit set for nuclear plant workers during an emergency, according to Tokyo Electric. (That limit was raised to 250 millisieverts last month.)

The company refused to say how many contract workers had been exposed to radiation. Of roughly 300 workers left at the plant on Thursday, 45 were employed by contractors, the company said.

Day laborers are being lured back to the plant by wages that have increased along with the risks of working there. Mr. Ishizawa, whose home is about a mile from the plant and who evacuated with the town's other residents the day after the quake, said he had been called last week by a former employer who offered daily wages of about \$350 for just two hours of work at the Fukushima Daiichi plant — more than twice his previous pay. Some of the former members of his team have been offered nearly \$1,000 a day. Offers have fluctuated depending on the progress at the plant and the perceived radiation risks that day. So far, Mr. Ishizawa has refused to return.

Working conditions have improved over the years, experts say. While exposure per worker dropped in the 1990s as safety standards improved, government statistics show, the rates have been rising since 2000, partly because there have been more accidents as reactors age. Moreover, the number of workers in the industry has risen, as the same tasks are carried out by more employees to reduce individual exposure levels.

<http://english.kyodonews.jp/news/2011/04/84291.html>

<http://english.kyodonews.jp/news/2011/04/84384.html>

#### **Highly radioactive water in nuke plant set to be moved for storage**

High radiation dosage at the level of several hundreds of millisieverts per hour has been observed at an area between the Nos. 2 and 3 reactors and the west side of the No. 3 reactor, suggesting the debris may be emitting radiation, TEPCO said, adding that work efficiency can be secured even in such touchy conditions by using the remote-control system.

<http://english.kyodonews.jp/news/2011/04/84371.html>

17,500 demonstrators in Tokyo

<http://english.kyodonews.jp/news/2011/04/84357.html>

20km zone off-limits

...As for the 20- to 30-km area for residents to stay indoors, Fukuyama said the government is considering expanding it as "some areas outside of the 30-km zone have seen the cumulative amount of radiation on the rise, depending on the wind."

[http://balisescriirad.free.fr/risques\\_en\\_france\\_v5.pdf](http://balisescriirad.free.fr/risques_en_france_v5.pdf)

<http://english.kyodonews.jp/news/2011/04/84522.html>

...Plant operator Tokyo Electric Power Co. is set to start pumping out some 700 tons of highly polluted water from an underground trench to a nearby storage area it secured in the No. 2 reactor turbine building, and the nuclear regulatory agency said in the morning that it had permitted the move after confirming the safety of the plan.

Water containing radioactive substances has been found in the basements of the Nos. 1 to 3 reactor turbine buildings, as well as in tunnel-like trenches connected to them. Transferring the water, totaling some 60,000 tons, to nearby tanks and other places is seen as vital to move ahead with work to restore the damaged key cooling functions of the reactors...

. The nuclear agency said that a total of 9,070 tons of liquid has been disposed of into the sea since April 4, in addition to about 1,300 tons of contaminated groundwater from near the No. 5 and No. 6 reactors..

On Monday, TEPCO also continued to inject nitrogen, an inert gas, into the No. 1 reactor to reduce the potential risks of hydrogen explosion, while continuing work to install enclosing materials in the sea to prevent a further spread of highly radioactive water that had already seeped from the plant.

---

## **URGENT: Japan to expand evacuation areas near crippled nuclear plant**

TOKYO, April 11, Kyodo

The government will expand evacuation districts near the crippled Fukushima Daiichi nuclear power plant, its top spokesman said Monday.

With the crisis at the plant dragging out, some municipalities within a 20- to 30-kilometer radius of the power plant will now be designated as additional evacuation areas, Chief Cabinet Secretary Yukio Edano said at a news conference.

Residents in the radius are at the moment urged to stay indoors.

## **Japan to expand evacuation areas near crippled nuclear plant**

TOKYO, April 11, Kyodo

The government will expand evacuation districts near the crippled Fukushima Daiichi nuclear power plant, its top spokesman said Monday.

With the crisis at the plant dragging on, some municipalities within a 20- to 30-kilometer radius of the power plant will now be designated as additional evacuation areas, Chief Cabinet Secretary Yukio Edano said at a news conference.

The government had earlier ordered residents within the 20-km radius of the power station to evacuate and those in the 20-30 km zone to stay indoors after the plant was hit by a deadly earthquake and tsunami on March 11.

The government changed the radiation exposure level which had been used to determine the evacuation zone.

Previously, the government said that outside radiation levels of over 50 millisieverts require evacuation, and advises residents to remain indoors when levels exceed 10 millisieverts.

From now on, it will issue an evacuation order if there is a possibility of residents receiving a dose of 20 millisieverts during the course of a year.

In the event of an emergency, the International Commission on Radiological Protection is recommending also that the highest planned residual dose over one year be in the range of 20 to 100 millisieverts.

The municipalities which will be part of the new evacuation zone include Katsurao, Namie and Iitate, all located in Fukushima Prefecture.

Residents in these municipalities will be expected to move to different areas within one month, Edano said.

<http://www.bloomberg.com/news/2011-04-10/mcdonald-s-wage-for-nuclear-job-shows-some-japan-towns-may-fade.html?cmpid=>

should the north-east be rebuilt at all ?

<http://english.kyodonews.jp/news/2011/04/84689.html>

water injection temporarily stopped after quake

## **Japan may raise nuke accident severity level to highest 7 from 5**

TOKYO, April 12, Kyodo <http://english.kyodonews.jp/news/2011/04/84721.html>

The Nuclear Safety Commission of Japan released a preliminary calculation Monday saying that the crippled Fukushima Daiichi nuclear plant had been releasing up to 10,000 terabecquerels of radioactive materials per hour at some point after a massive quake and tsunami hit northeastern Japan on March 11.

The disclosure prompted the government to consider raising the accident's severity level to 7, the worst on an international scale, from the current 5, government sources said. **The level 7 on the International Nuclear Event Scale has only been applied to the 1986 Chernobyl catastrophe.**

The current provisional evaluation of 5 is at the same level as the Three Mile Island accident in the United States in 1979.

According to an evaluation by the INES, level 7 accidents correspond with a release into the external environment radioactive materials equal to more than tens of thousands terabecquerels of radioactive iodine 131. One terabecquerel equals 1 trillion becquerels.

Haruki Madarame, chairman of the commission, which is a government panel, said it has estimated that the release of 10,000 terabecquerels of radioactive materials per hour continued for several hours.

The commission says the release has since come down to under 1 terabecquerel per hour and said that it is still examining the total amount of radioactive materials released.

The commission also released a preliminary calculation for the cumulative amount of external exposure to radiation, saying it exceeded the yearly limit of 1 millisieverts in areas extending more than 60 kilometers to the northwest of the plant and about 40 km to the south-southwest of the plant.

It encompasses the cities of Fukushima, Date, Soma, Minamisoma, and Iwaki, which are all in Fukushima Prefecture, and some areas including the town of Hirono in the prefecture.

**Within a 20-km exclusion zone set by the government, the amount varied from under 1 millisieverts to 100 millisieverts or more, and in the 20-30 km radius ring where residents are asked to stay indoors, it came to under 50 millisieverts.**

The commission used the System for Prediction of Environmental Emergency Dose Information to calculate the spread of radiation.

## **Japan raises nuke accident severity level to highest 7 from 5**

TOKYO, April 12, Kyodo

Japan on Tuesday raised the severity level of the accident at the crippled Fukushima Daiichi nuclear plant to the maximum 7 on an international scale, up from the current 5 and matching that of the 1986 Chernobyl catastrophe.

The previous evaluation of 5 on the International Nuclear Event Scale provisionally set by the Nuclear and Industrial Safety Agency, a body under the Ministry of Economy, Trade and Industry, was at the same level as the Three Mile Island accident in the United States in 1979.

While raising the level for the accident, the agency said, however, that the amount of radioactive materials released into the external environment from the nuke plant is estimated to be about 10 percent of the amount released in the Chernobyl catastrophe.

The decision comes after the release of a preliminary calculation Monday by the Nuclear Safety Commission of Japan, which said the crippled nuclear plant was releasing up to 10,000 terabecquerels of radioactive materials per hour at one point after a magnitude 9.0 earthquake and subsequent tsunami hit northeastern Japan on March 11.

Level 7 accidents on the INES correspond to the release into the external environment of radioactive materials equal to more than tens of thousands of terabecquerels of radioactive iodine 131. One terabecquerel equals 1 trillion becquerels.

The agency estimated that up to 370,000 terabecquerels of radioactive materials had been released in the air while the commission said it estimated 630,000 terabecquerels, both far exceeding the criteria for level

7.

Haruki Madarame, chairman of the commission, said earlier it estimates the release of 10,000 terabecquerels of radioactive materials per hour continued for several hours.

The commission says the release has since come down to under 1 terabecquerel per hour and that it is still examining the total amount of radioactive materials released.

It also released a preliminary calculation for the cumulative amount of external exposure to radiation, saying it exceeded the yearly limit of 1 millisievert in areas extending more than 60 kilometers northwest of the plant and about 40 km south-southwest of the plant.

The areas encompass the cities of Fukushima, Date, Soma, Minamisoma and Iwaki and part of the town of Hirono, all in Fukushima Prefecture.

Within a 20-km exclusion zone set by the government, the amount varied from under 1 millisievert to 100 millisieverts or more, and in the 20-30 km ring where residents are asked to stay indoors, it came to under 50 millisieverts.

The commission used the System for Prediction of Environmental Emergency Dose Information to calculate the spread of radiation.

==Kyodo

## **Japan apologizes after raising nuclear crisis level to highest**

TOKYO, April 12, Kyodo

Top government spokesman Yukio Edano apologized on Tuesday to residents near the crippled Fukushima Daiichi nuclear power plant and the global community after Japan raised the severity rating of its nuclear crisis to the highest level of 7.

Despite the changed assessment that puts it on a par with the 1986 Chernobyl catastrophe, the chief Cabinet secretary told reporters, "Unlike in the case of Chernobyl, we have not seen cases of direct damage to health because of the accident."

The Fukushima accident, triggered by the March 11 magnitude-9.0 earthquake and tsunami, is now registered as 7, up from the previous evaluation of 5, on the International Nuclear Event Scale provisionally set by the government's Nuclear and Industrial Safety Agency.

Edano promised that the government will place priority on taking steps to erase health hazards to the people and to contain the effects of the accident on products amid rumors about the safety of food items.

To support his point that farm products from Fukushima Prefecture are safe, the chief Cabinet secretary attended an exhibit of farm produce from the Fukushima city of Iwaki held in Tokyo's Shimbashi district.

Eating strawberries and tomatoes, Edano said, "Food sold on the market is all safe" and urged the public to help Fukushima by buying its products.

## **URGENT: Radiation leakage may eventually exceed that of Chernobyl: TEPCO**

TOKYO, April 12, Kyodo

**The operator of the crippled Fukushima nuclear plant said Tuesday that it is concerned that radiation leakage at the plant could eventually exceed that of the 1986 Chernobyl catastrophe.**

"The radiation leak has not stopped completely and our concern is that the amount of leakage could eventually reach that of Chernobyl or exceed it," an official from the Tokyo Electric Power Co. said.

Meanwhile, the Nuclear and Industrial Safety Agency said that most of the radioactive material released in the air from the crippled Fukushima Daiichi nuclear plant came from the No. 2 reactor damaged by an explosion on March 15.

At 6:10 a.m. on March 15, part of the reactor's containment vessel was damaged following an apparent hydrogen explosion. Massive amounts of radioactive substances are believed to have been released from the suppression pool of the reactor, the agency said.

Japan on Tuesday raised the severity level of the accident at the plant to the maximum 7 on an international scale, up from the current 5 and matching that of the Chernobyl disaster in the former Soviet republic of Ukraine.

**The agency said, however, that the amount of radioactive materials released from the nuke plant is estimated to be about 10 percent of the amount released in the Chernobyl accident.**

?????

<http://www.independent.co.uk/news/world/asia/japan-nuclear-crisis-severity-level-upgraded-2266594.html>

...He said the amount of radiation leaking from the Fukushima Dai-ichi nuclear plant was around 10 percent of the Chernobyl accident.

However, Tokyo Electric Power Co., the operator of the plant, is still estimating the total amount of radioactive material that might be released by the accident, said company spokesman Junichi Matsumoto.

He acknowledged that, if leaks continue, the amount of radioactivity released might eventually exceed the amount emitted by Chernobyl...

## **Radioactive strontium detected more than 30 km from Fukushima plant**

TOKYO, April 12, Kyodo

Minute amounts of radioactive strontium have been detected in soil and plants in Fukushima Prefecture beyond the 30-kilometer zone around the crippled Fukushima Daiichi Nuclear Power Station, the science ministry said Tuesday.

It is the first time that radioactive strontium has been detected since the Fukushima plant began leaking radioactive substances after it was severely damaged by the March 11 earthquake and tsunami.

There is no safety limit set by the government for exposure to strontium, but the amount found so far is extremely low and does not pose a threat to human health, the Education, Culture, Sports, Science and Technology said.

Experts, however, expressed concern that the accumulation of strontium could have adverse health effects. When strontium enters the human body, it tends to accumulate in bones and is believed to cause bone cancer and leukemia.

Samples of soil and plants were taken March 16 to 19 from a number of locations in Fukushima Prefecture.

The government has designated the area within a 20-km radius of the plant as an evacuation zone, while people residing in areas in the 20- to 30-km ring have been asked to remain indoors. On Monday, the government expanded the evacuation zone to some municipalities beyond the 20-km radius where residents will evacuate in around a month.

## Japan ups Fukushima nuke crisis severity to 7, same as Chernobyl

TOKYO, April 12, Kyodo

Japan on Tuesday raised the severity level of the ongoing emergency at the crippled Fukushima Daiichi nuclear power plant from level 5 to the maximum 7 on an international scale, **recognizing that the tsunami-caused accident matches the world's worst nuclear catastrophe in 1986 at Chernobyl.**

The government's Nuclear and Industrial Safety Agency upgraded its provisional evaluation based on an estimate that radioactive materials far exceeding the criteria for level 7 have so far been released into the external environment, but added that the release from the Fukushima plant is about 10 percent of that from the former Soviet nuclear plant.

The nuclear regulatory agency under the Economy, Trade and Industry Ministry and the Nuclear Safety Commission of Japan, a government panel, said that **between 370,000 and 630,000 terabecquerels of radioactive materials have been emitted into the air from the Nos. 1 to 3 reactors of the plant.**

Level 7 accidents on the International Nuclear Event Scale correspond to the release into the external environment of radioactive materials equal to more than tens of thousands of terabecquerels of radioactive iodine 131. One terabecquerel equals 1 trillion becquerels.

Chief Cabinet Secretary Yukio Edano emphasized that the raising of the severity level does not mean the situation at the Fukushima plant is "worsening."

The top government spokesman said the latest assessment is simply based on data which are more accurate than the time it made its previous assessments.

The plant operator Tokyo Electric Power Co. offered an apology to the public for being still unable to stop the radiation leakage, pointing to the possibility that the total emission of radioactive substances could eventually surpass that of the Chernobyl incident.

A considerable amount of radioactive materials emitted is believed to originate from the plant's No. 2 reactor, whose containment vessel's pressure suppression chamber was damaged by an explosion on March 15, said Kenkichi Hirose, a Cabinet Office adviser serving for the safety commission, at a news conference.

"Our estimates suggest the amount of radioactive materials released into the air sharply rose on March 15 and 16 after abnormalities were detected at the No. 2 reactor," Hirose said. "The cumulative amount of leaked radiation has been gradually on the rise, but we believe the current emission level is significantly low."

The safety commission said it estimates the release has come down to under 1 terabecquerel per hour.

Japan believes the Fukushima crisis, triggered by the devastating March 11 earthquake and ensuing tsunami, is different from the Chernobyl accident in many ways, said Hidehiko Nishiyama, a spokesman for the nuclear agency.

As examples, Nishiyama said no one in Fukushima has died from acute diseases caused by exposure to massive amounts of radiation, compared with about 30 in the accident that happened in the former Soviet Union, and that the reactors themselves did not explode as in Chernobyl.

"Even though some amount of radiation keeps leaking from reactors and their containment vessels, **they are not totally destroyed and are functioning**," Nishiyama said. ???????

Tokyo Electric Power Vice President Sakae Muto echoed the view that the Fukushima case is "considerably different" from Chernobyl "in terms of how radiation has been emitted and how much it has gone out."

Muto said the company takes seriously the fact that the severity level had been raised and apologized for the troubles at the plant. However, he did not give a clear-cut answer to questions about how the utility evaluates the current situation or the prospects of the still-unfolding crisis.

Hirose of the Cabinet Office ruled out the possibility that the evacuation zone set by the government within 20 kilometers from the plant will be reviewed following the upgrading of the severity level.

**Nishiyama said it took about a month to raise the severity level of the Fukushima contingency due to a delay in securing reliable monitoring data.** On March 18, the agency had provisionally set the level at 5, the same as the Three Mile Island accident in the United States in 1979.

The provisional judgment will be finalized after examinations by a government panel of nuclear experts, Nishiyama said, adding that the government will further bolster radiation monitoring to collect data.

The INES only reflects radiation emitted into the air, and **Japan needs to independently assess the severity of the incident by also monitoring contamination levels in the sea and soil**, he said.

Earlier, the safety commission released a preliminary calculation for the cumulative amount of radiation, saying it has exceeded the yearly limit of 1 millisievert in areas extending more than 60 km northwest of the plant and about 40 km south-southwest of the plant.

Within the 20-km exclusion zone, the amount varied from under 1 millisievert to 100 millisieverts or more, and in the 20-30 km ring where residents are asked to stay indoors it came to nearly 50 millisieverts.

<http://english.kyodonews.jp/news/2011/04/85134.html>

<http://english.kyodonews.jp/news/2011/04/85030.html>

## Workers start removing toxic water in level 7-rated nuke crisis

TOKYO, April 13, Kyodo

Workers at the disaster-hit Fukushima Daiichi nuclear power plant started Tuesday to remove highly radioactive water in the plant as part of efforts to bring an end to the nuclear crisis, which the government recognized as reaching the highest severity level of 7 on an international scale.

A series of aftershocks of the March 11 earthquake on Monday and Tuesday raised concerns over the plant conditions, but injecting water into the troubled Nos. 1 to 3 reactors, which is vital to keep the nuclear fuel inside cool, was not disrupted by the latest magnitude 6.3 quake at 2:07 p.m. Tuesday.

The aftershocks forced workers to temporarily evacuate, leading to a delay in the work to remove pools of highly radioactive water that is hampering efforts to restore the reactors' key cooling functions, lost in the March 11 massive quake and tsunami.

But from 7:30 p.m. Tuesday, Tokyo Electric Power Co., the plant operator, began pumping out some highly polluted water from an underground tunnel-like trench to a nearby storage area inside the No. 2 reactor's turbine building.

Some 700 tons are to be transferred to a "condenser" where in normal operations steam created from the reactor is converted into water. The operation is expected to take 40 hours.

Still there is a long road ahead to remove a total of some **60,000 tons of contaminated water**, found in the basements of the Nos. 1 to 3 reactor turbine buildings as well as the trenches connected to them, and to store it in nearby tanks and other areas.

Prime Minister Naoto Kan said Tuesday that situation of the troubled reactors is "improving step by step" and that the release of radioactive particles from the plant is declining.

However, the upgrading of the severity level of the Fukushima accident from 5 to 7, the same level as the world's worst nuclear catastrophe in 1986 in Chernobyl, further raises concerns over the disaster's impact on human health and environment.

Economy, Trade and Industry Minister Banri Kaieda told a press conference a large part of the radioactive materials release took place in the early days of the crisis when hydrogen explosions occurred, and that Tokyo Electric, known as TEPCO, is working hard to prevent a recurrence.

"As we have not been completely able to block radioactive substances from scattering, it is true that the amount of release would continue to increase...but we do not expect at this moment that the amount would drastically increase," Kaieda said.

While the strong aftershock on Monday resulted in the suspension of an operation to inject nitrogen into the No. 1 reactor to reduce the potential risks of hydrogen explosion, the government's Nuclear and Industrial Safety Agency said that the work resumed and was not affected in the Tuesday afternoon quake.

TEPCO, meanwhile, took 400 milliliters of water from the spent fuel pool of the No. 4 unit to check to what extent the spent nuclear fuel stored there is damaged.

There is a possibility that the fuel may have been temporarily exposed when the water level at the storage pool dropped following the March 11 disaster, but camera footage found that the water level now was enough to cover the fuel. But the temperature of the water was 90 degrees, much higher than the usual 20-30 degrees.

The firm has already estimated that 25-70 percent of the nuclear fuel rods in the Nos. 1-3 reactors have been damaged.

The No. 4 reactor, halted for a regular inspection before the quake, has had all of its fuel rods stored in the pool for the maintenance work.

Massive amounts of water have been poured into the reactors and their spent nuclear fuel pools as a stopgap measure to cool them down. **But pools of contaminated water have been detected in various parts of the nuclear complex on the Pacific coast, with some leaking into the sea, as an apparent side effect of the emergency measure.**

**Kaieda admitted that safety measures required for reactors to cope with tsunami waves had not been sufficient, saying that authorities must "reconsider the basic planning" of Japan's nuclear plants which are currently located on the coastlines of the quake-prone country.**

Meanwhile, TEPCO said that the latest quake on Tuesday did not affect the Fukushima Daini nuclear power plant, located near the Daiichi plant.

==Kyodo

<http://english.kyodonews.jp/news/2011/04/85142.html>

## **Edano aware in March that nuke crisis could be raised to worst level**

TOKYO, April 13, Kyodo

Chief Cabinet Secretary Yukio Edano said Wednesday he was aware in late March of the possibility that the status of the ongoing nuclear crisis at the Fukushima Daiichi power plant could be raised to the worst level, but the decision did not come until later because of inconclusive data.

Japan's new assessment, raising the crisis to the highest level of 7 on an international scale, was announced Tuesday, about a month after a magnitude 9.0 earthquake and tsunami crippled the plant and caused radiation leaks, fueling widespread criticism that the government has acted belatedly.

The assessment now puts the situation at the Fukushima plant situation on a par with the 1986 Chernobyl catastrophe.

Edano told a news conference Wednesday that two government-related nuclear bodies said in late March that their crisis assessment estimates were based on radiation monitoring data from only three locations.

"The Nuclear and Industrial Safety Agency and the Nuclear Safety Commission of Japan said they could not vouch for the certainty of their estimates, so I told them to make a thorough, reliable analysis as soon as possible," said the top government spokesman, who added that he was informed Monday about the forthcoming change in assessment.

The government's nuclear agency on Tuesday upgraded its provisional evaluation based on an estimate that radioactive materials far exceeding the criteria for level 7 have so far been released into the external environment.

On the same day, **Seiji Shiroya of the nuclear commission, a government panel, said in a news conference that he was aware as of March 23 that the crisis might be elevated to level 7, but left the decision to the agency because the assessment was the agency's responsibility.**

On March 18, the agency provisionally set the level at 5, the same as the 1979 Three Mile Island accident in the United States.

Edano defended the way the government has handled the process leading up to Tuesday's announcement, saying, "We have repeatedly issued instructions to relevant entities to fully disclose various information."

He also said that Japan's safety standards will not immediately change as a result of the assessment upgrading because the level was based on additional analysis of existing data.

At the same time, the chief Cabinet secretary **admitted that a proper assessment could have been possible more quickly if more extensive radiation monitoring data had been collected earlier.**

**"I believe we would have been able to make various decisions at an earlier stage if more monitoring of radioactive materials in the areas surrounding the plant had been conducted at more locations," Edano said.**

---

## **TEPCO confirms damage to part of No. 4 unit's spent nuke fuel**

TOKYO, April 13, Kyodo

Some of the spent nuclear fuel rods stored in the No. 4 reactor building of the crisis-hit Fukushima Daiichi power plant were confirmed to be damaged, but most of them are believed to be in sound condition, plant operator Tokyo Electric Power Co. said Wednesday.

The firm known as TEPCO said its analysis of a 400-milliliter water sample taken Tuesday from the No. 4 unit's spent nuclear fuel pool revealed the damage to some fuel rods in such a pool for the first time, as it detected higher-than-usual levels of radioactive iodine-131, cesium-134 and cesium-137.

The No. 4 reactor, halted for a regular inspection before last month's earthquake and tsunami disaster, had all of its 1,331 fuel rods stored in the pool for the maintenance work and the fuel was feared to have sustained damage from overheating.

The roof and the upper walls of the No. 4 reactor building have been blown away by a hydrogen explosion and damaged by fires since the disaster struck the plant. The water level in the spent fuel pool is believed to have temporarily dropped.

TEPCO plans to examine the condition of the plant's reactor buildings by deploying a small unmanned helicopter to see whether it is possible to extract spent fuel from pools.

Earlier in the day, the government's nuclear regulatory agency ordered TEPCO to check the quake resistance of reactor buildings at the Fukushima plant, which have been rocked by strong aftershocks from the magnitude-9.0 earthquake that wrecked the site and triggered tsunami on March 11.

The Nuclear and Industrial Safety Agency told the utility to immediately examine the buildings and consider reinforcement work if they are judged as not sufficiently quakeproof.

In addition to the No. 4 unit, the Nos. 1 and 3 reactor buildings have also been severely damaged by hydrogen explosions in the early days of the crisis.

"As strong aftershocks occur almost daily, we have to consider what will happen to buildings already damaged by blasts," said Hidehiko Nishiyama, a spokesman for the nuclear agency.

He acknowledged the difficulties involved in the work to reinforce the quake resistance of the buildings, where radiation levels are high, but said, "We must devise some ways." The agency urged TEPCO to report back to it on the matter as soon as possible.

Meanwhile, Yoko Komiyama, senior vice minister of health, labor and welfare, said Wednesday at a Diet session that a total of 22 workers at the plant have been exposed to radiation exceeding 100 millisieverts as of early Wednesday and that the highest level of exposure among them is 198.24 millisieverts.

Exposure to 100 millisieverts is the permissible level for nuclear plant workers dealing with an emergency, but the limit has been raised to 250 millisieverts for the ongoing crisis.

Workers continued Wednesday to remove highly radioactive water in the plant as part of efforts to put an end to the emergency, which is now acknowledged as one of the world's worst nuclear disasters.

TEPCO had pumped out 700 tons of highly polluted water by Wednesday evening from an underground tunnel-like trench to a "condenser," where in normal operations steam from the reactor is converted into water.

Eventually, the operator plans to remove a total of 60,000 tons of contaminated water, found in the basements of the Nos. 1 to 3 reactor turbine buildings as well as the trenches connected to them, and to store it in nearby tanks and other areas.

As a result of the operation, the level of highly radioactive water that had been filling up the trench connected to the No. 2 reactor's turbine building was lowered. Nishiyama said it will likely take several weeks before the tainted water removal operation ends.

The highly toxic water is believed to originate from the No. 2 reactor's core, where fuel rods have partially melted. The water, which has also affected other parts of the plant, is hampering efforts to restore the reactors' key cooling functions, lost in the March 11 earthquake and tsunami.

The nuclear agency also said TEPCO has installed three steel sheets near a seawater intake for the No. 2 reactor and set up "silt fence" curtain barriers near intakes for the Nos. 3-4 reactors at the six-reactor plant to block the spread of radioactive substances in water.

Massive amounts of water have been poured into the reactors and their spent nuclear fuel pools as a stopgap measure to cool them down at the Fukushima plant.

But pools of contaminated water have been detected in various parts of the nuclear complex on the Pacific coast, with some water leaking into the sea, as an apparent side effect of the emergency measure. TEPCO successfully stopped the leak of highly radioactive water from a cracked pit on April 6.

---

## Fukushima evacuees demand compensation

<http://www.guardian.co.uk/world/2011/apr/13/japan-nuclear-plant-evacuees-compensation>

Residents and business owners in [Japan](#) who have been forced to leave their homes amid radiation fears on Wednesday demanded immediate damages from the company at the centre of the nuclear crisis.

About 20 people who have been evacuated from areas near the Fukushima Daiichi plant protested outside the Tokyo Electric Power Company (Tepco) headquarters, calling for a quick decision on possible compensation.

The company's president, Masataka Shimizu, apologised during a rare public appearance and said he would compensate the tens of thousands of people whose lives have been disrupted by the nuclear emergency.

Japanese media suggests other domestic utilities could be asked to help pay damages, an approach adopted in the aftermath of the Three Mile Island disaster in the US in 1979.

Shimizu and other Tepco executives bowed in apology and promised that cash payments were being prepared. Shimizu, whose handling of the world's worst nuclear accident since Chernobyl has been

widely criticised, said the firm would do its utmost to stabilise the stricken reactors and enable evacuees to rebuild their businesses.

Safety officials have raised the severity level of the crisis to a maximum seven – the same as Chernobyl – although the quantities of radiation at Fukushima are one-tenth of those released by the Soviet plant. Government officials have conceded it could take months to bring the reactors under control.

Fears of contamination have devastated farming and fishing communities in the area. Tepco, however, was unable to say when compensation would be paid, or how much.

The promise of cash was not enough for one protester outside the firm's headquarters in the capital. "I can't work and that means I have no money," Shigeaki Konno, a car mechanic who lived seven miles from the Fukushima plant before he was forced to leave, told Reuters. "The talk about compensation is not concrete. We need it quickly."

Kensuke Takeuchi, a manager at Tepco, said the firm was not yet in a position to compensate residents, adding that he would pass on the protesters' demands to executives.

Despite the magnitude of the accident, and errors in Tepco's initial handling of the crisis, the government appears determined to ensure the firm's survival. **Yomiuri Shimbun newspaper reported that Tepco and the government were considering placing a £15bn to £28bn cap on the company's liabilities to avoid financial ruin in the face of compensation claims that could reach £80bn.**

The [nuclear power](#) company, which has lost three-quarters of its market value since the tsunami on 11 March, is Japan's largest issuer of corporate bonds and its shares are widely held by financial institutions.

The government's chief spokesman, Yukio Edano, said he was not aware of the payout plan. "I have not been notified beyond what has been reported in the media," he said.

On Tuesday the prime minister, Naoto Kan, said Tepco would be responsible for compensating victims but it was the government's job to ensure the payments were made.

Shimizu said he was not aware of the scheme, and refused to discuss calls for his resignation. "My biggest responsibility is to resolve the situation at the Fukushima Daiichi plant, support people who have been evacuated and make sure we provide electricity by overcoming the supply shortage as soon as possible," he said. "I am not in a position to comment on whether or not I will resign."

Under the proposals Tepco would be required to pay 100bn to 200bn yen a year for 15 years. Other utilities would contribute to a 2.7tn yen fund, with the remainder of the compensation coming from the state.

The agony for communities near the plant shows no signs of ending, despite assurances from Kan that the operation to reduce radiation leaks was making progress. Sixteen towns and facilities have been ordered to stop shipping produce, while tsunami damage has destroyed fishing and farming businesses across Japan's north-east coast.

## Excessive radioactive cesium found in fish caught off Fukushima

TOKYO, April 13, Kyodo

**Radioactive cesium 25 times above the legal limit for consumption** was detected Wednesday in young sand lance caught off Fukushima Prefecture, the Ministry of Health, Labor and Welfare said.

One of the sample fish had a level of cesium of 12,500 becquerels per kilogram about 500 meters off the city of Iwaki, and 35 kilometers from the crippled Fukushima Daiichi nuclear power station, it said. The limit is 500 becquerels under the Food Sanitation Law.

## TEPCO confirms damage to part of No. 4 unit's spent nuke fuel

TOKYO, April 14, Kyodo

Some of the spent nuclear fuel rods stored in the No. 4 reactor building of the crisis-hit Fukushima Daiichi power plant were confirmed to be damaged, but most of them are believed to be in sound condition, plant operator Tokyo Electric Power Co. said Wednesday.

The firm known as TEPCO said its analysis of a 400-milliliter water sample taken Tuesday from the No. 4 unit's spent nuclear fuel pool revealed the damage to some fuel rods in such a pool for the first time, as it detected higher-than-usual levels of radioactive iodine-131, cesium-134 and cesium-137.

The No. 4 reactor, halted for a regular inspection before last month's earthquake and tsunami disaster, had all of its 1,331 spent fuel rods and 204 unused fuel rods stored in the pool for the maintenance work and the fuel was feared to have sustained damage from overheating.

The cooling period for 548 of the 1,331 rods was shorter than that for others and the volume of decay heat emitted from the fuel in the No. 4 unit pool is larger compared with pools at other reactor buildings.

**According to TEPCO, radioactive iodine-131 amounting to 220 becquerels per cubic centimeter, cesium-134 of 88 becquerels and cesium-137 of 93 becquerels were detected in the pool water. Those substances are generated by nuclear fission.**

The government's Nuclear and Industrial Safety Agency said the confirmed radioactive materials were up to 100,000 times higher than normal but that the higher readings may have also been caused by the pouring of rainwater containing much radioactivity or particles of radiation-emitting rubble in the pool.

The roof and the upper walls of the No. 4 reactor building have been blown away by a hydrogen explosion and damaged by fires since the disaster struck the plant. The water level in the spent fuel pool is believed to have temporarily dropped.

TEPCO said the fuel rods may have also been damaged by steel frames that fell into the pool in addition to overheating caused by the loss of cooling functions after the twin disasters.

The utility plans to examine the condition of the plant's reactor buildings by deploying a small unmanned helicopter to see whether it is possible to extract spent fuel from pools.

The nuclear agency said now that the condition of the No. 4 unit pool is partially known, workers can better prepare for recovery works there.

Earlier in the day, the government's nuclear regulatory agency ordered TEPCO to check the quake resistance of reactor buildings at the Fukushima plant, which have been rocked by strong aftershocks from the magnitude-9.0 earthquake that wrecked the site and triggered tsunami on March 11.

The agency told the utility to immediately examine the buildings and consider reinforcement work if they are judged as not sufficiently quakeproof.

In addition to the No. 4 unit, the Nos. 1 and 3 reactor buildings have also been severely damaged by hydrogen explosions in the early days of the crisis.

"As strong aftershocks occur almost daily, we have to consider what will happen to buildings already damaged by blasts," said Hidehiko Nishiyama, a spokesman for the nuclear agency.

He acknowledged the difficulties involved in the work to reinforce the quake resistance of the buildings, where radiation levels are high, but said, "We must devise some ways." The agency urged TEPCO to report back to it on the matter as soon as possible.

Meanwhile, Yoko Komiyama, senior vice minister of health, labor and welfare, said Wednesday at a Diet session that a total of 22 workers at the plant have been exposed to radiation exceeding 100 millisieverts as of early Wednesday and that the highest level of exposure among them is 198.24 millisieverts.

Exposure to 100 millisieverts is the permissible level for nuclear plant workers dealing with an emergency, but the limit has been raised to 250 millisieverts for the ongoing crisis.

Workers continued Wednesday to remove highly radioactive water in the plant as part of efforts to put an end to the emergency, which is now acknowledged as one of the world's worst nuclear disasters.

TEPCO had pumped out 700 tons of highly polluted water by Wednesday evening from an underground tunnel-like trench to a "condenser," where in normal operations steam from the reactor is converted into water.

Eventually, the operator plans to remove a total of 60,000 tons of contaminated water, found in the basements of the Nos. 1 to 3 reactor turbine buildings as well as the trenches connected to them, and to store it in nearby tanks and other areas.

As a result of the operation, the level of highly radioactive water that had been filling up the trench connected to the No. 2 reactor's turbine building was lowered. Nishiyama said it will likely take **several weeks before the tainted water removal operation ends.**

The highly toxic water is believed to originate from the No. 2 reactor's core, where fuel rods have partially melted. The water, which has also affected other parts of the plant, is hampering efforts to restore the reactors' key cooling functions, lost in the March 11 earthquake and tsunami.

The nuclear agency also said TEPCO has installed three steel sheets near a seawater intake for the No. 2 reactor and set up "silt fence" curtain barriers near intakes for the Nos. 3-4 reactors at the six-reactor plant to block the spread of radioactive substances in water.

Massive amounts of water have been poured into the reactors and their spent nuclear fuel pools as a stopgap measure to cool them down at the Fukushima plant.

But pools of contaminated water have been detected in various parts of the nuclear complex on the Pacific coast, with some water leaking into the sea, as an apparent side effect of the emergency measure. TEPCO successfully stopped the leak of highly radioactive water from a cracked pit on April 6.

<http://english.kyodonews.jp/news/2011/04/85360.html>

## **Onagawa nuke plant suffers jolt greater than designed in aftershock**

---

### **Japan continues to struggle to remove highly toxic water at plant**

TOKYO, April 14, Kyodo

The difficult task of removing highly radioactive water at the crisis-hit Fukushima Daiichi nuclear power plant continued Thursday, with **the level of polluted water in the plant's underground trench found to be edging up again that morning after some 660 tons were pumped out.**

The removal of some 60,000 tons of contaminated water from the basements of the Nos. 1 to 3 reactor turbine buildings as well as trenches connected to them is vital, as the water is hampering work to restore key cooling functions of the reactors lost in the March 11 killer earthquake and ensuing tsunami.

Plant operator Tokyo Electric Power Co. pumped out about 660 tons of highly radioactive water Tuesday and Wednesday from one of the trenches to a "condenser" inside the nearby No. 2 reactor turbine building, where in normal operations steam from the reactor is converted into water.

**But the Nuclear and Industrial Safety Agency said that the water level at the vertical part of the trench as of 7 a.m. Thursday had increased by about 3.5 centimeters from the level observed at 6 p.m. Wednesday.**

The level of the water is 2.5 centimeters lower than just before the water-transferring mission started.

Hidehiko Nishiyama, the agency's spokesman, said that the rise in the water level is likely linked to the continued injection of water into the No. 2 reactor core, which is necessary to prevent the nuclear fuel inside from overheating.

"As there is believed to be around 20,000 tons of water (in the No. 2 reactor turbine building and the trench connected to it), we feel the difficulty of lowering the level of the water in a stable manner," he said.

Tokyo Electric, known as TEPCO, is preparing to transfer more of the highly radioactive water into a facility for nuclear waste disposal in the plant, which can accommodate 30,000 tons of liquid.

The water in and around the No. 2 reactor turbine building is believed to contain higher concentrations of radioactive substances than other contaminated water found at the site, and is believed to originate from the No. 2 reactor's core, where fuel rods have partially melted.

TEPCO also started looking into how to check the quake resistance of already heavily damaged reactor buildings at the site in line with an order issued Wednesday by the government's nuclear regulatory agency, in light of strong aftershocks from the March 11 quake.

The agency has told the utility to immediately examine the buildings and consider reinforcement work if they are judged as not sufficiently quakeproof.

TEPCO, however, has said that it cannot "immediately conduct an investigation" unless it confirms the safety of areas where checkups will be conducted.

To enhance preparation for tsunami waves triggered by aftershocks and other emergency situations, emergency diesel power or vehicle-mounted power sources are to be placed at higher ground, while backup units for water injection to the troubled Nos. 1 to 3 reactors are expected to be installed, according to the nuclear agency.

---

## Academics eye extensive study on impact of nuclear crisis

TOKYO, April 14, Kyodo

Professors and researchers from across Japan will jointly launch a large-scale study on the environmental and health effects of radioactive materials spread by the crisis-hit Fukushima Daiichi nuclear power plant, people familiar with the matter said Thursday.

More than 100 professors and other scholars will take part in collecting data on the impact of Japan's worst-ever nuclear crisis while establishing a team of academics to check the radiation exposure of residents in areas affected by the leak of radioactive substances.

Starting in May, part of the group, working with the Fukushima prefectural government that has already begun its own survey, will collect soil samples at 1,500 locations in areas stretching 100 kilometers along the coastal area centering on the crippled power plant as well as 60 km inland.

With regard to seawater contamination, they will look into the spread of radioactive materials off Fukuoka Prefecture, and their concentration in the food chain and impact on organisms.

They will consider establishing a website to disclose their findings.

The radiation checks will likely cover around 200,000 people living near the Fukushima plant, including around 30,000 who are 14 years old or younger and at high risk of cancer resulting from radioactive iodine accumulation in the thyroid gland.

The main participants in the study will include professors from the University of Tokyo and Osaka University.

---

## U.S. sends water storage tanks, trailer to Fukushima nuclear plant

TOKYO, April 14, Kyodo

The U.S. Department of Energy is shipping five large stainless steel tanks for storing water contaminated with radioactive materials and a tractor trailer with a shielded tank to the crippled Fukushima Daiichi nuclear power plant as part of its assistance, the U.S. Embassy in Tokyo said Thursday.

The **stainless steel tanks** are expected to be used to store contaminated water from the basements of the Nos. 1 to 3 reactor turbine buildings and connecting trenches, while the tractor trailer equipped with the shielded tank will allow for contaminated water characterization.

The pools of highly radioactive water are the major obstacles to work to restore the reactors' cooling functions lost after the March 11 earthquake and tsunami.

Details regarding the size of the tanks and expected arrival date were not immediately known.

**Stainless steel ???**

---

<http://english.kyodonews.jp/news/2011/04/85532.html>

## Groundwater radiation level at nuke plant rises: TEPCO

TOKYO, April 15, Kyodo

**The concentration levels of radioactive iodine and cesium in groundwater near the troubled Nos. 1 and 2 reactors at the Fukushima Daiichi nuclear power plant have increased up to several dozen times in one week, suggesting that toxic water has seeped from nearby reactor turbine buildings or elsewhere, Tokyo Electric Power Co. said Thursday.**

The announcement came as the plant operator continued to grapple with pools of highly radioactive water found on the plant's premises, with **the level of polluted water filling an underground trench edging up again after the company finished pumping out around 660 tons of water.**

According to the latest findings, a groundwater sample taken April 6 near the No. 1 reactor turbine building showed radioactive iodine-131 of 72 becquerels per cubic meter, with the concentration level growing to 400 becquerels as of Wednesday. The concentration level of cesium-134 increased from 1.4 becquerels to 53 becquerels.

The government's nuclear regulatory agency said it had ordered the utility firm known as TEPCO to enhance monitoring of groundwater inside the plant, which is located on the Pacific coast.

A total of around 60,000 tons of contaminated water is believed to be flooding the basements of the Nos. 1 to 3 reactor turbine buildings as well as trenches connected to them, and the water is hampering work to restore the cooling functions of the reactors lost since the March 11 earthquake and ensuing tsunami.

The pools of contaminated water are believed to be a side effect of TEPCO's emergency efforts to continue injecting water into the reactors and their spent nuclear fuel pools from outside to cool them down.

TEPCO pumped out around 660 tons of highly radioactive water Tuesday and Wednesday from one of the trenches to a "condenser" inside the nearby No. 2 reactor turbine building, where during normal operation steam from the reactor is converted into water.

But the Nuclear and Industrial Safety Agency said the water level in the vertical part of the trench as of 11 a.m. Thursday had increased by about 4.5 centimeters from the level observed at 6 p.m. Wednesday.

The level of the water is now only 1.5 centimeters lower than shortly before the water-transfer mission started at 7:35 p.m. Tuesday.

Hidehiko Nishiyama, the agency's spokesman, told a press conference Thursday morning that the rise in the water level is likely linked to the continued injection of water into the No. 2 reactor core, which is necessary to prevent the nuclear fuel inside from overheating.

"As there is believed to be around 20,000 tons of water (in the No. 2 reactor turbine building and the trench connected to it), we're feeling the difficulty of lowering the level of the water in a stable manner," he said.

TEPCO is preparing to transfer more of the highly radioactive water into a facility for nuclear waste disposal at the plant, which can accommodate 30,000 tons of liquid.

Work is under way to ensure that the facility will be able to contain highly radioactive water safely without fear of the stored liquid leaking outside, but **Nishiyama told the press conference that he was not sure when it would end.**

The water in and around the No. 2 reactor turbine building is believed to contain higher concentrations of radioactive substances than other contaminated water found at the site, and is believed to originate from the No. 2 reactor's core, where fuel rods have partially melted.

The agency decided to remove water from the trench first as it feared that the water inside the trench would overflow and leak into the Pacific Ocean.

TEPCO also started looking into how to check the quake resistance of already heavily damaged reactor buildings at the site in line with an order issued Wednesday by the nuclear regulatory agency, in light of a series of strong aftershocks of the March 11 quake.

The agency has told the utility to immediately examine the buildings and consider reinforcement work if they are judged as not sufficiently quakeproof.

TEPCO, however, has said that it cannot "immediately conduct an investigation" unless it confirms the safety of areas where checks will be conducted.

To enhance preparation for tsunami waves triggered by aftershocks and other emergency situations, emergency diesel power generators and vehicle-mounted power sources are to be placed on higher ground, while backup units for water injection at the troubled Nos. 1 to 3 reactors are expected to be installed, according to the nuclear agency.

Meanwhile, concern grew over the state of the No. 3 reactor at one point, as the agency said in the afternoon that the temperature of part of its reactor pressure vessel was found to be rising suddenly.

??????

But TEPCO officials said the data were likely due to a glitch in a measuring instrument, because other temperature data related to the vessel has not shown a similar rise.

<http://english.kyodonews.jp/news/2011/04/85646.html>

## **Melted nuclear fuel likely settled at bottom of crippled reactors**

TOKYO, April 15, Kyodo

**Nuclear fuel inside the crippled reactors at the Fukushima Daiichi power plant has partially melted and settled at the bottom of pressure vessels in the shape of grains**, according to an analysis by the Atomic Energy Society of Japan made public by Friday.

The academic body's panel on nuclear energy safety has said the melted fuel at the No. 1 to 3 reactors has been kept at a relatively low temperature, discounting the possibility that a large amount of melted fuel has already built up at the bottom of their reactor vessels given the temperature readings there.

**A large buildup of melted nuclear fuel at the bottom could become a molten mass so hot that it could damage the critical containers and eventually leak huge amounts of radioactive material.**

The panel has also said that the fuel grains with a diameter of between several millimeters and 1 centimeter are believed to have settled flatly at the bottom of the vessels, leaving **almost no possibility of a nuclear chain reaction** called "recriticality."

Takashi Sawada, deputy chairman of the group, gave the assessment that even if the current stabilization efforts proceed smoothly, it would take **at least two to three months** for the fuel to be stabilized with few if any radioactive emissions.

**The panel also found that the fuel rods in the No. 1 to 3 reactors have been damaged** after analyzing information made public by the plant operator Tokyo Electric Power Co. and the Nuclear and Industrial Safety Agency under the Ministry of Economy, Trade and Industry.

The panel has presumed that the fuel has slowly melted and become grain shaped as it was quenched when it fell into the cooling water and then settled down at the bottom of the reactor pressure vessels.

Parts of the fuel rods in the No. 1 and 2 reactors have apparently been exposed, while those in the No. 3 reactor have been completely submerged in water, according to the panel.

**Meanwhile, small amounts of plutonium believed to have been released as a result of the ongoing disaster have been detected in soil samples taken at the nuclear complex** in Fukushima Prefecture, the plant operator known as TEPCO said.

**It is the third time that traces of plutonium have been found in soil samples taken at the plant. The latest samples were taken on March 31 and April 4. The levels of plutonium in them were about the same levels observed in Japan following previous nuclear tests elsewhere, according to the utility.**

On Friday, workers continued their efforts to bring the reactors under control and stop radioactive leaks from the seaside plant, injecting more nitrogen gas into the No. 1 reactor and installing more steel sheets near a seawater intake for the No. 2 reactor.

TEPCO said it will throw sandbags containing zeolite, a mineral that absorbs radioactive material, into the sea near the plant to **reduce** the levels of contamination in the seawater.

The nitrogen injection is aimed at preventing a hydrogen explosion at the reactor. At a news conference on Friday, nuclear safety agency spokesman Hidehiko Nishiyama said the agency is also considering injecting nitrogen into the other two troubled reactors soon.

TEPCO has pumped out around 660 tons of highly radioactive water from a tunnel connected to the No. 2 reactor's turbine building into a container inside the building.

**The operation resulted in a lower water level in the vertical part of the tunnel, but the agency said that as of Friday morning the level had risen back to the same level as before the water transfer started on Tuesday.**

Removing the highly contaminated water that has flooded the basements of the No. 1 to 3 reactor turbine buildings and adjacent tunnels is seen as key to restoring critical cooling systems for the damaged reactors, which were lost in the March 11 earthquake and tsunami.

The flooding water is believed to be an unintended side effect of TEPCO's stopgap measure of injecting water into the reactors and their spent nuclear fuel pools to prevent them from overheating

<http://english.kyodonews.jp/news/2011/04/85725.html>

The agency said, meanwhile, that pressure inside the No. 1 reactor has dropped somewhat, an **indication that air inside the reactor has leaked outside**, but that no major changes in radiation levels have been detected.

...indication that air inside the reactor has leaked outside, but that no major changes in radiation levels have been detected....

---

<http://english.kyodonews.jp/news/2011/04/85736.html>

## **OPINION: How to minimize consequences of the Fukushima catastrophe**

By Alexey V. Yablokov  
MOSCOW, April 15, Kyodo

The analysis of the health impact of radioactive land contamination by the accident at the Fukushima Daiichi nuclear power plant, made by Professor Chris Busby (the European Committee of Radiation Risk) based on official Japanese Ministry of Education, Culture, Sports, Science and Technology data, has shown that over the next 50 years it would be possible to have around 400,000 additional cancer patients within a 200-kilometer radius of the plant.

This number can be lower and can be even higher, depending on strategies to minimize the consequences. Underestimation is more dangerous for the people and for the country than overestimation.

Based on Chernobyl experiences, it is necessary to understand that it may be impossible to quickly get back to life before the catastrophe and to accept the post-Fukushima realities as soon as possible.

The main directions of actions that should be taken:

1. Enlarge the exclusion zone to at least about a 50-km radius of the plant;
2. Distribute detailed instructions on effective ways to protect the health of individuals while avoiding the additional contamination of food. Organize regular measurements of all people by individual dose counters (for overall radionuclides) at least once a week. Distribute the radioprotectors and decontaminants (substances which provide the body protection against harmful effects of radiation) of radionuclides. There are many of such food additives;
3. Develop recommendations for safe agriculture on the contaminated territories: reprocessing of milk, decontamination of meat, turning agriculture into production of technical cultures (e.g. biofuels etc.). Such "radionuclide-resistant" agriculture will be costly (it may be up to 30-40 percent compared with conventional agriculture) and needs to be subsidized;

4. It is necessary to urgently improve existing medical centers -- and possibly create new ones -- to deal with the immediate and long-term consequences of the irradiated peoples (including medical-genetic consultations on the basis of chromosome analysis etc.);

5. The most effective way to help organize post-Fukushima life in the contaminated territories (from Chernobyl lessons) is to create a special powerful interagency state body (ministry or committee) to handle the problems of contaminated territories during the first most complicated years.

I am sure that Russian, Belarusian and Ukrainian radiation medicine and agriculture specialists, radiobiologists and radioecologists who have enormous experience in fighting radiation consequences will be ready to cooperate with Japan.

(Alexey V. Yablokov is a councilor for the Russian Academy of Science and a principal author of "Chernobyl: Consequences of the Catastrophe for People and the Environment," published in 20

---

## **Fukushima seawater radioactivity rises inside containment fence**

TOKYO, April 16, Kyodo

The level of radioactive substances in seawater increased sharply overnight inside a containment fence installed near the Fukushima Daiichi nuclear power plant, the operator Tokyo Electric Power Co. said Saturday.

The utility said the rise suggested that the fence is helping to curb the spread of contaminated water, but the government's Nuclear Industrial and Safety Agency remained cautious, citing the possibility that radioactive water could still be seeping from the complex.

The company said the level of radioactive iodine rose Saturday morning to 260 becquerels per cubic centimeter in seawater inside the fence near an intake leading to the No. 2 reactor.

**The figure, 6,500 times the legal limit, was around six times the 42 becquerels detected the previous day, the company said, adding the reading of radioactive cesium had also jumped by four times.**

TEPCO also said it plans on Sunday or later to throw sandbags containing zeolite, a mineral that absorbs radioactive materials, into the sea near intakes leading to the Nos. 1, 2 and 3 reactors to reduce the levels of contamination.

Meanwhile, the utility is considering installing circulating water cooling systems for reactors and spent fuel storage pools outside the reactor buildings at the plant in a bid to bring it under control, sources familiar with the matter said.

The new systems would cool nuclear fuel inside the reactors and spent fuel pools in a stable manner. They would involve heat exchangers and circulation pumps to drain reactor coolant water from the containment buildings, cooling it with seawater and then sending it back to the reactors, the sources said.

TEPCO appears to have already placed orders for dozens of gasketed plate heat exchangers -- each measuring 3 meters high, 1 meter wide and 2 meters long -- for such systems, the sources said.

The existing circulating water cooling systems at the plant were crippled by the March 11 earthquake and ensuing tsunami.

The utility has been pumping water into reactors and storage pools in a desperate bid to cool them. But the move has created large puddles of water contaminated with high levels of radiation inside the reactor containment and turbine buildings, as fuel rods in the reactors and storage pools have been partially damaged.

The presence of the large puddles in the buildings has blocked restoration work at the plant.

TEPCO has therefore determined that it is necessary to cool the reactors and storage pools with new circulating water cooling systems to be installed outside the containment buildings, they said.

It is impossible to sufficiently cool the reactors and storage pools simply by pumping water into them without circulating water through the reactors and pools. The pumping operation has also had the negative side effect of raising the water levels of the radiation-contaminated puddles.

It would be necessary to secure five or six heat exchangers to cool one reactor, but the cooling efficiency of the gasketed plate heat exchangers is twice that of conventional heat exchangers for nuclear plants, according to the sources.

Radiation levels inside the containment buildings remain high. TEPCO plans to utilize the pipes that it has been using to pump water into the reactors in the new circulating water cooling loops, so it can minimize the need for work inside the dangerous buildings.

---

## **Japan nuclear commission fails to send experts to Fukushima**

TOKYO, April 16, Kyodo

The Nuclear Safety Commission of Japan has failed to send designated experts to Fukushima Prefecture to look into the crisis at the crippled Fukushima Daiichi nuclear power plant even though a national disaster-preparedness plan requires it to do so, many of the experts said Saturday.

A commission spokesperson said problems following the March 11 earthquake and tsunami such as blackouts had discouraged it from sending any experts to Fukushima Prefecture, but many of the specialists and government officials questioned the claim.

The commission designates 40 nuclear accident experts including university professors and senior officials of relevant institutions as well as five others as members of its panel on emergency technical advice.

The disaster plan requires the commission to dispatch members of the panel to a location near an accident site.

The commission has dispatched members of its secretariat to the prefecture since the crisis began the nuclear complex but a government official said, "It seems a problem that none of the designated experts has gone to Fukushima. The matter should be examined in the course of post-accident fact-finding."

---

## Accumulated radiation tops 17,000 microsieverts in Fukushima's Namie

TOKYO, April 16, Kyodo

The accumulated radiation level in Namie, 30 kilometers from the crippled Fukushima Daiichi nuclear power plant, in the three weeks through Friday stood at 17,010 microsieverts, according to a tally released by the science ministry Saturday.

The accumulated levels during **the period starting March 23** stood at 9,850 microsieverts in Iitate and 495 microsieverts in Minamisoma, both near the plant, it said. The readings compare with the level of 1,000 microsieverts that ordinary people in Japan can expect to be exposed to over one year.

The amount of radioactive cesium stood between 12.7 and 71.0 becquerels per liter of surface seawater near the plant on Monday and Wednesday and 10.1 becquerels at deeper levels on Monday, the Ministry of Education, Culture, Sports, Science and Technology said.

[Does this mean the level of radiation in these places has only been checked from March 23 ?] and so doesn't include the amounts people received over the first 12 days ??????

## TEPCO aims to achieve 'cold shutdown' for reactors in 6-9 months

TOKYO, April 17, Kyodo

Tokyo Electric Power Co. said Sunday that **it aims to bring the damaged reactors at the Fukushima Daiichi nuclear power plant to a stable condition known as a "cold shutdown" in about six to nine months, while restoring stable cooling to the reactors and spent fuel pools in about three months.**

At a news conference in Tokyo, company Chairman Tsunehisa Katsumata announced the utility's schedule "for the moment" for bringing the complex in Fukushima Prefecture under control, while offering an apology for the ongoing nuclear crisis.

The utility, known as TEPCO, also said **it needs three months to achieve "steady reduction" in radiation, and an additional three to six months to control radioactive emissions and curb radiation substantially.**

It said it is addressing the immediate challenges of preventing hydrogen explosions at the Nos. 1 to 3 reactors and emission of water contaminated with high-level radiation from the No. 2 reactor.

It also said it will put special covers on the heavily damaged buildings of the Nos. 1, 3 and 4 reactors.

"We will do our utmost to curb the release of radioactive materials by achieving a stable cooling state at the reactors and spent fuel pools," Katsumata said.

He also said he will mull resigning to take responsibility for the nuclear disaster.

At a separate press conference, industry minister Banri Kaieda urged TEPCO to follow the restoration roadmap swiftly and steadily.

The nuclear plant has been crippled by the devastating March 11 earthquake and subsequent tsunami, with the resulting damage causing radioactive materials to be emitted into the environment and forcing residents near the plant to be evacuated.

The government's Nuclear and Industry Safety Agency raised the severity level of the crisis from level 5 to the maximum level 7 on an international scale, recognizing that it matches the world's worst nuclear catastrophe in 1986 at Chernobyl.

==Kyodo

<http://english.kyodonews.jp/news/2011/04/86000.html>

chronology events Fukushima

## **Elevated levels of radiation measured inside reactor buildings**

TOKYO, April 18, Kyodo

Elevated levels of radiation have been measured inside the buildings housing the Nos. 1 and 3 reactors at the troubled Fukushima Daiichi nuclear power plant, the nuclear safety agency said Monday.

The Nuclear and Industrial Safety Agency suggested that the readings -- measured at between 10 and 49 millisieverts per hour for the No. 1 unit and between 28 and 57 millisieverts per hour for the No. 3 unit -- put time constraints on any work that must be done inside the reactors.

On Sunday, two remotely controlled robots measured radiation levels and other parameters inside the buildings. The plant operator, Tokyo Electric Power Co., has found it **difficult to send workers inside them due to concerns that they may be exposed to high levels of radiation.**

## Up to 57 millisieverts measured at Nos. 1, 3 reactor buildings

TOKYO, April 18, Kyodo

The radiation level inside the troubled Nos. 1 and 3 reactor buildings at the Fukushima Daiichi nuclear power plant was up to about 57 millisieverts per hour as of Sunday, data obtained by remote-controlled robots showed Monday.

---

19h24 : reactor n° 4 building flooded with water 5 metres high

---

## Gov't panel releases 2 of over 2,000 radiation dispersal estimates

TOKYO, April 18, Kyodo

The Nuclear Safety Commission of Japan has released only two computer-simulated estimates of radioactive substance dispersal since the nuclear accident at the Fukushima Daiichi power plant, although more than 2,000 of them were made, sources familiar with the matter said Monday.

The estimates were made using the Nuclear Safety Technology Center's networked computer system known as SPEEDI, or system for prediction of environmental emergency dose information, developed and operated with a budget of about 12.8 billion yen.

The government commission released the two estimates on March 23 and April 11, including accumulated exposure to a radiation dose of more than 1 millisievert even outside a radius of 30 kilometers from the Fukushima plant that was crippled by the March 11 earthquake and tsunami.

---

## Radiation inside Nos. 1, 3 reactor buildings up to 57 millisieverts

TOKYO, April 18, Kyodo

The radiation level inside the Nos. 1 and 3 reactor buildings at the crippled Fukushima Daiichi nuclear power plant was up to about 57 millisieverts per hour as of Sunday, the government's nuclear safety

agency said Monday, acknowledging that it is **a level that puts time constraints on any restoration work that must be done there.**

**The Nuclear and Industrial Safety Agency also said that it has found the No. 4 reactor building flooded with water 5 meters high,** besides some 60,000 tons of contaminated water already found to be filling up the Nos. 1 to 3 reactor turbine buildings and nearby areas.

Many of the pools of water containing radioactive substances are believed to be a side effect of an emergency measure of pouring massive amounts of water into the reactors and their spent nuclear fuel pools from outside to keep them cool, given that they have lost their key cooling functions following the March 11 earthquake and tsunami.

---

<http://www.spiegel.de/wissenschaft/technik/0,1518,757732,00.html>

...

Die Hightech-Roboter werden von der Firma iRobot aus Bedford im US-Bundesstaat Massachusetts hergestellt. Der Raupenantrieb macht sie manövrierfähig, dazu können die Maschinen Türen öffnen und kleinere Trümmerteile aus dem Weg räumen. Die Aufnahmen des Roboters aus dem Reaktorgebäude 3 zeigten Berge von Schutt - auch für den Roboter sei ein Vorankommen schwierig gewesen, hieß es. In Reaktor 1 sei der PackBot in den Eingangsbereich vorgedrungen.

Die gemessene Radioaktivität betrug 10 bis 49 Millisievert pro Stunde in Block 1 und 28 bis 57 Millisievert pro Stunde in Block 3. Das ist nach Angaben des Betreibers Tepco **fast 6000-mal höher als im Normalbetrieb des Reaktors. Ab einem Wert von 1000 Millisievert bestehe akute Gesundheitsgefahr durch Strahlenkrankheit, die Übelkeit und Erbrechen zur Folge hat.**

Es ist nicht das erste Mal, dass der PackBot bei international beachteten Rettungseinsätzen verwendet wird. Eine frühe Version des High-Tech-Apparats wurde in den Trümmern des World Trade Centers nach den Anschlägen vom 11. September 2001 eingesetzt.

#### Greenpeace Messungen

.. Die Region um die Atomruine Fukushima ist nach Messungen der Umweltorganisation Greenpeace spürbar radioaktiv belastet. In der Stadt Fukushima, rund 60 Kilometer vom Atomkraftwerk entfernt, seien noch bis zu vier Mikrosievert pro Stunde gemessen worden, sagte Greenpeace-Experte Thomas Breuer nach einer Messkampagne am Montag in Hamburg. Ein Mikrosievert entspricht einem Tausendstel Millisievert.

Die Bevölkerung bekomme dort in 14 Tagen die höchste vertretbare künstliche Strahlendosis für ein Jahr ab. In zwei Dörfern der Region seien Werte von 7 bis 48 Mikrosievert pro Stunde gemessen worden, **dort erhielten die Bewohner bereits in zwei Tagen die Jahresdosis.**

---

[http://www.criirad.org/actualites/dossier2011/japon\\_bis/11-03-17-CPtokyo.pdf](http://www.criirad.org/actualites/dossier2011/japon_bis/11-03-17-CPtokyo.pdf)

COMMUNIQUE CRIIRAD

du 17 mars 2011 - 13h

RADIOACTIVITE DE L'AIR :

**Les quelques résultats enfin disponibles sont très inquiétants !**

**Des résultats nous parviennent d'heure en heure et confirment les éléments ci-dessous.**

**Nous essaierons de publier une mise à jour en fin de journée**

Suivre en temps réel l'ordre de grandeur de la contamination de l'air est indispensable

Depuis 5 jours, de la radioactivité s'échappe de la centrale nucléaire de FUKUSHIMA DAIICHI sans que l'on puisse évaluer les risques encourus par les populations. On n'a en effet aucune idée des quantités de produits radioactifs relâchées dans l'environnement et aucune cartographie des activités volumiques de l'air n'a été publiée.

Seuls des relevés dosimétriques (débits de dose en  $\mu\text{Gy/h}$  ou  $\mu\text{Sv/h}$ ) sont disponibles et seulement pour certains secteurs géographiques. Les plus exposés – la Préfecture de Fukushima notamment – sont très peu documentés [la situation est en train de changer]. Ces résultats ne rendent compte que de l'exposition externe et peuvent donc sous-évaluer considérablement les niveaux de risques.

En situation accidentelle, il est indispensable de disposer, en temps réel, des ordres de grandeurs de la contamination de l'air qui 1/ détermine le risque encouru par inhalation de gaz et d'aérosols radioactifs ; 2/ conditionne – en association avec les paramètres météorologiques - l'intensité des dépôts au sol et par conséquent les niveaux de contamination de la chaîne alimentaire.

Tout un cocktail de produits radioactifs dans l'air de Tokyo

Le laboratoire de la CRIIRAD a pu accéder aux mesures effectuées par le [Tokyo Metropolitan Industrial Technology Research Institute](#) sur les poussières atmosphériques prélevées à Tokyo, dans l'arrondissement de Setagaya, sur la période du mardi 15 mars minuit au mercredi 16 mars 18h (heures locales), soit 42 heures de suivi.

Les résultats publiés concernent 4 radionucléides (produits radioactifs) : iode 131, iode 132, césium 134 et césium 137. Moyennées sur les 42 heures de suivi, les activités sont les suivantes :

- Iode 131 : 14,9 Bq/m<sup>3</sup>
- Iode 132 : 14,5 Bq/m<sup>3</sup>
- Césium 134 : 3,4 Bq/m<sup>3</sup>
- Césium 137 : 3,2 Bq/m<sup>3</sup>

Accéder aux tableaux de résultats : 1. [Mise en forme CRIIRAD](#)

2. Originaux de l'Institut de Recherche de Tokyo : [15-03-11](#) ; [16-03-11](#) ; [17-03-11](#)

En situation normale, le seul radionucléide que l'on s'attend à mesurer dans l'atmosphère est le césium 137. Du fait des essais nucléaires militaires et de la catastrophe de Tchernobyl, subsiste en effet une contamination résiduelle mais heureusement très faible : de l'ordre de quelques  $\mu\text{Bq}/\text{m}^3$ . ( $1\mu\text{Bq} = 10^{-6}\text{Bq}$ ) Une valeur moyenne de 3,4 Bq/m<sup>3</sup> représente une augmentation considérable du niveau de radioactivité : de l'ordre de 1 million de fois.

Précision importante : l'air contient nécessairement d'autres radionucléides : probablement des gaz rares radioactifs comme le krypton 85 et le xénon 133 mais également du tritium, du tellure 132, des isotopes du ruthénium, du tellure, du strontium. Il faudrait également savoir si l'air contient des transuraniens, des émetteurs alpha très radiotoxiques comme les plutoniums 238, 239 ou 240 ou encore l'américium 241.

Si l'on considère l'évolution des concentrations dans le temps, on constate que le niveau de radioactivité de l'air a très fortement augmenté sur Tokyo le 15 mars, entre 10h et 12h, avec un pic de radioactivité sur les poussières prélevées à 11h :

- Iode 131 : 241 Bq/m<sup>3</sup>
- Iode 132 : 281 Bq/m<sup>3</sup>
- Césium 134 : 64 Bq/m<sup>3</sup>
- Césium 137 : 60 Bq/m<sup>3</sup> (soit plus de 10 millions de fois le niveau antérieur aux accidents nucléaires)

[Accéder au graphique établi par la CRIIRAD](#) (résultats actualisés au 17 mars)

A partir d'une activité moyenne en iode 131 de 15 Bq/m<sup>3</sup>, nous avons calculé les doses équivalentes à la

thyroïde qu'ont pu recevoir en 48 heures les enfants habitant Tokyo. Les résultats restent inférieurs au milliSievert (mSv) et par conséquent au seuil d'intervention de 10 mSv défini par l'OMS pour l'administration de comprimés d'iode stable.

Il faut cependant souligner que les chiffres utilisés pour les calculs sous-évaluent très probablement l'activité réelle de l'air. L'air a, en effet, été échantillonné à partir de filtres à poussières. Pour obtenir un bilan complet, il faudrait disposer de résultats sur des filtres à charbon actif capables de piéger les gaz, et notamment les formes moléculaires et organiques de l'iode. Elles peuvent représenter une part importante, voire majoritaire, de l'iode présent. Cette information doit être obtenue d'urgence.

Que se passe-t-il plus au nord ?

Le plus préoccupant est que Tokyo n'est pas le secteur le plus touché par le passage des masses d'air contaminé. L'analyse des relevés de débits de dose disponibles le montre clairement. Ces quelques éléments très – trop – lacunaires nous conduisent à nous interroger sur les niveaux d'exposition des personnes résidant à moindre distance de la centrale de FUKUSHIMA DAIICHI (Tokyo est situé à 230 km au sud). A quels niveaux de contamination ont été exposés les habitants de la Préfecture de Fukushima (l'évacuation est limitée à un rayon de 20 km) ou encore ceux du secteur d'ONAGAWA où les débits de dose ont été multipliés par 100, voire par 1 000 (à Tokyo, l'augmentation n'aurait été que d'un facteur 16) ? Et qu'en est-il des habitants de la Préfecture d'IBARAKI où l'élévation du niveau de rayonnement ambiant est un peu supérieure à celle de Tokyo et surtout bien plus prolongée ?

La CRIIRAD ne souhaite qu'une chose, c'est d'être rassurée sur les niveaux d'exposition de la population. Si les autorités considèrent que les niveaux de risques sont minimes, elles doivent le démontrer, chiffres à l'appui.

Si l'on se base sur les informations publiées par l'AIEA, jusqu'au mercredi 16 mars, l'ordre d'administrer des comprimés d'iode stable à la population n'avait pas été donné. L'AIEA indique que dès le 14 mars dernier, les autorités japonaises avaient distribué 230 000 tablettes de comprimés d'iode stable aux centres d'évacuation mais sans donner l'ordre de les administrer aux habitants. Or, la zone d'évacuation était encore hier limitée à un rayon de 20 km autour de FUKUSHIMA DAIICHI et consigne était donnée aux

personnes résidant dans un rayon de 30 km de se confiner chez elles.

Le problème, c'est que le confinement ne peut apporter qu'une protection très provisoire : une habitation n'a rien d'une enceinte étanche : en quelques heures tout le volume d'air intérieur est renouvelé. On gagne un peu de temps en calfeutrant toutes les ouvertures mais le confinement n'est absolument pas adapté à une contamination qui persiste sur plusieurs jours. L'aide internationale doit se mobiliser pour apporter la logistique nécessaire à l'évacuation des personnes sur un périmètre bien plus large. Ceci aurait dû être fait bien plus tôt. En attendant, il faut limiter les risques et l'iode stable est un moyen efficace – s'il est pris à temps ! – de limiter l'irradiation de la glande thyroïde et donc la survenue ultérieure de cancers ou d'autres pathologies thyroïdiennes. Rappelons également que l'iode stable n'est pas la panacée : il ne protège ni de l'irradiation externe, ni de la contamination par les autres radionucléides.

#### Dépôts au sol et contamination des aliments

La radioactivité présente dans l'air se dépose progressivement au sol et sur les végétaux. Les dépôts secs sont intensifiés par la pluie qui lessive les masses d'air contaminé et précipite au sol les particules radioactives (aérosols) et les gaz solubles (iode notamment).

Il faut disposer au plus vite d'une cartographie des activités surfaciques (Bq/m<sup>2</sup> de sol) permettant de recenser les zones à risque et de cibler les mesures à prendre pour le retrait des aliments contaminés ou les mesures de prévention (alimentation du bétail en fourrage non contaminé par exemple).

Concernant la contamination de la chaîne alimentaire, il faut rappeler que depuis 5 jours, des quantités très importantes de produits radioactifs sont rejetées à la mer. Il faut donc vérifier l'impact de ces rejets sur les produits de la mer dans les zones proches et en fonction des courants.

Le fait de connaître les niveaux de contamination des paramètres clefs de l'environnement n'est certes pas une garantie de protection. Il est en revanche certain que l'absence de données ne peut qu'empirer les choses. L'opacité n'a jamais profité à la défense des intérêts sanitaires de la population. Tchernobyl l'a clairement démontré.

#### **REPERES**

CONTAMINATION DE L'AIR :

## comparaison avec la situation de la France au moment de Tchernobyl

Les chiffres qui suivent sont des chiffres officiels relatifs à la contamination de l'air dans le sud-est de la France, une des régions les plus touchées par les retombées radioactives consécutives à l'explosion du réacteur n°4 de Tchernobyl. Les activités sont des valeurs moyennes pour la période du 1<sup>er</sup> au 3 mai 1986.

**Césium 137** : de **0,3 à 0,9 Bq/m<sup>3</sup>** à comparer à la concentration moyenne sur 2 jours de **3,2 Bq/m<sup>3</sup>** à Tokyo

**Iode 131** : de **0,6 et 4,2 Bq/m<sup>3</sup>** à comparer à la concentration moyenne sur 2 jours de **14,9 Bq/m<sup>3</sup>** à Tokyo.

CRIIRAD

---

[http://www.criirad.org/actualites/dossier2011/japon/iode\\_131\\_dose\\_ingestion.pdf](http://www.criirad.org/actualites/dossier2011/japon/iode_131_dose_ingestion.pdf)

---

## Tokyo Electric admits fuel could be melting at Fukushima nuke plant

TOKYO, April 21, Kyodo

An official at Tokyo Electric Power Co., the operator of the crippled Fukushima Daiichi nuclear power plant, admitted Wednesday that fuel of the plant's No. 1 reactor could be melting.

## Radioactive leaks into sea were 20,000 times above limit: TEPCO

TOKYO, April 21, Kyodo

Tokyo Electric Power Co. said Thursday radioactive substances that leaked into the sea from its crisis-hit nuclear plant over six days from April 1 totaled an estimated 5,000 terabecquerels, 20,000 times more than the annual allowable limit for the plant.

The radioactive substances were in an estimated 520 tons of high-level radioactive water that leaked into the sea from the No. 2 reactor of the six-reactor Fukushima Daiichi nuclear plant, which was devastated by the March 11 earthquake-tsunami disaster in northeastern Japan. The leaks were found on April 2 and stopped on April 6.

The estimated 5,000 terabecquerels is far lower than 370,000 to 630,000 terabecquerels, the estimated amount of radioactive substances released into the atmosphere from the plant. But it is 30,000 times more than the radioactive substances in low-level radioactive water that TEPCO discharged to secure a storage space for the high-level radioactive water.

## Radiation over 100 microsievarts detected 2-3 km from troubled plant

TOKYO, April 21, Kyodo

Radiation levels of over 100 microsieverts per hour were measured at four locations 2 to 3 kilometers from the crippled Fukushima Daiichi nuclear plant from late last month, the science ministry said Thursday as it released such data for the first time.

NATURE NEWS

Published online 21 April 2011

<http://www.nature.com/news/2011/110421/full/472400a.html>

## Reactors, residents and risk

A world population analysis reveals the locations that could put the most people in danger should a nuclear accident occur.

[Declan Butler](#)

**Map showing the population size living within 75 kilometres of each of the world's nuclear power plants. Population increases with circle size and with colour, from green (< 0.5 million) to red (> 20 million). You need to download the [Google Earth plug-in](#) to view this graphic. For a larger version, [click here](#).**

In the aftermath of the Fukushima nuclear accident, people everywhere are asking: could a similar disaster strike closer to home?

For much of the world's population, distance offers no comfort. An analysis carried out by Nature and Columbia University, New York, shows that two-thirds of the world's 211 power plants have more people living within a 30-kilometre radius than the 172,000 people living within 30 kilometres of the Fukushima Daiichi plant, who have been forced or advised to leave. Some 21 plants have populations larger than 1 million within that radius, and six have populations larger than 3 million.

[Online collection](#)

Population size was just one of the factors that Nature set out to explore in a bid to map reactor hazards around the world. Nuclear experts say that an objective 'danger' ranking is almost impossible because each reactor has its own unique risk profile, and some risks are simply unknowable. Reactor safety depends above all on a 'culture of security', including the quality of maintenance and training, the competence of the operator and the workforce, and the rigour of regulatory oversight, says Mycle Schneider, an independent nuclear consultant based in Paris. This means that a better-designed, newer reactor is not always a safer one. "What is more dangerous, a drunk driver in a brand new Ferrari or a sober Formula 1 pilot in a 30-year-old 2CV?" Schneider says. But experts do agree on a few critical risk factors, and on measures that could limit them.

## Population

Population density is one critical lens through which other risks have to be assessed, says Laurent Stricker, a nuclear engineer who is chairman of the World Association of Nuclear Operators (WANO), created as an international forum on nuclear safety in the aftermath of the 1986 Chernobyl accident. "We need to look at the safety of reactors taking into account where they are," he says (see [Nature 472, 274; 2011](#)).

To carry out the population analysis, Nature teamed up with the NASA Socioeconomic Data and Applications Center based at Columbia University (see ['How population sizes were estimated'](#) for an explanation of how the analysis was carried out). The KANUPP plant in Karachi, Pakistan, has the most people — 8.2 million — living within 30 kilometres, although it has just one relatively small reactor with an output of 125 megawatts (see ['Nuclear neighbours'](#)). Next in the league, however, are much larger plants — Taiwan's 1,933-megawatt Kuosheng plant with 5.5 million people within a 30-kilometre radius and the 1,208-megawatt Chin Shan plant with 4.7 million; both zones include the capital city of Taipei. The findings of Nature's population analysis are "scary", says Ed Lyman, a nuclear expert with the Union of Concerned Scientists in Washington DC.

If the radius is broadened to 75 kilometres, the picture looks even more disconcerting. China's neighbouring Guangdong and Lingao plants top that league, each with around 28 million people within a 75-kilometre radius that covers Hong Kong, followed by the Indian Point plant near New York, with 17.3 million, and the Narora plant in Uttar Pradesh, India with 16 million. One hundred and fifty-two nuclear power plants have more than 1 million people living within 75 kilometres; and all but five plants have more than 1 million people within 150 kilometres. Fortunately, prevailing winds have so far blown most of Fukushima Daiichi's radioactivity out to sea, as some 7.7 million people, including some in the greater Tokyo area, live within 150 kilometres of that site (see ['Where the worst could happen'](#)).

## External threats

As Fukushima showed, external threats — such as earthquakes, tsunamis, fires, flooding, tornadoes or even terrorist attacks — are some of the greatest risk factors for a serious nuclear accident. Conventionally, nuclear plant operators have considered some accident sequences so unlikely that they have not built in complete safeguards — such accidents are called 'beyond design basis' events. Yet forecasting the location of the next earthquake or the size of the next tsunami is an imperfect art.

This means that nuclear plants situated outside known geological danger zones could pose greater accident threats in the event of an earthquake than those inside, as the former could have weaker protection built in. The Fukushima Daiichi plant, for example, was located in an area designated, on Japan's seismic risk map, as having a relatively low chance of a large earthquake and tsunami; when the 2011 tsunami arrived, it was in excess of anything its engineers had planned for.

The possibility of beyond design basis accidents is a major thrust of the many safety reviews being conducted post-Fukushima. The International Atomic Energy Agency (IAEA) is already paying attention to external threats — creating an internal International Seismic Safety Centre in 2008, for example, after an earthquake hit the Kashiwazaki-Kariwa plant on the west coast of Japan in 2007,

prompting an automatic shutdown and a minor release of radioactivity (see [Nature 448, 392–393; 2007](#)).

## Design and age

Some reactors and plants are inherently more dangerous than others. One factor is sheer size. A larger plant can generate more fallout, and when simultaneous crises develop at multiple reactors — as happened at four of Fukushima's six reactors — operators can be overwhelmed. The Kashiwazaki-Kariwa plant has seven reactors, making it the world's biggest in terms of electrical output at 7,965 megawatts. Other such mega-sites, besides Fukushima itself, include Qinshan on China's northeast coast, Yeonggwang and Ulchin in South Korea, the Leningrad plant in Russia, Bruce on the shores of Lake Huron in Ontario, Canada, and Gravelines and Paluel, both on the northern coast of France.

“One hundred and fifty-two nuclear power plants have more than 1 million people living within 75 kilometres.”

Older reactors are not necessarily more dangerous than newer ones. The 1978 Three Mile Island accident in the United States occurred in a reactor that had started operation only three months earlier, and the accident at Chernobyl (now in Ukraine) occurred after only two years of operation. A serious loss of coolant occurred at the French Civaux-1 reactor in 1998, less than five months after start-up. That's not surprising, says Lyman, as reactors follow a well-known trajectory in reliability engineering called the 'bathtub curve'. Complex new machines and installations often have features that haven't been fully tested, or are new to operators, so bugs and mistakes can occur at the start. After the bugs get worked out, reactors enter a relatively lower-risk stable phase, but risk later increases with age-related deterioration. "Institutional loss of memory" is another problem that increases with reactor age, says Jan Beránek, head of nuclear campaigns at Greenpeace International, headquartered in Amsterdam, the Netherlands. "Many engineers who are familiar with the design and were involved in the planning and building of those reactors are retired, and part of their very specific expertise is getting lost."

As the 1986 Chernobyl accident showed, the design itself can pose risks. The Chernobyl reactor core contained flammable graphite, and the fire that burned for weeks after the accident spewed radioactivity high into the atmosphere. The reactor design also contained an inherent instability such that the chain reactions accelerated as the core lost water — an impossible event with most other reactor designs. Several Chernobyl-design reactors are still in operation in Russia, in particular at the plant near St Petersburg, close to large population centres. These reactors have, however, been radically overhauled to address these and other safety issues with the design.

But Lyman cautions against placing too much stock in one reactor design being safer than another. Modern pressurized water reactors would face much the same difficulties as Fukushima if their cooling systems were disabled, he says.

## Culture

However safe a plant is designed to be, it is operated by error-prone humans. Operators must guard against complacency, says Stricker. "One flaw that I worry about is that of overconfidence." Experts

say that the largest single internal factor determining the safety of a plant is the culture of security among regulators, operators and the workforce — and creating such a culture is not easy. "It is expensive. And it involves an attention to detail and a willingness to accept and learn from intrusive peer review by others," wrote Richard Meserve, president of the Carnegie Institution for Science in Washington DC, in 2010 as chair of the IAEA's International Nuclear Safety Advisory Group.

Meserve was referring in particular to what many experts see as potentially the fastest-growing risk in the nuclear industry: that many countries with little or no past experience are embarking on nuclear power or are already building large numbers of reactors. Meserve points, for example, to plans to introduce nuclear power in Belarus, Chile, Egypt, Indonesia, Jordan, Lithuania, Malaysia and Morocco, among others. Experts worry about lack of regulatory oversight and corruption in some regions. Stricker says that peer review of plants before they start up will be of particular importance in inexperienced countries, and that WANO intends to increase such reviews.

Tom Cochran, a nuclear expert at the Natural Resources Defense Council in Washington DC, is sceptical that the many post-Fukushima safety reviews already under way in the United States, the European Union and elsewhere will result in significant changes in risk assessment of nuclear reactors. "They will make recommendations and adjustments, but I don't think you can ask regulators to review whether they have made mistakes in the past; I don't think they will do enough." Cochran wants independent commissions to be established, similar to the Kemeny Commission set up to draw lessons from the Three Mile Island accident.

And with risk assessment so difficult, experts say that one of those lessons is that operators must simply prepare better for a serious nuclear emergency. "One change that WANO could, and in my opinion must, make," says Stricker, "is to be in a position to verify that every nuclear operator company from the smallest to the largest has plans to cope with unforeseen accidents."

message-footer.txt

-----  
[rezo-nuke-info] - Mailing list in english about nuclear and energy alternatives.

The information given on the list are not always representative of the Reseau "Sortir du nucleaire" opinion - Don't forget also to visit the International Press Review on our website English section >

<http://www.sortirdunucleaire.org/index.php?menu=english&page=index>

To unsubscribe send an empty mail to [rezo-nuke-info-unsubscribe@sortirdunucleaire.org](mailto:rezo-nuke-info-unsubscribe@sortirdunucleaire.org)

-----

## Workers locked in battle at nuclear plant; exposure to radiation rising

Sunday 24th April, 06:20 AM JST

FUKUSHIMA —

Workers at a nuclear power plant damaged by last month's earthquake and tsunami that devastated Japan's northeast continued battling to deal with radioactive water Saturday as their exposure to radiation is constantly increasing.

One more worker is found to have been exposed to radiation of more than 100 millisieverts, bringing to 30 the total number of people of that dosage level while dealing with the crisis at the Fukushima Daiichi plant since the March 11 disasters, sources familiar with the situation said.

Plant operator Tokyo Electric Power Co said Saturday that a piece of concrete rubble with a high radiation emission of 900 millisieverts per hour was found near the plant's No. 3 reactor and a worker removed it using heavy equipment.

The worker who operated the equipment was exposed to 3.17 millisieverts of radiation, but officials of TEPCO said the dosage does not pose a major problem.

The concrete piece, about 30 centimeters in both length and width with a thickness of about 5 cm, was found Wednesday and removed the following day and is currently being kept inside a container with other pieces of rubble, the officials said.

While workers are removing rubble from the damaged plant using remote-controlled heavy machinery, the one emitting high radiation was removed directly using the equipment so as not to damage an important pipe located nearby, they said.

TEPCO says workers and engineers exposed to radiation close to 200 millisieverts are switched to jobs that risk receiving lower levels of contamination.

Such a policy has been applied to just one worker so far, after his reading rose to 198 millisieverts, according to the utility.

To cope with the Fukushima crisis, the government has raised the legal limit on the amount of radiation to which each worker could be exposed in an emergency situation to 250 millisieverts from 100 millisieverts.

On Saturday, highly toxic radioactive water from the No. 2 reactor was transferred from the basement of a building to a nearby waste-disposing facility for a fifth consecutive day, while attempts were made to prevent it from leaking into the sea.

An estimated 25,000 tons of contaminated water need to be removed, of which 10,000 tons are planned to be sent to the facility by mid-May. Only less than 10% has been transferred so far in a process considered crucial for the plant to restore the cooling functions for its reactors.

At the No. 4 reactor building, the temperature of the spent nuclear fuel pool dropped from 83 C to 66 C after a four-hour process of injecting 140 tons of fresh water using a concrete pump truck, increasing the water level in the pool by 1 meter, TEPCO officials said.

Separately, the science ministry said the cumulative dosage of radiation has exceeded the annual limit set by the government for evacuation at one location in the town of Namie, Fukushima Prefecture, about 30 km northwest of the nuclear complex.

The Ministry of Education, Culture, Sports, Science and Technology said the radiation amount, measured over one month between March 23 and Friday, surpassed the 20-millisievert limit at the place although the pace of accumulation has gradually slowed.

The ministry's data showed the radiation level there reached 10 millisieverts after the first 12 days since the start of measurement, but it took 19 days for an additional 10 millisieverts of radiation to be detected.

---

## **Gov't endorses TEPCO's estimates on radioactive leak into sea**

TOKYO, April 25, Kyodo

The government's nuclear safety agency on Monday endorsed a report by Tokyo Electric Power Co. estimating radioactive substances 20,000 times the allowable annual limit were carried into the Pacific Ocean by contaminated water leaking from the crisis-hit Fukushima Daiichi nuclear plant in early April.

The Nuclear and Industrial Safety Agency approved the report submitted by the plant operator last Thursday and said the leak would not cause immediate health hazards because radioactive materials would be diluted in seawater, while fishing had been banned in areas close to the atomic power station.

Hidehiko Nishiyama, a spokesman for the nuclear agency, said the concentration of radioactive substances believed to have leaked into the sea from a cracked pit between April 1 and 6 was about 30,000 times higher than the level seen in low-level radioactive water TEPCO deliberately dumped into the sea between April 4 and 10.

## **OPINION: Children of Fukushima need our protection**

By Tilman Ruff

MELBOURNE, April 26, Kyodo

I was dismayed to learn that the Ministry of Education, Culture, Sports, Science and Technology earlier this week increased the allowable dose of ionizing radiation for children in Fukushima Prefecture.

The dose they set, 3.8 microsieverts per hour, equates to more than 33 millisieverts (mSv) over a year. This is to apply to children in kindergartens, nursery, primary and junior high schools. Let me try to put this in perspective.

Widely accepted science tells us that the health risk from radiation is proportional to the dose -- the bigger the dose the greater the risk, and there is no level without risk.

The International Commission on Radiological Protection recommends that all radiation exposure be kept as low as achievable, and for the public, on top of background radiation and any medical procedures, should not exceed 1 mSv per year.

For nuclear industry workers, they recommend a maximum permissible annual dose of 20 mSv averaged over five years, with no more than 50 mSv in any one year.

In Japan the maximum allowed annual dose for workers, 100 mSv, was already higher than international standards. This has been increased in response to the Fukushima disaster to 250 mSv.

The U.S. National Academy of Sciences BEIR VII report estimates that each 1 mSv of radiation is associated with an increased risk of solid cancer (cancers other than leukemia) of about 1 in 10,000; an increased risk of leukemia of about 1 in 100,000; and a 1 in 17,500 increased risk of dying from cancer.

But a critical factor is that not everyone faces the same level of risk. For infants (under 1 year of age) the radiation-related cancer risk is 3 to 4 times higher than for adults; and female infants are twice as susceptible as male infants.

Females' overall risk of cancer related to radiation exposure is 40 percent greater than for males. Fetuses in the womb are the most radiation-sensitive of all.

The pioneering Oxford Survey of Childhood Cancer found that X-rays of mothers, involving doses to the fetus of 10-20 mSv, resulted in a 40 percent increase in the cancer rate among children up to age 15.

In Germany, a recent study of 25 years of the national childhood cancer register showed that even the normal operation of nuclear power plants is associated with a more than doubling of the risk of leukemia for children under 5 years old living within 5 kilometers of a nuclear plant.

Increased risk was seen to more than 50 km away. This was much higher than expected, and highlights the particular vulnerability to radiation of children in and outside the womb.

In addition to exposure measured by typical external radiation counters, the children of Fukushima will also receive internal radiation from particles inhaled and lodged in their lungs, and taken in through contaminated food and water.

A number of radioactive substances are concentrated up the food chain and in people. As a parent, as a physician, the decision to allow the children of Fukushima to be exposed to such injurious levels of radiation is an unacceptable abrogation of the responsibility of care and custodianship for our children and future generations.

(Tilman Ruff is chair of the International Campaign to Abolish Nuclear Weapons and associate professor at the Nossal Institute for Global Health at the University of Melbourne, Australia.)

==Kyodo

April 26, 2011

[http://www.nytimes.com/2011/04/27/world/asia/27collusion.html?\\_r=1&nl=todaysheadlines&emc=tha2](http://www.nytimes.com/2011/04/27/world/asia/27collusion.html?_r=1&nl=todaysheadlines&emc=tha2)

## Culture of Complicity Tied to Stricken Nuclear Plant

By [NORIMITSU ONISHI](#) and [KEN BELSON](#)

TOKYO — Given the fierce insularity of [Japan](#)'s nuclear industry, it was perhaps fitting that an outsider exposed the most serious safety cover-up in the history of Japanese nuclear power. It took place at Fukushima Daiichi, the plant that Japan has been struggling to get under control since last month's earthquake and tsunami.

In 2000, Kei Sugaoka, a Japanese-American nuclear inspector who had done work for General Electric at Daiichi, told Japan's main nuclear regulator about a cracked steam dryer that he believed was being concealed. If exposed, the revelations could have forced the operator, Tokyo Electric Power, to do what utilities least want to do: undertake costly repairs.

What happened next was an example, critics have since said, of the collusive ties that bind the nation's nuclear power companies, regulators and politicians.

Despite a new law shielding whistle-blowers, the regulator, the Nuclear and Industrial Safety Agency, divulged Mr. Sugaoka's identity to Tokyo Electric, effectively blackballing him from the industry. Instead of immediately deploying its own investigators to Daiichi, the agency instructed the company to inspect its own reactors. Regulators allowed the company to keep operating its reactors for the next two years even though, an investigation ultimately revealed, its executives had actually hidden other, far more serious problems, including cracks in the shrouds that cover reactor cores.

Investigators may take months or years to decide to what extent safety problems or weak regulation contributed to the disaster at Daiichi, the worst of its kind since Chernobyl. But as troubles at the plant

and fears over radiation continue to rattle the nation, the Japanese are increasingly raising the possibility that a culture of complicity made the plant especially vulnerable to the natural disaster that struck the country on March 11.

Already, many Japanese and Western experts argue that inconsistent, nonexistent or unenforced regulations played a role in the accident — especially the low seawalls that failed to protect the plant against the tsunami and the decision to place backup diesel generators that power the reactors' cooling system at ground level, which made them highly susceptible to flooding.

A 10-year extension for the oldest of Daiichi's reactors suggests that the regulatory system was allowed to remain lax by politicians, bureaucrats and industry executives **single-mindedly focused on expanding nuclear power**. Regulators approved the extension beyond the reactor's 40-year statutory limit just weeks before the tsunami **despite warnings about its safety and subsequent admissions by Tokyo Electric, often called Tepco, that it had failed to carry out proper inspections of critical equipment**.

**The mild punishment meted out for past safety infractions** has reinforced the belief that nuclear power's main players are more interested in protecting their interests than increasing safety. In 2002, after Tepco's cover-ups finally became public, its chairman and president resigned, only to be given advisory posts at the company. Other executives were demoted, but later took jobs at companies that do business with Tepco. Still others received tiny pay cuts for their role in the cover-up. And after a temporary shutdown and repairs at Daiichi, Tepco resumed operating the plant.

In a telephone interview from his home in the San Francisco Bay Area, Mr. Sugaoka said, "I support nuclear power, but I want to see complete transparency."

## **Revolving Door**

In Japan, the **web of connections between the nuclear industry and government** officials is now popularly referred to as the "nuclear power village." The expression connotes the nontransparent, collusive interests that underlie the establishment's push to increase nuclear power despite the discovery of active fault lines under plants, new projections about the size of tsunamis and a long history of cover-ups of safety problems.

Just as in any Japanese village, the like-minded — nuclear industry officials, bureaucrats, politicians and scientists — have prospered by rewarding one another with construction projects, lucrative positions, and political, financial and regulatory support. The few openly skeptical of nuclear power's safety become village outcasts, losing out on promotions and backing.

Until recently, it had been considered political suicide to even discuss the need to reform an industry that appeared less concerned with safety than maximizing profits, said Kusuo Oshima, one of the few governing Democratic Party lawmakers who have long been critical of the nuclear industry.

"Everyone considered that **a taboo**, so nobody wanted to touch it," said Mr. Oshima, adding that he could speak freely because he was backed not by a nuclear-affiliated group, but by Rissho Kosei-Kai, one of Japan's largest lay Buddhist movements.

**"It's all about money,"** he added.

At Fukushima Daiichi and elsewhere, critics say that safety problems have stemmed from a common source: a watchdog that is a member of the nuclear power village.

Though it is charged with oversight, the Nuclear and Industrial Safety Agency is part of the Ministry of Trade, Economy and Industry, the bureaucracy charged with promoting the use of nuclear power. Over a long career, officials are often transferred repeatedly between oversight and promotion divisions, **blurring the lines between supporting and policing the industry.**

Influential bureaucrats tend to side with the nuclear industry — and the promotion of it — because of a practice known as amakudari, or descent from heaven. Widely practiced in Japan’s main industries, amakudari allows senior bureaucrats, usually in their 50s, to land cushy jobs at the companies they once oversaw.

According to data compiled by the Communist Party, one of the fiercest critics of the nuclear industry, generations of high-ranking officials from the ministry have landed senior positions at the country’s 10 utilities since Japan’s first nuclear plants were designed in the 1960s. In a pattern reflective of the clear hierarchy in Japan’s ministries and utilities, the ministry’s most senior officials went to work at Tepco, while those of lower ranks ended up at smaller utilities.

At Tepco, from 1959 to 2010, four former top-ranking ministry officials successively served as vice presidents at the company. When one retired from Tepco, his junior from the ministry took over what is known as the ministry’s “reserved seat” of vice president at the company.

In the most recent case, a director general of the ministry’s Natural Resources and Energy Agency, Toru Ishida, left the ministry last year and joined Tepco early this year as an adviser. Prime Minister [Naoto Kan](#)’s government initially defended the appointment but reversed itself after the Communist Party publicized the extent of amakudari appointments since the 1960s. Mr. Ishida, who would have normally become vice president later this year, was forced to step down last week.

Kazuhiro Hasegawa, a spokesman for Tepco, denied that it was an amakudari appointment, adding that the company simply hired the best people. The company declined to make an executive available for an interview about the company’s links with bureaucrats and politicians.

Lower-ranking officials also end up at similar, though less lucrative, jobs at the countless companies affiliated with the power companies, as well as advisory bodies with close links to the ministry and utilities.

“Because of this collusion, the Nuclear and Industrial Safety Agency ends up becoming a member of the community seeking profits from nuclear power,” said Hidekatsu Yoshii, a Communist Party lawmaker and nuclear engineer who has long followed the nuclear industry.

Collusion flows the other way, too, in a lesser-known practice known as amaagari, or ascent to heaven. Because the regulatory panels meant to backstop the Nuclear and Industrial Safety Agency lack full-time technical experts, they depend largely on retired or active engineers from nuclear-industry-related companies. They are unlikely to criticize the companies that employ them.

Even academics who challenge the industry may find themselves shunned. As Japan has begun looking into the problems surrounding collusion since March 11, the Japanese news media has highlighted the discrimination faced by academics who raised questions about the safety of nuclear power.

In Japan, research into nuclear power is financed by the government or nuclear power-related companies. Unable to conduct research, skeptics, especially a group of six at Kyoto University, languished for decades as assistant professors.

One, Hiroaki Koide, a nuclear reactor expert who has held a position equivalent to assistant professor for 37 years at Kyoto University, said he applied unsuccessfully for research funds when he was younger.

“They’re not handed out to outsiders like me,” he said.

In the United States, the [Nuclear Regulatory Commission](#), the main regulatory agency for the nuclear power industry, can choose from a pool of engineers unaffiliated with a utility or manufacturer, including those who learned their trade in the Navy or at research institutes like Brookhaven or Oak Ridge.

As a result, the N.R.C. does not rely on the industry itself to develop proposals and rules. In Japan, however, the Nuclear and Industrial Safety Agency lacks the technical firepower to draw up comprehensive regulations and tends to turn to industry experts to provide that expertise.

The agency “has the legal authority to regulate the utilities, but significantly **lacks the technical capability to independently evaluate what they propose**,” said Satoshi Sato, who has nearly 30 years’ experience working in the nuclear industry in the United States and Japan. “Naturally, the regulators tend to avoid any risk by proposing their own ideas.”

Inspections are not rigorous, Mr. Sato said, because agency inspectors are not trained thoroughly, and safety standards are watered down to meet levels that the utilities can financially bear, he and others said.

### **Dominion in Parliament**

The political establishment, one of the great beneficiaries of the nuclear power industry, has shown little interest in bolstering safety. In fact, critics say, lax oversight serves their interests. Costly renovations get in the way of building new plants, which create construction projects, jobs and generous subsidies to host communities.

The Liberal Democrats, who governed Japan nearly without interruption from 1955 to 2009, have close ties to the management of nuclear-industry-related companies. The Democratic Party, which has governed since, is backed by labor unions, which, in Japan, tend to be close to management.

“Both parties are captive to the power companies, and they follow what the power companies want to do,” said Taro Kono, a Liberal Democratic lawmaker with a reputation as a reformer.

Under Japan's electoral system, in which a significant percentage of legislators is chosen indirectly, parties reward institutional backers with seats in Parliament. In 1998, the Liberal Democrats selected Tokio Kano, a former vice president at Tepco, for one of these seats.

Backed by Keidanren — Japan's biggest business lobby, of which Tepco is one of the biggest members — Mr. Kano served two six-year terms in the upper house of Parliament until 2010. In a move that has raised eyebrows even in a world of cross-fertilizing interests, he has returned to Tepco as an adviser.

While in office, Mr. Kano led a campaign to reshape the country's energy policy by putting nuclear power at its center. He held leadership positions on energy committees that recommended policies long sought by the nuclear industry, like the use of a fuel called mixed oxide, or mox, in fast-breeder reactors. He also opposed the deregulation of the power industry.

In 1999, Mr. Kano even complained in Parliament that nuclear power was portrayed unfairly in government-endorsed school textbooks. "Everything written about [solar energy](#) is positive, but only negative things are written about nuclear power," he said, according to parliamentary records.

Most important, in 2003, on the strength of Mr. Kano's leadership, Japan adopted a national basic energy plan calling for the growth of [nuclear energy](#) as a way to achieve greater energy independence and to reduce Japan's emission of greenhouses gases. The plan and subsequent versions mentioned only in broad terms the importance of safety at the nation's nuclear plants despite the 2002 disclosure of cover-ups at Fukushima Daiichi and a 1999 accident at a plant northeast of Tokyo in which high levels of radiation were spewed into the air.

Mr. Kano's legislative activities drew criticism even from some members of his own party.

"He rewrote everything in favor of the power companies," Mr. Kono said.

In an interview at a Tepco office here, accompanied by a company spokesman, Mr. Kano said he had served in Parliament out of "conviction."

"It's disgusting to be thought of as a politician who was a company errand boy just because I was supported by a power company and the business community," Mr. Kano said.

### **Taking on a Leviathan**

So entrenched is the nuclear power village that it easily survived postwar Japan's biggest political shake-up. When the Democratic Party came to power 20 months ago, it pledged to reform the nuclear industry and strengthen the Nuclear and Industrial Safety Agency.

Hearings on reforming the agency were held starting in 2009 at the Ministry of Economy, Trade and Industry, said Yosuke Kondo, a lawmaker of the governing Democratic Party who was the ministry's deputy minister at the time. But they fizzled out, he said, after a new minister was appointed in September 2010.

The new minister, Akihiro Ohata, was a former engineer at Hitachi's nuclear division and one of the most influential advocates of nuclear power in the Democratic Party. He had successfully lobbied his party to change its official designation of nuclear power from a "transitional" to "main" source of

energy. An aide to Mr. Ohata, who became Minister of Land, Infrastructure, Transport and Tourism in January, said he was unavailable for an interview.

As moves to strengthen oversight were put on the back burner, the new government dusted off the energy plan designed by Mr. Kano, the Tepco adviser and former lawmaker. It added fresh details, including plans to build 14 new reactors by 2030 and raise the share of electricity generated by nuclear power and minor sources of clean energy to 70 percent from 34 percent.

What is more, Japan would make the sale of nuclear reactors and technology the central component of a long-term export strategy to energy-hungry developing nations. A new company, the **International Nuclear Energy Development of Japan**, was created to do just that. Its shareholders were made up of the country's nine main nuclear plant operators, three manufacturers of nuclear reactors and the government itself.

The nuclear power village was **going global** with the new company. The government took a 10 percent stake. Tepco took the biggest, with 20 percent, and one of its top executives was named the company's first president.

---

## **Female worker at nuke plant suffers radiation dose exceeding limit**

TOKYO, April 27, Kyodo

Tokyo Electric Power Co. said Wednesday that one of its female employees at the crisis-hit Fukushima Daiichi nuclear power plant was exposed to radiation exceeding three times the legal limit of 5 millisieverts in a three-month period.

## **Fukushima city removing radioactive topsoil in schools**

KORIYAMA, Japan, April 27, Kyodo

A city in Fukushima Prefecture started Wednesday to remove topsoil from playgrounds in its elementary and nursery schools, following radiation leaks from a crisis-hit nuclear power plant nearby.

Heavy machinery began scooping off surface soil at Kaoru Elementary School and Tsurumidan Nursery School in Koriyama, city officials said, adding that the removed soil will be **discarded in landfills in the inland city**.

The work is part of a project to remove the upper layer of soil at 15 elementary and junior high schools, where radiation levels have been measured at **over 3.8 microsieverts per hour**, as well as 13 nursery schools, where levels of **over 3.0 microsieverts** per hour have been detected, the city officials said.

## [EPCO filling containment vessels; experts raise doubts](#)

"The water level at the No. 1 reactor has been raised to about 6 meters above the bottom of the containment vessel. That level is 3 meters below the bottom of the pressure vessel.

But TEPCO has been unable to verify the water levels at the No. 2 and No. 3 reactors, and suspect that water is leaking from the damaged containment vessels." [Asahi](#)

---

Petition to stop increasing radiation for Fukushima's children

From the petition: "We urgently demand the withdrawal of the Japanese Government's inhumane decision to force 20mSv per year radiation exposure onto children.

"On April 19th, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) notified the Board of Education and related institutions in Fukushima Prefecture the level of 20 millisieverts per year (mSv/y) as a Radiation Safety Standard for schools in Fukushima Prefecture. This is the standard to be used for school grounds and buildings.

"...The Labour Standards Act prohibits those under the age of 18 from working under these conditions. Forcing children to be exposed to such radiation doses is an exceedingly inhumane decision. Therefore, we condemn this in the strongest terms.

"20 mSv/y is comparable to the [legally] recognized dose for inducing leukemia in nuclear power plant workers. It is also comparable to the maximum dose allowed for nuclear power plant workers in Germany." Also see the Japan Federation of Bar Associations [statement](#) opposing this level of radiation exposure. Beyond Nuclear has released a [press statement](#) today. [Sign the petition](#).

## **Female worker at nuke plant suffers radiation dose exceeding limit**

By Miya Tanaka  
TOKYO, April 28, Kyodo

Tokyo Electric Power Co. said Wednesday that one of its female employees was exposed to radiation doses **far above the legal limit** at the crisis-hit Fukushima Daiichi nuclear power plant -- the latest revelation of lax radiation management by the plant operator since the crisis erupted last month.

As a key step to bringing an end to the ongoing crisis, the utility said, meanwhile, it will seek to start in June decontamination of highly radioactive water accumulating in the plant's premises, which has prevented restoration work as a side effect of the emergency water injection into troubled reactors from outside in place of their lost cooling functions.

TEPCO as the firm is known also started to increase the amount of water injected into the damaged No. 1 reactor core in preparation to flood the reactor's primary containment vessel to cool the fuel inside in a stable manner.

## Japan to scrap workers' annual radiation dose limit at normal times

TOKYO, April 28, Kyodo

The health ministry plans to scrap the annual radiation dose limit for nuclear power plant workers at normal times for the meantime **to secure enough workers** for maintenance and checkups of nuclear power plants other than the crisis-hit Fukushima power station, sources close to the matter said Wednesday.

## Increased water injection into No. 1 reactor yields positive signs

TOKYO, April 28, Kyodo

The injection of increased amounts of coolant water into the damaged No. 1 reactor core at the crisis-hit Fukushima Daiichi nuclear plant has yielded positive signs, with both the temperature and pressure inside the reactor vessel falling as expected, the government's nuclear agency said Thursday.

The plant operator Tokyo Electric Power Co. began raising the amount of water Wednesday morning from 6 tons per hour to 10 tons in preparation for flooding the reactor's primary containment vessel to cool the fuel in a stable manner. The utility known as TEPCO will keep injecting the current amount until Thursday evening, it said.

Hidehiko Nishiyama, a spokesman for the Nuclear and Industrial Safety Agency, said TEPCO initially planned to increase the amount of water to 14 tons per hour, but decided to keep pouring 10 tons per hour so as not to cause abnormalities.

<http://www.iaea.org/newscenter/news/tsunamiupdate01.html>

### 1. Current situation (27 avril)

Overall, the situation at the Fukushima Daiichi nuclear power plant remains very serious, but there are signs of recovery in some functions, such as electrical power and instrumentation.

TOKYO (Kyodo) -- The health ministry plans to scrap the annual radiation dose limit for nuclear power plant workers at normal times for the meantime to secure enough workers for maintenance and checkups of nuclear power plants other than the crisis-hit Fukushima power station, sources close to the matter said Wednesday.

Under Japanese law, nuclear workers cannot be exposed to more than 50 millisieverts in one year and more than 100 millisieverts over five years.

The ministry, however, is expected to maintain the 100-millisievert rule, as there is medical evidence that exposure to radiation exceeding 100 millisieverts could increase the risk of developing leukemia and cancer, according to the sources.

The move comes as many nuclear workers are being sent to deal with the emergency situation at the radiation-leaking Fukushima Daiichi nuclear power plant, although there are only 70,000 people nationwide who can engage in work at such plants.

As workers would not be able to work at other plants once they exceed their radiation dose limit by dealing with the Fukushima crisis, the industry ministry has been calling on the Ministry of Health, Labor and Welfare to ease the limit to prevent a possible shortage of such workers.

To cope with the Fukushima crisis, the health ministry raised the legal limit on the amount of radiation to which each worker could be exposed in an emergency situation to 250 millisieverts from 100 millisieverts on March 15. But the limit for nuclear workers at normal times was not changed.



In this photo from a footage of a live camera released by Tokyo Electric Power Co. (TEPCO), black smoke billows from the crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, northeastern Japan, on March 22, 2011. (AP)

In the United States, the limit for civilians is 100 millisieverts in an emergency situation. Civilians should not be exposed to more than 50 millisieverts annually in normal times and more than 100 millisieverts over five years.

Tokyo Electric Power Co., which owns the crippled Fukushima Daiichi power station, said that 30 people who worked at the plant were exposed to 100 millisieverts or more.

(Mainichi Japan) April 28, 2011

## **High levels of radiation in areas near nuclear plant foreseen for a year**

The Japanese government unveiled a map of radioactive contamination on April 26, predicting residents in areas near the troubled nuclear power plant could be exposed to radiation far greater than permissible levels.

According to the contamination map unveiled by the Ministry of Education, Culture, Sports, Science and Technology, a cumulative dose of radiation for the year to March 11, 2012 is expected to reach 235.4 millisieverts in Akogi Kunugidaira in Namie, Fukushima Prefecture, 24 kilometers northwest of the Fukushima No. 1 Nuclear Power Plant.

The cities of Fukushima and Minami-Soma are also predicted to receive more than 10 millisieverts of radiation, 10 times the dose of artificial radiation an ordinary person is allowed to be exposed to a year.

Based on data collected from 2,138 monitoring points, the ministry calculated total cumulative doses of radiation between March 12 and April 21 and added them up to expected cumulative doses of radiation for the period thereafter to March 11, 2012.

Expected radiation exposure was based on the assumption that the nuclear power plant continues to spew the same level of radiation as that detected on April 22. The ministry assumed that people in each monitoring point spend eight hours outdoors and 16 hours inside wooden houses a day. The ministry assumes the level of exposure to radiation in wooden houses is 40 percent lower than outdoors.

Source: [Mainichi Daily News](#)

## **Increased water injection helping to cool No. 1 reactor faster**

TOKYO, April 28, Kyodo

The operator of the crippled Fukushima Daiichi nuclear plant said Thursday that the injection of more water is helping to cool the No. 1 reactor core faster and there appears to be no major leakage so far from the No. 4 unit's spent fuel storage pool.

## **Radiation adviser to Kan to quit over gov't nuke crisis response**

TOKYO, April 29, Kyodo

An adviser to Prime Minister Naoto Kan on the nuclear crisis at the Fukushima Daiichi power plant told the prime minister's office Friday he will resign in protest over what he called the

---

## **Prediction system found useless in nuke emergency, evacuation plans**



In this image made on Friday, April 15, 2011, the Longmen Nuclear Power Plant is seen behind Fulong beach in Gongliao Township, northeastern Taiwan. As China, Taiwan.

TOKYO (Kyodo) -- Japan's multi-billion-yen system for predicting the dispersal of radioactive materials has proven to be of not much help in the ongoing crisis at the Fukushima Daiichi nuclear power plant, drawing sharp criticism of the government of Prime Minister Naoto Kan.

Data from the System for Prediction of Environmental Emergency Dose Information, or SPEEDI, were released only twice in the first six weeks after March 11, when the massive earthquake and tsunami crippled the nuclear plant in northeastern Japan.

In sharp contrast, some overseas research institutes made their own estimates public, although with the proviso that as the amount of radioactive materials spewed from the plant was unknown, the actual diffusive concentrations could be different.

Receiving flak, the Nuclear Safety Commission, which supervises SPEEDI, began releasing hour-by-hour data only in late April. But even so, the Japanese government's ability to adequately use the information remains in question, experts say.



This March 24, 2011 aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE shows damaged Unit 4 of the crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima prefecture, northern Japan. (AP Photo/AIR PHOTO SERVICE )

The system forms part of the disaster-prevention policy established by the commission for nuclear power facilities.

It is designed to speedily calculate the dispersal of radioactive substances emitted in the air and the predicted amount of radiation to help the state and local governments in their disaster-prevention measures.

More than 30 years have passed since the development of SPEEDI started, and its development and maintenance have cost a total of about **12.8 billion yen**. In this fiscal year, about 770 million yen is earmarked for its budget.

Before the commission made available hourly measurements, it released SPEEDI data regarding the Fukushima accident only twice -- on March 23 and April 11. The figures were for the amounts of radioactive materials already released and their dispersal, but did not include a prediction for the future.

**This was because data about the nuclear reactors and radioactive substances needed for making a prediction became unavailable after the plant lost power supply due to the earthquake and tsunami**, the commission said.



This March 24, 2011 aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE shows damaged Unit 3 of the crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan. (AP Photo/AIR PHOTO SERVICE )

Commission Chairman Haruki Madarame said SPEEDI was created on the premise that such information as the emission amounts of radioactive materials would always be available, and admitted the system's inadequacy, saying, "It cannot be used in an (information-lacking) case like this one."

An official at the disaster countermeasures headquarters at the Fukushima prefectural government said, "It is very regrettable. We could have avoided unnecessary turmoil in evacuating residents if the diffusion prediction had been grounded."

Although an exact diffusion prediction could not be made, the system calculated an accurate trend -- to some extent -- for the spread of radioactive materials by carrying out an estimate based on hypothetical conditions, according to the commission.

The commission thought a massive amount of radioactive materials was emitted when the power plant's No. 2 reactor's container vessel was damaged March 15 by a hydrogen explosion. It then estimated the following day the amount of released radioactive materials based on the meteorological data on the day of the explosion. But this information was not made public immediately.

When making public the result of the estimate for the first time on March 23, Madarame said, "I hesitated to make such an announcement because it would cause social turmoil," showing a lack of trust in how people would react to such information.



In this photo released by Tokyo Electric Power Co. (TEPCO) , workers in protective suits conduct cooling operation by spraying water at the damaged No. 4 unit of the Fukushima Dai-ichi nuclear complex in Okumamachi, northeastern Japan, Tuesday, March 22, 2011. (AP Photo/Tokyo Electric Power Co.)

The system's data were used as a basis when the government raised the severity level of the Fukushima nuclear crisis on April 12 from level 5 to the most serious level 7 on the International Nuclear Event Scale. But the safety commission was again hesitant to make the information public.

When North Korea carried out a nuclear test in 2006 and a volcano on Japan's Miyakejima Island erupted in 2000, predictions by SPEEDI about the diffusion of radioactive substances and volcanic gases were unveiled.

The government's initial failure to release the SPEEDI data in the Fukushima accident invites the suspicion that it was trying to conceal information that was negative for the domestic nuclear industry, experts say.

The data obtained by SPEEDI are jointly owned with local governments which shoulder the maintenance costs for the system. This time, the local governments in the disaster-hit areas were unable to get information when they needed it the most.

Hitoshi Yoshioka, a professor at Kyushu University, said, "If there were estimate dispersal figures, they should have been fully explained and positively made public even if they lacked credibility to some degree."



In this photo released by Tokyo Electric Power Co. (TEPCO), gray smoke rises from Unit 3 of the tsunami-stricken Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, Japan, Monday, March 21, 2011. (AP Photo/Tokyo Electric Power Co.)

The reason why the government judged that people could not understand such information and did not make it public immediately was a fear of criticism of nuclear power governance, he said.

"The government is asked to fundamentally review SPEEDI's original function of the dispersal prediction for radioactive materials," he added.

(Mainichi Japan) April 29, 2011

## **Radiation exposure level nears limit for 1 worker at Fukushima plant**

TOKYO, April 30, Kyodo

Tokyo Electric Power Co. said Saturday that the level of radiation exposure for one of its employees came close to the legal yearly limit of 250 millisieverts at the crisis-hit Fukushima Daiichi nuclear power plant.

TEPCO, as the firm is known, said it found that the amount of internal and external radiation exposures of one of its employees working at the plant, crippled by the March 11 killer earthquake and ensuing tsunami, had reached 240.8 millisieverts in total, while another received 226.6 millisieverts.

Under Japanese law, nuclear workers cannot be exposed to more than 250 millisieverts per year in an emergency situation. To cope with the Fukushima crisis, the Ministry of Health, Labor and Welfare raised the legal limit of radiation that each worker could be exposed to in such situation from 100 millisieverts on March 15.

## **Cabinet nuclear advisor resigns in protest over government response to plant crisis**



University of Tokyo Professor Toshiso Kosako is pictured during a press conference held at the Diet building on April 29, 2011, following his resignation as a special nuclear advisor to the Cabinet. (Mainichi)

A nuclear advisor to the Cabinet has resigned in protest against government stopgap measures that deal with the ongoing nuclear crisis in Fukushima Prefecture.

Toshiso Kosako, 61, a University of Tokyo professor specializing in radiation safety, submitted a letter of resignation to the Prime Minister's Office on April 29.

During a press conference held at the Diet building later that day, Kosako, who was named a special advisor to Prime Minister Naoto Kan on March 16, criticized the government's handling of the crisis at the Fukushima No. 1 Nuclear Power Plant as shortsighted.

In particular, Kosako protested against the government's decision to revise the maximum permissible level of radiation exposure among children up to 20 millisieverts per year, saying, "Should I approve that decision, I would no longer be a researcher. I would not want my children to be exposed to that amount of radiation."

Kosako revealed the Cabinet did not accept his advice that outdoor school activities for elementary and junior high school students near the crippled power station be restricted to prevent them from being exposed to over 1 millisievert of radiation per year.

"It is quite rare for nuclear power plant workers dealing with radioactive materials to be exposed to 20 millisieverts of radiation per year. I cannot allow infants and children to be exposed to such high levels of radiation from an academic as well as humanitarian point of view."

He also pointed out that the government was slow in applying the System for Prediction of Environmental Emergency Dose Information (SPEEDI) and disclosing its data, even though nuclear safety guidelines stipulate the system be implemented immediately in an emergency. "The government has ignored the law and taken stopgap measures, failing to bring the crisis under control promptly," he said.

Seiki Soramoto, Democratic Party of Japan (DPJ) member of the House of Representatives, also attended the press conference and said, "I want to drive the situation in the right direction by telling my fellow lawmakers that it's a mistake that the government set the radiation exposure limit for children at 20 millisieverts per year."

Soramoto, one of the DPJ lawmakers close to former party head Ichiro Ozawa, had been working on the issue in collaboration with Kosako.

During a House of Representatives Budget Committee meeting on April 30, Kan, who appointed six nuclear experts and others as special advisors on the Fukushima crisis after the March 11 disasters, responded, "The government has taken into account the opinions of special advisors in making the decision. I don't believe our response was shortsighted."

---

---

## **Radiation level of 1,120 millisieverts per hour detected in damaged reactor building**



Evacuees are screened for radiation contamination at a testing center Tuesday, March 15, 2011, in Koriyama city, Fukushima Prefecture, northern Japan, four days after a massive earthquake and tsunami struck the country's north east coast. (AP Photo/Wally Santana)

A **high radiation level of 1,120 millisieverts per hour** was detected within the damaged No. 1 reactor building at the Fukushima No. 1 Nuclear Power Plant when robots photographed the area on April 26, it has been learned.

The level is the highest detected in the reactor building to date. The plant's operator, Tokyo Electric Power Co. (TEPCO), plans to fill the nuclear reactor containment vessel with water to contain radiation emissions, and is trying to cool down the reactor, but the high levels of radiation in the building are hampering work and are likely to cause difficulties for the company in achieving its goal of bringing the crisis at the plant under control within "six to nine months."

Two robots were used to photograph the area near the pump room on the first floor of the No. 1 reactor building and measure radiation. The pump room contains a heat exchanger that is used to cool water containing residual heat that is emitted when the nuclear reactors are stopped, and a pump to circulate cooling water.

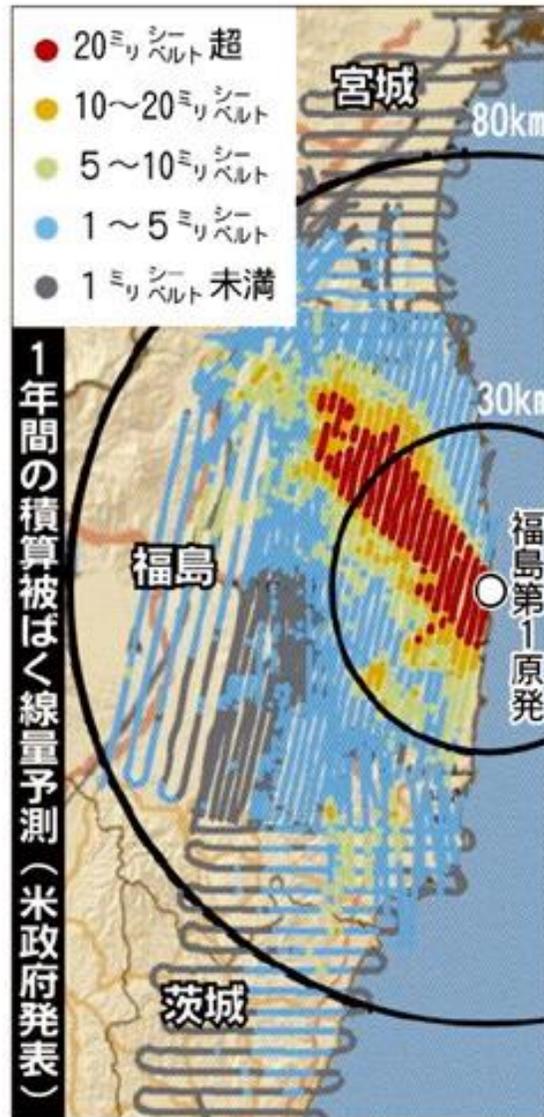
"It's possible that reactor water containing radioactive materials seeped into pipes due to valve problems," a TEPCO representative commented.

Initially, TEPCO planned to use the reactor's residual heat removal system to restore circulatory cooling functions, but as high levels of radiation were detected near the entrance of the pump room, the company is considering other options.

"Operations going through the pump room would be difficult. We want to establish an alternative route," TEPCO manager Junichi Matsumoto said.

On April 27, TEPCO began inspections to determine whether it will be possible to fill the containment vessel with water, increasing the amount of water pumped into the reactor in stages.

Mainichi Daily News 28.04.2011



The NNSA hazard map released by the U.S. federal government. The Fukushima No. 1 Nuclear Power Plant is marked by a white dot at right.

"At present, no water is leaking onto the floor, so we will continue to pump water into the reactor," Matsumoto said.

Under the Nuclear Reactor Regulation Law and the Industrial Safety and Health Act, the maximum permitted exposure to radiation is 100 millisieverts over a period of five years or 50 millisieverts per year. But a provision in the general rules stipulates that 100 millisieverts can be added to the maximum exposure level in times of emergencies.

The government has taken the special step of raising the limit to 250 millisieverts for the crisis at the Fukushima nuclear power station.

**MAI 2011**

## **Another female worker at nuke plant exposed to radiation above limit**

TOKYO, May 1, Kyodo

Tokyo Electric Power Co. said Sunday that a second female radiation worker at the crisis-hit Fukushima Daiichi nuclear power plant has been exposed to radiation exceeding the legal limit, after news of the first was reported Thursday.

The worker has no health problems so far and will be seen by a doctor on Monday, it added.

The woman in her 40s has been exposed to a total of 7.49 millisieverts of radiation, against the legal limit for female workers of 5 millisieverts for a three-month period, when she was working at the six-reactor complex following the March 11 earthquake and ensuing tsunami which hit the plant, the utility operating the plant said.

## **Radiation exposure levels near limit for 2 Fukushima nuke workers**

Mainichi News

A man is scanned for levels of radiation in Koriyama, Fukushima Prefecture, Japan, Sunday, March 13, 2011.  
(AP Photo/Mark Baker)

TOKYO (Kyodo) -- As the nuclear crisis continues at the Fukushima Daiichi power plant, two workers, who were previously hospitalized for possible radiation burns, turned out Saturday to have been exposed to radiation levels close to the limit of 250 millisieverts while seven women in affected areas were found with slightly contaminated breast milk.

Plant operator Tokyo Electric Power Co. said the same day that it will build a makeshift breakwater possibly by mid-June to prevent any tsunami from a huge aftershock from further damaging the plant, while plugging up underground trenches on the premises with concrete by late May to prevent contaminated water from leaking again into the sea.

The two workers have been exposed to 240.8 millisieverts and 226.6 millisieverts of radiation, respectively, when internal exposure is taken into account, among 21 workers exposed to over 100 millisieverts of external radiation since the crisis erupted following the magnitude 9 quake and tsunami, it said.

Under Japanese law, the Ministry of Health, Labor and Welfare has limited by an ordinance radiation exposure of each nuclear plant worker at 100 millisieverts a year in an emergency situation, but raised the limit to 250 millisieverts to cope with the Fukushima crisis on March 15.

The two were hospitalized for possible radiation burns to their feet after standing in water that contained radioactive materials 10,000 times the normal level while laying a cable underground at the troubled plant on March 24, the utility known as TEPCO said.

The latest revelation came after the firm checked internal exposure of the 21 workers, of whom eight others were exposed to a total of 150-200 millisieverts and the remaining 11 were exposed to 100-150 millisieverts.



In this photo released by Nuclear and Industrial Safety Agency, Tokyo Electric Power Co. workers collect data in the control room for Unit 1 and Unit 2 at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, Fukushima Prefecture, on March 23, 2011.(AP)

The health ministry said the same day its survey of breast milk on 23 women in Tokyo and four prefectures, including Fukushima and its neighboring Ibaraki, found 2.2 to 8.0 becquerels of radioactive substances per kilogram in seven of them but that the amounts pose no health risks to their babies.

Of the seven, 3.5 becquerels of iodine and 2.4 becquerels of cesium were detected in milk taken from one who lived within 30 kilometers from the nuclear plant until March 14 after the March 11 quake and tsunami triggered the crisis there. The others live in Ibaraki and Chiba prefectures.

Samples of milk were taken from the women in their 20s to 30s at obstetric clinics over the five days through Thursday in response to a civic group's announcement on April 20 that 36.3 becquerels of iodine was found in breast milk of a woman in Chiba Prefecture, compared with the interim limits set under the Food Sanitation Law of 100 becquerels of iodine and 200 becquerels of cesium for milk and dairy products.

Located on the Pacific coast some 220 km from Tokyo, the Fukushima Daiichi Nuclear Power Station has spewed radioactive materials, causing concerns about human health in the prefecture and other northeastern and eastern Japan prefectures.

The amount of iodine contaminating the sea is expected to fall to the undetectable level of below 10 becquerels per liter by early May and that of cesium by early June, the Ministry of Education, Culture, Sports, Science and Technology said based on supercomputer simulations.

But the forecast was of no help for affected fishers in Ibaraki, who said the same day they would give up the season's catch of young sand lance, having voluntarily refrained from catching the fry by request from the prefectural government when they were about to start their fishing.

TEPCO Vice President Norio Tsuzumi and other officials again apologized Saturday as they visited the affected municipalities of Iitate and Kawamata in Fukushima where all and some residents, respectively, are required to evacuate by late May.



In this photo released by Nuclear and Industrial Safety Agency, Tokyo Electric Power Co. workers collect data in the control room for Unit 1 and Unit 2 at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, Fukushima Prefecture, on March 23, 2011. (AP)

In a related development, the government's advisory Nuclear Safety Commission was found the same day to have endorsed a controversial antiradiation measure proposed by the education ministry in just two hours without proper procedures on April 19, government sources said.

Under the measure, schoolchildren and kindergarteners would be limited from outdoor activities when the radiation level reaches 20 millisieverts per year -- 20 times the limit for people to be safely exposed.

The commission's endorsement of the measure was one reason Toshiso Kosako, professor on antiradiation safety measures at the University of Tokyo's graduate school, said he would resign Friday as an adviser to Prime Minister Naoto Kan on the ongoing nuclear crisis.

(Mainichi Japan) May 1, 2011

## **U.S. medical group blasts Tokyo radiation policy on Fukushima children**

TOKYO, May 2, Kyodo

Physicians for Social Responsibility, a U.S. nonprofit organization of medical experts, has condemned as "unconscionable" the Japanese government's safety standards on radiation levels at elementary and middle schools in nuclear disaster-stricken Fukushima Prefecture.

The PSR statement directly challenges the Japanese government stance that it is safe for schoolchildren to use playgrounds on school premises in the prefecture as long as the dose they are exposed to does not exceed 20 millisieverts over a year.

The PSR view is also in line with that voiced by Toshiso Kosako, who said Friday he would step down as an adviser to Prime Minister Naoto Kan on the Fukushima nuclear crisis in protest. The University of Tokyo professor urged the government to toughen guidelines on upper limits on radiation levels the education ministry recently announced for primary school playgrounds in Fukushima.

---

## Work starts to install air filter to reduce radiation at nuke plant

TOKYO (Kyodo) -- The operator of the crisis-hit Fukushima Daiichi power plant on Monday started work to install an air filter in the building housing the No. 1 reactor to reduce the high radiation level and enable workers to enter and create a system to cool the troubled reactor.

Meanwhile, it was revealed the same day that Japan's system to predict the volume of radioactive materials that would be released into the environment in the event of a nuclear accident failed to work when the March 11 quake and ensuing tsunami hit Fukushima because the plant lost power, according to sources close to the matter.

It has already been revealed that another system for predicting the dispersal of radioactive materials has been of little use in the ongoing crisis. A total of 28 billion yen has been spent on developing and maintain the two systems.



In this photo released by Nuclear and Industrial Safety Agency, Tokyo Electric Power Co. workers collect data in the control room for Unit 1 and Unit 2 at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, Fukushima Prefecture, on March 23, 2011. (AP)

The disaster at the Fukushima nuclear power plant is the country's worst nuclear accident, with plant operator Tokyo Electric Power Co. saying that it will take at least six months before the utility can stabilize the plant's troubled reactors.

The utility known as TEPCO is currently trying to restore stable cooling functions to the reactors, and reducing the radiation level inside the No. 1 reactor building is seen as a key step toward that end.

"We have to improve the condition in the reactor building in terms of radiation, so that we can install equipment...to create a cooling system," Hidehiko Nishiyama, a spokesman for the government's Nuclear and Industrial Safety Agency, told a press conference in the afternoon.

TEPCO is hoping to start ventilating the air in the building as early as Thursday, according to TEPCO officials.

Under the utility's plan, the No. 1 reactor's primary containment vessel is expected to be filled with water to a level above the reactor fuel placed inside the pressure vessel.

Reactor fuel is placed inside a pressure vessel, which is contained in a round-bottomed, flask-shaped primary containment vessel. Each reactor building houses these vessels.

(Mainichi Japan) May 2, 2011

## **TEPCO faces uphill battle in filling nuclear reactor containment vessel with water**

Tokyo Electric Power Co. (TEPCO) is struggling to carry out its plans to fill the containment vessel of the Fukushima No. 1 Nuclear Power Plant's No. 1 reactor with water to control radiation emissions, it has emerged.

**Workers have already pumped in more than enough water to fill the containment vessel, but they have not actually seen a rise in the water level. Furthermore, when workers increased the amount of water pumped into the containment vessel, pressure inside the vessel fell, threatening a hydrogen explosion.** As a result, workers had to once again reduce the amount of water. When pressure inside the containment vessel falls to a level near regular atmospheric pressure, oxygen can enter the container from outside and react with hydrogen inside to produce an explosion.



In this image from video footage taken Tuesday, April 26, 2011 by a PackBot and released Wednesday, April 27, 2011 by Tokyo Electric Power Co., another PacBot works inside the nuclear reactor building of Unit 1 at the

Fukushima Dai-ich nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

In a news conference on May 1, TEPCO said the amount of water being pumped into the reactor's pressure vessel had been brought back down from 10 to 6 tons per hour. As a result pressure inside the containment vessel rose to 1.4 times normal atmospheric pressure -- **about the same level as before the amount of water was increased.**

Officials said the water level inside the reactor's pressure vessel remained almost unchanged -- at about 1.6 meters above the top of the fuel rods -- when the amount of water was temporarily increased. With water pumped into the pressure vessel leaking out, workers estimate that the water level inside the containment vessel stands at about 6 meters, but they do not know the exact level.

**More than 7,400 tons of water -- roughly the amount needed to fill the containment vessel -- has already been pumped into the reactor. Normally, this would have significantly increased the water level inside the pressure vessel.**

**"We don't know why the water level isn't increasing,"** a TEPCO representative said. "We've judged that 6 tons of water per hour is enough to cool the reactor down, so we want to continue to pump in water this way."

On May 1 TEPCO announced that it had pumped about 120 tons of water from the turbine building of the No. 6 reactor into a makeshift tank. The level of accumulated water, totaling roughly 4,900 tons, stands at about 2 meters. Its level of radioactivity is thought to be relatively low. Makeshift tanks will be used to store the remaining water.

 [Click here for the original Japanese story](#)

(Mainichi Japan) May 2, 2011

---

## **Une nouvelle digue protégera Fukushima**

LEMONDE.FR avec AFP | 02.05.11 | 08h25

### **Vue aérienne de la centrale de Fukushima, le 20 mars 2011.AFP/AIR PHOTO SERVICE**

Une nouvelle digue va être construite devant la centrale nucléaire endommagée de Fukushima Dai-Ichi, sur la côte nord-est du Japon, afin de la protéger contre d'éventuels tsunamis de grande ampleur, a annoncé l'opérateur Tokyo Electric Power.

Construite sur un terrain situé dix mètres au-dessus du niveau de la mer, cette nouvelle digue de deux mètres de haut et de 500 mètres de long devrait être achevée d'ici à mi-juin, selon l'opérateur, cité par des médias locaux.

Selon le journal *Daily Yomiuri*, le groupe japonais a pris cette décision sur la base des travaux d'une équipe de chercheurs qui ont effectué des simulations sur les possibles répliques du séisme et envisagent des vagues pouvant aller jusqu'à 7 mètres.

Le tremblement de terre du 11 mars, de magnitude 9, a provoqué le déferlement d'une vague d'environ 14 mètres sur la centrale. Ce tsunami a entraîné une panne des circuits de refroidissement de la centrale nucléaire Fukushima 1, entraînant des explosions d'hydrogène et d'importantes fuites radioactives.

Tepeco a également annoncé son intention de faire passer de 1 000 à 3 000 le nombre de personnes – salariés directs ou employés de sous-traitants – pouvant travailler sur le site endommagé afin de limiter leurs temps d'exposition aux radiations. La limite légale de radiations autorisées pour les hommes travaillant dans le nucléaire en temps de crise a été relevée à 250 millisieverts par an depuis l'accident de Fukushima, contre 100 auparavant.

Tepeco estime qu'il faudra trois mois pour que le niveau de radiations commence à baisser et encore trois à six mois supplémentaires pour réduire les fuites radioactives à un niveau *"très bas"*.

## Une fuite radioactive décelée à la centrale de Tsuruga au Japon

LEMONDE.FR avec AFP | 02.05.11 | 13h40

### Vue aérienne de la centrale de Tsuruga, en mars 2010.REUTERS/KYODO

Une augmentation des niveaux de radioactivité a été constatée dans l'eau de refroidissement d'un réacteur à la centrale de Tsuruga, à quelque 350 kilomètres à l'ouest de Tokyo, indique Japan Atomic Power, l'exploitant de l'installation.

Il n'y a aucun impact radioactif sur l'environnement extérieur, a assuré dans un communiqué la société. Les opérateurs de sites nucléaires japonais redoublent de vigilance depuis l'accident majeur survenu à la centrale de Fukushima, à la suite du tremblement de terre et du tsunami du 11 mars.

Au cours d'un contrôle régulier effectué lundi à Tsuruga, les techniciens ont relevé une augmentation de la densité d'éléments radioactifs (xénon 133 et iode 133) dans l'eau de refroidissement du circuit primaire de l'un des deux réacteurs du site, selon le communiqué. *"Nous pensons qu'il pourrait provenir de l'assemblage de combustible et avons renforcé la surveillance de la densité de substances radiatives dans le liquide de refroidissement primaire"*, est-il précisé. La société envisage d'arrêter le réacteur pour des examens plus approfondis.

## Radiation leaks from fuel rods suspected at Tsuruga plant

FUKUI, Japan, May 2, Kyodo

Leaks of radioactive substances from fuel rods are suspected to have occurred at a nuclear power plant in Tsuruga, the Fukui prefectural government said Monday, citing a rise in the level of radioactive substances in coolant water.

The operator, Japan Atomic Power Co., will manually shut down the No. 2 reactor of the plant on the Sea of Japan coast and examine the primary cooling system for it. The local government denied that the levels of radioactive substances could threaten the nearby environment.

According to Japan Atomic, 4.2 becquerels of iodine-133 and 3,900 becquerels of xenon gas were detected per cubic centimeter Monday, up from 2.1 and 5.2 becquerels, respectively, during previous measurements conducted last Tuesday.

## **Radiation leaks from fuel rods suspected at Tsuruga plant**

Leaks of radioactive substances from fuel rods are suspected to have occurred at a nuclear power plant in Tsuruga, the Fukui prefectural government said Monday, citing a rise in the level of radioactive substances in coolant water.

The operator, Japan Atomic Power Co., will manually shut down the No. 2 reactor of the plant on the Sea of Japan coast and examine the primary cooling system for it. The local government denied that the levels of radioactive substances could threaten the nearby environment.

According to Japan Atomic, 4.2 becquerels of iodine-133 and 3,900 becquerels of xenon gas were detected per cubic centimeter Monday, up from 2.1 and 5.2 becquerels, respectively, during previous measurements conducted last Tuesday.

It is possible that a pinhole has been created in a zirconium alloy encasing fuel pellets, according to sources at Japan Atomic.

The company said the planned shutdown is a precaution following the crisis at the Fukushima Daiichi power station caused by the March 11 earthquake and tsunami. Japan Atomic's regulations require a reactor to be halted when the amount of leaked iodine reaches 40,000 becquerels.

The company said it will increase the frequency of measurements to once a day from once a week before deciding when to shut down the reactor.

(Mainichi Japan) May 3, 2011

## **URGENT: Seabed radiation 100-1,000 times normal level off Fukushima plant: TEPCO**

TOKYO, May 3, Kyodo

Radiation readings have risen to 100-1,000 times the normal level on the Pacific seabed near the crippled Fukushima Daiichi nuclear power plant, the operator said Tuesday.

The high levels of radioactive materials were detected from samples taken Friday from the seabed at points 20-30 meters deep, according to Tokyo Electric Power Co.

## **TEPCO neglected radiation checks in building where two women absorbed high doses**

Tokyo Electric Power Co. (TEPCO) failed to check the levels of radiation inside a key operation center at the crippled Fukushima nuclear power plant before two female workers were exposed to high levels of radiation there.

The two workers have recently been exposed to radiation higher than the legal limit for female workers -- lower than that for men -- of 5 millisieverts over a three-month period. For about two weeks after the March 11 earthquake, the utility did not check the radiation levels inside a special quake-resistant building where the two workers were exposed. About 200 workers use the building on the premises of the Fukushima No. 1 Nuclear Power Plant each day as a base to deal with the ongoing crisis.

The building was opened for use in July 2010 as an emergency response base. Located about 200 meters northwest of the No. 1 nuclear reactor, it was built to withstand earthquakes measuring the strongest quakes on the Japanese seven-point scale. However, its structure allows small amounts of radiation to leak through vents. When designing the power plant, the utility had not envisaged the hydrogen explosion that actually damaged the doors of the building and permitted radioactive substances to flow in inside.

TEPCO said the delay in preparing a "buffer area" where workers were supposed to take off their protective gear was a factor behind its failure to prevent radioactive substances from coming into the building. One of the women in her 50s suffered internal radiation exposure of 13.6 millisieverts (and external exposure of 3.95 millisieverts), while another woman in her 40s had internal exposure of 6.71 millisieverts (and external exposure of 0.78 millisieverts) -- numbers which suggest most of their exposure came from what they inhaled in the building.

TEPCO said it had been aware that the levels of radiation inside the building were high. But it then said, "We initially thought that way because the levels of radiation outside the building were high." TEPCO started checking the levels of radiation in the building on March 24 -- a day after it stopped female workers from working there.

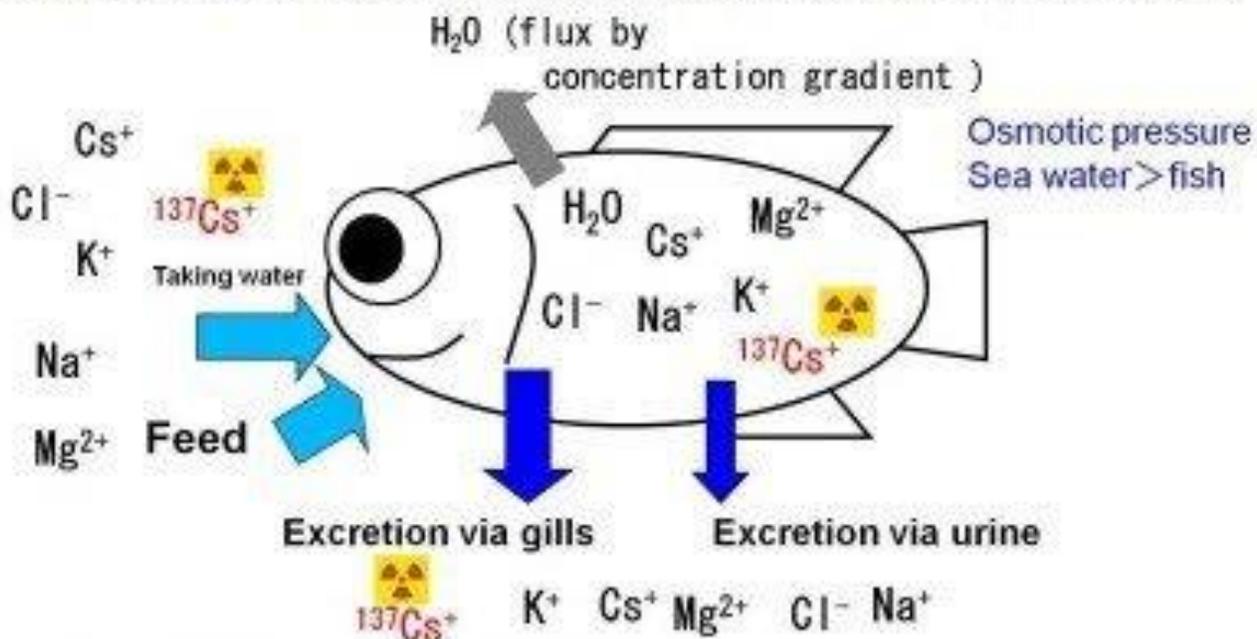
Since then, TEPCO has taken steps such as setting up small rooms equipped with air cleaners at entrances and putting lead sheets over the windows to shut out radiation. TEPCO has also been checking male workers on their internal radiation exposure. Male workers are allowed to be exposed to up to 250 millisieverts of radiation per year.

"We should've had workers wear masks earlier. I believe the fact that radioactive substances entered the building after the hydrogen explosion will be an important lesson for us. We want to assess the way



qui explique la forte contamination de certaines espèces marines et l'interdiction de pêche dans un rayon de 30 km autour de la centrale. Le lançon qui concentre l'iode et le césium radioactifs (plus que les autres espèces pour des raisons non expliquées) est interdit de pêche dans tout le département d'Ibaraki au sud de Fukushima."

## Ce schéma du ministère de la pêche japonais explique que le poisson n'accumule pas les radionucléides, mais qu'il les excrète



- \* Radionucléotides excrète, not accumulate.
- \* The concentration in fish is depend on the concentration of environmental water .

(Ref: Fundamental physiology of fish Edit. K. Aida)

original japonais : [http://www.jfa.maff.go.jp/j/kakou/Q\\_A/pdf/110331\\_2suisan.pdf](http://www.jfa.maff.go.jp/j/kakou/Q_A/pdf/110331_2suisan.pdf)

Alors que les scientifiques du monde entier se posent des questions sur les incidences des déversements d'eaux radioactives de la centrale de Fukushima Daiichi à l'encontre des écosystèmes marins et notamment sur « l'empoisonnement » des produits de la mer, et qu'ils constatent un manque criant d'études sur le sujet, l'administration japonaise évacue le problème en expliquant que les poissons n'accumulent pas les éléments radioactifs comme le césium !"

<http://aquaculture-aquablog.blogspot.com/2011/03/japon-nucleaire-peche-aquaculture.html>

## COMMUNIQUE DE PRESSE DU 13 AVRIL 2011

## **POUR LE GOUVERNEMENT, L'EXPOSITION AUX RAYONNEMENTS IONISANTS**

**N'EST PLUS CANCEROGENE !**

**FARCE DE TRES MAUVAIS GOUT**

**SURREALISTE** : En plein débat sur les risques liés au Nucléaire après la catastrophe de FUKUSHIMA, le gouvernement vient de retirer du décret « Pénibilité » l'exposition aux rayonnements ionisants de la liste des risques, ouvrant droit à une possibilité de départ en retraite anticipée pour les travailleurs exposés.

Pourtant, lors de la consultation pour avis de la Commission Accident du Travail – Maladies Professionnelles de la Sécurité sociale le 23 février dernier, cette exposition figurait bien dans la liste des facteurs de pénibilité susceptibles d'ouvrir droit à un départ anticipé en retraite pour les travailleurs concernés.

Ainsi, en conséquence, les travailleurs du Nucléaire sont mis à l'écart d'une disposition valable pour toutes les expositions professionnelles à des cancérogènes alors que leur risque de développer un cancer est supérieur au risque encouru par ceux qui sont exposés à d'autres cancérogènes dans le cadre de leur travail.

**EN EFFET** : Toutes les données épidémiologiques montrent que l'exposition aux rayonnements ionisants, respectant les limites des normes professionnelles, présente des risques de cancer et de leucémies supérieurs à ceux que représente l'exposition aux autres substances cancérogènes, prises elles aussi dans les limites des normes d'expositions professionnelles.

Par exemple, un travailleur soumis annuellement à la « dose maximale admissible » (20mSv/an) présentera à l'issue de sa carrière un risque de cancer dix fois supérieur à celui d'un travailleur exposé à l'amiante dans les mêmes limites réglementaires.

Ecarter les travailleurs du Nucléaire des dispositions en faveur de la pénibilité alors que les risques qu'ils encourent en matière de cancers sont encore plus grands que dans les autres industries, est un non sens social, une injustice flagrante.

Il ne peut être que la conséquence d'un formidable lobbying exercé par les industriels du Nucléaire au moment même où le monde entier s'interroge sur la santé de ces travailleurs qui interviennent actuellement sur le Site de FUKUSHIMA.

320.000 salariés en France sont exposés aux rayonnements ionisants dans le cadre de leur activité professionnelle. Les salariés du Nucléaire représentent 47% de la population ayant pris une dose supérieure à 1 mSV alors qu'ils ne représentent « que » 20% des salariés exposés. Parmi eux, ce sont en particulier les sous-traitants qui enregistrent 80% de la totalité des doses prises et qui sont soumis aux plus fortes expositions.

**LA CGT EXIGE DU GOUVERNEMENT QU'IL REINTEGRE DANS CE DECRET L'EXPOSITION AUX RAYONNEMENTS IONISANTS TEL QUE CELA ETAIT PREVU DANS LE PROJET DE DECRET SOUMIS AUX PARTENAIRES SOCIAUX.**

**EXPLICATIONS :**

*Les dernières données épidémiologiques fournies par l'INSERM (janvier 2010) sur les sous-traitants indiquent que l'excès de risque relatif<sup>1</sup> (ERR) est de 1,54 pour les salariés ayant reçu une dose de 100 mSV alors qu'il est de 1,35 dans les industries chimiques ou 1,25 dans le BTP pour toute la carrière professionnelle<sup>2</sup>.*

*Or, à la fin de leur carrière professionnelle, les sous-traitants du Nucléaire peuvent facilement atteindre les 400 ou 500 mSV !*

*Ils peuvent même aller jusqu'à 800 mSV (20 mSV/an pendant 40 ans) puisque c'est là le « risque acceptable ». Selon les données épidémiologiques du CIRC<sup>3</sup> (sur 407.000 travailleurs du Nucléaire dans 15 pays), le risque à cette dose cumulée carrière serait alors de 12% de surmortalité par rapport à une population non exposée. C'est 2 fois supérieur au risque que la CIPR<sup>4</sup> avait calculé à partir des survivants d'Hiroshima.*

<sup>1</sup> Facteur par lequel le risque de maladie est multiplié en fonction d'une exposition spécifique. C'est le risque supplémentaire dû à une exposition par rapport au risque d'une population non exposée.

<sup>2</sup> Ellen IMBERNON, cancers professionnels : vers une meilleure connaissance, rapport INVS/2009

<sup>3</sup> Cardis, E., et al., 2005

<sup>4</sup> Commission internationale de protection contre les rayonnements, préconisations CIPR 60 adoptée par l'AIEA en 1990.

*Les trois catégories les plus exposés sont : le médical 62%, l'industrie (non nucléaire) 10,5% et le Nucléaire 20% (industriel et armement). Le reste est le secteur de la recherche et les transports aériens*

*Les activités médicales représentent 19,6% de la dosimétrie collective, l'industrie non nucléaire 18,2%, le **Nucléaire représente 26,1%**.*

---

*Mais si l'on ne regarde que ceux qui ont pris une dose supérieure à 1 mSV, alors **les salariés du Nucléaire représentent 47% de la population ayant pris une dose supérieure à 1 mSV (alors qu'ils ne représentent « que » 20% des salariés exposés)***

*Et dans le Nucléaire: **6,3% des sous-traitants ont pris une dose supérieure à 6 mSV ; ils sont 0,4% chez les agents EDF et 0,7% dans le secteur médical.***

**Interlocuteurs :**

Michel LALLIER : 06 85 56 18 81

Yves ADELIN : 06 07 03 72 27

**Contacts Presse :**

Marie-Claire CAILLETAUD : 06 17 48 44 79

Laurent LANGLARD : 06 70 30 82 96

---

Tsunamis sur les côtes de France ,see :

<http://www.lefigaro.fr/sciences/2011/04/06/01008-20110406ARTFIG00691-depuis-1700-34-tsunamis-sur-les-cotes-francaises.php>

## **TEPCO compensation means higher electric bills**

2011/05/04 <http://www.asahi.com/english/TKY201105030093.html>

Tokyo Electric Power Co. employees bow in apology on May 2 to Fukushima Prefecture residents who were relocated to Iida, Nagano Prefecture, following the Fukushima No. 1 nuclear power plant accident. (Tadayuki Ito)

Consumers can expect to see higher electric bills as Tokyo Electric Power Co. passes on its compensation obligations due to the Fukushima No. 1 nuclear power plant accident.

Government sources said May 2 that an estimate of the total amount of compensation required reached 4 trillion yen (**\$48.7 billion**) and that **TEPCO would be expected to cover about half of that.**

TEPCO and the eight other electric power companies will pay the compensation over a 10-year period, and each company is expected to raise electricity rates. For TEPCO, that would likely mean a close to **20-percent increase in rates.**

---

Because the accident at the Fukushima plant is far from resolved and the exact amount needed for compensation and to decommission the crippled nuclear reactors have not been set, the estimates are preliminary figures that would serve as the outer limits and still allow TEPCO to continue as an independent company.

While consumers and taxpayers will be forced to share the TEPCO burden, the major financial institutions that have made emergency loans to the electric power company would not be expected to pay more. That will likely lead to questions about the fairness of the compensation plan.

Cabinet ministers handling the issue are continuing with discussions, but under the estimates that have been calculated, TEPCO would handle the compensation.

Whatever funds it cannot procure will have to be provided by a new organization to be established by the electric power companies. The central government will also contribute funds to that new organization. The electric power companies will be asked to repay the public funds by returning 400 billion yen a year over a 10-year period.

Of that 400 billion yen, TEPCO would be required to make a special contribution of 100 billion yen a year. The remaining 300 billion yen would be shouldered by the nine electric power companies, including TEPCO, that operate nuclear power plants.

Each company's share would be determined by its electric supply. Because TEPCO provides about one-third of all electricity in Japan, its share would be about 100 billion yen.

According to sources, TEPCO will likely have to raise electricity rates by about 16 percent to secure the funds to place in the compensation pool.

The eight other electric power companies would together have to contribute about 200 billion yen. That would mean about a 2-percent increase in electricity rates for those companies.

TEPCO would end up contributing about 2 trillion yen of the overall expected compensation amount, with the eight other electric power companies contributing the remaining 2 trillion yen.

The new organization would receive the equivalent of 1.6 trillion yen in preferred shares in TEPCO as a means of preventing a loss of trust in TEPCO and a downgrading of its debt ratings.

The government estimate also foresees a total cost of 1.5 trillion yen to decommission the six reactors at the Fukushima No. 1 plant as well as an additional 1 trillion yen a year to pay for fuel to be used at thermal power plants.

TEPCO will also be expected to implement downsizing measures totaling 150 billion yen by the next fiscal year as well as selling off a total of 300 billion yen in real estate and stock holdings.

---

The government expects an annual payment of 1 trillion yen in compensation, with payments to end after four years.

While Chief Cabinet Secretary Yukio Edano rejected the notion of setting an upper limit to the compensation amount to be paid by TEPCO, an estimate for compensation amounts was made to allow TEPCO to compile its financial statements for the fiscal year that ended in March.

Government sources have not given any indication of what would happen if total compensation exceeded 4 trillion yen.

TEPCO is expected to post a net loss of about 800 billion yen for the fiscal year that ended in March. However, the company is seeking to climb out of the red in four years. TEPCO officials want to resume issuing corporate bonds after fiscal 2014 as well as seek to resume dividend payments to shareholders by fiscal 2018.

(This article was written by Takeshi Kamiya and Kazuo Nakano.)

---

## **Workers to enter No. 1 reactor building for 1st time since accident**

TOKYO, May 5, Kyodo

Workers will enter the No. 1 nuclear reactor building at the Fukushima Daiichi power plant Thursday for the first time since the complex was damaged by the March 11 mega earthquake and subsequent tsunami, as part of efforts to install a cooling system at the No. 1 reactor, Tokyo Electric Power Co. officials said.

Tokyo Electric, or TEPCO, seeks to remove air contaminated with radioactive substances from inside the reactor building by connecting it to a ventilating device installed at the adjacent turbine building.

Twelve workers with protective suits, masks and air packs will operate for about 40 minutes within the reactor building to connect it to the ventilator with eight pipes, according to the officials.

## **Workers enter No. 1 reactor building for 1st time since explosion**



---

In this photo released by Nuclear and Industrial Safety Agency, Tokyo Electric Power Co. workers collect data in the control room for Unit 1 and Unit 2 at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, Fukushima Prefecture, on March 23, 2011. (AP)

TOKYO (Kyodo) -- Workers entered the No. 1 nuclear reactor building at the Fukushima Daiichi power plant Thursday for the first time since a hydrogen explosion occurred outside the reactor container on March 12, a day after the complex was damaged by a massive earthquake and subsequent tsunami, Tokyo Electric Power Co. officials said.

The workers installed eight pipes of 30 centimeters in diameter connected to a ventilating device at the adjacent turbine building as part of efforts to reduce the high level of radioactive contamination inside the reactor building by circulating air through a filter on the device, the officials said.

The move is aimed at preventing workers from suffering internal radiation exposure when they work on setting up a new cooling system at the No. 1 reactor, according to Tokyo Electric, or TEPCO, which operates the plant in Fukushima Prefecture.

The ventilation, which will be continued for about three days, could pave the way for more workers to enter the reactor building and install heat-exchanger equipment and other devices in an effective manner, the officials said.

They added that the operator is planning to start setting up the cooling system as early as Sunday and begin circulating water in the reactor container next month.

On Thursday, nine workers with protective suits, masks and air packs broke up into several teams to install the pipes, while four others checked radiation levels inside the No. 1 reactor building to make sure the workers were not heavily exposed to radioactive substances, according to the officials.



In this March 23, 2011 file photo released by Nuclear and Industrial Safety Agency, Tokyo Electric Power Co. workers collect data in the control room for Unit 1 and Unit 2 at the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, Japan. (AP Photo/Nuclear and Industrial Safety Agency)

---

The radiation level was 10 to 93 millisieverts per hour inside the reactor building, and the workers were exposed to between 0.24 and 2.8 millisieverts, which was within the expected range, they said.

The task is expected to help reduce the concentration of radioactive substances inside the building to one-twentieth the current levels as the air will go through the pipes and through the filter, which will catch the substances, before going back to the reactor building.

(Mainichi Japan) May 5, 2011

## **Workers enter No. 1 reactor building for 1st time since accident**



In this photo released by Nuclear and Industrial Safety Agency, Tokyo Electric Power Co. workers collect data in the control room for Unit 1 and Unit 2 at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, Fukushima Prefecture, on March 23, 2011. (AP)

TOKYO (Kyodo) -- Workers entered the No. 1 nuclear reactor building at the Fukushima Daiichi power plant Thursday for the first time since the complex was damaged by the March 11 mega earthquake and subsequent tsunami, as part of efforts to install a cooling system at the No. 1 reactor, Tokyo Electric Power Co. officials said.

Tokyo Electric, or TEPCO, seeks to remove air contaminated with radioactive substances from inside the reactor building by connecting it to a ventilating device installed at the adjacent turbine building.

Twelve workers with protective suits, masks and air packs will operate for about 40 minutes within the reactor building to connect it to the ventilator with eight pipes, according to the officials.

The operator has only been putting water into the reactor as its cooling system broken down in the disaster. With the new system, the operator can circulate coolant water between the containment of the reactor and outer equipment.



In this April 21, 2011 image from a video footage taken by T-Hawk drone aircraft and released, Wednesday, April 27, 2011 by Tokyo Electric Power Co. (TEPCO), the aerial image shows south side of the damaged reactor



In this March 23, 2011 file photo released by Nuclear and Industrial Safety Agency, Tokyo Electric Power Co. workers collect data in the control room for Unit 1 and Unit 2 at the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, Japan. (AP Photo/Nuclear and Industrial Safety Agency)

High radiation levels inside the building have so far prevented workers from entering it. Radiation up to 49 millisieverts per hour was detected inside the reactor building on April 17 during a survey using a robot.

(Mainichi Japan) May 5, 2011

building of Unit 1 at the Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

The utility also said it wants to install the new cooling system at the No. 2 and No. 3 reactors, where the original cooling functions have also been lost, but it does not yet know when it can do so.

As the spread of high levels of radioactive substances has forced residents in nearby municipalities to evacuate for an indefinite period, Prime Minister Naoto Kan said the same day the government will judge early next year if the evacuees could return home.

"We will be able to see a certain stable condition early next year if the restoration work goes as scheduled," Kan said during a meeting with the mayor of Futaba, one of the affected municipalities. TEPCO forecasts it may stabilize the damaged reactors in about six to nine months.

"At that point, we will determine if the evacuating people could return home by taking monitoring results into consideration," Kan said during the meeting in Kazo, Saitama Prefecture, where some people from Futaba are being housed in shelters.

In Fukushima Prefecture, TEPCO President Masataka Shimizu toured some municipalities and apologized to residents and local government officials for the crisis at the plant.



In this March 20, 2011 aerial file photo taken by a small unmanned drone and released by Air Photo Service, the crippled Fukushima No. 1 Nuclear Power Plant is seen in Okumamachi, Fukushima prefecture. From top to bottom: Unit 1, Unit 2, Unit 3 and Unit 4. (AP Photo/Air Photo Service)

At a shelter in Nihonmatsu, Shimizu knelt down in front of about 150 evacuees, saying, "I apologize from deep in my heart. We'll do our utmost so you can go back to your hometowns."

(Mainichi Japan) May 5, 2011

## Resistance from Regulators

# Nuclear Stress Tests May Be Watered Down

05/04/2011 <http://www.spiegel.de/international/europe/0,1518,760654,00.html>

**In the wake of Fukushima, EU officials pledged to create stress tests for nuclear power plants that would evaluate the threat posed by natural disasters, terrorism, cyberwar and human error. Now a major German newspaper is reporting that regulators are unwilling to accept stricter scrutiny and the plans are likely to get watered down.**

After Japan's nuclear disaster at Fukushima, the European Union announced with great fanfare that it would introduce stress tests for Europe's nuclear power plants to help ensure that a similar catastrophe could not happen here. It appears, however, that the final plans will be far less ambitious than originally envisioned.

Germany's *Süddeutsche Zeitung* newspaper is reporting that the Western European Nuclear Regulators' Association has completed its proposal for the tests. Under the final plan, however, the plants would only be required to undergo stress test inspections for dangers presented by natural disasters like earthquakes, tsunamis or extreme fluctuations in weather.

At the end of March, leaders of the 27 EU member states agreed at a summit that inspection measures at the 146 nuclear plants within the bloc would be stepped up to include additional accident scenarios. Additional tests would be conducted to consider electricity supplies like those that failed at Fukushima, cooling systems and additional aspects like terrorist attacks, human error or the plants' ability to function safely during unexpected emergency situations. In an interview with SPIEGEL in April, European Union Energy Commissioner Günther Oettinger of Germany said: "We will also run simulations of a terrorist attack with an airplane and a cyber attack on the computer system."

### 'The Question Is Open'

But Western European nuclear regulators are now staunchly rejecting those calls, *Süddeutsche Zeitung* reported in its Wednesday edition. **The regulators reportedly stated in an internal paper that they would only agree to conduct stress tests involving natural disaster scenarios -- and not terrorist strikes or other manmade situations. Instead, they would agree to compose reports on potential threats that would be submitted to the European Commission in Brussels. Neither would independent nuclear experts be given access to the plants under the plan.**

European energy ministers discussed the issue during an informal meeting on Tuesday and Wednesday in Gödöllő, Hungary. At the end of the meeting, Hungary, which currently holds the six-month rotating presidency of the EU, issued a statement saying that the stress tests would begin in June.

In its report, the *Süddeutsche Zeitung* cited sources indicating that the ministers appear likely to agree to the regulators' plan, and that the nuclear plants would only be tested for possible natural disasters. Countries that want more stringent tests could do so voluntarily, the newspaper quoted a source close to Energy Commissioner Günther Oettinger as saying. On Tuesday, Oettinger said publicly that "the

question is open" as to whether stricter stress test measures would be included, admitting there were differences between the 27 member states.

European Commission sources told the newspaper that France and Britain have led the efforts to oppose more stringent stress tests. With France's 59 plants and Britain's 19, the two operate the largest number of nuclear power plants of any countries in Europe. Government officials in Paris and London have already stated that they plan to rely more heavily on nuclear power in the future despite the Fukushima disaster. Officials in London also stated they would not publish the results of the stress tests, which are expected to be completed by December.

The European Commission still feels that even the watered-down plan is better than the status quo. Even under the more limited plan, officials in Brussels will still get access for the first time to construction plans for plants and they would also be provided with a much better general overview of all European atomic power facilities. EU member states will also be required to disclose the conditions stipulated during the permit approval process for construction and operation. Officials described the development as "major progress." After a few more rounds of consultations, a final plan is expected to be introduced on May 12 in Brussels.

Speaking on Tuesday, International Energy Agency Executive Director Nobuo Tanaka told reporters that some older nuclear power plants in the EU may be forced to close earlier than planned as a result of the stress tests.

Efforts to water down plans for more stringent stress tests have sparked criticism in Germany. "We need to test all disaster scenarios, regardless whether they are caused by man or nature," Angelika Niebler, a German member of the European Parliament with Bavaria's conservative Christian Social Union party, told the *Süddeutsche*. Rebecca Harms, who chairs the party group in the European Parliament for the Greens, spoke of a "dangerous lowering" of expectations in the plans. She said Energy Commissioner Oettinger had broken his pledge to make European nuclear power plants as safe as possible and to develop new, uniform standards.

### **Concerns about Energy Costs**

At the same time, a fresh debate has broken out in Germany over higher prices for electricity in the country. After Fukushima, German Chancellor Angela Merkel reversed her government's decision, taken last year, to delay the nuclear phase-out -- which was passed by former Chancellor Gerhard Schröder in his government with the Greens -- and extend plant lifespans. In March, Merkel shut down Germany's oldest plants and placed a three-month moratorium on the lifespan extensions.

Now German companies from energy-intensive industrial sectors have rung the alarm bell, warning that energy prices could soon skyrocket.

"We already have the highest electricity prices in Europe," Kurt Bock, who will become CEO of chemical maker BASF on Friday, told reporters this week. "Our demand is very clear: We need affordable energy prices in Germany." He also said that energy supply must be guaranteed, without any shortfalls, 24 hours a day. Bock questioned whether it would be possible to ensure supplies and meet climate protection targets for reducing CO2 emissions. "I don't see any way that we can reconcile these two points with an expedited phase-out" of nuclear power, he said.

However, the question of whether a nuclear withdrawal will automatically lead to an increase in prices is disputed. **"We can phase out nuclear energy faster without having an irresponsible rise in energy prices,"** former United Nations environment chief Klaus Töpfer, who is heading Germany's so-called "Ethics Commission" to study the future of nuclear power, told the *Neue Osnabrücker Zeitung* newspaper. He said it would also be possible to do so without putting jobs at risk.

With his statements, Töpfer distanced himself from [Johannes Teyssen](#), who heads the major German power utility E.on. The executive, whose company operates nuclear power plants, had recently warned that Germany would only be able to phase out nuclear energy by importing atomic power and fossil fuel-generated electricity from other countries.

Töpfer said: "The fact that the head of a very large company that operate nuclear power plants is representing a position like that isn't surprising. But I don't think it is true."

## **Combined gov't and TEPCO news conferences don't appear to be improvement**



A scene from a regular joint news conference between government organizations concerned and TEPCO about crisis at the Fukushima No. 1 Nuclear Power Plant in Tokyo on May 4. (Mainichi)

Joint news conferences by government bodies and the Tokyo Electric Power Co. (TEPCO) over the crisis at the tsunami-hit nuclear power plant appear to have been far from effective at promoting the "transparent and accurate information releases" the government said it was aiming for.

The government's joint task force on nuclear accident countermeasures began the joint news conferences last month. The conferences, initially held on a daily basis, are attended by representatives from TEPCO, the Nuclear and Industrial Safety Agency (NISA), the Nuclear Safety Commission (NSC) and the Ministry of Education, Culture, Sports, Science and Technology (MEXT). Each conference lasts for three to five hours.

However, despite the length of the conferences, they are not addressing everything reporters want to know. Goshi Hosono, secretary-general of the government joint task force, has declared that education-related issues will not be covered by the conferences, but reporters' questions for several days nonetheless centered on government set limits on radiation exposure for outdoor activities of

elementary and junior high school students. Currently those activities are restricted when the annual dose of radiation exceeds 20 millisieverts, but this has become a controversial issue.

It was pointed out by reporters that an NSC member who was said to have suggested the upper limit had actually been opposed to it. They sought a disclosure of the details of that matter and asked that the NSC member attend at a later conference.

However, the task force secretariat declined to comply, repeating that the government had gone through the proper procedures in setting the standards and stirring protest from the journalists.

In the end, at a May 2 news conference the secretariat to the task force released a document detailing what led up to the decision on the dose limit.

At a May 4 conference, an irritated-seeming Hosono said, "From now on, we'd like you to ask questions about that issue at the MEXT."

More than 100 pages of documents, such as data on radiation levels in areas near the crippled Fukushima No. 1 Nuclear Power Plant, are distributed to around 200 reporters at each news conference.

Officials who are supposed to answer questions have occasionally been seen dozing off, showing their fatigue.

After the April 28 conference, Hosono notified news organizations that the task force would hold the joint news conferences only every other day during the Golden Week holiday period -- lasting from April 29 to May 5 -- in order to "achieve a balance between (the task force's) primary duties and the news conferences." He also said that some of the organizations represented at the conferences are requesting that the meets be limited to two hours.

As to the reason for holding the joint news conferences, Hosono cited requests from legislators from both ruling and opposition parties and overseas news organizations and said, "Previously, (government organizations and TEPCO) had held separate news conferences, causing information overlaps and confusion."

However, TEPCO and NISA have still been holding their own news conferences on days when the joint conferences have not been held.

Yasuhiko Tajima, professor of news media at Sophia University, criticized the task force for limiting the scope of questions and limiting the length of the news conferences.

"News conferences being long isn't a bad thing if freelance journalists are allowed to attend and it leads to further information disclosure," he said. "Rather, if the task force imposes time limits on the length of the conferences, it will be neglecting its responsibility to explain the situation and infringing on people's right to know."

"The government said it was combining the news conferences to keep consistency in the released information, but that was nothing more than serving its own goals. Excluding important issues like the 20 millisievert per year dose limit for children from the conferences seems to me to be an evasion of responsibility," he said.

## Hiroshima A-bomb victim voices anger over handling of nuclear crisis



Atsushi Hoshino gives his views about the nuclear accident at his residence in Fukushima. (Mainichi)

FUKUSHIMA -- Atsushi Hoshino, an 83-year-old A-bomb victim from Hiroshima, harshly criticized the government's handling of the ongoing crisis at the nuclear power plant crippled by the March 11 earthquake and tsunami, calling for a sweeping review of the nation's energy policy and people's ways of life.

Hoshino, a professor emeritus at Fukushima University, told the Mainichi in an interview in his home in Fukushima that he had initially thought that nuclear power generation was different in nature from the blasting of weapons of mass destruction. "But when I actually saw the nuclear reactors getting out of control, I had to change my thinking," he said. Based on his own experience as well as the suffering inflicted on many other victims of the atomic bombings of Hiroshima and Nagasaki, he expressed his anxiety and anger over the way the government has been responding to the nuclear disaster.

When he was a 17-year-old high school student, he saw from his home in Kure, Hiroshima Prefecture, a mushroom cloud fill the sky over the city of Hiroshima. The following day, he walked around the city in search of a friend. Around him were burnt-out ruins, piles of bodies, fires still burning, and foul smells. People were weeping in despair. The Hiroshima Hoshino had known was gone.

Hoshino managed to find his friend, but the friend's nostrils and lips were carbonized and he could not even drink water. Hoshino could do nothing but pick away the maggots coming over his friend and watch him pass away.

He helped in the horrible work of cremating the bodies of Hiroshima citizens, digging large holes in the ground, putting bodies inside, covering them with steel sheets, pouring heavy oil on and setting it ablaze. He did this work again and again. "The bodies looked awful. You couldn't tell whether they were male and female. They didn't even have a fraction of dignity left in them," Hoshino said.

After the war he got cataracts and rectal cancer -- aftereffects of exposure to radiation from the atomic bombing. He currently serves as secretary-general of a group in Fukushima Prefecture that supports the

A-bomb victims. He is now worried about the welfare of several of his group's members who lived near the nuclear power plant. The group has about 90 members and hasn't been able to get in touch with over 10 of its members who lived near the nuclear power plant.

"I am very upset with Tokyo Electric Power Co., the government, and the Nuclear and Industrial Safety Agency. Their safety management, including their post-accident response, has been unbelievably lax. I don't sense an enthusiasm from them to work hard to protect people's lives," he said. "Based on the lessons we learn from this nuclear accident, I think we have to review the energy policy and our way of life."

(Mainichi Japan) May 5, 2011

[http://www.maxisciences.com/centrale-nucl%e9aire/centrales-nucleaires-des-tests-de-securite-tres-incomplets\\_art14415.htm](http://www.maxisciences.com/centrale-nucl%e9aire/centrales-nucleaires-des-tests-de-securite-tres-incomplets_art14415.htm)

## Resistance from Regulators

### Nuclear Stress Tests May Be Watered Dow

05/04/2011 <http://www.spiegel.de/international/europe/0,1518,760654,00.html>

**In the wake of Fukushima, EU officials pledged to create stress tests for nuclear power plants that would evaluate the threat posed by natural disasters, terrorism, cyberwar and human error. Now a major German newspaper is reporting that regulators are unwilling to accept stricter scrutiny and the plans are likely to get watered down.**

After Japan's nuclear disaster at Fukushima, the European Union announced with great fanfare that it would introduce stress tests for Europe's nuclear power plants to help ensure that a similar catastrophe could not happen here. It appears, however, that the final plans will be far less ambitious than originally envisioned.

Germany's *Süddeutsche Zeitung* newspaper is reporting that the Western European Nuclear Regulators' Association has completed its proposal for the tests. Under the final plan, however, the plants would only be required to undergo stress test inspections for dangers presented by natural disasters like earthquakes, tsunamis or extreme fluctuations in weather.

At the end of March, leaders of the 27 EU member states agreed at a summit that inspection measures at the 146 nuclear plants within the bloc would be stepped up to include additional accident scenarios. Additional tests would be conducted to consider electricity supplies like those that failed at Fukushima, cooling systems and additional aspects like terrorist attacks, human error or the plants' ability to function safely during unexpected emergency situations. In an interview with SPIEGEL in April, European Union Energy Commissioner Günther Oettinger of Germany said: "We will also run simulations of a terrorist attack with an airplane and a cyber attack on the computer system."

### 'The Question Is Open'

But Western European nuclear regulators are now staunchly rejecting those calls, *Süddeutsche Zeitung* reported in its Wednesday edition. **The regulators reportedly stated in an internal paper that they would only agree to conduct stress tests involving natural disaster scenarios -- and not terrorist strikes or other manmade situations. Instead, they would agree to compose reports on potential threats that would be submitted to the European Commission in Brussels. Neither would independent nuclear experts be given access to the plants under the plan.**

European energy ministers discussed the issue during an informal meeting on Tuesday and Wednesday in Gödöllő, Hungary. At the end of the meeting, Hungary, which currently holds the six-month rotating presidency of the EU, issued a statement saying that the stress tests would begin in June.

In its report, the *Süddeutsche Zeitung* cited sources indicating that the ministers appear likely to agree to the regulators' plan, and that the nuclear plants would only be tested for possible natural disasters. Countries that want more stringent tests could do so voluntarily, the newspaper quoted a source close to Energy Commissioner Günther Oettinger as saying. On Tuesday, Oettinger said publicly that "the question is open" as to whether stricter stress test measures would be included, admitting there were differences between the 27 member states.

European Commission sources told the newspaper that France and Britain have led the efforts to oppose more stringent stress tests. With France's 59 plants and Britain's 19, the two operate the largest number of nuclear power plants of any countries in Europe. Government officials in Paris and London have already stated that they plan to rely more heavily on nuclear power in the future despite the Fukushima disaster. Officials in London also stated they would not publish the results of the stress tests, which are expected to be completed by December.

The European Commission still feels that even the watered-down plan is better than the status quo. Even under the more limited plan, officials in Brussels will still get access for the first time to construction plans for plants and they would also be provided with a much better general overview of all European atomic power facilities. EU member states will also be required to disclose the conditions stipulated during the permit approval process for construction and operation. Officials described the development as "major progress." After a few more rounds of consultations, a final plan is expected to be introduced on May 12 in Brussels.

Speaking on Tuesday, International Energy Agency Executive Director Nobuo Tanaka told reporters that some older nuclear power plants in the EU may be forced to close earlier than planned as a result of the stress tests.

Efforts to water down plans for more stringent stress tests have sparked criticism in Germany. "We need to test all disaster scenarios, regardless whether they are caused by man or nature," Angelika Niebler, a German member of the European Parliament with Bavaria's conservative Christian Social Union party, told the *Süddeutsche*. Rebecca Harms, who chairs the party group in the European Parliament for the Greens, spoke of a "dangerous lowering" of expectations in the plans. She said Energy Commissioner Oettinger had broken his pledge to make European nuclear power plants as safe as possible and to develop new, uniform standards.

### **Concerns about Energy Costs**

At the same time, a fresh debate has broken out in Germany over higher prices for electricity in the country. After Fukushima, German Chancellor Angela Merkel reversed her government's decision, taken last year, to delay the nuclear phase-out -- which was passed by former Chancellor Gerhard Schröder in his government with the Greens -- and extend plant lifespans. In March, Merkel shut down Germany's oldest plants and placed a three-month moratorium on the lifespan extensions.

Now German companies from energy-intensive industrial sectors have rung the alarm bell, warning that energy prices could soon skyrocket.

"We already have the highest electricity prices in Europe," Kurt Bock, who will become CEO of chemical maker BASF on Friday, told reporters this week. "Our demand is very clear: We need affordable energy prices in Germany." He also said that energy supply must be guaranteed, without any shortfalls, 24 hours a day. Bock questioned whether it would be possible to ensure supplies and meet climate protection targets for reducing CO2 emissions. "I don't see any way that we can reconcile these two points with an expedited phase-out" of nuclear power, he said.

However, the question of whether a nuclear withdrawal will automatically lead to an increase in prices is disputed. **"We can phase out nuclear energy faster without having an irresponsible rise in energy prices," former United Nations environment chief Klaus Töpfer, who is heading Germany's so-called "Ethics Commission" to study the future of nuclear power, told the *Neue Osnabrücker Zeitung* newspaper. He said it would also be possible to do so without putting jobs at risk.**

With his statements, Töpfer distanced himself from [Johannes Teyssen](#), who heads the major German power utility E.on. The executive, whose company operates nuclear power plants, had recently warned that Germany would only be able to phase out nuclear energy by importing atomic power and fossil fuel-generated electricity from other countries.

Töpfer said: "The fact that the head of a very large company that operate nuclear power plants is representing a position like that isn't surprising. But I don't think it is true."

---

## **TEPCO starts flooding No. 1 reactor with water for cooling system**

TOKYO, May 6, Kyodo

The operator of the crisis-hit Fukushima Daiichi nuclear power plant on Friday started increasing the amount of water being injected into the No. 1 reactor in an effort to stably cool the damaged nuclear fuel inside.

Tokyo Electric Power Co. plans to fill the reactor's primary containment vessel with water to a level above the fuel over the next 20 days or so, and start operating by June an air-cooling device aimed at reducing the temperature of water circulating around the reactor, company officials said.

Restoring the cooling systems of the plant's reactors, which were lost in the wake of the March 11 quake and tsunami, is seen as vital to end the country's worst nuclear crisis, as the current emergency measure of continually injecting water from outside has created vast pools of highly radioactive water within the plant.

## **Valve at Kashiwazaki-Kariwa nuke plant not working properly: TEPCO**

NIIGATA, Japan, May 6, Kyodo

Tokyo Electric Power Co. said Friday it has found an abnormality in one of the valves at the Kashiwazaki-Kariwa nuclear power plant in Niigata Prefecture used to pump cool water to reactors in the event of an emergency.

There is unlikely to be a leakage of radioactive substances or any other impact on the outside environment, the firm known as TEPCO said, adding that it is looking into the cause of the dysfunction.

The utility found during checks of electric-operated valves in the residual heat removal system at the plant's No. 1 reactor Thursday evening that one of the valves did not close properly, and had to close it manually.

## **Radioactive materials from Fukushima to reach U.S. within few yrs: IAEA**

VIENNA, May 6, Kyodo

The International Atomic Energy Agency said Thursday radioactive substances leaked into the Pacific Ocean from the crippled Fukushima Daiichi nuclear plant in Japan are expected to reach the west coast of the United States and Canada within one or two years.

The quantity of the substances, however, is expected to be too small to affect human health, an IAEA official said at a press conference.

Radioactive substances have also been emitted into the atmosphere from the nuclear plant, which was crippled by the March 11 massive earthquake and tsunami, and the leakage was confirmed across the Northern Hemisphere and parts of the Southern Hemisphere.

## Industry minister questions safety measures at Hamaoka nuclear plant

OMAEZAKI, Shizuoka -- Economy, Trade and Industry Minister Banri Kaieda expressed concerns over safety measures at the Hamaoka Nuclear Power Plant in Shizuoka Prefecture after inspecting the facility on May 5.

Kaieda visited the controversial plant -- **located at the predicted epicenter of a great Tokai earthquake that experts have been warning of for years** -- to confirm if emergency safety measures required by the government following the accident at the Fukushima No. 1 Nuclear Power Plant had been implemented.

"I raised some questions over issues including (quake and tsunami) drills," Kaieda told reporters following his inspection of the plant in Omaezaki, Shizuoka Prefecture, on May 5, suggesting that anti-disaster measures at the facility are insufficient.

Kaieda said the government would release an assessment of the plant's safety measures in early May, based on the results of his inspection and local opinions.

During his visit, the industry minister inspected power generators that were newly installed by the plant's operator, Chubu Electric Power Co., and a sand dune where a breakwater wall over 15 meters high is scheduled to be built to prevent potential tsunami damage. Following the inspection, Kaieda met Shizuoka Gov. Heita Kawakatsu and Omaezaki Mayor Shigeo Ishihara.

Regarding plans to restart the plant's No. 3 reactor, Kawakatsu expressed reservations, saying, "The plant's tsunami countermeasures are impromptu and extremely insufficient." Ishihara, meanwhile, called on the central government to provide safety guidelines for anti-tsunami measures. He did not clarify his stance on whether the No. 3 reactor should be restarted.

After the meeting, Kaieda commented, "It seems it will take a little more time to implement anti-tsunami measures." He added that he would take the issue of whether to resume operation of the No. 3 reactor seriously.

Meanwhile, Chubu Electric Power Co. President Akihisa Mizuno said the company would respect local opinions, saying, "We don't think we can resume operation immediately after the government releases its assessment. We will move forward only after making credible explanations to the local community and gaining its approval."

(Mainichi Japan) May 6, 2011

## **Gov't to ask Chubu Electric to stop Hamaoka nuclear power plant**



The Hamaoka nuclear power station in Omaezaki, Shizuoka Prefecture, is pictured in this aerial photo taken from a Mainichi helicopter on Feb. 23, 2011. (Mainichi)

TOKYO (Kyodo) -- Prime Minister Naoto Kan said Friday the Japanese government has asked Chubu Electric Power Co. to suspend all its nuclear reactors at the Hamaoka nuclear power station, citing experts' forecast of a major earthquake that could hit the region.

Kan said during an evening news conference, "It's a decision made after thinking about people's safety."

Kan said the nuclear power station lacks medium- to long-term measures for protection against disasters, such as embankments.

The government will take utmost measures not to cause a major imbalance in power demand and supply in Chubu Electric Power's service areas in the event the Hamaoka plant is shut down.

(Mainichi Japan) May 6, 2011

## **Opinion split on health effects of low radiation doses**

As the Fukushima nuclear crisis drags on, so too do abnormally high airborne radiation levels in a number of prefectures, as well as the presence of radioactive materials in water and vegetables.

In response, the government has repeatedly told the public that there is "no immediate health risk" from the contamination, while many experts have chimed in with reassurances that no one need worry if their accumulated dose does not exceed 100 millisieverts. However, how well known are the effects of exposure up to the 100 millisievert line, what experts term a "low dose"?

Radiation damages cells and the DNA in their nuclei. A 1,000 millisievert dose can cause severe symptoms such as hair loss, infertility and even death. Smaller doses don't in general produce such

acute effects, but symptoms can emerge years or even decades after exposure, and create serious worries of passing on genetic abnormalities to subsequent generations.

A follow-up survey of some 93,000 Hiroshima and Nagasaki atomic bombing survivors spanning a period of more than 50 years after the attacks showed that instances of cancer increased in direct proportion to the amount of radiation absorbed over 100 millisieverts. That is, if person A had double the exposure of person B, person A had double the chance of developing cancer.

According to the National Institute of Radiological Sciences, if 1,000 people absorb a radioactive dose of 100 millisieverts, 305 will eventually die of cancer -- five more than the norm. However, there is no clear evidence of if or how lower doses influence the chances of developing cancer, as a whole series of other factors including eating habits and smoking affect a person's chances of getting the disease. Complicating studies of lower exposure levels, research on the effects of about a 10 millisievert dose, for example, would require 10 million test subjects exposed to that amount of radiation.

Furthermore, scientific opinion on the existence of clearly defined safe and unsafe doses is divided, with some claiming that there is a concrete threshold under which there are no health effects, and others insisting on the "Linear No Threshold (LNT) hypothesis," which states that radiation exposure is harmful at any dose.

The International Commission on Radiological Protection (ICRP), which has a strong influence on radiation regulations in many countries and has drawn up a set of standard values based on the LNT hypothesis, states that anti-radiation precautions can be effective as long as risks are not underestimated.

"We must consider the monetary and social costs of any anti-radiation measures when considering what extent we can protect ourselves from low radiation doses," states Kyoto University professor emeritus and ICRP steering committee member Otsura Niwa.

## **Gov't, experts must release criteria for radiation safety around nuke plant**

[a shocking article really, all the more so because it sounds so reasonable]

"Resigning was the worst choice, wasn't it?" says an e-mail I received from one of my colleagues late last week. It referred to the resignation of University of Tokyo professor and radiation expert Toshiso Kosako as an adviser to the Cabinet Secretariat.

Kosako tearfully criticized the government for what he calls its "lax" response to the crisis at the tsunami-hit Fukushima No. 1 Nuclear Power Plant when he announced his departure at a news

conference. My colleague fears that Kosako's abrupt and emotional announcement could fuel local residents' concern about radiation leaks from the crippled power station.

There are two kinds of health hazards that radioactive material can cause -- immediate tissue damage from high levels of radiation, and chromosomal damage that increases the risk of cancer in the future even if the amount of radioactive material is small.

Radiation in areas dozens of kilometers away from the plant is far below the level that could immediately damage tissues. Therefore, the government asserts that the radiation "will not pose an immediate threat to human health."

On the other hand, if people are exposed to even a small amount of radiation, experts say it will slightly increase the risk of cancer in the future. Children in particular are vulnerable to radioactive substances. This is what residents of Fukushima Prefecture are worried about.

However, if children living in Fukushima Prefecture suffer from cancer in the future, it will be impossible to prove a causal relationship between their exposure to radiation and the disease. Even experts are divided over whether and how far the Chernobyl nuclear crisis will affect the health of nearby populations from a long-term perspective. **In short, health hazards that radiation can cause have not been clarified.**

We need to consider how to deal with such a slight rise in health hazards caused by radiation, but **there is too little information available to make that judgment. [the information exists but you've got to be willing to see it]**

Professor Kosako voiced objections to the government's repeated assertions that the situation is safe. However, his warning that the situation is dangerous without showing clear evidence also fuels the public's anxiety.

Both the government and experts like Kosako are required to show the public clear criteria for judging whether the situation is safe or dangerous. It is Fukushima Prefecture residents, rather than Kosako, who really want to cry over the ongoing nuclear crisis. (By Etsuko Nagayama, Tokyo Science and Environment News Department)

(Mainichi Japan) May 4, 2011

OUEST-FRANCE

Hier, pour la première fois depuis le séisme et le tsunami qui ont endommagé la centrale, treize ouvriers ont pénétré dans le bâtiment du réacteur n° 1, dont le toit avait été soufflé par une explosion. Équipés de combinaisons et munis de bouteilles d'oxygène, ils ont travaillé pendant une heure et demie, **[il était prévu qu'ils y restent 40 minutes voir Mainichi]** se relayant par petits groupes. Ils ont connecté huit tubes à des ventilateurs conçus pour filtrer les éléments radioactifs présents dans l'air. Un système qui restera en place deux ou trois jours. Ce qui devrait, par la suite, faciliter les travaux de réparation des circuits de refroidissement, pour l'instant freinés par la radioactivité, trop élevée.

.../...

L'opérateur Tepco, propriétaire de la centrale, pense pouvoir réussir à refroidir les réacteurs et les arrêter, d'ici au début de l'année prochaine. L'Institut français de radioprotection et de sûreté nucléaire (IRSN) estime néanmoins que la situation demeure « préoccupante ». De l'eau douce dont le pompage reste délicat est toujours injectée pour refroidir les installations. Hier, sujet d'inquiétude, la température qui s'élève à 240 °C était en hausse dans le réacteur n° 3.

.../...

Eau contaminée rejetée en mer : quel impact ?

Le niveau des substances radioactives a fortement augmenté, à une quinzaine de kilomètres au large de Fukushima. Les échantillons collectés indiquent des niveaux de césium 137, 600 fois supérieurs à ceux trouvés jusqu'alors. L'IRSN estime que cette pollution affectera l'environnement marin. Des poissons et des algues consommées au Japon pourraient accumuler des radionucléides, comme l'iode 131.

[http://www.ouest-france.fr/actu/actuDet\\_-Fukushima-des-ouvriers-dans-le-reacteur-no-1-3637-1787816\\_actu.Htm?xtor=RSS-4&utm\\_source=RSS\\_MVI\\_ouest-france&utm\\_medium=RSS&utm\\_campaign=RSS](http://www.ouest-france.fr/actu/actuDet_-Fukushima-des-ouvriers-dans-le-reacteur-no-1-3637-1787816_actu.Htm?xtor=RSS-4&utm_source=RSS_MVI_ouest-france&utm_medium=RSS&utm_campaign=RSS)

## E POINT

La France se penche sur sa gestion des conséquences d'une crise nucléaire

Le Point.fr - Publié le 05/05/2011 à 18:59 - Modifié le 05/05/2011 à 19:02

L'exemple japonais rappelle que l'Hexagone doit encore améliorer ses dispositifs en cas d'accident nucléaire.

.../...

jeudi et vendredi à Paris un séminaire de réflexion du **Comité directeur pour la gestion de la phase post-accidentelle d'un accident nucléaire ou d'une situation d'urgence radiologique (Codirpa)**, destiné à élaborer une doctrine française en la matière. Simple hasard de calendrier, puisque cette réunion de tous les acteurs du nucléaire français avait été programmée dès 2007.

.../...

Premier constat, les acteurs concernés (exploitants, autorités de contrôle, associations, pouvoir publics...) en sont encore **au stade de la "réflexion"**. C'est le président de l'Autorité de sûreté nucléaire française (ASN) lui-même, André-Claude Lacoste, qui en fait l'aveu.

.../...

Les réflexions du Codirpa devraient notamment déboucher sur un "guide de sortie de la phase d'urgence" après un accident nucléaire. Il devrait être publié au cours de l'année 2011. Ses préconisations sont "en cours d'expérimentation sur trois sites" nucléaires, ceux de Tricastin, de Fessenheim et de Civaux.

[http://www.lepoint.fr/societe/la-france-se-penche-sur-sa-gestion-des-consequences-d-une-crise-nucleaire-05-05-2011-1327399\\_23.php](http://www.lepoint.fr/societe/la-france-se-penche-sur-sa-gestion-des-consequences-d-une-crise-nucleaire-05-05-2011-1327399_23.php)

---

France : Cette petite phrase nous vient du directeur général de l'IRSN, Jacques Repussard :

"Notre pays doit **accepter de se préparer à des accidents nucléaires 'complètement inimaginables'**, qui représentent le plus grand danger pour ses installations, comme le prouve la catastrophe de Fukushima.".../...

"Si un accident se produit, le moins invraisemblable est que ce soit un accident absolument extraordinaire, lié par exemple à des effets dominos avec d'autres installations voisines, des aléas naturels ou des actes de malveillance. Il faut se préparer à ce type de scénarios", a averti le responsable de l'IRSN jeudi, dans le cadre d'une audition de la mission parlementaire sur la sûreté des installations nucléaires.

[[Voir les déclarations de Ban ki Moon sur ce genre de catastrophes](#)]

## **Right choice to close Hamaoka nuke plant, but other reactors also a concern**



The Hamaoka nuclear power plant operated by Chubu Electric Power Co. is pictured in Omaezaki, Shizuoka Prefecture, from a Mainichi helicopter in this February 2011 photo. (Mainichi)

As the Fukushima nuclear crisis rages on, Prime Minister Naoto Kan has demanded that Chubu Electric Power Co. shut down all reactors at its Hamaoka nuclear plant, fearing the facility near an earthquake danger zone is another nuclear disaster waiting to happen.

The Hamaoka plant in Shizuoka Prefecture sits on the edge an area where experts expect the next great Tokai earthquake to have its epicenter sometime in the relatively near future -- a vital piece of seismological information unknown at the time the plant was built. If the builders had known, they would have avoided the area. We in the press have certainly pointed out the risks.

Are earthquakes and tsunami really so powerful? Are the effects of a nuclear disaster really so grave? The Great East Japan Earthquake of March 11 gave us a clear answer to these questions.

If by any chance another terrible accident strikes, just as the prime minister stated, the consequences for all of Japan would be grave indeed.

Since the March 11 disaster, Chubu Electric has set about a number of tsunami safety projects including the construction of breakwaters. However, it is impossible to guarantee that a Tokai quake won't hit before these projects are finished. Major temblors are also possible in broad expanses of the seas off the east coast of Japan. As such, Kan's request that the Hamaoka reactors be shuttered before the mid- to long-term disaster safety projects have been completed is absolutely the correct decision, and we praise him for it. Furthermore, Chubu Electric has no choice but to comply.

One point that needs to be mentioned, however, is that even if the reactors are shut down, guaranteeing the safety and security of the plant's nuclear fuel must be an ongoing enterprise. Looking at the Fukushima nuclear crisis, it becomes obvious that continued cooling of spent fuel rods is of utmost importance.



Reactors at the Hamaoka Nuclear Power Plant are pictured in this photograph taken from a Mainichi helicopter in February 2011. (Mainichi)

In his stated reasons for demanding the Hamaoka plant be shut, Kan cited the prediction by the government's Headquarters for Earthquake Research Promotion that there was an 87 percent chance of a magnitude 8 earthquake striking the Tokai region in the next 30 years.

On the other hand, the government body's predictions are not 100-percent guaranteed to come true. In fact, nothing like the magnitude 9 quake that hit northeast Japan in March was ever even considered by the headquarters. No guarantee can be made to areas with low chances of a quake that no seismic disaster lays in their future. In fact, the Great East Japan Earthquake may have stimulated seismic activity all over the country, in places both high and low risk.

With this in mind, we call on the government not to overlook Japan's other nuclear power plants. We remain concerned that emergency response measures, to continuously keep nuclear fuel cool and reactors stable in the event of a disaster, are not sufficient. Furthermore, with attention now so focused on tsunami safety projects, neglect of measures to deal with the vibrations from an earthquake cannot be allowed.

There are probably many people worried about what effect closing the Hamaoka plant will have on the country's power supply, and the government must prevent any confusion on this point.

 [Click here for the original Japanese story](#)

(Mainichi Japan) May 7, 2011

## Chubu Electric puts off decision on nuke plant suspension



The Hamaoka nuclear power station in Omaezaki, Shizuoka Prefecture, is pictured in this aerial photo taken from a Mainichi helicopter on Feb. 23, 2011. (Mainichi)

NAGOYA (Kyodo) -- Chubu Electric Power Co. held an inconclusive board meeting Saturday over whether to suspend the Hamaoka nuclear power plant in Shizuoka Prefecture as requested by Prime Minister Naoto Kan for safety reasons, participants said.

The utility serving central Japan surrounding Nagoya will continue talks Sunday or later, they said after the meeting where discussions are believed to have centered on the suspension's anticipated impact on its business and how to ensure a stable energy supply without its only nuclear power plant.

The plant in the city of Omaezaki accounts for about 11.7 percent of the utility's total supply.

Suspending it is projected to lead to a loss of about 3.6 million kilowatts of the firm's estimated output of up to 30.89 million kilowatts against the projected peak demand of 27.09 million kilowatts in the summer, according to the government's Nuclear and Industrial Safety Agency.

The Nagoya-based power company will likely study alternative sources such as its thermal power plants and procuring electricity from other utilities, company sources said.

At a hastily arranged news conference Friday evening, Kan said all operations at the Hamaoka plant must be suspended due to concerns that a powerful earthquake could hit the area and trigger another serious nuclear crisis in addition to the one ongoing at a Tokyo Electric Power Co. plant in Fukushima Prefecture.



Economy, Trade and Industry Minister Banri Kaieda, second from left, listens to explanations by Chubu Electric Power Co. employees near a sand embankment in front of the Hamaoka Nuclear Power Plant in Omaezaki, Shizuoka Prefecture, on May 5, 2011. (Mainichi)

Chubu Electric President Akihisa Mizuno responded in a statement late Friday that the utility will "swiftly consider" the premier's request. One official said Saturday morning, "A business judgment at the highest level is required. It is important that we make a decision swiftly and notify society of it."

But as Kan has admitted that the request is not based on law, some people within Chubu Electric remain reluctant to immediately comply with it, the sources said.

In summer, energy demand, chiefly for air conditioning, climbs 800,000 kilowatts for each 1 C rise in the temperature, the utility says.

If it is to meet all the demand only with thermal power generation, the additional fuel cost would be 700 million yen per day, or about 250 billion per annum, according to the firm.

Omaezaki Mayor Shigeo Ishihara complained Saturday about Kan's request, telling a press conference, "It will have a large impact on (local) employment. I wanted him to listen more to local opinions," adding that the local assembly is united in seeking enhanced safety steps while keeping the plant running.

The request is not intended to halt the country's entire nuclear program and was made after confirming that it will not damage the economy of the Chubu region in central Japan, Goshi Hosono, one of Kan's aides from the ruling Democratic Party of Japan, said on a TV talk show the same day.

He and Economy, Trade and Industry Minister Banri Kaieda have inspected the plant but "could not fully dispel concerns" about a possible accident, Hosono said.

\_\_\_\_\_ (Mainichi Japan) May 7, 2011

Actu-Environnement :

## Fukushima : deux options de refroidissement des réacteurs opposent les experts

Depuis le 5 mai, Tepco, l'exploitant de la centrale, tente de rétablir le refroidissement du réacteur numéro 1. Si la création d'un circuit fermé est privilégiée, certains experts sont dubitatifs et proposent plutôt de noyer les réacteurs.

[Climat](#) | 06 Mai 2011 | [Actu-Environnement.com](#)

[Réduire la taille du texte](#)[Augmenter la taille du texte](#)[Imprimer cette page](#)[Options de partage](#)

Ouvrier de Tepco mesurant la radioactivité au sein du bâtiment du réacteur n°1 de la centrale

La catastrophe de Fukushima a quitté progressivement le devant de la scène médiatique, mais [la situation est instable](#) et reste "*très sérieuse*" selon l'expression utilisée quotidiennement dans les bulletins de l'Agence internationale à l'énergie atomique (AIEA) .

### Des ouvriers dans le bâtiment du réacteur numéro 1

Jeudi 5 mai, Tepco a annoncé que pour la première fois depuis le 11 mars, des ouvriers sont entrés dans le bâtiment du réacteur numéro 1. Objectif : installer des équipements de ventilation équipés de filtres afin d'[abaisser le niveau de radioactivité à l'intérieur du bâtiment](#).

Dans un premier temps, deux employés de Tepco sont entrés dans le bâtiment pour mesurer la radioactivité pendant 25 minutes. Selon les informations fournies par l'opérateur, celle-ci irait de 10 à 93 millisieverts par heure (mSvt/h). Ensuite, neuf employés de sous-traitants se sont relayés pendant 90 minutes pour relier le bâtiment à une ventilation située dans le bâtiment des turbines. Ces derniers étaient accompagnés de deux employés chargés de contrôler la radioactivité. Tepco a précisé que durant cette opération, les ouvriers ont été exposés à un maximum de 3,16 mSvt, soit environ 12% de la dose annuelle autorisée dans le contexte de la catastrophe en cours.

Avec cette opération, l'exploitant espère abaisser de 90% le niveau des radiations dans le bâtiment pour y installer un système de refroidissement à partir du 8 mai et rétablir le refroidissement en juin.

### Rétablir un circuit de refroidissement

Actuellement, le refroidissement des réacteurs est assuré par des injections d'eau via des vannes d'incendie. Cependant, ces circuits n'étant pas fermés et les enceintes de confinement n'étant plus parfaitement étanches, cette eau coule à l'extérieure et stagne dans les parties basses de la centrale. Il y aurait actuellement environ 90.000 m<sup>3</sup> d'eau hautement radioactive sur le site. Un volume qui croît, malgré [l'opération de pompage débutée mi-avril](#). Cette opération devait permettre d'évacuer en 26 jours les 10.000 m<sup>3</sup> présents au niveau du réacteur numéro 2. Après 10 jours de pompage, 2.390 m<sup>3</sup> ont été évacués.

Avec le système de refroidissement que souhaite installer Tepco, le maintien à froid du réacteur deviendrait possible tout en limitant les fuites. Ce système serait proche du refroidissement normal puisqu'un premier circuit clos permettrait d'injecter de l'eau froide et l'eau chaude récupérée serait refroidie via un échangeur de chaleur relié à un second circuit. Un avantage annexe de cette stratégie

est de fournir un exutoire pour l'eau hautement radioactive puisqu'elle pourrait être utilisée dans le circuit primaire du système de refroidissement.

Le même type de circuit est envisagé pour les réacteurs 2 et 3, mais Tepco n'a pas annoncé de date pour le début des travaux.

### **La NISA envisage de noyer le réacteur**

Si personne ne remet en cause l'efficacité de l'option retenue par Tepco, certains observateurs doutent cependant qu'il soit possible de rétablir un circuit de refroidissement. En effet, ils jugent que la tâche est trop complexe et que les conditions de travail dans le bâtiment ne permettent pas de la mener à bien.

Par ailleurs ils soulignent que la situation presse et que les variations de la pression et de la température dans les réacteurs témoignent de l'instabilité de la situation et d'une possibilité d'aggravation rapide.

L'Agence de sûreté nucléaire japonaise (NISA) a donc demandé à Tepco de lui soumettre un plan alternatif, surnommé "*water tomb*". Il s'agit non plus de refroidir le réacteur via un circuit, mais de le noyer en remplissant d'eau l'enceinte de confinement. Cependant, cette solution a également ses détracteurs. Ces derniers estiment que si l'eau contaminée provient du réacteur, c'est un signe de la perte d'étanchéité de l'enceinte. Tenter de la remplir ne ferait qu'augmenter les fuites radioactives.

Tepco a étudié cette option et soumis, en réponse à la demande de la NISA, un rapport qui démontre que cette stratégie pourrait refroidir efficacement les réacteurs sans que les tonnes d'eau injectées ne menace l'intégrité de l'enceinte de confinement. Il conviendrait néanmoins de renforcer les piliers de la chambre de surpression située sous l'enceinte de confinement.

Philippe Collet

## **Radiation levels drop inside troubled No. 1 reactor building**



This photo shows the installment of ducts inside the No. 1 nuclear reactor building. (Photo courtesy of Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Radiation levels have dropped inside the building housing the No. 1 reactor at the crippled Fukushima Daiichi nuclear power plant, the plant's operator said Saturday, a development that would pave the way for workers to reenter the site to stabilize the reactor.

The operator, Tokyo Electric Power Co., known as TEPCO, attributed the drop to a ventilator installed in the building on Thursday to filter out radioactive substances inside.

TEPCO has been struggling to bring the six-reactor complex in Fukushima Prefecture under control ever since the March 11 tsunami triggered by a major earthquake knocked out the plant's vital cooling functions and severely crippled the Nos. 1 to 3 reactors with nuclear fuel left inside their cores.

Radiation levels rose Friday, but TEPCO said it occurred because the ventilator stirred the air inside the building, leading a temporary spike.

The lower levels would reduce the risk of plant workers being exposed to elevated levels of radiation when they build a new cooling system for the reactor inside the building.

TEPCO is planning to open doors that connect the building and an adjacent turbine building soon, possibly on Sunday afternoon, to begin work on building the cooling system. But leaving them open for a long period of time would risk releasing radioactive substances into the air through a damaged part of the reactor building, the utility said.



A worker checks the radiation level inside the No. 1 reactor of the Fukushima No. 1 Nuclear Power Plant on May 5. (Photo courtesy of Tokyo Electric Power Co.)

The company will therefore assess the possible environmental impact of the move and seek an appraisal from the government before opening the doors.

Earlier Saturday, TEPCO officials said around 800 workers have spent more than a month dealing with the nuclear crisis at the power plant, but **they have only recently started to undergo medical checkups.**

**It took nearly two months after the crisis erupted following the March 11 quake and tsunami to commence regular health checks** as the health ministry had initially only required them to be performed after the crisis ends, assuming it would not be prolonged, according to the officials.

Of the workers, 30 have been exposed to over 100 millisieverts of cumulative radiation. However, with the exception of three workers exposed on March 25 to high-level radiation and those who have already ceased working at the plant, the workers only began to undergo their first examinations this month, the officials said.

The checks came after the Health, Labor and Welfare Ministry instructed employers on April 25 to immediately examine the health of workers who have been dealing with the crisis for more than a month or who have been exposed to more than 100 millisieverts of radiation.

Around 500 employees of the utility and about 300 workers from its affiliates and other companies have worked at the troubled plant for more than a month, with several hundred workers per day engaging in on-site efforts to contain Japan's worst ever nuclear accident, according to TEPCO.

However, they have only just begun to meet doctors commissioned by their employers as part of what will be monthly checkups as it took time to determine the number of such workers, the officials said.



This Sunday, April 10 image taken by T-Hawk drone aircraft and released by Tokyo Electric Power Co. (TEPCO) shows the damaged reactor building of Unit 1 of the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan.(AP Photo/Tokyo Electric Power Co.)

Initially, the ministry told the employers on March 16, a day after it raised the legal limit for radiation exposure in an emergency to 250 millisieverts from 100 millisieverts to deal with the current crisis, to check the health of workers exposed to over 100 millisieverts after they finish their work.

Although six workers had been exposed to more than 100 millisieverts of radiation as of March 19, no checkups were performed amid the continuing crisis, prompting the ministry to issue its updated directive more than a month later, the officials said.

The number reached 30 on April 23, including the three who on March 25 stepped into a highly radioactive pool of water while laying cable in the basement of the No. 3 reactor's turbine building as part of efforts to restore the plant's cooling functions.

(Mainichi Japan) May 8, 2011

---

minute amount of radiation leaked from Tsuruga plant (15.06 ) le 9 mai\_

---

## Workers measure radiation inside troubled No. 1 reactor

TOKYO, May 9, Kyodo

Workers battling the nuclear crisis at the Fukushima Daiichi power plant measured radiation inside the No. 1 reactor building early Monday to clear the way for full-scale work to stabilize the country's worst-ever nuclear emergency after a nearly two-month delay.

The move came after plant operator Tokyo Electric Power Co. opened the doors linking the reactor building to its adjacent turbine building Sunday evening, and confirmed that the resultant release of radioactive materials into the air had not raised radiation levels on the premises, according to the firm.

Nine workers went into the reactor building around 4:20 a.m. and measured radiation and other conditions inside for about 30 minutes, the utility known as TEPCO said, **without immediately announcing the radiation**

If the radiation level is confirmed to be safe for workers to operate inside, they will start building a new cooling system for the reactor -- the most severely damaged of the six at the plant -- which lost cooling functions in the March 11 quake and tsunami.



In this Friday May 6, 2011 image from video footage released on Sunday May 8, 2011 by Tokyo Electric Power Co., workers are seen on the first floor of the turbine building of the Unit 1 reactor building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Restoration work at the reactor has been hampered by a hydrogen explosion on March 12 and high radiation levels since.

In the envisaged next step, workers will install and adjust equipment including a heat exchanger and instruments to measure the water levels in the reactor's pressure vessel containing nuclear fuel and the containment vessel shrouding it, the company said.

**No rises in the radiation level have been seen at nine observation points in the plant located some 220 kilometers northeast of Tokyo since the double-entry doors were opened shortly past 8 p.m. Sunday, TEPCO said.**

The government's Nuclear and Industrial Safety Agency and the Environment Ministry began measuring the same day radiation levels in debris left by the quake-tsunami disaster in Fukushima Prefecture to consider ways to dispose of it and address the fears of local people.

The debris has been stored at makeshift scrap yards in coastal and central areas of the prefecture due to fears of contamination with radioactive materials.

The agency will check radiation levels on the surface of rubble at 12 locations and bring back samples to Tokyo for analysis. The ministry will gauge radiation in the air at some 120 scrap yards and their vicinity, except in areas from which people have been or will soon be evacuated.

(Mainichi Japan) May 9, 2011

## **Small amount of radioactive gas leaks from Tsuruga nuke plant**

FUKUI, Japan, May 9, Kyodo

A small amount of radioactive gas leaked from a nuclear power plant in Tsuruga, Fukui Prefecture, but there is no impact on the surrounding environment, the plant's operator Japan Atomic Power Co. said Monday.

## **Man made to work at Fukushima plant for 2 weeks without prior knowledge**

OSAKA, May 9, Kyodo

An Osaka man was made to work at the crippled nuclear power plant in Fukushima Prefecture for about two weeks, when he had been expecting to work in neighboring Miyagi Prefecture, said a job placement center in Osaka on Monday.

The worker in his 60s received daily wages of about 24,000 yen, double the sum he was initially promised, but complained that the pay undervalued the work he did at the Fukushima plant, the Nishinari labor welfare center said after interviewing the man and the company that hired him.

"I was finally issued with a radiation dosimeter on my fourth day of work there," he was quoted as saying.

## With New Nukes Unlikely, US To Supercharge Aging Reactor Fleet

May. 8 2011 - 8:11 am <http://blogs.forbes.com/jeffmcmahon/2011/05/08/with-new-nukes-unlikely-us-to-supercharge-aging-reactor-fleet/>

The United States can generate the power equivalent of seven new nuclear reactors by upgrading its current fleet, according to the Department of Energy.

DOE took an important step last week toward increasing the power output and extending the life of existing reactors.

Scientists launched a “virtual reactor” Tuesday at DOE’s Consortium for Advanced Simulation of Light Water Reactors (CASL) in Oak Ridge, Tennessee. The software will model the performance of the country’s aging light-water reactors so scientists can determine how to make them burn more fuel more intensely and more efficiently—and for a longer lifetime.

“These upgrades could improve the energy output of our existing reactor fleet by as much as seven reactors’ worth at a fraction of the cost of building new reactors, while providing continued improvements in reliability and safety,” DOE [announced](#).

At a recent [forum](#) in Chicago, an official from Argonne National Laboratory predicted this would become the U.S. nuclear strategy:

“I think the prospects for new plants are very limited,” said Hussein Khalil, head of Argonne’s Nuclear Energy Division. “But I think we’ll try to keep our existing plants going and try to get the most out of them. As long as we can safely do that.”

CASL will investigate ways to extend the life of existing U.S. reactors, an effort likely to ruffle the feathers of local opponents nationwide who are looking forward to the expiration of reactor licenses. DOE sees license extension as a way to reduce the per unit cost of nuclear power: new energy with little or no new capital costs.

Without extensions, the U.S. faces a sudden drop in nuclear power output.

**U.S. officials envisioned that reactors would operate for 60 years, with a 40-year initial license and one 20-year extension, but [according](#) to the Energy Information Administration, that schedule “would result in the retirement of more than one-third of existing U.S. nuclear capacity between 2029 and 2035.”**

To extend the life of reactors, the CASL team has to determine the effects of increased radiation and aging on the integrity of the reactor vessel, internal components, containment and piping.

The scientists will also investigate ways of “uprating” the power output of existing reactors, which risks damage to structures, systems, and components, fuel and steam generator integrity and may violate existing safety limits.

They will seek ways to burn more fuel more efficiently to reduce nuclear waste production, but first they have to determine whether the fuel system can handle the strain. The Consortium released a [slideshow](#) outlining these goals and risks.

The U.S. has 104 nuclear reactors, 50 of which have received license renewals, according to EIA. They supply about 20 percent of the nation's electricity.

Two new reactor projects are expected to receive construction permits this year, in [Georgia and South Carolina](#), but those projects advanced through the permit process before a series of setbacks that is [expected to delay](#) the permitting of more new reactors for several years.

Those setbacks include reduced energy demand, a drop in the price of natural gas, and safety concerns stemming from the Fukushima disaster in Japan.

“Nuclear energy is our nation's largest source of carbon-free power and is an important part of our energy mix moving forward,” said Secretary of Energy Steven Chu. “Work done at this facility will help make our fleet of reactors even safer and more efficient while creating jobs, fueling the economy and saving consumers money on their utility bills.”

CASL is a hub of laboratories headquartered at Oak Ridge National Laboratory. Its partner institutions include the Electric Power Research Institute, Idaho National Laboratory, Los Alamos National Laboratory, Massachusetts Institute of Technology, North Carolina State University, Sandia National Laboratories, Tennessee Valley Authority, University of Michigan and the manufacturer of the new reactors in the southeast: Westinghouse Electric Company.

## **France to Test 58 Reactors for Surviving Earthquakes, Not Terrorist Attack**

*By Tara Patel - May 9, 2011 1:40 PM GMT+0200 <http://preview.bloomberg.com/news/2011-05-09/france-to-test-58-reactors-for-surviving-earthquakes-not-terrorist-attack.html>*

Safety reviews at Electricite de [France](#) SA's 58 atomic reactors in France will cover their vulnerability to earthquakes and floods and exclude terrorist attacks, the nation's atomic regulator said.

“We don't think there could be a serious study,” of risks caused by terrorism nor could it be done transparently, the head of the Autorite de Surete Nucleaire, Andre-Claude Lacoste, said at a briefing in Paris today. “This will be discussed at the end of the week in Brussels. It's not a dogmatic position.”

Prime Minister Francois Fillon had asked the regulator to evaluate whether French plants can withstand earthquakes, floods, power outages and cooling-system failures. The European Union is also planning to carry out “stress tests” in the second half of the year in response to the Japanese atomic accident caused by a March 11 earthquake and tsunami.

The EU aims to reveal the criteria for tests on its 143 atomic plants on May 12, the same day that national regulators in Europe are due to give their approval to the plans, European Energy Commissioner Guenther Oettinger has said.

Lacoste said France's criteria may differ from the EU's. "There is no assurance of a total convergence" between what France announced today and what the EU will decide later this week. He said the French have based their decisions "as much as possible" on what is known now about the European process and that of other countries.

## Testing 58 Reactors

Nuclear power stations owned by companies including state-owned EDF and [Germany's RWE AG \(RWE\)](#) produce about a third of the electricity in the EU, which wants to draw up common safety criteria after the Japanese crisis triggered public protests in Europe against atomic power.

The French watchdog is preparing the stress tests, which also will exclude fuel-transport mishaps, on EDF's 58 existing reactors that produce more than 75 percent of the nation's electricity as well as one being built at Flamanville in Normandy. Lacoste has raised the possibility of a construction halt at Flamanville in the coming months if lessons learned from Fukushima require changes to improve safety.

"We will take any measures that are necessary," he said when asked whether any EDF reactors could be shut down as a consequence of safety issues or whether the operator may be obliged to build containment facilities over spent fuel pools at plants.

Fukushima was a "massive event" that is being taken more seriously in [Europe](#) than in [Russia](#) and the U.S., he said. "There is clearly a before Fukushima and an after Fukushima."

About 15 nuclear facilities that are related to reactors also will be reviewed, including waste storage and treatment plants, the ASN said.

To contact the reporter on this story: Tara Patel in Paris at [tpatel2@bloomberg.net](mailto:tpatel2@bloomberg.net)

---

## Fukushima's No. 1 reactor building radiation up to 700 millisieverts



In this Friday May 6, 2011 image from video footage released on Sunday May 8, 2011 by Tokyo Electric Power Co., workers are seen on the first floor of the turbine building of the Unit 1 reactor building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- The operator of the Fukushima Daiichi nuclear power plant found that the radiation level of the building housing the troubled No. 1 reactor stood at up to 700 millisieverts per hour, the government's nuclear agency said Monday, citing the need for radiation shielding to proceed with work to bring an end to the nuclear crisis.

The radiation level, which was around 10 millisieverts per hour at its lowest, was measured as Tokyo Electric Power Co. workers and agency officials entered into the No. 1 reactor building early Monday as part of preparations to start full-scale work to create a system to stably cool the damaged nuclear fuel inside.

"An area with a double-digit millisievert level, let alone three-digit figures, is quite tough as a working environment. So we have to do the work by using some shielding," Hidehiko Nishiyama, a spokesman for the Nuclear and Industrial Safety Agency, told a press conference.

As for ways to shield against radiation, the utility known as TEPCO is considering making a metal tunnel for people to walk through, or using some lead sheeting, according to Nishiyama.

TEPCO officials said that the high radiation level is so far unlikely to affect the utility's schedule to stabilize the plant's troubled reactors around October at the earliest, but **it is uncertain whether things will go as planned because of the difficult working environment.**

Workers dealing with the crisis triggered due to the March 11 earthquake and tsunami are allowed to be exposed to radiation levels no higher than 250 millisieverts. **They can only stay for some 20 minutes in the most contaminated area of the No. 1 reactor building.**



In this Friday May 6, 2011 image from video footage released on Sunday May 8, 2011 by Tokyo Electric Power Co., workers are seen on the first floor of the turbine building of the Unit 1 reactor building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Still, TEPCO believes that restoration work is possible inside the No. 1 reactor building because the radiation level of areas where workers would need to stay is between 10 to 70 millisieverts per hour.

The latest move came after TEPCO opened the doors linking the reactor building to its adjacent turbine building Sunday evening, and confirmed that the resultant release of radioactive materials into the air had not raised radiation levels on the premises and nearby areas as of 5 a.m. Monday, according to the firm.

**By opening the double-entry doors, air containing about 500 million becquerels of radioactive substances is believed to have been released into the atmosphere from the upper part of the No. 1 reactor building,** which was damaged in a hydrogen explosion that occurred at the early days of the nuclear crisis.

Seven TEPCO workers and two nuclear regulatory agency officials went into the reactor building around 4:20 a.m. and measured radiation and other conditions inside for about 30 minutes. The nine were exposed to radiation between 2.7 millisieverts and 10.56 millisieverts, the agency said.

Under the current plan, TEPCO will fill the No. 1 reactor's primary containment vessel with water to a level above the nuclear fuel inside, and start operating by June an air-cooling device aimed at reducing the temperature of the water circulating around the reactor.

Now that workers have entered the No. 1 reactor building, TEPCO plans to have them install and adjust instruments to measure the water levels in the reactor's containment vessel, and place a heat exchanger.

Restoring the cooling systems of the plant's reactors, which were lost in the wake of the March 11 quake and tsunami, is seen as vital to end the country's worst nuclear crisis, as the current emergency measure of continually injecting water from outside has created vast pools of highly radioactive water within the plant.

The nuclear agency and the Environment Ministry began measuring the same day radiation levels in debris left by the quake-tsunami disaster in Fukushima Prefecture in order to consider ways of disposing of it and addressing the fears of local people.

The debris has been stored at makeshift scrap yards in coastal and central areas of the prefecture due to fears of contamination with radioactive materials.

The agency will check radiation levels on the surface of rubble at 12 locations and bring back samples to Tokyo for analysis. The ministry will gauge radiation in the air at some 120 scrap yards and their vicinity, except in areas from which people have been or will soon be evacuated.

(Mainichi Japan) May 9, 2011

## **Recovery of fallen device from Monju reactor slated for June**

TOKYO, May 10, Kyodo

The Japan Atomic Energy Agency will undertake the work in June of recovering a fallen 3.3-ton device from its prototype fast-breeder reactor Monju in Tsuruga, Fukui Prefecture, agency officials said Tuesday.

## Japan Scraps Plan for New Nuclear Plants

[http://www.nytimes.com/2011/05/11/world/asia/11japan.html?\\_r=1&partner=rss&emc=rss](http://www.nytimes.com/2011/05/11/world/asia/11japan.html?_r=1&partner=rss&emc=rss)

TOKYO — Prime Minister [Naoto Kan](#) said Tuesday that [Japan](#) would abandon plans to build new nuclear reactors, saying his country needed to “start from scratch” in creating a new energy policy.

Mr. Kan’s announcement came as Japan allowed residents of evacuated areas around the stricken Fukushima Daiichi nuclear plant to briefly revisit their homes for the first time since the devastating earthquake and tsunami in March caused the nuclear accident.

Tuesday’s decision will abandon a plan that the Kan government released last year to build 14 more nuclear reactors by 2030 and increase the share of nuclear power in Japan’s electricity supply to 50 percent. Japan currently has 54 reactors that before the earthquake produced 30 percent of its electricity.

The cancellation of the planned nuclear plants is the second time that Mr. Kan has suddenly announced big changes in Japanese nuclear policy without the usual endless committee meetings and media leaks that characterize the country’s consensus-driven decision making. Mr. Kan appears to be seeking a stronger leadership role after criticism of his government’s sometimes slow and indecisive handling of the Fukushima accident.

Last week, Mr. Kan asked a utility company to suspend operations at the Hamaoka nuclear plant, which sits atop an active earthquake fault line, about 120 miles southwest of Tokyo. After three days of delays, the company, Chubu Electric Power, finally agreed on Monday to shut down the plant until a new wave wall was built and other measures could be taken to strengthen it against earthquakes and tsunamis.

Mr. Kan said Japan would retain nuclear and fossil fuels as energy sources, but vowed to add two new pillars to Japan’s energy policy: renewable energy and conservation. While Japan has been a global leader in energy conservation, it lags behind the United States and Europe in adopting solar and wind power, and other new energy sources.

“We need to start from scratch,” Mr. Kan told reporters. “We need to make [nuclear energy](#) safer and do more to promote renewable energy.”

Mr. Kan had also previously called for Japan to sell its nuclear technology to emerging nations as a new source of export income. However, the Fukushima accident has prompted a global rethinking of nuclear energy and may drive customers away from Japanese suppliers to rivals in places like South Korea.

Mr. Kan also appeared to pull back from his earlier vows to remain committed to nuclear power. His apparent about-face may be driven partly by public opinion, which has soured on nuclear power since the Fukushima accident.

On Tuesday, Japan was reminded of the human costs of the disaster, when the first group of 92 people paid two-hour visits to their homes in the town of Kawauchi, within the 12-mile zone around the plant that was evacuated after the nuclear crisis.

The residents wore white anti-radiation clothing and traveled in buses under tight supervision by nuclear officials. They retrieved belongings such as photo albums and the small tablets traditionally used in Japan to honor dead relatives in household Buddhist shrines, according to local media reports.

The Kan government appeared to agonize for weeks over whether to allow even such brief trips. Officials were concerned about whether civilians could be kept safe from exposure to potentially high radiation doses around the plant.

Complicating their decision was the lack of scientific knowledge on the health effects of the radiation doses now seen in many of the evacuated areas. Some scientists say radiation levels even in many evacuated areas are too low to cause immediate illness while others worry that incidence of cancer could rise over the long term.

Last week, the government staged a trial run, in which officials played the role of returning residents, to see if the trips could be made safely, and within the time allotted. Screened for radiation on their return, those participating were found to have been exposed to a dose of up to 25 microsieverts during the two-hour visit.

That is well above the 3.8 microsieverts per hour that Japan has used in some cases as a threshold for deciding such safety issues as whether to allow children to play outside while at school.

## **Suspension of Hamaoka nuke plant sparks battle between common sense and outdated thinking**

The suspension of operations at the Hamaoka Nuclear Power Plant in Shizuoka Prefecture, which is widely regarded as vulnerable to a powerful earthquake and tsunami, will adversely affect production and employment in central Japan. Moreover, the move will certainly contribute to public opinion against nuclear power generation and spark demands that other nuclear power stations be also closed.

However, is the decision to shut down the plant really a reckless move? Rather, calls for the continued consumption of electric power by all means should be called irresponsible.

Nearly 100,000 residents near the tsunami-hit Fukushima No. 1 Nuclear Power Plant have been evacuated from their hometowns and deprived of their jobs, and are at a loss what to do. Those who are remaining in their neighborhoods around the plant fear possible contamination of the air, water and soil from radiation leaking from the crippled plant.

Agricultural products from Fukushima and fish caught off the prefecture are not selling well because groundless rumors that such products are contaminated with radiation have spread throughout the country. Moreover, the nuclear reactors at the plant are still out of control.

The accident at the Fukushima plant is very different from the Chernobyl nuclear crisis. The Chernobyl accident occurred while nuclear fission was under way but the Fukushima crisis took place after nuclear fission had been stopped.

The Fukushima accident is merely the result of the inability to remove the remaining heat from nuclear fuel. However, this remaining heat has caused such a serious crisis.

Tokyo Electric Power Co. (TEPCO), the operator of the plant, claims that it can place the power station under control if the external electric power grid to cool down the reactors is restored. TEPCO and the government's Nuclear and Industrial Safety Agency (NISA) share the view that the biggest lesson learned from the crisis at the Fukushima plant is that the loss of external power sources to cool down reactors can cause such a serious situation.

In the meantime, the public has learned another lesson from the accident -- how much damage can be caused by radioactive waste generated at nuclear power plants and the difficulties in bringing such troubled power stations under control. These issues had been common knowledge among those opposing nuclear power plants, but only became widely known to the public following the accident.

A documentary film titled, "Into Eternity," about a final radioactive waste burial facility in Finland called "Onkalo," is now being screened in Japan. It was released following the crisis without any prior advertising, but theaters where the film is being shown are full almost every day -- a far stronger reaction than its distributor had expected.

Onkalo is the only final radioactive waste disposal facility under construction in the world. Finland, which relies heavily on Russia for energy, needs nuclear power plants, and public consensus has been formed on the need to build a permanent nuclear waste burial site.

However, it will take 100,000 years before high-level radioactive waste becomes harmless. No structure has lasted for such a long period. No one can guarantee that the burial site will never be damaged by war, crustal changes or floods.

Moreover, the advancement of civilization and languages hundreds of years into the future is beyond people's imagination. The film raises questions on how people can tell their children and grandchildren about the risks that buried radioactive waste poses to the environment and whether the project is feasible or not.

Japan is pursuing a nuclear fuel cycle and a method for the final treatment of waste generated in that process, but has been unable to draw a clear roadmap toward that end. Japan is far more irresponsible than Finland in that its prospects for treating radioactive waste are unclear. Still, it has been generating a massive amount of nuclear waste. One cannot help but wonder whether Japan's practice is justifiable.

It is true that Prime Minister Naoto Kan's announcement that the government would ask Chubu Electric Power Co. to stop operating the Hamaoka plant came very suddenly. Some political analysts describe

Kan's actions as a populist performance while others call it a surprise move aimed at containing his political foes. However, these comments fail to get to the heart of the issue.

The point here is the tug-of-war between those who aim to continue generating and using electric power by all means and those who are attempting to change the trend of the times.

Everybody knows it would be unrealistic to immediately stop all nuclear power plants. Nevertheless, it is unjustifiable to demand that the operation of the Hamaoka Nuclear Power Plant continues because there are also other dangerous nuclear power stations in Japan. The operation of all other dangerous nuclear power plants should be restricted from a mid-term perspective.

It is a battle between the common sense of those who look straight at the crisis in Fukushima Prefecture and review Japan's reliance on nuclear power generation and the outdated thinking of those who disregard the plight of Fukushima residents and want to continue the current energy policy merely by force of habit. (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) May 11, 2011

## **Gov't, TEPCO in uphill battle to contain Fukushima reactors, set to review roadmap**

Two months after the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant, the government and Tokyo Electric Power Co. (TEPCO) are still fighting an uphill battle to contain overheating nuclear reactors and are likely to review their roadmap that seeks to put the reactors under control within six to nine months.

The government and TEPCO, the operator of the crippled nuclear plant, are set to review the roadmap on May 17, a month after it was unveiled. "Although we have been making progress little by little, we must not relax our efforts," said Goshi Hosono, secretary-general of the government joint task force.

Of all the reactors at the nuclear complex, the biggest progress in restoration work has been made at the No. 1 reactor. On May 10, work to set a water-level gauge in the reactor pressure vessel was completed. On May 11, the pressure gauge in the reactor was due to be adjusted. Preparations have been underway to install a recycle cooling system designed to cool down the reactor in a stable manner.

But many obstacles lie ahead. A high level of radiation -- 600 to 700 millisieverts per hour -- was detected in some part of the reactor building on May 9. That could force a review of the work schedule.

At the No. 2 reactor, water contaminated with high levels of radiation gathering in the basement of the turbine building is standing in the way of restoration efforts. Efforts have been made to remove the contaminated water, but the water level has not dropped sufficiently.

At the No. 3 reactor that sustained the heaviest damage, the temperature in the pressure vessel was rising. Although more water was injected into the vessel, the temperature has not dropped sufficiently.

The reactor building of the No. 4 reactor was destroyed by explosions. TEPCO is to set up a structure to support the pool from underneath to keep it sound.

Shojiro Matsuura, former head of the Nuclear Safety Commission, said at the Japan National Press Club that workers wearing airtight protective gear could come down with heat stroke in summer. He suggested that it was an urgent task to improve the work environment and set up a well-developed medical care system for emergency workers.

(Mainichi Japan) May 11, 2011

## **Radiation in soil near troubled Japan nuclear plant exceeds Chernobyl evacuation level**

The levels of radiation accumulated in soil near the crippled nuclear power plant in northeastern Japan far exceeded the level of radiation the then-Soviet Union had used as a criterion for urging people to evacuate at the time of the 1986 Chernobyl nuclear disaster, threatening to plague local residents for a lengthy period.

Using aircraft, the Ministry of Education, Culture, Sports, Science and Technology checked the cesium-137 (half life of about 30 years) and cesium-134 (half life of about two years) accumulated in soil in collaboration with the U.S. Department of Energy in April.

Cesium-137 that has longer effects, ranging from 3 million to 14.7 million becquerels per square meter, was detected in Namie, Futaba, Minamisoma, Iitate and Katsurao, northwest of the Fukushima No. 1 Nuclear Power Plant, in Fukushima Prefecture. **The levels far exceeded 550,000 becquerels per square meter, the level the then-Soviet Union had used as a criterion for urging people to evacuate at the time of the 1986 Chernobyl nuclear disaster.**

Based on recommendations from the International Commission on Radiological Protection (ICRP), **the Japanese government used 20 millisieverts per year of radiation in the atmosphere as the criterion to designate evacuation areas in the wake of the nuclear accident** in Fukushima. Therefore, there are areas that have not been designated as evacuation zones although they have larger amounts of accumulated radiation.

The Ministry of Education, Culture, Sports, Science and Technology says, "Radioactive substances in soil do not enter human bodies immediately." On the other hand, when authorities try to decide whether to allow local residents to return to their homes or resume farming, levels of soil contamination could be one of the hot topics of debate.

Hiromi Yamazawa, professor of environmental radiology at Nagoya University, said, "The problem with soil contamination is external exposure through gamma rays emitted from cesium adhered to soil." He said that replacing soil with non-contaminated soil is an effective way of reducing the concentration of radiation. He also said, "Replacing soil in lower layers with that from upper layers is also effective."

(Mainichi Japan) May 11, 2011

## EU divided over nuclear plants' resistance to attack

By [Pete Harrison](http://www.reuters.com/article/2011/05/11/us-eu-energy-nuclear-idUSTRE74A1NZ20110511) <http://www.reuters.com/article/2011/05/11/us-eu-energy-nuclear-idUSTRE74A1NZ20110511>

BRUSSELS | Wed May 11, 2011 7:49am EDT

(Reuters) - Europe's nuclear safety tests should be strengthened to include man-made crises, such as terrorist attacks or airplane crashes, European Commission President Jose Manuel Barroso said on Wednesday.

European leaders agreed in March to subject Europe's 143 reactors to "stress tests," to guard against disasters such as the one at Japan's stricken Fukushima plant.

**But since then, a dispute has broken out between EU energy commissioner Guenther Oettinger, who wants the tests as wide-ranging as possible, and the French regulator, which opposes the inclusion of man-made scenarios.**

Barroso threw his weight behind Oettinger on Wednesday, aiming to put an end to the dispute ahead of a meeting of the European Nuclear Safety Regulators Group (ENSREG) on Thursday, which will aim to agree methodology for the tests.

"These tests should be comprehensive and include the widest range of scenarios, natural and man-made, focusing on their possible impact on the plants' functioning systems," Barroso said in a statement. "I hope this can be agreed tomorrow.

"I will also push for the strengthening of the international legal framework governing nuclear safety, in particular the Nuclear Safety Convention and the Convention on Early Notification of a Nuclear Accident," Barroso added.

Those who oppose testing nuclear plants for their resilience to terrorist attack say the test might reveal weaknesses that terrorists would be quick to exploit, but Oettinger's spokeswoman said there was room for confidentiality.

"It is important that citizens know what we're doing and what the results of our stress tests are, but clearly...there's some information in this area which cannot be published, and the Commissioner said he was willing to compromise on that issue," Marlene Holzner told reporters.

**Although the European Commission is trying to extend its reach into a region it has never regulated before, it still does not have powers to close unsafe reactors, and any such move would likely result from a government decision or public pressure.**

"The stress test is in any case voluntary, because the European Commission, although it has a mandate to develop the stress tests, it does not have a mandate to force a member state to do the stress tests or to shut down a nuclear power plant," said Holzner.

## **TEPCO finds another leak of radioactive water into sea**

TOKYO, May 11, Kyodo

Tokyo Electric Power Co. said Wednesday it had detected another leak of highly contaminated radioactive water into the sea near the Fukushima Daiichi nuclear power plant but was able to stop the flow.

## **Edano offers apologies over new radioactive water leak into sea**

TOKYO, May 12, Kyodo

Chief Cabinet Secretary Yukio Edano said Thursday that a new leak of radioactive water into the sea from the troubled Fukushima Daiichi nuclear power plant was "very deplorable" and offered his apologies to neighboring countries and others who may be affected.

"I apologize for again causing worries and troubles to local residents, those in the fishing industry and neighboring nations," the top government spokesman told a news conference, a day after plant operator Tokyo Electric Power Co. announced the leak and said it was able to stop the flow.

The utility said highly contaminated radioactive water had leaked into the sea from a pit close to a seawater intake for the No. 3 reactor, after a similar case was detected last month near the No. 2 reactor of the Fukushima plant, which has been crippled by the devastating March 11 earthquake and tsunami.

## **Nuclear fuel at Fukushima No. 1 unit melted after full exposure**

TOKYO, May 12, Kyodo

Water inside the troubled No. 1 reactor of the Fukushima Daiichi nuclear power plant was at an unexpectedly low level, not enough to cover the nuclear fuel, hinting that a large part of the fuel melted after being fully exposed, Tokyo Electric Power Co. said Thursday based on data obtained by adjusted gauges.

But the plant operator said the water at the bottom of the reactor pressure vessel holding the fuel is keeping the melted fuel cool, assuring that the company is succeeding in preventing the reactor's fuel from overheating by injecting water from outside.

Based on the latest data after workers adjusted gauges for measuring the water level at the reactor, water could not be confirmed inside the pressure vessel at a point 5 meters below where the top of the 4-meter-long fuel rods normally are, according to the utility also known as TEPCO.

## **Nuclear fuel at Fukushima No. 1 unit melted after full exposure**

TOKYO (Kyodo) -- Water inside the troubled No. 1 reactor of the Fukushima Daiichi nuclear power plant was at an unexpectedly low level, not enough to cover the nuclear fuel, hinting that a large part of the fuel melted after being fully exposed, Tokyo Electric Power Co. said Thursday based on data obtained by adjusted gauges.

But the plant operator said the water at the bottom of the reactor pressure vessel holding the fuel is keeping the melted fuel cool, assuring that the company is succeeding in preventing the reactor's fuel from overheating by injecting water from outside.

Based on the latest data after workers adjusted gauges for measuring the water level at the reactor, water could not be confirmed inside the pressure vessel at a point 5 meters below where the top of the 4-meter-long fuel rods normally are, according to the utility also known as TEPCO.

**The water level is far lower than earlier thought. Measurements taken before the gauge adjustment indicated that about 1.5 to 1.7 meters of the fuel rods were exposed and not submerged in water.**

Still, the surface temperature of the pressure vessel was relatively low, measuring between 100 C and 120 C.

The utility had earlier estimated that 55 percent of the reactor core at the No. 1 unit has been damaged. It is unknown how much fuel melted and dropped to the bottom, but the fuel is unlikely to be at its original position.

TEPCO has been trying to check the levels of water inside the No. 1 reactor's pressure vessel and the outer primary container so that it can move ahead with a plan to flood the container with water up to the level above the fuel and create a system to stably keep the fuel cool.

But the latest finding on the situation inside the unit -- one of the six at the plant crippled by the March 11 massive quake and tsunami -- suggests that **a significant amount of the water injected into the reactor core to keep the fuel cool as an emergency measure was leaking out to the primary container.**

A TEPCO official said the company will review its plan to flood the primary container up to the level above the fuel.

Hidehiko Nishiyama, a spokesman for the government's Nuclear and Industrial Safety Agency, said even if the container is not flooded with water, creating a system that would enable coolant to circulate

around the reactor is possible by using the water that now exists inside the vessel and primary container.

(Mainichi Japan) May 12, 2011

## **TEPCO finds highly radioactive water leaked into Pacific Ocean**

Tokyo Electric Power Co. (TEPCO) said on May 11 that it had discovered highly radioactive water was flowing into the ocean near the Fukushima No. 1 Nuclear Power Plant and swiftly moved to stop the flow.

TEPCO, the operator of the crippled nuclear power plant in northeastern Japan, said the highly toxic radioactive water was leaked into the ocean after flowing into a concrete hole called a "pit" near a seawater intake for the No. 3 reactor. **It is not clear when the water started flowing into the sea**, but the utility filled the pit with concrete to stop the water from flowing into the ocean on the afternoon of May 11. In a similar case, highly contaminated water had flowed from the seawater intake of the No. 2 reactor into the ocean in April.

According to TEPCO, when a worker was filling a tunnel for the No. 3 reactor, he found water flowing into the 2.3-meter-deep pit near the seawater intake.

**The water in the pit contained a total of about 80,000 becquerels of radiation -- 37,000 becquerels of cesium-134, 620,000 times the legal limit for seawater and 39,000 becquerels of cesium-137, about 430,000 times the legal limit.**

More than 80,000 metric tons of contaminated water is believed to be gathered in the concrete tunnels that house electric cables as well as in turbine buildings for the No. 1, 2, 3 and 4 reactors. Work has been underway to remove the water from the No. 2 reactor first. TEPCO believes that the contaminated water found on May 11 had come from a tunnel of the No. 3 reactor, as was the case for the No. 2 reactor in April.

## **Nuclear fuel at Fukushima No. 1 unit melted after full exposure**

TOKYO, May 12, Kyodo

Tokyo Electric Power Co., the operator of the crippled Fukushima Daiichi nuclear power plant, revealed Thursday that **holes had been created by melted nuclear fuel at the bottom of the No. 1 reactor's pressure vessel.**

The company said it has found multiple holes adding up to several centimeters in welded piping. Earlier in the day, it said the amount of water inside the troubled reactor was unexpectedly low -- not enough to cover the nuclear fuel -- hinting that a large part of the fuel melted after being fully exposed.

The finding is raising concerns that the company will face difficulty achieving its plan to bring the damaged reactors to a stable condition known as a "cold shutdown" in about six to nine months, observers said.

May 12, 2011

## Disaster Plan Problems Found at U.S. Nuclear Plants (NYT)

By [MATTHEW L. WALD](#)

ROCKVILLE, Md. — Despite repeated assurances that American nuclear plants are better equipped to deal with natural disasters than their counterparts in Japan, regulators said Thursday that recent inspections had found serious problems with some emergency equipment that would have made it unusable in an accident.

In addition, the staff of the [Nuclear Regulatory Commission](#) acknowledged that the agency's current regulations and disaster plans did not give enough consideration to two factors that had greatly contributed to the continuing Fukushima Daiichi crisis in Japan: simultaneous problems at more than one reactor and a natural disaster that disrupts roads, electricity and other infrastructure surrounding a plant.

The briefing was part of a review requested by the commissioners to evaluate the vulnerability of American reactors to severe natural disasters like the ones that hit the Japanese plant in March.

Marty Virgilio, the deputy executive director of the agency, told the five commissioners that inspectors checked a sample of equipment at all 104 reactors and found problems at less than a third of them. The problems included pumps that would not start or, if they did, did not put out the required amount of water; equipment that was supposed to be set aside for emergencies but was being used in other parts of the plants; emergency equipment that would be needed in case of flood stored in places that could be flooded; and insufficient diesel on hand to run backup systems.

Many of the emergency systems were put in place after the Sept. 11, 2001, terrorist attacks.

Officials said the problems that had been found were addressed immediately but not everything had been inspected. Mr. Virgilio said he expected to have a fuller picture soon.

He said an entire category of new procedures, called "severe accident mitigation guidelines," had been adopted voluntarily by the nuclear industry and thus was not subject to commission rules.

R. William Borchardt, the commission's chief staff official, said some of the preparations for severe accidents "don't have the same kind of regulatory pedigree" as the equipment in the original plant design.

The two-hour briefing given to the five-member commission was an early assessment, 30 days into a 90-day review being conducted by an N.R.C. task force.

Charlie Miller, the staff member leading the effort, said the staff was considering “enhancements” to its disaster plans and procedures. But as laid out by the staff, some of the changes under consideration could be far-reaching.

For example, the N.R.C. now looks at how well a plant’s design can handle a problem at just one reactor, even if there is more than one reactor at the site.

“You have to take a step back and consider what would happen if you had multiple units affected by some ‘beyond design basis’ events,” Mr. Miller said.

Another problem, staff members acknowledged, is that they have never paid much attention to the issues posed by handling an emergency when there is widespread damage to surrounding roads, power systems and communications links. In the past, the commission has explicitly rejected the notion that it should consider such combined events when reviewing a plant’s safety preparations.

Simultaneous with the commission’s meeting, Representative Edward J. Markey, a Massachusetts Democrat, released a report arguing that a variety of other shortcomings existed at nuclear plants, including the frequent failure of emergency diesel generators, which are essential to plant safety if the power grid goes down. He also criticized the commission for not requiring plants to have a backup power source for spent fuel pools while the reactor is shut for maintenance or refueling.

The Fukushima accident has cast new attention on spent fuel pools; the reason the United States government recommended that Americans stay 50 miles from the plant was damage to the spent fuel pool of Fukushima’s Unit 4, a reactor that was shut down before the March 11 earthquake and tsunami.

Mr. Markey pointed out that in the last eight years, the commission had received 69 reports of inoperable diesel generators at 33 plants, with six of those generators out for more than a month. The diesels provide power for water pumps that allow removal of “decay heat,” the heat that fuel generates even after a reactor shuts down. The Fukushima plants shut down successfully but decay heat wrecked their cores.

The N.R.C. said it was aware of the reports. But on Wednesday, attention was called to that problem by the Institute of Nuclear Power Operations, an industry group formed after the Three Mile Island accident in 1979 to provide peer-to-peer safety reviews. That group said one of the few safety measures that was getting worse was the reliability of diesel generators.

Mr. Markey also complained that the commission had allowed some plant operators to remove equipment that eliminates hydrogen produced by overheating fuel. In addition, there is no requirement for equipment to remove hydrogen in the rooms where spent fuel is stored; the building surrounding Fukushima Unit 4 was destroyed by the explosion of hydrogen that came from the spent fuel pool.

Commission officials said they were reviewing their previous decision to permit very heavy loading of the spent fuel pools. Thinning them out would reduce the amount of heat production that had to be dealt with in case of a severe accident, they said.

<http://www.nytimes.com/2011/05/13/business/energy-environment/13nuke.html?nl=todaysheadlines&emc=tha25>

<http://mdn.mainichi.jp/mdnnews/news/20110513p2g00m0dm008000c.html>

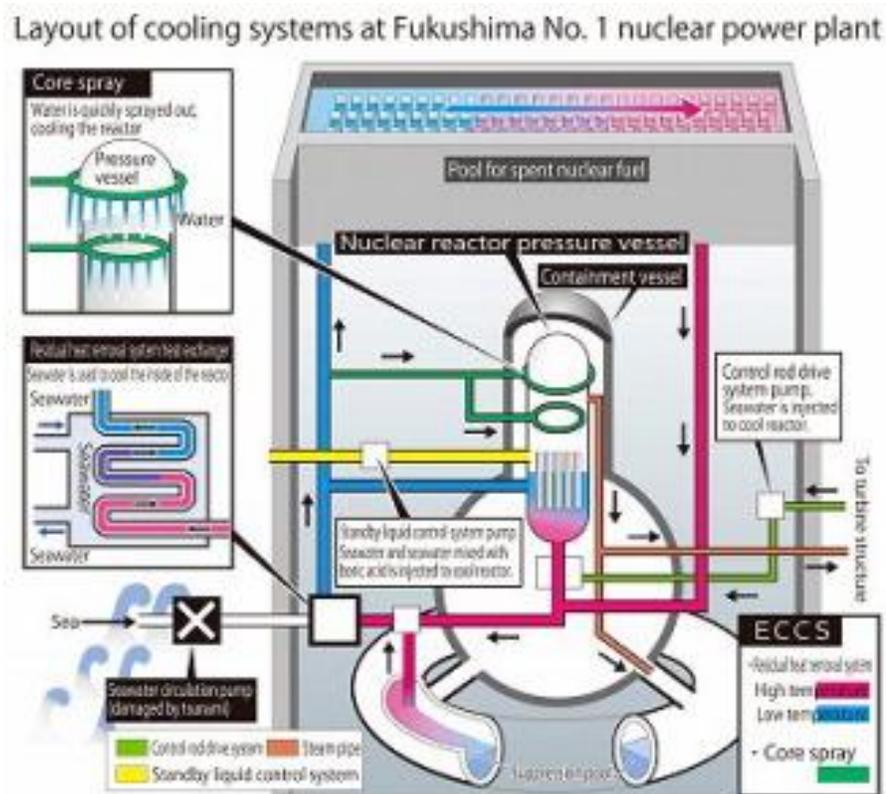
## Nuclear fuel at Fukushima No. 1 unit melted after full exposure

TOKYO (Kyodo) -- Tokyo Electric Power Co., the operator of the crippled Fukushima Daiichi nuclear power plant, revealed Thursday that holes had been created by melted nuclear fuel at the bottom of the No. 1 reactor's pressure vessel.

The company said it has found multiple holes adding up to several centimeters in welded piping. Earlier in the day, it said the amount of water inside the troubled reactor was unexpectedly low -- not enough to cover the nuclear fuel -- hinting that a large part of the fuel melted after being fully exposed.

The finding is raising concerns that the company will face difficulty achieving its plan to bring the damaged reactors to a stable condition known as a "cold shutdown" in about six to nine months, observers said.

But the utility, known as TEPCO, noted that water at the bottom of the reactor pressure vessel holding the fuel is keeping the melted fuel cool, indicating that the company is succeeding in preventing the reactor's fuel from overheating by injecting water from outside.



Layout of cooling systems at the Fukushima No. 1 Nuclear Power Plant. (Mainichi)

Based on the latest data after workers adjusted gauges for measuring the water level at the reactor, water could not be confirmed inside the pressure vessel at a point 5 meters below the top of the 4-meter-long fuel rods when they are in their usual position, according to TEPCO.

The water level is far lower than earlier thought. Measurements taken before the gauge adjustment indicated that about 1.5 to 1.7 meters of the fuel rods were exposed and not submerged in water.

Still, the surface temperature of the pressure vessel was relatively low, measuring between 100 C and 120 C, allowing a TEPCO official to say, "We've been successful in cooling (the fuel rods with water)."

The utility had earlier estimated that 55 percent of the reactor core at the No. 1 unit has been damaged. It is unknown how much fuel melted and dropped to the bottom, but the fuel is unlikely to be in its original position.

TEPCO has been trying to check the levels of water inside the No. 1 reactor's pressure vessel and the outer primary container so that it can move ahead with a plan to flood the container with water up to the level above the fuel and create a system to stably keep the fuel cool.

But the latest finding regarding the situation inside the unit -- one of six at the plant crippled by the massive March 11 quake and tsunami -- suggests that a significant amount of the water injected into the reactor core as an emergency measure to keep the fuel cool was leaking out to the primary container.

A TEPCO official said the company will review its plan and map out additional necessary measures to flood the primary container up to the level above the fuel by Tuesday.

Hidehiko Nishiyama, a spokesman for the government's Nuclear and Industrial Safety Agency, said even if the container is not flooded with water, creating a system that would enable coolant to circulate around the reactor is possible by using the water that now exists inside the vessel and primary container.

The review of the flooding plan will include injecting around 8 tons of water per hour to raise the water level in the container and changing the point for the water's removal to make way for the new water circulation system, according to sources familiar with the situation.

The utility will also check the No. 1 reactor vessel to detect from where water is leaking, they added.

TEPCO, however, could face difficulties in accomplishing such missions, considering that the radiation level is high at some locations inside the No. 1 reactor's building, observers said.

(Mainichi Japan) May 13, 2011

---

## **Melted nuclear fuel shows TEPCO's data lacks credibility**

Melted nuclear fuel inside the No. 1 reactor of the crippled Fukushima No. 1 Nuclear Power Plant has been found at the bottom of the reactor's pressure vessel, indicating there is a likelihood of a hole up to several centimeters in it, plant operator Tokyo Electric Power Co. (TEPCO) announced.

Many fuel rods at the reactor are under water and in a stable condition. But TEPCO's failure to detect a massive leak of water and to accurately measure water levels is likely to force the utility to review a road map that calls for bringing the plant's damaged reactors to a stable condition, known as a "cold shutdown," in about six to nine months.

TEPCO concluded that a large portion of fuel had melted inside the pressure vessel after workers double-checked the amount of water and found the water level inside the No. 1 reactor to be very low. TEPCO measures the water level by checking the differential between about 5 meters above the top of the 4-meter-long fuel rods and about 1.5 meters from the bottom of the fuel rods.

TEPCO had initially announced that the water level was about 1.6 to 1.7 meters from the top of the fuel rods. But new data revealed that the water level was at a point more than 5 meters below the top of the fuel rods.

The temperature at the lower section of the pressure vessel stood at a reasonable 100 to 120 degrees, leading the utility to speculate that a large portion of the fuel rods had previously melted, sank to the bottom of the vessel and were cooled.

Hidehiko Nishiyama, a spokesman for the Nuclear and Industrial Safety Agency (NISA), said the latest data has more credibility than previous data.

But Tadashi Narabayashi, a professor of reactor engineering at Hokkaido University, said, "It is problematic that TEPCO kept releasing data as if the water gauges were functioning properly. I wonder what a road map based on such data really means."

He said that most fuel was probably at the bottom of the pressure vessel and is being cooled. He cited a possibility that equipment which drives the control rods and other devices is penetrating and probably damaging the bottom of the vessel.

TEPCO officials said at a news conference on the night of May 12 that the pressure vessel's bottom appeared to have a hole measuring a total of several centimeters from which water and the fuel were likely leaking.

The question remains when the fuel melted and sank to the bottom. Nuclear fuel starts melting at an extremely high 2,800 degrees Celsius.

Hisashi Ninokata, a professor of nuclear engineering at the Tokyo Institute of Technology, speculated that the nuclear fuel probably melted when the fuel rods emerged from water immediately after an explosion of high calorific value. He said the current volume of calorific value is low and the fuel above water can be cooled with steam.

In the 1979 Three Mile Island nuclear accident in which a core meltdown occurred in its Unit 2 reactor, it took the plant operator and U.S. authorities 14 years to clean up radiation due to the difficulty in removing the melted fuel rods.

Ninokata said, "This time, workers cooled the reactors with sea water and there is a fear that salt has accelerated the pressure vessel's corrosion and damaged the unit. There is also a possibility of the melted fuel and metal from the cover pipes being mixed and solidified, making efforts to remove them (to shut down the reactor) a challenging task."

NISA defines a fall of melted fuel rods to the bottom of a pressure vessel as a meltdown. TEPCO acknowledged that it is a meltdown if the fuel rods are not in their original form.

Haruki Madarame, chairman of the Nuclear Safety Commission of Japan, said at a news conference on May 12, "It was not surprising because we predicted a melting of the fuel rods at an early stage. We don't think all of the fuel rods are under water judging from temperatures inside the pressure vessel. We want to do more analysis."

## **Sewage plants in Fukushima perplexed over how to dispose of highly radioactive sludge**

Highly radioactive sludge found at sewage plants in Fukushima Prefecture will be temporarily kept at those plants, the central government has announced.

The move came after high levels of radioactive cesium were detected in sludge and other waste material at sewage plants in Fukushima Prefecture -- home to the disaster-crippled Fukushima No. 1 Nuclear Power Plant.

On May 12, the government announced that highly radioactive sludge will be tentatively kept at sewage plants in the prefecture, while sludge with relatively low-level radiation could be recycled into cement and other material.

While highly-radioactive sludge will be treated in the same way as radioactive waste for the time being, no plans for the final disposal of such sludge were presented. It will also be difficult to promote the recycling of sludge with high-level radiation contamination. Since relevant laws and regulations do not cover highly-radioactive sludge at sewage plants, the government faces serious challenges in handling the issue.

According to the announcement, sludge with radioactivity levels of over 100,000 becquerels per kilogram should preferably be incinerated and melted in Fukushima Prefecture before being kept at sewage plants. Ash generated through sludge incineration should be contained in metal barrels to prevent it from scattering. Sludge with radioactivity levels of under 100,000 becquerels per kilogram can be temporarily kept at sewage plants and controlled disposal sites, with radioactivity monitoring required.

"Radioactive sludge should be treated in the same way as radioactive waste," said an official with the Cabinet Office's Nuclear Disaster Countermeasures Headquarters, adding, "We will look into how to ultimately dispose of it later."

Sludge with radioactivity levels of under 1,000 becquerels per kilogram can be recycled into cement and other material if the levels can be reduced to under 100 becquerels through mixture with other materials and dilution.

"The volume of radioactive sludge should be reduced as much as possible through recycling," said an official with the Ministry of Land, Infrastructure, Transport and Tourism, adding that the recycling of such sludge into fertilizer should be withheld for the time being.

The government also announced that safety standards for workers at sewage plants should be applied in accordance with the Ordinance on the Prevention of Ionizing Radiation Hazards, which is administered by the Ministry of Health, Labor and Welfare.

The ordinance mandates operators to set up controlled areas and control radiation doses if radiation levels in the air at workplaces are expected to exceed 1.3 millisieverts in three months. However, since the ordinance does not presume cases in which private operators transport radioactive sludge, the government cannot obligate forwarding agents to take the abovementioned measures.

On May 1, the Fukushima Prefectural Government announced that 334,000 becquerels per kilogram of radioactive cesium was detected in molten slag **after** sludge was processed with high heat at a purification center in Koriyama, Fukushima Prefecture. The finding was followed by the detection of radioactive cesium in sludge at 15 other sewage plants in the prefecture, as well as at one sewage treatment facility in Tochigi Prefecture, one in Ibaraki Prefecture, three in Gunma Prefecture and one in Niigata Prefecture. The Kanagawa Prefectural Government announced on May 12 that cesium was detected in sludge at four sewage plants in the prefecture, while the Tokyo Metropolitan Government disclosed the same day that up to 24,000 becquerels of radioactivity was detected in sludge incineration ash at three sewage plants in the capital.

## Reactor 1 in worse shape than thought

### Cracks suspected in containment after fuel rods found fully exposed

By KAZUAKI NAGATA <http://search.japantimes.co.jp/print/nn20110513a1.html>

Staff writer

Tokyo Electric Power Co. said Thursday that the water level in the No. 1 reactor's pressure vessel at the Fukushima No. 1 power plant is much lower than thought and that some of the fuel rods have melted and sunk to its bottom.

But Tepco also said the temperature in the pressure vessel has been kept at around 100 to 120 degrees, which is cool enough to keep the reactor safe, for now.

The low water level, however, indicates that the pressure vessel could have holes or cracks through which radioactive water is leaking.

Tepco's latest discoveries were found after workers entered the main building, where they were finally able to check and fix water-level indicators damaged when the March 11 monster earthquake and tsunami crippled the nuclear power plant.

The workers also learned that the water in the containment vessel, which Tepco has kept spraying to cool down the pressure vessel from the outside, is also much lower than earlier believed. There might be some holes or cracks in the vessel or components connected to it, Tepco said.

Any holes or cracks in the pressure and containment vessels are sure to make repair work more difficult.

The utility plans to keep cooling the reactor's core by attaching air-cooling machines that will recirculate the water inside the containment vessel.

Tepco has poured about 10,000 cu. meters of water into the containment vessel so far. But only about 7,500 cu. meters should be necessary to cool the fuel rods if a way can be found to reuse the water instead of letting it flow away.

"We're not sure how much of the fuel rods fell down to the bottom and in what form, but the temperature shows that they are being cooled," Tepco spokesman Junichi Matsumoto said at a news conference.

On March 12, reactor No. 1 suffered a hydrogen explosion after the fuel rods were fully exposed for hours and generated hydrogen, which reacted violently with oxygen.

But Matsumoto said Tepco believes such an explosion at this time is unlikely because nitrogen has already been poured inside the containment vessel to purge explosive gases.

Matsumoto also said that, considering the situation with the No. 1 reactor, the water level data from reactors 2 and 3 may not be credible.

Tadashi Narabayashi, a professor of reactor engineering at Hokkaido University, also said it is likely that the melted fuel rods are being cooled with coolant water at the bottom of the pressure vessel.

According to Narabayashi, the zirconium encasing the fuel rods becomes weak and brittle when it is fully exposed to oxygen and then covered with cold water again.

According to Tepco, the water-level indicators of the pressure vessel had indicated the water surface was about 1.65 meters below the top of the fuel rods. But as of Thursday morning the reading was more than 5 meters below the top. The fuel rods, if undamaged, are only 4.5 meters in height.

Although the water is leaking from somewhere in the pressure vessel, Tepco officials don't believe the melted fuel has penetrated the bottom of the pressure vessel and dropped into the containment vessel below, given that the thermometer placed at the bottom of the pressure vessel is still working. If a big chunk was missing, it would malfunction, Tepco said.

There are actually no tools specially designed to check the water level in the containment vessel, but Tepco said it made estimates based on other factors, including the pressure in the containment vessel.

information from kyodo added

The Japan Times: Friday, May 13, 2011

## **Contaminated nuke plant workers going back on job as safety regs go by wayside**



The badly damaged building housing the Fukushima No. 1 Nuclear Power Plant's No. 1 reactor is pictured in this photo provided by a worker at the plant.

**Safety standards for workers at the tsunami-hit nuclear power plant in Fukushima Prefecture have been relaxed without any scrutiny, forcing workers to do their jobs without being completely decontaminated, it has emerged.**

Workers who are struggling to get the Tokyo Electric Power Co. (TEPCO)-operated Fukushima No. 1 Nuclear Power Plant under control as well as experts have expressed grave concern about possible health hazards.

Radiation levels on the premises of the power station remain high, with part of the ruins of its No. 3 reactor building -- badly damaged by a hydrogen explosion -- emitting 900 millisieverts of radiation per hour.

Safety regulations dictate that when it is estimated workers will be exposed to more than 1 millisievert of radiation per day at a nuclear power plant, companies contracted by the plant operator must submit a

work plan specifying the anticipated radiation levels to the local labor standards inspection office, get a receipt stamp and submit a copy of the document to the plant operator.

Some contractors then hand copies of the document to their subcontractors as a special permit to perform the work.

An employee of one of the subcontractors at Fukushima plant said he worked there without such a special permit and was exposed to 1.3 millisieverts of radiation over a 2 1/2-hour period. Subsequent screening detected radioactive substances on the back of the employee's head and neck, as well as those of about 10 co-workers.

They washed with special shampoo at the nuclear crisis operations center about 20 kilometers away from the plant. **However, three of them were unable to completely decontaminate themselves. They tried again at a TEPCO facility but failed to completely remove radioactive substances from their bodies. TEPCO subsequently issued a certificate specifying the areas of their bodies contaminated with radioactive material, and they returned to work.**

In cases where radioactive substances are detected on workers' bodies, their employers are required to submit a report detailing the work they performed and how they were contaminated to the original contractor, which in turn must notify TEPCO.

However, the workers' subcontractor has neither submitted such a report to the original contractor nor been instructed by the contractor or TEPCO to do so. The employee has pointed out that the safety regulations have been eased without any scrutiny amid the ongoing crisis.

"Both TEPCO and the original contractor appear to be thinking it's natural that we're contaminated with radioactive substances, considering our working environment," he lamented.

"Many of us are eager to help get the plant under control, and think we can't avoid being contaminated. But frankly speaking, we're concerned," he added.

TEPCO said the certificate specifying the areas of workers' bodies contaminated is issued if high levels of radiation are detected during screening, but claimed that such workers are completely decontaminated before returning to work.

Mainichi 14<sup>th</sup> May

---

## **TEPCO concealed radiation data before explosion at No. 3 reactor**

2011/05/14 <http://www.asahi.com/english/TKY201105130370.html>

Debris litters the west part of the first floor at the No. 3 reactor building. (Provided by Tokyo Electric Power Co.)

Tokyo Electric Power Co. concealed data showing spikes in radiation levels at the Fukushima No. 1 nuclear power plant in March, one day before a hydrogen explosion injured seven workers.

The Asahi Shimbun obtained a 100-page internal TEPCO report containing minute-to-minute data on radiation levels at the plant as well as pressure and water levels inside the No. 3 reactor from March 11 to April 30.

The data has never been released by the company that operates the stricken plant.

The unpublished information shows that at 1:17 p.m. on March 13, 300 millisieverts of radiation per hour was detected inside a double-entry door at the No. 3 reactor building. At 2:31 p.m., the radiation level was measured at 300 millisieverts or higher per hour to the north of the door.

Both levels were well above the upper limit of 250 millisieverts for an entire year under the plant's safety standards for workers. But the workers who were trying to bring the situation under control at the plant were not informed of the levels.

When the Great East Japan Earthquake struck on March 11, the No. 1, No. 2 and No. 3 reactors all automatically shut down. But the tsunami crippled the emergency generators, leading to a total power failure that prevented the cooling systems from functioning.

The TEPCO data also showed high levels of hydrogen may be emitting from the damaged core of the No. 3 reactor on March 13, when TEPCO started injecting seawater to cool the reactor.

The following day around 11 a.m., a hydrogen explosion destroyed the upper part of the No. 3 reactor building. Seven TEPCO workers were injured in the blast.

TEPCO's public relations department said the company has informed the public that significant levels of radiation have been detected at the plant, but it disclose specific data after a thorough review of the figures is completed.

Keiji Miyazaki, professor emeritus of nuclear reactor engineering at Osaka University, criticized TEPCO's policy.

He said such important data should be immediately released to ensure the safety of the public and workers at the plant, especially in an emergency like the Fukushima nuclear accident.

Miyazaki said TEPCO's decision to conceal the data must be scrutinized.

Failure to release radiation data in the early stages of the crisis is said to have delayed the evacuations of communities near the plant.

Kiyoshi Sakurai, another nuclear power expert, said a thorough examination is needed not only on TEPCO's unpublished data, but also verbal communications of those involved, instructions issued by the central government and TEPCO, and the communication structure between management and workers at the plant.

---

## **Key nuclear facilities may have been damaged before tsunami**

<http://mdn.mainichi.jp/mdnnews/news/20110515p2g00m0dm007000c.html>

TOKYO (Kyodo) -- Data taken at the Fukushima Daiichi nuclear power plant on the night of March 11 showing a high level of radiation at a reactor building suggest the possibility that key facilities there may have been damaged by the quake itself that day rather than tsunami-caused power loss that failed the reactor's cooling function, a utility source said Saturday.

The revelation may call for a review of preparedness against quakes at various nuclear power stations in Japan as they have primarily focused on securing auxiliary power supplies and embankment enhancement against tsunami after the Fukushima plant crisis, assuming that reactor facilities at the plant were unscathed by trembling.

On March 11, the power plant was shut down automatically just past 2:46 p.m. following the magnitude-9 quake. Within an hour, it was hit by at least two rounds of tsunami waves. The external power supply was then shut down, disabling the emergency core cooling system from injecting water at 4:36 p.m.

Prime Minister Naoto Kan declared the country's first state of nuclear emergency in the evening and residents near the plant were asked to evacuate.

Workers entered the No. 1 reactor building in the night to assess damage to the reactor but a few seconds later their dosimeter's alarm was triggered, according to the sources at Tokyo Electric Power Co. The building was believed to be filled with steam with high radiation dose, prompting the workers to evacuate.

Based on dosimeter readings, radiation was estimated at around 300 millisieverts per hour, according to the sources, a result suggesting a large amount of radioactive materials from nuclear fuel in the reactor was already released.

It has been thought that power loss failed the cooling system at the No. 1 reactor, releasing highly radioactive steam from the reactor pressure vessel.

This scenario assumes that pressure inside the reactor had built up and damaged piping and other facilities, a process that is thought to require a much longer time before such building is filled with steam.

A source at TEPCO admitted the possibility of key facilities having been compromised before the tsunami waves, saying, "The quake's trembling may have caused damage to the pressure vessel or pipes."

The Nuclear and Industrial Safety Agency has so far said the reactor withstood shaking but tsunami of an unexpected scale caused power loss, which led to an explosion.

On the night of March 11, TEPCO did not yet take the step of opening vents of the containment vessel to relieve pressure that was supposed to be rising, a move that it took in the morning the following day that led to the release of radioactive steam from the vessel.

Inside the No. 1 reactor, water level was falling from the night of March 11. TEPCO sprayed a large volume of water but failed to recover water level, leading to exposure of fuel and a meltdown of the reactor core.

Subsequently, zirconium, a metal covering fuel triggered a chemical reaction with steam, generating hydrogen and leading to the explosion at the reactor building at 3:36 p.m. on March 12.

(Mainichi Japan) May 15, 2011

en français:

## Des installations clés de la centrale nucléaire n°1 de Fukushima auraient été endommagées par le séisme, avant le tsunami

Par Liang Nin, le 15/05/2011 à 13:39 © [Chine Nouvelle](#) (Xinhua)



**Lors du [séisme](#) du 11 mars, des installations clés de la centrale [nucléaire](#) n°1 de Fukushima auraient été endommagées par les fortes secousses telluriques, avant même que le système de refroidissement du réacteur, affecté par la coupure d'électricité causée par le tsunami, ne cesse de fonctionner, a rapporté samedi l'agence de presse Kyodo, citant une source de Tepco, la compagnie exploitante de la centrale.**

Selon les données recueillies le 11 mars au soir par les employés qui sont entrés dans le bâtiment abritant le réacteur n°1 de la centrale accidentée, le niveau de radiation atteignait 300 millisieverts par heure, ce qui suggère qu'une grande quantité de substances radioactives provenant des combustibles nucléaires du réacteur était en train de s'échapper.

Cette découverte pourrait amener à réviser les capacités de résistance des installations en cas de séismes dans les autres centrales nucléaires japonaises, où, suite à l'accident de Fukushima, l'on s'est essentiellement concentré sur la capacité des générateurs de secours à maintenir l'alimentation électrique en cas de défaillance externe ainsi que sur le renforcement des digues anti-tsunami, en supposant que les installations au sein des réacteurs à Fukushima n'avaient pas été endommagées lors du tremblement de terre.

Le 11 mars, la centrale [nucléaire](#) s'est automatiquement arrêtée à 14h46 heure locale suite au [séisme](#) de magnitude 9. Moins d'une heure plus tard, elle a été frappée par au moins deux énormes vagues successives lors du tsunami. L'alimentation externe en électricité a été interrompue, ce qui a empêché, dès 16h36 heure locale, le système d'urgence de refroidissement du coeur d'injecter de l'eau.

Selon l'hypothèse initiale, c'est l'arrêt de l'alimentation électrique qui a empêché le système de refroidissement du réacteur n°1 de fonctionner normalement, ce qui a abouti à la fuite de vapeur hautement radioactive de l'enceinte de confinement du réacteur.

Cependant, un responsable de Tepco a reconnu la possibilité que des installations clés aient été endommagées avant que les vagues du tsunami ne viennent déferler sur le site, déclarant que "les secousses du tremblement de terre pourraient avoir provoqué des dégâts au niveau de la cuve [cuve en acier entourant le coeur du réacteur] ou au niveau de certaines conduites", a rapporté Kyodo.

L'Agence japonaise de sûreté [nucléaire](#) et industrielle a jusqu'à présent affirmé que le réacteur avait bien résisté au tremblement de terre, mais que le tsunami d'une ampleur imprévue qui s'en était suivi avait entraîné la coupure d'électricité, qui avait abouti à une explosion au niveau du bâtiment externe abritant le réacteur n°1.

## Trouble delayed cold shutdown of Hamaoka nuclear reactor

Sunday 15th May, 06:53 PM JST

SHIZUOKA —

Chubu Electric Power Co said Sunday that **cooling system trouble delayed the cold shutdown of the No. 5 reactor at its Hamaoka power plant** in Shizuoka Prefecture for about two hours earlier in the day, while ruling out any external release of radioactive substances.

**Seawater leaked into a steam condenser at the reactor**, which cools and turns steam from the turbines into water, apparently due to damage to its piping, prompting the utility to switch to another system to cool and stabilize the reactor and complete the work shortly past noon, it said.

The No. 5 unit was the last active nuclear reactor at the plant located in the Pacific coastal city of Omaezaki to come to a stable condition with an internal temperature below 100 C, the benchmark for cold shutdown.

The utility serving central Japan halted operation of the plant—its only nuclear facility located around 180 kilometers southwest of Tokyo—on Saturday, following an unprecedented government request due to fears of another nuclear disaster in the event of a large earthquake in the area, which lies on a major active fault line.

The ongoing nuclear crisis at Tokyo Electric Power Co's Fukushima Daiichi power plant on the Pacific coast around 220 km northeast of Tokyo was triggered by the devastating March 11 quake and tsunami.

The Nagoya-based firm said it had found Saturday evening, after a measuring instrument indicated abnormalities around 4:30 p.m., that **around 400 tons of seawater had flowed into the condenser of the No. 5 reactor**.

**The water also found its way into the reactor, making it necessary to desalinate it, the company said.**

At the plant, the No. 4 reactor was halted Friday and came to a stable condition the following day while the No. 3 reactor was already suspended for regular checks. The Nos. 1 and 2 reactors at the plant have been shut down for decommissioning.

In a related development, Katsuya Okada, secretary general of the ruling Democratic Party of Japan, said Sunday nuclear power plants that remain closed or were shut down after the March 11 earthquake and tsunami should be restarted provided that they meet tougher safety standards.

“It is an irrefutable fact that Japan cannot secure the electricity it needs unless it utilizes existing nuclear plants and those under construction,” he said, adding, “The public is now taking a more critical view concerning the safety of atomic energy, so revamping the existing safety standards should be a prerequisite (for continued use of nuclear facilities).”

Okada made the comments during a meeting with mayors of localities in Aomori Prefecture, where one nuclear power station is currently out of action and another is under construction.

## Germany 'not satisfied' with nuclear fusion spending

VALENTINA POP

11.05.2011 @ 09:27 CET

EUOBSERVER / BERLIN - Germany has said it is unhappy with the "exorbitant" cost of the EU's international nuclear fusion project, Iter EU, and called for more transparency on spending.

"The bigger a science project is - and in Iter, Europe is not the only member - the more complicate its governance. **Iter is exorbitant,**" Annette Schavan, Germany's education and research minister told journalists on Tuesday (10 May).

A detailed cutaway of the Iter, with hot plasma, in pink, in the centre. (Photo: ITER)

Schavan said that Berlin last year demanded a special taskforce to investigate the governance of the France-based nuclear fusion project, which aims to generate energy from fusing atoms, instead of splitting them as it is the case with the current nuclear technology (fission).

Apart from the EU - carrying the brunt of the cost (45 percent), the mega-project includes Russia, China, the US, India, Japan and South Korea contributing with nine percent of the cost, **expected to reach over €15 billion.** Supporters of the project say it will deliver to the world an essentially endless supply of cheap energy.

**But the cost has tripled from its initial estimate in 2005,** with Schavan noting that "science has a tendency to encourage politics to ask for more money."

"It is good for Europe to be present in such a project and Germany still supports it, but we need more transparency in its governance, more financial discipline. I am not satisfied today, one year later after the taskforce was put in place," she said.

The European Parliament last year refused to approve a proposal by the European Commission to reallocate €1.3 billion from the Union's unspent budget to cover a financing shortfall for the project.

The commission has re-cast its bid for the 2012 budget, pointing out that this is an international commitment the bloc cannot abandon and that construction is set to begin next year. A first debate in the parliament in April had Greens protesting against the project and pointing out that **it is to be built in a seismic area,** recalling the disaster of Fukushima, a nuclear fission plant.

**Iter maintains that no comparisons can be made, since the technology is fundamentally different. [ah bon]**

Yet radioactive materials will still be produced if the researchers manage to secure a safe reactor for the high-power reaction to take place.

Sebastien Balibar, a leading French nuclear physicist, has cast doubts that the EU-funded project will ever come into being: "We say that we will put the sun into a box. The idea is pretty. The problem is, we don't know how to make the box," he told the Wisconsin Scientist in 2006.

© 2011 EUobserver.com. All rights reserved. Printed on 16.05.2011.

## **TEPCO admits nuclear meltdown occurred at Fukushima reactor 16 hours after quake**

Tokyo Electric Power Co. (TEPCO) **admitted for the first time on May 15** that most of the fuel in one of its nuclear reactors at the Fukushima No. 1 Nuclear Power Plant had melted **only about 16 hours after the March 11 earthquake** struck a wide swath of northeastern Japan and triggered a devastating tsunami.

According to TEPCO, the operator of the crippled nuclear power plant, the emergency condenser designed to cool the steam inside the pressure vessel of the No. 1 reactor was working properly shortly after the magnitude-9.0 earthquake, but it lost its functions around 3:30 p.m. on March 11 when tsunami waves hit the reactor.

Based on provisional analysis of data on the reactor, the utility concluded that the water level in the pressure vessel began to drop rapidly immediately after the tsunami, and the top of the fuel began to be exposed above the water around 6 p.m. Around 7:30 p.m., the fuel was fully exposed above the water surface and overheated for more than 10 hours. At about 9 p.m., the temperature in the reactor core rose to 2,800 degrees Celsius, the melting point for fuel. At approximately 7:50 p.m., the upper part of the fuel started melting, and at around 6:50 a.m. on March 12, a meltdown occurred.

**On the reason why it took over two months after the earthquake to reveal the information, TEPCO said it had only been able to start obtaining detailed data on the temperature and pressure in the reactor for analysis in early May.**

Junichiro Matsumoto, a senior TEPCO official, said, "**Because there is similar damage to the fuel rods at the No. 2 and 3 reactors, the bottoms of their pressure vessels could also have been damaged.**" He said the utility would carry out similar analysis on the two reactors.

Hiroaki Koide, professor of nuclear safety engineering at Kyoto University, was critical of TEPCO.

**"They could have assumed that when the loss of power made it impossible to cool down the reactor, it would soon lead to a meltdown of the core. TEPCO's persistent explanation that the damage to the fuel had been limited turned out to be wrong,"** he said.

(Mainichi Japan) May 16, 2011

## EDF to Rely on Seaside Reactors as Drought Cuts Water Levels

By Tara Patel - May 16, 2011 3:45 PM GMT+0200 <http://preview.bloomberg.com/news/2011-05-16/edf-to-rely-on-seaside-reactors-as-drought-cuts-water-levels-1-.html>

Electricite de France SA will limit planned maintenance at nuclear reactors near the [English Channel](#) and Atlantic Ocean as the driest spring in about 50 years reduces river water for cooling inland plants.

EDF, [Europe](#)'s biggest power generator, operates France's 58 nuclear reactors that provide about three quarters of the country's power needs. Most require river water for operations, prompting the utility and the country's nuclear safety watchdog to step up monitoring.

Measures being taken by the utility include the "limitation of summer outages in seaside nuclear plants," EDF said in a [presentation](#) last week. The dozen French reactors that rely on seawater for cooling include Gravelines, Penly, Paluel, Flamanville and Blayais.

EDF schedules planned refueling and maintenance sometimes years in advance to coincide with a greater need for base nuclear power during cold winter months and hot summer months. The utility was forced to reduce output at some riverside reactors during a 2003 heat wave that left 14,000 people dead.

"We have to pay attention to reactor operations. A decline in water flow and increase in temperatures have an impact on cooling," French Environment Minister Nathalie Kosciusko-Morizet said at a news conference today. "If the water flow becomes too low, a reactor will be halted."

## Maintain Level

Swiss authorities would like to maintain the water level of Lake Geneva by adjusting flows into the Rhone River, she said, adding that this could affect French reactors.

The current dry spell, which has prompted water restrictions in some areas, hasn't had an impact on nuclear output, EDF spokeswoman Jill Coulombe said by telephone. French law requires plants to reduce output when water levels drop below a certain level or shut down if temperatures rise too high.

Dry conditions lowered EDF's hydroelectric power production by 2.1 terawatt-hours last quarter, EDF said in a May 12 [statement](#).

The availability of water for EDF power generation started to fall below average in the middle of January and remained through March below the minimum recorded over the past decade, according to last week's presentation.

## On Record

[France](#) may have "one of the driest" months of May on record, Michele Blanchard, a researcher at forecaster Meteo France, said in an interview in Paris today. No significant rain is forecast for the next two weeks and temperatures will start rising.

France's nuclear safety watchdog is reviewing guidelines that would need to be followed in the event of a drought in the coming months, Andre-Claude Lacoste, head of the Autorite de Surete Nucleaire, said last week. Reactors that may be affected include those located on the Loire and Rhone Rivers, he said.

EDF will also carry out weekly "stress tests based on historical temperature models," as part of water management measures as well as "cautious" management of the water in dams, according to the presentation.

Hydroelectric reserves in France are 9 percentage points below the same week last year and 11 points lower than in 2009, according to data on the website of Reseau de Transport d'Electricite, a unit of EDF. France gets about 20 percent of its power capacity from running water through turbines.

To contact the reporter on this story: Tara Patel in Paris at [tpatel2@bloomberg.net](mailto:tpatel2@bloomberg.net)

---

**L'accident de criticité de Tokai-Mura (pdf, 3 pages) :**  
<http://www.cea.fr/content/download/2940/13741/file/11-accident.pdf>

---

## **Meltdown may have occurred also at Nos. 2, 3 reactors**

TOKYO, May 16, Kyodo

An adviser to Prime Minister Naoto Kan said Monday that the operator of the Fukushima Daiichi nuclear power plant had failed to inject water into the Nos. 2 and 3 reactors for more than six hours after the March 11 massive earthquake and ensuing tsunami.

Goshi Hosono, tasked with handling the nuclear crisis, said at a press conference that Tokyo Electric Power Co. had not been able to cool down the reactors' cores due to loss of external power for a long time after the quake, acknowledging that fuel in the vessels might have largely melted "in the worst-case scenario."

But he added the utility, known as TEPCO, has been succeeding in preventing the reactor's fuel from overheating so far and reiterated the government will stick to the timetable set by the firm, which announced April 17 it aims to bring the crisis there under control in six to nine months.

## **Meltdown may have occurred also at Nos. 2, 3 reactors**

TOKYO (Kyodo) -- An adviser to Prime Minister Naoto Kan said Monday that the operator of the Fukushima Daiichi nuclear power plant had failed to inject water into the Nos. 2 and 3 reactors for more than six hours after the March 11 massive earthquake and ensuing tsunami.

Goshi Hosono, tasked with handling the nuclear crisis, said at a press conference that Tokyo Electric Power Co. had not been able to cool down the reactors' cores due to loss of external power for a long time after the quake, acknowledging that fuel in the vessels might have largely melted "in the worst-case scenario."

But he added the utility, known as TEPCO, has been succeeding in preventing the reactor's fuel from overheating so far and reiterated the government will stick to the timetable set by the firm, which announced April 17 it aims to bring the crisis there under control in six to nine months.

His remarks came a day after TEPCO said a nuclear fuel meltdown at the No. 1 reactor is believed to have occurred around 16 hours after the devastating quake and tsunami crippled the plant's critical cooling systems.

TEPCO is slated to release on Tuesday an updated roadmap for bringing under control Japan's worst nuclear accident based on new information about the plant's condition.

Hosono has said that it has no choice but to abandon an initial plan to flood and cool the No. 1 reactor's containment vessel as holes have been created in the pressure vessel by the melted fuel.

The government will also unveil the same day its own version of a roadmap that will outline measures on how to deal comprehensively with the crisis amid growing discontent by lawmakers and the public over the government's handling of it.

TEPCO, meanwhile, said Monday it will start transferring highly radioactive water at the No. 3 reactor of the atomic power complex to a waste-disposing facility the following day to prevent it from leaking into the environment.

The move is believed to be essential to contain radiation leaks from the power station as well as to allow workers to get access to the damaged vessel, from which the contaminated water may be leaking to its adjacent turbine building and other places.

While such water previously found at the No. 2 reactor has been already stored in the facility, the utility has stepped up its efforts to set up equipment at the water-disposing facility to decontaminate the radioactive water so it can be reused to cool fuel in the vessels in the near future, company officials said.

Under a plan by TEPCO, a total of 4,000 tons of water is expected to be pumped out of the No. 3 reactor turbine building to the nuclear waste disposal facility by using hoses.

The utility has been injecting more water into the reactor than in the past to cool down its vessel as its temperature has been rising recently, pushing the level of water up there, the officials said.

The government's Nuclear and Industrial Safety Agency said it has already given the green light to TEPCO's plan.

The tainted water, the level of which has been rising by around 2 centimeters a day in the No. 3 reactor's turbine building, may be leaking into the sea, prodding the plant operator to remove it as soon as possible.

But TEPCO is also being forced to keep injecting sufficient quantities of water into the reactor as workers have been struggling to cool down its vessel stably.

The temperature inside the No. 3 reactor has been rising since the beginning of the month, topping 200 C on May 7, compared with around 90 C on May 1, TEPCO said.

While the temperature fell to 141.3 C on Monday morning, TEPCO remains vigilant as there is some skepticism about whether water has remained in the reactor, company officials said.

<http://www.nature.com/news/2011/110317/full/news.2011.168.html>

## Radiation data from Japanese disaster starts to filter out

[Declan Butler](#)

Published March 17, 2011

Confidential data held by nuclear test ban organization emerging as key to monitoring Fukushima radiation.

*Nature* [revealed earlier](#) this week than an international agency set up to detect nuclear tests, the Comprehensive Nuclear-Test-Ban Treaty Organization ([CTBTO](#)), is transmitting detailed data on the spectrum of radionuclides and their levels in the air in and around Japan and the Asia-Pacific region to its member states each day, but that the CTBTO could not release these data to the public because it lacked a mandate to do so.

Now, at least one CTBTO member state, Austria, intends to make some of the data public in the form of summary reports and forecasts of global radiation spread.

*Nature* has also learned that initial CTBTO data suggest that a large meltdown at the Fukushima power plant has not yet occurred, although that assessment may change as more data flow in during the coming days. Lars-Erik De Geer, research director of the [Swedish Defence Research Institute](#) in Stockholm, which has access to the CTBTO data and uses it to provide the foreign ministry and other Swedish government departments with analyses, says that the data show high amounts of volatile radioactive isotopes, such as iodine and caesium, as well the noble gas xenon. But so far, the data show no high levels of the less volatile elements such as zirconium and barium that would signal that a large meltdown had taken place — elements that were released during the 1986 reactor explosion in Chernobyl in the Ukraine.

Rather, the data sit well, he says, with a scenario wherein the main release of radioactivity has come from the release of excess pressure in the containment vessels of affected reactors, and the subsequent explosion of the evacuated hydrogen-laden steam within the reactor buildings. The radioactive plume will spread around the hemisphere within weeks, he predicts, but the levels of radioactivity outside

Japan will not be dangerous. The levels in Japan itself, outside the immediate vicinity of the Fukushima power plant, "wouldn't scare me", he adds.

### Watchful waiting

De Geer and other scientists are keenly awaiting the fresh data that they will receive from CTBTO over the next few days. Initial data from a station near Tokyo were corrupted because the collection filters used in the sensors were contaminated earlier this week during handling when a plume of radioactivity fanned over the station building, according to Gerhard Wotawa, a researcher at Austria's weather service, the Central Institute for Meteorology and Geodynamics in Vienna. That situation has now been resolved and better data are expected from tomorrow, he says.

The centre this week published [maps of radioactive spread](#) based on atmospheric transport models, which incorporate weather forecasts. (See this [animation](#) of the predicted course.) Given prevailing winds, plumes of low levels of radiation are expected to travel across the Pacific Ocean and reach the western seaboard of the United States by the end of the week. Stations in Russia are starting to pick up increases in radioactive noble gases, says Wotawa, and stations outside Japan are likely to start detecting higher radionuclides levels in the coming days.

The CTBTO data come from a worldwide network of radionuclide particulate monitoring stations operated by the Preparatory Commission of the CTBTO, a Vienna-based body set up to build a verification regime for a global ban on the testing of nuclear weapons, so that this network will be operational when enough of the organization's member states have ratified the treaty for it to enter force. The organization monitors radionuclide, seismic, hydroacoustic and infrasound characteristics at stations across the globe to check for the tell-tale signals of a nuclear bomb test.

### [boxed-text](#)



Location of CTBTO's radionuclide monitoring stations in the Asia-Pacific region. Click for larger image.

Credit: CTBTO

The CTBTO has 60 radionuclide particulate monitoring stations in operation, and two of these are in Japan, near Tokyo, with dozens of others, often on islands, throughout the Asia-Pacific region (see map). It also has instruments to monitor noble gases, such as xenon. These stations monitor the air continuously, and so have extensive data on any radionuclides projected into the atmosphere during the ongoing nuclear disaster.

The data would be of enormous public interest as they would provide a far fuller picture of the extent and spread of any current or future radioactive release from the major Japanese nuclear accident now

under way. But although the data are being made available to member states and their radiation protection services, the CTBTO cannot make them public.

### Worldwide web

The CTBTO does make available its hydroacoustic and seismic data — among the most reliable and rapid around — for the purposes of tsunami warnings, and indeed these data [contributed](#) to the rapid alerts issued by tsunami warning systems following the 9.0-magnitude earthquake. The agency's member states agreed to this after the 2004 Indian Ocean tsunami. But the CTBTO has no mandate for making radionuclide data publicly available for the purposes of monitoring nuclear accidents, because its member states have not yet agreed for it to have this role — although it does have a mandate to release radionuclide data on nuclear tests (see, for example, '[North Korea's ignoble blast](#)').

Yet its radionuclide network is also well adapted to monitoring levels of radiation in the fallout from nuclear accidents — it is still picking up radioactive caesium-137 (which has a 30-year half-life) from the 1986 Chernobyl reactor explosion in the Ukraine, for example — and its website lists such work as one of the [civil benefits](#) of its network of monitoring stations.

Each particulate monitoring station sends one  $\gamma$ -ray spectrum per day, a two-dimensional plot showing which radionuclides, and how much of each, occur in its sampling. Nuclear accidents produce a spectrum of radioactive fission products, including various radioisotopes of iodine, caesium and zirconium. The network can pick up all of them, says Lassina Zerbo, director of the CTBTO Preparatory Commission's International Data Centre Division in Vienna.

De Geer criticizes the secrecy surrounding CTBTO data. "For me it is absolutely clear: all this should be totally open," he says. "The CTBTO is a complicated organization; certain member states want all data to be classified, so they are not allowed to be given out," says De Geer, who was formerly head of the CTBTO's Radionuclide Development Unit. Even freeing the tsunami-relevant data "took years of discussion", he says.

He believes that the national laws of Sweden, a CTBTO member state, give it the right legally to "do what we want with the data", adding that the issue of the confidentiality of the data is nonetheless still a "grey zone". Wotawa likewise believes that Austria has the right to use the data, and says that his centre will be publishing CTBTO data in the daily updates of the Fukushima fallout that it is providing on its [website](#).

Zerbo says that the CTBTO's radionuclide monitoring service would be well placed to take on any international role in monitoring nuclear accidents for radiation protection purposes. "Japan and other countries have their own national radiation protection services, but where we could be useful is the worldwide nature of our monitoring network", he says. "We are the only truly worldwide radionuclide monitoring network." In a step towards that role, the CTBTO and the International Atomic Energy Agency in Vienna yesterday agreed to cooperate.



<http://www.nih.gov/news/health/mar2011/nci-17.htm>

<http://www.ncbi.nlm.nih.gov/pubmed/16738412>

<http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1469835/?tool=pubmed>

<http://english.kyodonews.jp/news/2011/03/80010.html>

<http://english.kyodonews.jp/news/2011/03/80110.html>

contaminated seawater

<http://english.kyodonews.jp/news/2011/03/80057.html>

x1600 chiffres AIEA

(Mainichi Japan) May 17, 2011

## **TEPCO documents reveal chaos at Fukushima nuke plant after quake, tsunami**

If there is one word to describe events at the Fukushima No. 1 Nuclear Power Plant in the immediate aftermath of the March 11 quake and tsunami -- with cooling systems failing and the worst nuclear disaster since Chernobyl brewing in its reactors -- it would be "chaos."

That is the picture painted by documents released by Tokyo Electric Power Co. (TEPCO) on May 16 describing the situation at the plant in the hours after tsunami slammed into the coastal facility. Coming more than two months after the disaster, the TEPCO data will soon be dissected by a government committee set up to analyze the causes of the nuclear crisis and the actions taken by both the government and TEPCO to contain it.

"The power-source trucks (to supply the reactors with outside power) are stuck in traffic!"

"We've given up on venting operations (to lower reactor vessel pressure). The radiation is just too high."

These are just two of the TEPCO employee reports included in the documents, which also lay out the exact chronology of events at the plant as the disaster unfolded.

At exactly 46 minutes and 46 seconds past 2 p.m. on March 11 -- just after the magnitude 9.0 earthquake had struck off the northeast coast of Japan -- reactors No. 1-3 began emergency shut-down procedures (reactors No. 4-6 were not operating). However, as the reactors were shutting down, the plant log reveals workers were being bombarded with alarms for control rod insertions in each reactor, water level fluctuations, and other details of a nuclear plant swinging into crisis-response mode.

According to the TEPCO documents, the tsunami hit at about 3:30 p.m., cutting all power at the plant. In response, at about 5 p.m. TEPCO ordered power-source trucks to head to the plant from its branches nearby. However, "the trucks were unable to make progress due to road damage and traffic jams," a report included in the documents states. Unable to get the trucks to the Fukushima plant, at 6:20 p.m., TEPCO requested neighboring Tohoku Electric Power Co. to send some in their stead.

The Tohoku Electric trucks did not arrive at the plant until about 11 p.m., but faced with "the dark, pools of tsunami water, missing manhole covers on the road, and debris everywhere hindering progress," workers found hooking up the necessary power cables extremely difficult, according to a report from around dawn on March 12. Power was finally restored to the plant at about 3 p.m., but at 3:36 p.m. a massive hydrogen explosion in the No.1 reactor building destroyed the newly laid cables, cutting power once more.

Meanwhile, workers inside the plant were trying to vent the No. 1 reactor to relieve pressure building in the reactor vessel. Reports made as the crisis went on show workers tried to vent the reactor manually at about 9:15 p.m. on March 11 but soon had to stop, with an entry at about 9:30 p.m. stating, "We tried the operation onsite, but the radiation dose was so high we gave up." The venting operation was eventually completed, but not until 10:17 p.m.

What the workers were doing between 9:30 p.m. and 10:17 p.m., however, is not revealed in the TEPCO documents, and a TEPCO representative told reporters, "We don't know what kind of risk assessment led the workers to try again."

However, an entry for 9:51 p.m. in the plant duty log also released by TEPCO states: "No entry permitted" to the No. 1 reactor building due to high radiation -- an order that photos of memos on the plant's central control room whiteboard show came directly from TEPCO President Masataka Shimizu. The high radiation that led to the no-entry order furthermore lends support to the theory that a core meltdown began soon after the tsunami struck.

While much of the detail surrounding TEPCO's immediate response to the disaster is included in the documents, there is no record of the utility's communications with the Prime Minister's Office, leaving government-TEPCO interactions over critical decisions such as the venting operation and the use of sea water for cooling a mystery.

(Mainichi Japan) May 17, 2011

## **Cooling system of Fukushima plant's No. 1 reactor not functioning before tsunami**

The No. 1 reactor's emergency cooling system at the Fukushima No. 1 Nuclear Power Plant was not functioning even before tsunami triggered by the March 11 earthquake struck the facility, according to initial data released on May 16 by Tokyo Electric Power Co. (TEPCO).

The emergency cooling system had previously been believed to be operating until the tsunami hit the No. 1 reactor. TEPCO had based the results of its analysis of how the cooling system stopped functioning -- which were released on May 15 -- on the assumption that the system was damaged by the tsunami.

TEPCO had also said prior to the release of analytical results on May 15 that the cooling system became inoperative due to the tsunami.

"Pressure inside the reactor suddenly dropped due to the cooling system. It probably was manually halted," plant operator TEPCO explained. As the tsunami neared the power plant, workers repeatedly tried to halt the cooling system, resulting in the loss of the system's capabilities.

The revelation is expected to figure importantly in an upcoming governmental probe of the cause of the accident.

TEPCO's newly released data, totaling about 2,900 pages, included various records from the No. 1 reactor, a log of warnings, the handover diaries by operators in the central control room and reports on electricity restoration work.

According to the data, all control rods were put in a pressure vessel immediately after the earthquake occurred at 2:46 p.m. on March 11, and the reactor came to an emergency halt. Emergency diesel generators reactivated normally.

The No. 1 reactor's emergency condenser to cool the reactor automatically activated, but about 10 minutes later pressure inside the reactor suddenly dropped. The emergency cooling system is believed to have been manually halted at around 3 p.m.

The pressure vessel's data points to the possibility that plant workers started and stopped the cooling system several times before the tsunami hit the plant at around 3:30 p.m.

A TEPCO official said the workers, following an operating manual, probably tried to prevent the inside of the reactor from getting too cold. It is not clear if the condenser was operating by 6:10 p.m. during which time there were records of manually activated operations.

The workers also started venting steam to release radioactive condensation at the No. 1 reactor from 9:15 a.m. on March 12 to protect the containment vessel from a rupture.

At the No. 2 reactor, workers tried to vent steam twice between March 13 and 15, but TEPCO could not confirm a fall in pressure inside the containment vessel. At the No. 3 reactor, workers made several attempts to vent steam after March 13.

(Mainichi Japan) May 17, 2011

## **Timetable to end nuclear crisis too optimistic**

A timetable for bringing an end to radiation leaks from the tsunami-hit Fukushima No. 1 Nuclear Power Plant and paying compensation to those affected by the accident -- which the government's task force has just announced -- suggests that **the plant operator and the government had been too optimistic about the prospects for ending the crisis.**

Tokyo Electric Power Co. (TEPCO), the operator of the plant, which had released a roadmap a month ago for placing the crippled plant under control, has since unveiled a revised version. The roadmap focuses specifically on cooling down the reactors, sealing off radioactive substances and monitoring the reactors.

In contrast, the government's timetable covers a wider range of measures -- including the evacuation of residents from affected areas, health inspections, decontamination of soil tainted with radiation, securing jobs for residents of crisis-hit areas and compensation for victims.

In particular, measures to lessen health hazards that radioactive substances can cause, specific relief measures for evacuees and prospects of when they can go home are important matters of concern for many people. The government should have shown these issues much earlier. The government is urged to promptly implement various measures that meet the needs of residents affected by the crisis.

The review of the roadmap for getting the reactors under control, based on which other measures have been worked out, has raised various questions. TEPCO has not changed its original schedule for bringing the affected reactors to a stable condition, known as a "cold shutdown," and reducing the amount of water contaminated with radiation in them. The government has approved TEPCO's original schedule.

TEPCO began to release initial data on **May 16** showing what actually happened to the Fukushima No. 1 Nuclear Power Plant immediately after the Great East Japan Earthquake occurred on March 11. The data has suggested that **the meltdown occurred at its No. 1, 2 and 3 reactors and that their pressure vessels were damaged.**

**Nuclear fuel is believed to have melted in the reactors, and dropped to the bottom of the pressure vessels, causing radioactive water to leak into their containment vessels. The containment vessels are also feared to be damaged and are leaking a massive amount of radioactive water. Moreover, there is a possibility that nuclear fuel that has melted has leaked into the containment vessels.**

**The government and TEPCO should have suspected that such trouble occurred even without the initial data.** TEPCO's initial roadmap was based on its overly optimistic perception of the state of affairs at the plant, and needs to be thoroughly reviewed.

It is a matter of course that TEPCO has been forced to abandon filling the containment vessels with water to seal off the pressure vessels. However, questions remain as to how to install heat exchanges to the crippled reactors and ensure that water is cycled inside them in order to permanently place them under control. Another problem is how to promptly shield the reactors in a bid to prevent radioactive water from leaking into the soil and contaminating underground water and the sea.

**The government and TEPCO need to accurately grasp the state of affairs at the reactors,** work out specific countermeasures and explain them to the public. If their efforts to place the reactors under control are based on their overly optimistic prospects because they want evacuees to return home as early as possible, it will be counterproductive.

Needless to say, it is an important task to **improve the work environment for workers struggling to place the nuclear plant under control and to secure skilled workers.** TEPCO has incorporated measures to improve the working environment at the plant in its revised roadmap, while the government has shown specific measures to improve health management for the workers. The government and TEPCO should steadily implement these measures.

(Mainichi Japan) May 18, 2011

May 17, 2011

---

New York Times

## With Reactor Damage Thought to Be Worse, Tokyo Utility Sticks to Plan

By [HIROKO TABUCHI](#)

TOKYO — [Japan](#) vowed Tuesday to stick to its goal of stabilizing a stricken nuclear power plant in as soon as six months, despite recently acknowledging that damage to the plant's reactors might be worse than initially estimated.

The operator of the Fukushima Daiichi nuclear power plant, Tokyo Electric Power Company, has in the past week offered a graver account of how the accident unfolded after the facility was ravaged by the tsunami that followed the March 11 earthquake. The company now acknowledges that a fuel meltdown occurred at three of the plant's six reactors in the early hours of the crisis, something experts had been suggesting for weeks.

"Even though we have confirmed that the nuclear core melted soon after the accident, our three- to six-month timeline will not change," Tokyo Electric's nuclear chief, Sakae Muto, said at a news conference on Tuesday.

Tokyo Electric said it would change some aspects of its plan to bring the reactors to what it called a "cold shutdown," where temperatures at the core fall below the boiling point.

The utility no longer plans to fill up the reactors with water to stabilize them, it said. Instead, the company will now try to keep the reactors cool by building self-circulating cooling systems at the damaged reactors.

Workers have been pumping water into the reactors since the first days of the accident, but have allowed contaminated water to seep out, causing dangerous runoff, some of which has spilled into the Pacific Ocean.

Tokyo Electric will also drape a large polystyrene cover around the severely damaged outer structure of Reactor 1 in an attempt to reduce radiation emissions, and to shield the building from summer typhoons.

To protect the plant from tsunami risks, Tokyo Electric will start placing stone-filled cages as makeshift armor units along the site's shoreline.

Stabilizing the reactors would allow workers to start dismantling and decontaminating the site, a process which experts have said will take at least a decade. About 80,000 people who lived around the plant, 140 miles north of Tokyo, have fled their homes, while thousands of farmers and fishermen risk losing their livelihoods as contamination spreads from the plant.

It is unclear whether even six to nine months will be enough to start a cleanup. Tokyo Electric in the past week has released data that show that the fuel rods at the three most damaged reactors started to melt down rapidly after the site was jolted by a quake at 2:46 p.m. on March 11, knocking out its external power supply. Less than an hour later, the plant was overrun by a 50-foot tsunami, which inundated the plant's backup diesel generators, according to the company.

The crisis worsened rapidly after that. At 7:30 p.m. on March 11, less than five hours after the quake, damage began to the nuclear fuel at Reactor 1, the company now says.

Twenty minutes later, an uncontrolled meltdown had begun, as fuel started to slump to the bottom of the reactor pressure vessel.

By 9 p.m. on the 11th, temperatures had reached 2,800 degrees Celsius, the melting point of the uranium nuclear fuel rods, leading most of the fuel to fall to the bottom of the reactor vessel. The company says meltdown also happened at Reactors No. 2 and 3.

Tokyo Electric officials had previously said that the uranium fuel rods in the reactors' cores were likely to have melted only partly.

The high temperatures also caused the fuel rods' zirconium cladding to react chemically with water, producing hydrogen gas. That hydrogen built up inside the reactor buildings, setting off explosions at two reactors and severely damaging a third.

A fourth reactor that was not operating at the time of the accident has also been wrecked. Tokyo Electric has suggested that hydrogen may have traveled there from an adjacent reactor through pipes and vents.

The International Atomic Energy Agency will send a fact-finding mission to Japan next week, the government said Tuesday.

Japan's chief cabinet secretary, Yukio Edano, said that the 20-member team will spend about a week in Japan and report its findings in June.

## In Japan Reactor Failings, Danger Signs for the U.S.

*By HIROKO TABUCHI, KEITH BRADSHER and MATTHEW L. WALD*

*This article is by **Hiroko Tabuchi, Keith Bradsher and Matthew L. Wald.***

**TOKYO — Emergency vents that American officials have said would prevent devastating hydrogen explosions at nuclear plants in the United States were put to the test in Japan — and failed to work,** according to experts and officials with the company that operates the crippled Fukushima Daiichi plant.

The failure of the vents calls into question the safety of similar nuclear power plants in the United States and Japan. After the venting failed at the Fukushima plant, the hydrogen gas fueled explosions that spewed radioactive materials into the atmosphere, reaching levels about 10 percent of estimated emissions at Chernobyl, according to Japan's nuclear regulatory agency.

Venting was critical to relieving pressure that was building up inside several reactors after the March 11 tsunami knocked out the plant's crucial cooling systems. Without flowing water to cool the reactors' cores, they had begun to dangerously overheat.

American officials had said early on that reactors in the United States would be safe from such disasters because they were equipped with new, stronger venting systems. But Tokyo Electric Power Company, which runs the plant, now says that Fukushima Daiichi had installed the same vents years ago.

Government officials have also suggested that one of the primary causes of the explosions was a several-hour delay in a decision to use the vents, as Tokyo Electric managers agonized over whether to resort to emergency measures that would allow a substantial amount of radioactive materials to escape into the air.

But the release this week of company documents and interviews with experts **provides the most comprehensive evidence yet that mechanical failures and design flaws in the venting system also contributed to delays.** The documents paint a picture of **increasing desperation** at the plant in the early hours of the disaster, as workers who had finally gotten the go-ahead to vent realized that the system would not respond to their commands.

**While venting would have allowed some radioactive materials to escape, analysts say that those releases would have been far smaller than those that followed the explosions at three of the plant's reactors,** which blew open containment buildings meant to serve as a first line of defense against catastrophe. The blasts may also have been responsible for breaches in containment vessels that have complicated efforts to cool the fuel rods and contain radioactive leaks from the site.

One reason the venting system at the plant, which was built by **General Electric**, did not work is that it relied on the same sources of electricity as the rest of the plant: backup generators that were in basements at the plant and vulnerable to tsunamis. But the earthquake may also have damaged the valves that are part of the venting system, preventing them from working even when operators tried to manually open them, Tokyo Electric officials said.

In either case, regulators in the United States and Japan will now need to determine if such systems at similar plants designed by G.E. need to undergo expensive and time-consuming retrofitting or redesign to allow them to function even in severe accidents.

"Japan is going to teach us lessons," said David Lochbaum at the Union of Concerned Scientists. **"If we're in a situation where we can't vent where we need to, we need to fix that."**

Officials from General Electric did not comment on Tuesday.

The seriousness of the crisis at the Fukushima plant became evident within hours of the quake and the tsunami that rushed over the plant's sea wall.

**Just 12 hours after the quake, the pressure inside Reactor No. 1 had reached roughly twice the maximum pressure the unit had been designed to withstand,** raising fears that the vessels that house fuel rods would rupture, setting a possible meltdown in motion. With the pressure high, pumping in additional cooling water also was not possible.

The government became rattled enough that it ordered Tokyo Electric to begin venting. But even then, Tokyo Electric's executives continued to deliberate, according to a person close to government efforts to bring the reactors under control. The exchanges became so heated, the person said, that the company's nuclear chief, Vice President Sakae Muto, and the stricken plant's director, Masao Yoshida, engaged in a "shouting match" — a rarity in reserved Japan.

Mr. Yoshida wanted to vent as soon as possible, but Mr. Muto was skeptical whether venting would work, the person said, requesting anonymity because he is still an adviser to the government and is not permitted to comment publicly. "There was **hesitation, arguments and sheer confusion over what to do,**" he said.

**The executives did not give the order to begin venting until Saturday — more than 17 hours after the tsunami struck and 6 hours after the government order to vent.**

As workers scrambled to comply with their new directive, they faced a cascading series of complications.

The venting system is designed to be operated from the control room, but operators' attempts to turn it on failed, most likely because the power to open critical valves was out. The valves are designed so they can also be opened manually, but by that time, workers found radiation levels near the venting system at Reactor No. 1 were already too high to approach, according to Tokyo Electric's records.

At Reactor No. 2, workers tried to manually open the safety valves, but pressure did not fall inside the reactor, making it unclear whether venting was successful, the records show. At Reactor No. 3, workers tried seven times to manually open the valve, but it kept closing, the records say.

The results of the failed venting were disastrous.

**Reactor No. 1 exploded first, on Saturday, the day after the earthquake. Reactor No. 3 came next, on Monday. And No. 2 exploded early Tuesday morning.**

**With each explosion, radioactive materials surged into the air, forcing the evacuation of tens of thousands of earthquake survivors living near the plant, contaminating crops and sending a faint plume of radioactive isotopes as far as the United States within days.** Aerial photos of the reactor buildings showed No. 1 and 3 had been blown apart and another was seriously damaged.

As the troubles mounted, Tokyo Electric and government officials conducted a series of news conferences that began to suggest the scope of the damage. The blasts, they said, probably caused breaches in containment vessels that are among the final layers of protection against meltdowns and even larger releases of radioactive materials.

Tokyo Electric in recent days has acknowledged that damage at the plant was worse than previously thought, with fuel rods most likely melting completely at Reactors 1, 2 and 3 in the early hours of the crisis, raising the danger of more catastrophic releases of radioactive materials. The company also said new evidence seemed to confirm that at Reactor No. 1, the pressure vessel, the last layer of protection, was broken and leaking radioactive water.

The improved venting system at the Fukushima plant was first mandated for use in the United States in the late 1980s as part of a “safety enhancement program” for boiling-water reactors that used the Mark I containment system, which had been designed by General Electric in the 1960s. Between 1998 and 2001, Tokyo Electric followed suit at Fukushima Daiichi, where five of six reactors use the Mark I design.

The company said that was the case this week, after a review of Japanese regulatory filings made in 2002 showed that the vents had been installed.

The fortified venting system addressed concerns that the existing systems were not strong enough to channel pent-up pressure inside the reactors in an emergency. Pressure would be expected to rise along with temperature, damaging the zirconium cladding on the fuel rods at the reactor core and allowing them to react chemically with water to produce zirconium oxide and hydrogen gas.

The new vents were designed to send steam and gas directly from the reactor’s primary containment, which houses the reactor vessel, racing past the usual filters and gas treatment systems that would normally slow releases of gas and eliminate most radioactive materials.

**But the emergency vents were fitted with numerous safeguards, some of which require electricity to work, rendering them useless when all power is lost at a nuclear plant, experts say.**

The most important of those safeguards are the valves, operated from a switch under lock and key in the control room, that must be opened for the vents to work. When a key is inserted into the keyboard in the nuclear reactor’s control room and turned, the valves are supposed to open, letting gases rush out of the reactor building.

Tokyo Electric has said the valves did not work at Fukushima Daiichi after the power failed.

That would suggest that operators of similar plants in the United States and Japan could protect reactors **by moving generators to higher floors if the equipment is currently in places that could be affected by tsunamis or flooding from rivers.**

But a redesign of the venting system itself might also be necessary.

The design is the result of conflicting schools of thought among United States nuclear officials, said Michael Friedlander, a former senior operator at several American nuclear power plants.

Mr. Friedlander said, referring to the Nuclear Regulatory Commission: **“You have the N.R.C. containment isolation guys who want containment closed, always, under every conceivable accident scenario, and then you’ve got the reactor safety guys who need containment to be vented under severe accident scenarios. It is a very controversial system.”**

Hiroko Tabuchi reported from Tokyo, Keith Bradsher from Hong Kong, and Matthew L. Wald from Washington.

## Venting failed twice at Fukushima plant, possibly damaging reactor

TOKYO, May 18, Kyodo

The operator of the crippled Fukushima Daiichi nuclear power plant failed twice to vent steam out of the containment vessel of the No. 2 reactor, most likely resulting in damage done to part of it, a plant operator source said Wednesday.

The failure in the immediate aftermath of the March 11 earthquake and tsunami and subsequent trouble at the plant, such as the release of massive amounts of radioactive material into the air and the discharge of contaminated water, call into question Tokyo Electric Power Co.'s crisis management, observers say.

The world's worst nuclear crisis since the 1986 Chernobyl disaster has yet to be contained, with the government and the utility struggling to restart key cooling functions at most of the six reactors there.

## Radioactive water released at U.S. request: Cabinet adviser

SEOUL (Kyodo) -- Japanese playwright Oriza Hirata, who serves as a special adviser to the Cabinet, **claimed in a recent lecture given here that the dumping of low-level radioactive water into the Pacific Ocean was done at the "strong request" from the United States**, a person who attended the lecture said Wednesday.

The release of the water from the Fukushima Daiichi nuclear power plant last month generated anxiety about the possible spread of radioactive contamination from the seaside power station.

The Japanese government had apparently given its permission for the release of the water after receiving a report from plant operator Tokyo Electric Power Co.

Hirata's remarks, made Tuesday, that the release was not carried out based on Tokyo's independent judgment but rather on a request from Washington is likely to ignite a discussion.

South Korea and other neighboring countries have voiced concerns over a lack of prior notification of the tainted water discharge.

Hirata's lecture in Seoul was titled "Earthquakes and the Revitalization of Japan," and in response to a question at the venue, he called Japan's failure to give advance notification an error of communication.

While acknowledging that the release of the water caused concern in South Korea, **he said the water that was discharged had an extremely low radioactivity and the quantity was small. [ah bon ?]**

Speaking at a news conference in Tokyo on Wednesday, Chief Cabinet Secretary Yukio Edano said that he was "not aware" of the release of the water being carried out at the request of the United States.

"I would like to confirm with him afterward based on what recognition he was speaking," Edano said, indicating that he intends to question Hirata on his claim of U.S. intervention.

(Mainichi Japan) May 18, 2011

## Workers enter another reactor building at crippled Fukushima plant

TOKYO (Kyodo) -- Workers trying to restore the Fukushima Daiichi nuclear power plant on Wednesday entered the building housing the troubled No. 2 reactor for the first time since an explosion occurred inside the building in the early days of the nuclear crisis.

Plant operator Tokyo Electric Power Co. has already sent people inside the No. 1 reactor building to make preparations to create a system to stably cool the nuclear fuel, and similar work is expected to take place inside the No. 2 reactor, such as checking the equipment and adjusting the reactor's gauges that may have some malfunctions.

The utility known as TEPCO is struggling to contain the nuclear crisis, triggered in the wake of the March 11 earthquake and tsunami, in line with a road map that aims to bring the crippled Nos. 1 to 3 reactors to a stable cooling condition by mid-July and to a condition called "cold shutdown" by January at the latest.

In an updated version of its road map unveiled Tuesday, TEPCO did not change the broad restoration time frame, but said **it plans to create a system to cool the three reactors by recycling massive amounts of radioactive water now filling up the reactor buildings and the adjacent reactor turbine buildings.**

The water would be recycled by using a decontamination facility, scheduled to be set up in mid-June. TEPCO said it now estimates that **roughly 84,700 tons of relatively highly radioactive water are in the Nos. 1 to 4 reactor buildings, reactor turbine buildings and nearby underground trenches.**

The pools of water are believed to be a side effect of an emergency measure after the disaster to keep injecting water into the reactors and spent fuel pools, which lost their key cooling functions in the quake and tsunami, to prevent the fuel inside from overheating.

The latest findings have suggested that the No. 1 reactor core suffered a meltdown shortly after the plant was rattled by the earthquake, and **government officials have emphasized the need to act on the assumption that the Nos. 2 and 3 reactor cores may also be in a similar situation.**

On Wednesday morning, four TEPCO workers entered the No. 2 reactor building **for about 15 minutes. They were exposed to radiation of between 3.33 and 4.27 millisieverts, TEPCO said.**

**The environment inside the No. 2 reactor building is tough for workers not only because of the high radiation level but also the high humidity that can be attributed to steam coming out from the pool that stores the spent nuclear fuel, it said.**

TEPCO spokesman Junichi Matsumoto told a press conference in the afternoon that the company plans to install a device to efficiently cool the water inside the spent fuel pool and start the system's test-run May 31.

The system is also expected to help lower the humidity inside the building, which would mean an improvement in the working conditions there, according to the government's Nuclear and Industrial Safety Agency.

TEPCO will speak on Thursday about the outcome of the radiation level and other data obtained from the entry into the No. 2 reactor building, Matsumoto said.

Meanwhile, Economy, Trade and Industry Minister Banri Kaieda told a separate press conference that he thinks the direct cause of the crisis was the giant tsunami that led the plant to lose all its power sources, rather than the quake, denying speculation that key reactor equipment may have suffered damage before the power loss occurred. [????????]

Such speculation has emerged after it was found that the radiation level inside the No. 1 reactor building was already high on the night of March 11.

(Mainichi Japan) May 19, 2011

## 5 tons of seawater may have entered Hamaoka nuclear reactor

SHIZUOKA, Japan, May 19, Kyodo

Around five tons of seawater may have entered one of the reactors at the Hamaoka nuclear power plant in Shizuoka Prefecture along with about 400 tons of seawater found in its steam condenser when work was under way Sunday to put the reactor into a state of "cold shutdown," Chubu Electric Power Co., the plant operator, said Thursday.

The reactor will not be decommissioned because the utility will dilute and desalinate the seawater in an effort to prevent any corrosion inside the reactor, the company said.

Seawater might have entered from damaged piping inside the condenser, which cools steam from the turbine and turns it into water.

## Cabinet adviser retracts remark about release of contaminated water

TOKYO (Kyodo) -- Cabinet adviser Oriza Hirata has retracted a recent remark that low-level radioactive water was dumped from the troubled Fukushima No. 1 Nuclear Power Plant into the Pacific in April at the "strong request" of the United States, his office said Thursday.

In a statement issued by his office, Hirata, a playwright who has served in the government post since October 2009, said he had confused the dumping of the radioactive water with another matter when he made the controversial comment during a lecture in Seoul on Tuesday, offering an apology.

Hirata, 48, said in the statement that he has not visited the prime minister's office since the March 11 earthquake and tsunami, and that he is not in a position to know about developments in the nuclear crisis.

Chief Cabinet Secretary Yukio Edano, the top government spokesman, told a morning news conference that he had received an apology from Hirata for making what the adviser called an **"improper remark."**

The release of low-level radioactive water into the sea, carried out with the government's permission, generated anxiety among neighboring countries such as South Korea.

(Mainichi Japan) May 19, 2011

<http://mdn.mainichi.jp/photospecials/graph/plant/15.html>

(Mainichi Japan) May 30, 2011

## **Gov't to scrap upper limit of radiation exposure for workers at Fukushima plant**

The government has decided to abolish the upper cap of radiation exposure for workers at the disaster-crippled Fukushima No. 1 Nuclear Power Plant, drawing concern from experts, it has been learned.

The Ministry of Health, Labor and Welfare decided to lift the yearly 50-millisievert maximum permissible amount of radiation exposure for workers at the troubled Fukushima plant in the face of the prolonged restoration work at the facility.

The ministry has notified the Japanese Trade Union Confederation (Rengo) -- Japan's largest labor organization -- of the decision in writing. The ministry will uphold the combined 100-millisievert maximum allowable exposure for workers over a five-year period, inclusive of doses they are exposed to during regular inspections of other nuclear power plants.

The move came after **it became likely that workers at the Fukushima plant would not be able to be engaged in regular inspections at other nuclear power generation facilities after their stint at**

**Fukushima.** However, experts are voicing concerns over the change of policy, saying it could adversely affect the workers' health.

The ministry had earlier upgraded the yearly limit of 100-millisievert accumulated exposure in emergencies to 250 millisieverts only for workers at the Fukushima plant, while leaving a decision whether to allow the doses to be combined with those they are exposed to during regular inspections at other nuclear plants unclear.

**In a notice issued on April 28, the ministry clearly stated that workers should be exposed to no more than 100 millisieverts of radiation over a five-year period and that the yearly limit of 50 millisieverts should be upheld for workers at other facilities than the Fukushima plant.**

According to sources close to the case, the ministry's notice was distributed at an ad-hoc meeting at Rengo's Tokyo headquarters on May 11 under the name of a division head of the ministry's Industrial Safety and Health Department. The notice stated that **workers at the Fukushima plant will not be given administrative guidance even if they are exposed to more than 50 millisieverts of radiation a year** but that they will be instructed to be exposed to no more than 100 millisieverts over a five-year period.

"We wanted to prevent our decision from being misunderstood by workers," said an official with the ministry's Industrial Health Division.

Masanobu Nishino, secretary-general of the Kansai Occupational Safety & Health Center and an expert in occupational exposure to radiation, criticized the ministry's move.

"Considering the fact that workers are exposed to only around an average 1 millisievert of radiation a year through regular inspections at nuclear power plants, even the limit of 50 millisieverts is too much and this raises concerns over workers' health. It should be the role of the health ministry to instruct workers to be exposed to no more than 50 millisieverts," Nishino said.

## **Cooling system pumps stop at Fukushima plant's No. 5 unit**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Sunday the pumps to cool the nuclear reactor and fuel pool stopped at its crippled Fukushima No. 1 power plant's No. 5 unit.

As the temperature of the reactor rose, the operator switched to backup pumps to restore the cooling system, while investigating the cause of the trouble.

The backup pumps are a makeshift solution designed to tap seawater for cooling purposes.

When a worker at the plant became aware of the problem at 9 p.m. Saturday, the temperature of the reactor stood at 68 C and that of the fuel pool at 41 C. The figures had risen to 94 C and 46 C, respectively, as of noon Sunday, it said.

Tokyo Electric did not reveal the trouble until Sunday morning, and an official said, "We reported it to the central government and the prefectural government of Fukushima on Saturday evening, but we feel sorry that we did not announce it" immediately.

(Mainichi Japan) May 29, 2011

---

<http://mdn.mainichi.jp/photospecials/graph/plant/>

---

New York Times

May 30, 2011

## In Japan, a Culture That Promotes Nuclear Dependency

By [MARTIN FACKLER](#) and [NORIMITSU ONISHI](#)

KASHIMA, Japan — When the Shimane nuclear plant was first proposed here more than 40 years ago, this rural port town put up such fierce resistance that the plant's would-be operator, Chugoku Electric, almost scrapped the project. Angry fishermen vowed to defend areas where they had fished and harvested seaweed for generations.

Two decades later, when Chugoku Electric was considering whether to expand the plant with a third reactor, Kashima once again swung into action: this time, to rally in favor. Prodded by the local fishing cooperative, the town assembly voted 15 to 2 to make a public appeal for construction of the \$4 billion reactor.

Kashima's reversal is a common story in [Japan](#), and one that helps explain what is, so far, this nation's unwavering pursuit of nuclear power: a lack of widespread grass-roots opposition in the communities around its 54 nuclear reactors. This has held true even after the March 11 earthquake and tsunami generated a nuclear crisis at the Fukushima Daiichi station that has raised serious questions about whether this quake-prone nation has adequately ensured the safety of its plants. So far, it has spurred only muted public questioning in towns like this.

Prime Minister Naoto Kan has, at least temporarily, shelved plans to expand Japan's use of nuclear power — plans promoted by the country's powerful nuclear establishment. Communities appear willing to fight fiercely for nuclear power, despite concerns about safety that many residents refrain from voicing publicly.

To understand Kashima's about-face, one need look no further than the Fukada Sports Park, which serves the 7,500 mostly older residents here with a baseball diamond, lighted tennis courts, a soccer field and a \$35 million gymnasium with indoor pool and Olympic-size volleyball arena. **The gym is just one of several big public works projects paid for with the hundreds of millions of dollars this community is receiving for accepting the No. 3 reactor, which is still under construction.**

As Kashima's story suggests, Tokyo has been able to essentially buy the support, or at least the silent acquiescence, of communities by showering them with generous subsidies, payouts and jobs. In 2009 alone, Tokyo gave \$1.15 billion for public works projects to communities that have electric plants, according to the Ministry of Economy, Trade and Industry. Experts say the majority of that money goes to communities near nuclear plants.

And that is just the tip of the iceberg, experts say, as the communities also receive a host of subsidies, property and income tax revenues, compensation to individuals and even "anonymous" donations to local treasuries that are widely believed to come from plant operators.

Unquestionably, the aid has enriched rural communities that were rapidly losing jobs and people to the cities. With no substantial reserves of oil or coal, Japan relies on nuclear power for the energy needed to drive its economic machine. But critics contend that the largess has also made communities dependent on central government spending — and thus unwilling to rock the boat by pushing for robust safety measures.

In a process that critics have likened to drug addiction, the flow of easy money and higher-paying jobs quickly replaces the communities' original economic basis, usually farming or fishing.

Nor did planners offer alternatives to public works projects like nuclear plants. Keeping the spending spigots open became the only way to maintain newly elevated living standards.

Experts and some residents say this dependency helps explain why, despite the legacy of Hiroshima and Nagasaki, and the accidents at the Three Mile Island and Chernobyl nuclear plants, Japan never faced the levels of popular opposition to nuclear power seen in the United States and Europe — and is less likely than the United States to stop building new plants. Towns become enmeshed in the same circle — which includes politicians, bureaucrats, judges and nuclear industry executives — that has relentlessly promoted the expansion of nuclear power over safety concerns.

"This structure of dependency makes it impossible for communities to speak out against the plants or nuclear power," said Shuji Shimizu, a professor of public finance at Fukushima University.

## Code of Silence

Indeed, a code of silence seems to prevail even now in towns like Kashima, which merged with the neighboring city of Matsue a half decade ago.

Tsuneyoshi Adachi, a 63-year-old fisherman, joined the huge protests in the 1970s and 1980s against the plant's No. 2 reactor. He said many fishermen were angry then because chlorine from the pumps of the plant's No. 1 reactor, which began operating in 1974, was killing seaweed and fish in local fishing grounds.

However, Mr. Adachi said, once compensation payments from the No. 2 reactor began to flow in, neighbors began to give him cold looks and then ignore him. By the time the No. 3 reactor was proposed in the early 1990s, no one, including Mr. Adachi, was willing to speak out against the plant. He said that there was the same peer pressure even after the accident at Fukushima, which scared many here because they live within a few miles of the Shimane plant.

“Sure, we are all worried in our hearts about whether the same disaster could happen at the Shimane nuclear plant,” Mr. Adachi said. However, “the town knows it can no longer survive economically without the nuclear plant.”

While few will say so in public, many residents also quietly express concern about how their town gave up its once-busy fishing industry. They also say that flashy projects like the sports park have brought little lasting economic benefit. The No. 3 reactor alone brought the town some \$90 million in public works money, and the promise of another \$690 million in property tax revenues spread over more than 15 years once the reactor becomes operational next year.

In the 1990s, property taxes from the No. 2 reactor supplied as much as three-quarters of town tax revenues. The fact that the revenues were going to decline eventually was one factor that drove the town to seek the No. 3 reactor, said the mayor at the time, Zentaro Aoyama.

Mr. Aoyama admitted that the Fukushima accident had frightened many people here. Even so, he said, the community had no regrets about accepting the Shimane plant, which he said had raised living standards and prevented the depopulation that has hollowed out much of rural Japan.

“What would have happened here without the plant?” said Mr. Aoyama, 73, who said the town used its very first compensation payment from the No. 1 reactor back in the late 1960s to install indoor plumbing.

While the plants provide power mostly to distant urban areas, they were built in isolated, impoverished rural areas.

Kazuyoshi Nakamura, 84, recalls how difficult life was as a child in Katakū, a tiny fishing hamlet within Kashima that faces the rough Sea of Japan. His father used a tiny wooden skiff to catch squid and bream, which his mother carried on her back to market, walking narrow mountain paths in straw sandals.

Still, at first local fishermen adamantly refused to give up rights to the seaweed and fishing grounds near the plant, said Mr. Nakamura, who was a leader of Katakū’s fishing cooperative at the time. They eventually accepted compensation payments that have totaled up to \$600,000 for each fisherman.

“In the end, we gave in for money,” Mr. Nakamura said.

Today, the dirt-floor huts of Mr. Nakamura’s childhood have been replaced by oversize homes with driveways, and a tunnel has made central Kashima a five-minute drive away. But the new wealth has changed this hamlet of almost 300 in unforeseen ways. Only about 30 aging residents still make a living from fishing. Many of the rest now commute to the plant, where they work as security guards or cleaners.

“There was no need to work anymore because the money just flowed so easily,” said a former town assemblyman who twice ran unsuccessfully for mayor on an antinuclear platform.

## **A Flow of Cash**

Much of this flow of cash was the product of the Three Power Source Development Laws, a sophisticated system of government subsidies created in 1974 by Kakuei Tanaka, the powerful prime minister who shaped Japan's nuclear power landscape and used big public works projects to build postwar Japan's most formidable political machine.

**The law required all Japanese power consumers to pay, as part of their utility bills, a tax that was funneled to communities with nuclear plants.** Officials at the Ministry of Economy, Trade and Industry, which regulates the nuclear industry, and oversees the subsidies, refused to specify how much communities have come to rely on those subsidies.

“This is money to promote the locality's acceptance of a nuclear plant,” said Tatsumi Nakano of the ministry's Agency for Natural Resources and Energy. A spokesman for Tohoku Electric Power Company, which operates a plant in Higashidori, said that the company is not involved in the subsidies, and that since Fukushima, it has focused on reassuring the public of the safety of nuclear plants.

**Political experts say the subsidies encourage not only acceptance of a plant but also, over time, its expansion. That is because subsidies are designed to peak soon after a plant or reactor becomes operational, and then decline.**

“In many cases, what you'll see is that a town that was depopulating and had very little tax base gets a tremendous surge of money,” said [Daniel P. Aldrich](#), a political scientist at Purdue University who has studied the laws.

**As the subsidies continue to decline over the lifetime of a reactor, communities come under pressure to accept the construction of new ones,** Mr. Aldrich said. “The local community gets used to the spending they got for the first reactor — and the second, third, fourth, and fifth reactors help them keep up,” he added.

Critics point to the case of Futaba, the town that includes Fukushima Daiichi's No. 5 and No. 6 reactors, which began operating in 1978 and 1979, respectively.

According to Professor Shimizu of Fukushima University, Fukushima Daiichi and the nearby Fukushima Daini plants directly or indirectly employed some 11,000 people in communities that include Futaba — or about one person in every two households. Since 1974, communities in Fukushima Prefecture have received about **\$3.3 billion in subsidies** for its electrical plants, most of it for the two nuclear power facilities, Mr. Shimizu said.

Despite these huge subsidies, most given in the 1970s, Futaba recently began to experience budget problems. As they did in Kashima, the subsidies dwindled along with other revenues related to the nuclear plant, including property taxes. By 2007, Futaba was one of the most fiscally troubled towns in Japan and nearly went bankrupt. Town officials blamed the upkeep costs of the public facilities built in the early days of flush subsidies and poor management stemming from the belief that the subsidies would remain generous.

Eisaku Sato, who served as the governor of Fukushima Prefecture from 1988 to 2006 and became a critic of the nuclear industry, said that 30 years after its first reactor started operating, the town of Futaba could no longer pay its mayor's salary.

“With a nuclear reactor, in one generation, or about 30 years, it’s possible that you’ll become a community that won’t be able to survive,” Mr. Sato said.

Futaba’s solution to its fiscal crisis was to ask the government and Tokyo Electric, Fukushima Daiichi’s operator, to build two new reactors, which would have eventually increased the number of reactors at Fukushima Daiichi to eight. The request immediately earned Futaba new subsidies.

“Putting aside whether ‘drugs’ is the right expression,” Mr. Sato said, “if you take them one time, you’ll definitely want to take them again.”

Eiji Nakamura, the failed candidate for mayor of Kashima, said the town came to rely on the constant flow of subsidies for political as well as economic reasons. He said the prefectural and town leaders used the jobs and money from public works to secure the support of key voting blocs like the construction industry and the fishing cooperative, to which about a third of the town’s working population belongs.

“They call it a nuclear power plant, but **it should actually be called a political power plant**,” Mr. Nakamura joked.

### **The Most to Lose**

This dependence explains why Prime Minister Kan’s talk of slowing Japan’s push for nuclear power worries few places as much as the Shimokita Peninsula, an isolated region in northern Honshu.

The peninsula’s first reactor went online in 2005, two are under construction, and two more are still being planned. Japan is also building massive nuclear waste disposal and reprocessing facilities there. As newcomers to nuclear power, Shimokita’s host communities now have the most to lose.

Consider Higashidori, a town with one working reactor and three more scheduled to start operating over the next decade. With the subsidies and other revenues from four planned reactors, town officials began building an entirely new town center two decades ago.

Serving a rapidly declining population of 7,300, the town center is now dominated by three gigantic, and barely used, buildings in the shape of a triangle, a circle and a square, which, according to the Tokyo-based designer, symbolize man, woman and child. Nearby, a sprawling campus with two running tracks, two large gymnasiums, eight tennis courts and an indoor baseball field serves fewer than 600 elementary and junior high school children. In 2010, nearly 46 percent of the town’s \$94 million budget came from nuclear-related subsidies and property taxes.

Shigenori Sasatake, a town official overseeing nuclear power, said Higashidori hoped that the Japanese government and plant operators would not waver from their commitment to build three more reactors there, despite the risks exposed at Fukushima.

“Because there are risks, there is no way reactors would be built in Tokyo, but only here in this kind of rural area,” Mr. Sasatake said, adding that town officials harbored no regrets about having undertaken such grandiose building projects.

But Higashidori's building spree raised eyebrows in Oma, another peninsula town, with 6,300 residents, where construction on its first reactor, scheduled to start operating in 2014, was halted after the Fukushima disaster.

Tsuneoyoshi Asami, a former mayor who played a critical role in bringing the plant to Oma, said that the town did not want to be stuck with fancy but useless buildings that would create fiscal problems in the future. So far, Oma has resisted building a new town hall, using nuclear subsidies instead to construct educational and fisheries facilities, as well as a home for the elderly.

"Regular people and town council members kept saying that no other community where a plant was located has stopped at only one reactor — that there was always a second or third one — so we should be spending more," Mr. Asami said. "But I said no."

Still, even in Oma, there were worries that the Fukushima disaster would indefinitely delay the construction of its plant. It is just the latest example of how the system of subsidies and dependency Japan created to expand nuclear power makes it difficult for the country to reverse course.

"We absolutely need it," Yoshifumi Matsuyama, the chairman of Oma's Chamber of Commerce, said of the plant. "Nothing other than a nuclear plant will bring money here. That's for sure. What else can an isolated town like this do except host a nuclear plant?"

---

## **TEPCO begins streaming video of Fukushima nuclear plant on homepage**



A still taken from the Fuku-Ichi Live Camera stream at about 7 p.m. on May 30. (Image courtesy of TEPCO)

Anyone seeking a peek inside the crippled Fukushima No. 1 Nuclear Power Plant can now check up on the goings on there anytime of the day with a new 24-hour camera feed, available through plant operator Tokyo Electric Power Co. (TEPCO)'s website.

TEPCO put the feed from the "Fuku-Ichi Live Camera" up on its homepage at 10 a.m. on May 31. The camera is mounted close to the plant's main administrative building, about 250 meters from the No. 1 reactor, and provides views of reactors No. 1 to 4. The video relay will lag about 30 seconds. TEPCO

also says it hopes to provide annotations to explain any fires or other serious events captured by the camera.

The video feed can be found at: <http://www.tepco.co.jp/nu/f1-np/camera/index-j.html>.

## Related links

Fuku-Ichi Live Camera stream

<http://www.tepco.co.jp/nu/f1-np/camera/index-j.html>

(Mainichi Japan) May 31, 2011

---

## Oil briefly leaked into sea close to crippled Fukushima nuke plant

TOKYO, May 31, Kyodo

Oil has temporarily leaked into the sea near the crisis-hit Fukushima Daiichi nuclear power plant from an oil pipe that may have been damaged in the March 11 earthquake and tsunami, the plant operator said Tuesday, adding it set up oil fences to prevent the liquid from spreading into the Pacific Ocean.

In another incident, the sound of an explosion was heard in the afternoon near the No. 4 reactor building because remote-controlled heavy machinery damaged an oxygen cylinder when removing rubble, Tokyo Electric Power Co. said. No one was injured and the radiation level at the area remained stable, it added.

As for the oil problem, Goshi Hosono, a senior government official tasked with handling the nuclear crisis, said in a press conference jointly held with Tokyo Electric in the afternoon that the amount of leakage was found to be "extremely small."

**JUIN 2011**

(Mainichi Japan) June 1, 2011

## **TEPCO starts system to cool spent fuel pool at Fukushima plant**

TOKYO (Kyodo) -- The operator of the crippled Fukushima No. 1 Nuclear Power Plant said that it has started to fully operate a water circulation system to **stably cool one of the pools storing spent nuclear fuel at the plant**, marking progress in its efforts to bring the nuclear crisis under control.

Tokyo Electric Power Co. said, meanwhile, it had discovered that oil temporarily leaked into the sea near the plant located on the Pacific coast, while an oxygen cylinder ruptured during work to remove rubble earlier in the day.

The utility known as TEPCO is trying to contain the world's worst nuclear crisis since the 1986 Chernobyl disaster, in line with a road map that aims to stabilize sometime between October and January the plant's reactors and spent fuel pools, which lost their key cooling functions in the wake of the massive March 11 earthquake and tsunami.

**The new water circulation cooling system was established for the spent fuel pool in the No. 2 reactor building.** The system is also expected to **help lower the extremely high humidity detected inside the building by reducing steam coming out from the hot water in the pool** and to improve the working environment inside the building.

TEPCO spokesman Junichi Matsumoto said that the temperature of **the pool's water is expected to fall to around 40 C from about 70-80 C by operating the system for about a month.**

Similar systems are to be created for the spent fuel pools of the Nos. 1 and 3 units in June, as well as for the No. 4 unit in around July.

But on the same day, TEPCO found that oil had temporarily leaked into the sea near the plant from an oil pipe that may have been damaged in the March disaster. It said the leak has stopped and hastily set up oil fences to prevent the liquid from spreading into the Pacific Ocean.

Goshi Hosono, a senior government official tasked with handling the nuclear crisis, said in a press conference jointly held with TEPCO's Matsumoto and others in the afternoon that the amount of oil involved was "extremely small."

TEPCO workers detected the **oil slick, which extended for 200 to 300 meters inside breakwaters** at one point, at 8 a.m. when patrolling the plant.

**Tokyo Electric suspects the oil leaked from a pipe believed to be connected to two heavy oil tanks located near the water intake for the Nos. 5 and 6 reactors. Recent typhoon-affected rainy weather may also have led to the leak,** it said.

When the March 11 disaster struck the plant, a tanker was supplying oil to the tanks, each with a capacity of 960 kiloliters. One of them was moved from its original location because of the tsunami.

Aside from the oil spill, the sea close to the plant was earlier contaminated with highly radioactive water that leaked from the plant.

To reduce contamination of seawater enclosed inside the harbor, TEPCO said it will start test-operating from Wednesday a system to **pump out the water and extract radioactive materials from it by using a mineral called zeolite.**

In another incident, an explosion was heard at 2:30 p.m. near the No. 4 reactor building after remote-controlled heavy machinery damaged an oxygen cylinder while rubble was being removed. No one was injured and the radiation level in the area remained stable, TEPCO added.

**Meanwhile, it was also revealed Tuesday that the head of a government task force on the Fukushima disaster has been absent since May 19 because of illness.**

The task force head, senior vice industry minister Motohisa Ikeda, has been hospitalized, Economy, Trade and Industry Minister Banri Kaieda told a parliamentary committee.

**A senior bureaucrat of the Nuclear and Industrial Safety Agency has been serving as acting chief, but the government had not announced the fact.**

## **Audits de sûreté nucléaire : l'Union européenne se range à la proposition des régulateurs**

À l'issue de deux semaines de négociation, le commissaire européen à l'Energie a finalement validé les stress-tests proposés le 13 mai par les régulateurs. La sûreté et la sécurité feront l'objet de deux audits distincts.

| 26 Mai 2011 | Actu-Environnement.com

La Commission européenne et les régulateurs européens ont annoncé mercredi 25 mai 2011 avoir trouvé un compromis sur le contenu et la forme des tests de résistance que passeront les centrales nucléaires de l'Union. Les audits de sûreté pourront débuter dès le 1er juin, se félicite la Commission, pour un rendu à l'occasion du sommet européen du 9 décembre.

Concrètement, l'exécutif européen a validé l'approche proposée par le Groupe des régulateurs européens dans le domaine de la sûreté nucléaire (ENSREG). Selon des diplomates interrogés par Reuters, l'accord aurait été scellé mardi soir après que l'Autriche ait finalement approuvé les propositions des régulateurs. Les deux dernières semaines de négociation n'ont finalement rien apporté puisque [le document de l'ENSREG](#) validé par la Commission, date du 13 mai 2011.

### **Les audits nationaux évalués par un groupe de sept experts**

Les questions de sûreté des installations et le thème de la sécurité face à des actes terroristes ou la chute d'un avion feront donc l'objet de [deux évaluations distinctes](#).

Les [propositions](#) de l'Association des responsables des autorités de sûreté nucléaire des pays d'Europe de l'Ouest (Wenra) serviront de base à l'audit de sûreté.

Cette évaluation se déroulera en trois étapes. Tout d'abord, les opérateurs des centrales nucléaires répondront à un questionnaire reprenant les éléments des tests de résistance. Ensuite les régulateurs nationaux vérifieront la crédibilité des réponses et rédigeront un rapport de synthèse. Enfin, une équipe internationale, composé d'un représentant de la Commission et de six représentants choisis parmi les 27 régulateurs des Etats membres, passera en revue les rapports. Le groupe d'experts, dont la composition exacte sera définie ultérieurement, pourra visiter certains sites pour valider les rapports des régulateurs et ses conclusions seront rendues publiques.

### **Vers la création d'un groupe de travail sur la sécurité**

Quant à la sécurité, elle fera l'objet d'un groupe de travail chargé de définir la nature des tests. *"Les menaces liées à la sécurité ne font pas partie du mandat de l'ENSREG et la prévention et les réponses à apporter aux accidents causés par des actes malveillants ou terroristes (y compris les chutes d'avion) concernent d'autres autorités"* explique le document validé par la Commission, précisant qu'*"afin de prendre en compte ces questions, il est proposé que le Conseil établisse un groupe de travail spécifique composé de représentants des Etats membres et de la Commission, selon leur compétence respective."*

Jusqu'à maintenant, Günther Oettinger, le commissaire européen à l'énergie, refusait de distinguer l'évaluation de la sûreté et de la sécurité des installations nucléaires. Cependant, au cours des négociations avec les régulateurs, il s'était rangé à cette option, mais en contrepartie il avait émis le souhait d'avoir la mainmise sur la composition du groupe de travail sur la sécurité.

À l'issue de la négociation, le Commissaire semble finalement avoir renoncé à cette revendication. Il évoque maintenant *"le besoin de confidentialité"* afin de justifier le traitement distinct des questions de sécurité.

### **Les Verts critiquent le manque de fermeté de Günther Oettinger**

La conclusion semble bien éloignée de [la fermeté affichée par le commissaire devant les parlementaires européens](#) puisque Günther Oettinger est maintenant *"très satisfait"* du compromis même s'il reconnaît implicitement certaines limites aux tests. En particulier, [le caractère facultatif des audits](#) et l'impossibilité pour la Commission d'imposer la fermeture des réacteurs les moins fiables posent problème. *"Je sais qu'il y a des attentes en ce sens au Parlement européen, en Allemagne et en Autriche, mais ce ne sera pas le cas, car ce n'est pas mon mandat"* a-t-il expliqué en rappelant les prérogatives des Etats membres en matière de politique énergétique.

Pour le groupe Verts au Parlement européen, *"ces tests sont loin d'avoir la rigueur nécessaire pour évaluer correctement la sûreté [des] réacteurs et réduire au maximum le risque d'accident."*

Les eurodéputés, et notamment Michèle Rivasi et Yannick Jadot, estiment que *"Günther Oettinger a perdu la lutte face aux autorités britanniques et françaises."* Selon les écologistes, il *"n'a pas réussi à imposer des stress tests totalement transparents et indépendants, qui prennent en compte tous les"*

*critères nécessaires" et cela bien qu'il ait "longtemps campé sur ses positions et affirmé qu'il prendrait en compte les attentats terroristes dans le cahier des charges."*

Philippe Collet

© Tous droits réservés Actu-Environnement Reproduction interdite sauf [accord de l'Éditeur](#) ou [établissement d'un lien préformaté](#) [12647] / [utilisation du flux d'actualité](#).

## **TEPCO to resume transferring toxic water at Fukushima plant**

TOKYO, June 2, Kyodo

The operator of the crippled Fukushima Daiichi nuclear power plant plans to resume transferring radioactive-contaminated water within the No. 3 reactor's turbine building by securing additional room to pool it, company officials said Thursday.

Tokyo Electric Power Co. was set to resume the operation at a time it is working **to prevent the tainted water from spilling out of pits and other facilities at the plant** before activating new equipment that can recycle the problem water to cool down reactors about two weeks later.

The utility sees **the amount of tainted water increasing in turbine buildings and nearby pits at the station as a recent typhoon brought substantial rainfall to the complex**, 220 kilometers northeast of Tokyo. **The rainy season zone is also approaching** Fukushima Prefecture and other areas in the northeastern Tohoku region.

## **Japan mulls evacuating radiation 'hot spots'**

TOKYO (Kyodo) -- The government is considering expanding the scope of its evacuation order **to include people from certain spots that are emitting high levels of radiation as a result of the nuclear accident at the Fukushima No. 1 power plant** in March, government officials said.

The government will be discussing with municipalities these so-called "hot spots" suffering from radiation exposure that would exceed the **yardstick of 20 millisieverts during the course of a year**.

A hot spot refers to an area that has a high level of radiation following rain or as a result of landscape or wind conditions that affect the direction in which radioactive materials travel after being released into the air.

Normally, radiation spreads concentrically but under such conditions, radioactive materials spread randomly to various spots.

Top government spokesman Yukio Edano said at a news conference there are certain spots, other than the government-designated evacuation areas, where radiation levels are high depending on atmospheric and other conditions, and the government will boost monitoring at these locations.

"Based on the outcome of (radiation) monitoring, we will consider taking appropriate action," the chief Cabinet secretary told a news conference, hinting at the possible evacuation of these areas.

Separately, Deputy Chief Cabinet Secretary Tetsuro Fukuyama told an opposition lawmaker that **some parts of Minamisoma city in Fukushima have registered high levels of radiation**, and the government will consult with the mayor and other officials on whether or not to evacuate the residents there.

Following the devastating March 11 earthquake and tsunami that triggered a nuclear emergency, the government ordered the evacuation of people living within 30 kilometers of the Fukushima Daiichi plant, which lost its key cooling functions and continues to spew radiation.

The government has since prohibited people from entering areas within a 20-kilometer radius of the crippled Fukushima plant and added some towns outside the limit to the list of areas covered by its evacuation directive due to concerns over high levels of radiation exposure.

(Mainichi Japan) June 7, 2011

## **Japan starts probe into Fukushima nuke crisis under expert panel**

TOKYO (Kyodo) -- Japan has started looking into the causes of the nuclear crisis at the Fukushima Daiichi power plant three months after it was triggered by the March 11 massive earthquake and tsunami, with an **independent panel of experts** holding their first gathering Tuesday in Tokyo.

The move marks the beginning of a comprehensive investigation of the world's worst nuclear crisis in 25 years since Chernobyl. The steps taken by the plant operator to deal with the disaster, often criticized as belated, as well as the government's response will be under scrutiny, but the panel does not intend to pursue the responsibilities of the people involved.

The panel, led by Yotaro Hatamura, a researcher on human error.

plans to compile a midterm report of their findings by the end of this year and a final report sometime after the crisis is settled.

At the outset of the meeting, Prime Minister Naoto Kan called on the members to make "firm judgments as a panel independent from the government," and said he is willing to be questioned as part of the panel's investigation process.

"I would like to ask for a report that can live up to scrutiny from around the world," Kan said.

Hatamura, a professor emeritus at the University of Tokyo, said, "I think it is a mistake to consider it safe." He also suggested the panel will inspect the crippled Fukushima plant as early as this month.

The panel is entitled to question people concerned, including officials of the plant operator Tokyo Electric Power Co., related Cabinet members and government bureaucrats, but Hatamura was negative about the idea of making people speak about the facts in exchange for immunity.

"If we think about granting an exemption under the Japanese law, it may take about two or three years to decide on it...and people would forget about the issues which we want to investigate by that time," he told a press conference after the meeting. "So we will do what is best under this current framework."

The country's nuclear safety regulatory system is also expected to be examined amid criticism over whether it is appropriate to have the nuclear regulatory agency under the wing of the industry ministry that promotes nuclear power.

The investigation process, however, is apparently difficult because relevant people are still working to bring the troubled plant under control.

The panel consists of a total of 10 members, including nonfiction writer Kunio Yanagida, Michio Furukawa, mayor of the town of Kawamata in Fukushima Prefecture, and Yukio Takasu, Japan's former ambassador to the United Nations.

Hit by the magnitude 9.0 earthquake and tsunami waves more than 14 meters high, the six-reactor nuclear complex lost nearly all of its power sources, leading the cooling functions of the reactors and spent nuclear fuel pools at the Nos. 1 to 4 units to fail.

The Nos. 1 to 3 reactors' cores are assumed to have suffered meltdowns, although the melted fuel is now believed to be kept cool at the bottom of each reactor pressure vessel because water is being injected into the vessel as an emergency measure.

The remaining Nos. 4 to 6 reactors were under maintenance at the time of the earthquake and the No. 4 unit has all the fuel in the spent fuel tank. The Nos. 5 and 6 reactors achieved a state of "cold shutdown," helped by one emergency diesel generator which escaped being flooded.

(Mainichi Japan) June 8, 2011

## **Nuclear accident inspection must give public a fair view of Fukushima crisis**

A report on the nuclear crisis at the Fukushima No. 1 Nuclear Power Plant **that the government has compiled** ahead of this month's International Atomic Energy Agency ministerial conference has unveiled 28 lessons from the crisis. Many of these lessons had already been pointed out by experts and the media, but the government had not officially acknowledged them.

The report stated that measures to prevent serious nuclear accidents such as those involving the meltdown of reactor cores had been left up to the discretion of nuclear power companies. Furthermore, guidelines on how to handle accidents had not been revised for nearly 20 years and training was insufficient, the report said.

Probabilistic risk assessment was often carried out but measures were not put into effect. Furthermore, monitoring of radiation after the accident and the supply of information was insufficient. It was also pointed out that the government's system for predicting radioactive substance doses, known as SPEEDI, was not effectively used.

Considering the government's admission of such problems and its call for boosted countermeasures, the report could be regarded as a step forward in Japan's inspection of the nuclear crisis. But insufficiencies in the government's analysis remain.

For example, what caused the delays in Japan's response to the crisis, and what lessons can be learned from these delays? How greatly was the public disadvantaged through radiation exposure or other problems stemming from insufficient information?

It is only natural that the Nuclear and Industrial Safety Agency (NISA) be made independent from the Ministry of Economy, Trade and Industry, but asking what role the Nuclear Safety Commission of Japan has played is surely also important when thinking about a system for future safety regulations.

We must remember that the report is only a provisional assessment by the government. Its content should be examined by the independent accident investigation and inspection committee that is probing the crisis.

During the first meeting of the committee, Prime Minister Naoto Kan stated, "The government will not ask you to proceed in a particular direction. We will supply everything that we are asked for." It is important for the committee to proceed with a completely independent and open investigation without making presumptions, taking the government's report as just one source of information. And the government should give 100 percent cooperation.

Worthy of note is the fact that the head of the accident investigation and inspection committee, Yotaro Hatamura, has stated, "The energy density of nuclear power is extremely high and dangerous, and I think it is a mistake that it has been considered safe up until now."

We want the committee to go about its inspection work with this kind of harsh view, working back to the foundations of nuclear power plants. The inspections are not something concerning the Fukushima No. 1 plant alone; they extend to nuclear power plants all over Japan, and, one might say, across the world.

Japan must now proceed with public debate on the nation's policy on nuclear power plants. Inspections of the accident will form the foundation for that debate, so the committee must do its utmost to provide sufficient material for judgment.

(Mainichi Japan) June 8, 2011

## **Fisheries Agency opposes Fukushima Daini nuke plant water release plan**

TOKYO, June 8, Kyodo

Tokyo Electric Power Co.'s plan to release water containing traces of radioactive materials from the tsunami-hit Fukushima Daini nuclear power plant to the sea has been stopped due to stiff opposition from the Fisheries Agency, sources close to the matter said Wednesday.

Although the utility known as TEPCO told the agency that it will release the water after removing radioactive substances to an undetectable level, the agency is not approving the plan, **leaving the fate of the 3,000 tons of the water accumulated in the nuclear power station, located 15 kilometers south from the crippled Fukushima Daiichi power plant, undecided.**

**If the water remains in tanks for a prolonged time, the storage facility may be corroded by salt in the water.**

## **Fisheries Agency opposes Fukushima Daini nuke plant water release plan**

TOKYO (Kyodo) -- Tokyo Electric Power Co.'s plan to release water containing traces of radioactive materials from the tsunami-hit Fukushima Daini nuclear power plant to the sea has been stopped due to stiff opposition from the Fisheries Agency, sources close to the matter said Wednesday.

Although the utility known as TEPCO told the agency that it will release the water after removing radioactive substances to an undetectable level, the agency is not approving the plan, **leaving the fate of the 3,000 tons of the water accumulated in the nuclear power station, located 15 kilometers south from the crippled Fukushima Daiichi power plant, undecided.**

**If the water remains in tanks for a prolonged time, the storage facility may be corroded by salt in the water.**

After being flooded by tsunami following a magnitude 9.0 earthquake that struck northeastern Japan on March 11, the Fukushima Daini power station saw about 7,000 tons of water accumulate in its facilities.

Of the water, 3,000 tons in the reactor, turbine and other buildings has been found to contain a small amount of radioactive materials such as cobalt.

TEPCO initially planned to let the water stay in the tank, but changed its mind after seeing rust in the storage facility and decided to release the water into the sea.

The level of radioactive materials detected in the water is below the legal standard for releasing such water to the environment. [encore une fois, peut-on se permettre de dire qu'il y a des seuils de radioactivité non dangereux ?]

To seek acceptance of its plan, TEPCO told the Fisheries Agency and local fishermen it would further clean the water with a mineral called zeolite before releasing it.

The agency declined to comment on the matter.

At TEPCO's Fukushima Daiichi power plant, which lost many of the key functions to keep nuclear fuel cool in the wake of the natural calamities, highly contaminated water was found to have leaked into the sea.

The utility has also released water with a low level of contamination in line with its plans to deal with the nuclear crisis.

The moves raised concerns over its effects on fisheries and TEPCO's unilateral notice on the releases to local fishermen drew public criticism.

(Mainichi Japan) June 8, 2011

## Blackout hits Fukushima nuclear plant's Nos. 1, 2 units

Wednesday 08th June, 06:59 PM JST

Print

TOKYO —

The crippled Fukushima Daiichi nuclear power plant suffered power outages at its Nos. 1 and 2 reactors temporarily Wednesday, with lights in the units' central control room being cut off and the transmission of radiation data being partially halted.

The operator, Tokyo Electric Power Co, said the blackout did not affect its water injecting operation to cool the reactors, while Goshi Hosono, an adviser to Prime Minister Naoto Kan on the radiation leakage crisis, said the incident did not affect any equipment that could have caused an extremely serious situation.

Electricity was restored around 5:30 p.m., TEPCO said, adding that it is investigating the cause of the power outage.

The company said it found that a power panel linked to locations including the Nos. 1 and 2 reactors' central control room did not work at around 2:30 p.m.

The system to transfer data from radiation monitoring posts was found to have partly stopped. The blackout is also believed to have affected the nitrogen supply system for the No. 1 unit's containment vessel so its operation was stopped manually.

TEPCO is investigating whether the blackout damaged measuring equipment and affected its monitoring system of abnormalities.

Also Wednesday, TEPCO revealed a plan to leave a door linking the reactor and turbine buildings of the No. 1 unit open to reduce humidity in the reactor buildings later this month and help improve work efficiency within them.

Since radioactive materials within the reactor building could leak to the outside through the opened door, the Nuclear and Industrial Safety Agency, the government's nuclear safety agency, has instructed the utility to report the expected effects of the move on the environment by June 15.

At the No. 2 unit, the level of humidity has been high due to what appeared to be evaporation of water in a spent fuel pool of the reactor building and radioactive contaminated water believed to have accumulated in the building's basement. The humidity has hampered piping and data measuring work there.

© 2011 Kyodo News. All rights reserved. No reproduction or republication without written permission.

## **Strontium contamination found outside nuclear crisis exclusion zone**

Radioactive strontium 89 and strontium 90 has been detected in 11 locations outside the 20-kilometer exclusion zone around the crisis-stricken Fukushima No. 1 Nuclear Power Plant, the government announced June 8.

The radioactive isotopes of strontium are thought to cause bone cancer and leukemia. However, the Ministry of Education, Culture, Sports, Science and Technology has said the amounts detected are miniscule, and present no threat to human health.

The science ministry took soil samples in areas around the Fukushima plant from late March through early May. The highest strontium contamination outside the exclusion zone was found 29 kilometers west northwest of the plant in the town of Namie, with 1,500 becquerels of radiation from strontium 89, and 250 becquerels from strontium 90 per 1 kilogram of soil.

The second-highest contamination was found 36 kilometers northwest of the plant in the village of Iitate, with 1,100 becquerels of strontium 89, and 120 of strontium 90. The furthest from the plant strontium was detected was 62 kilometers away in the city of Fukushima, which registered 54 becquerels of strontium 89 and 7.7 becquerels of strontium 90.

The science ministry had previously detected strontium in three locations outside the 30-kilometer indoor standby order zone, and in four locations inside the exclusion zone.

 [Click here for the original Japanese story](#)

(Mainichi Japan) June 9, 2011

## **TEPCO to test new water treatment system Fri. in Fukushima crisis**

TOKYO (Kyodo) -- Tokyo Electric Power Co. plans to begin testing a newly installed radioactive water treatment system at its troubled Fukushima Daiichi nuclear power plant Friday, to deal with the massive amount of contaminated water that has hampered crisis control, a government regulator said Thursday.

The roughly weeklong trial run will precede a planned full operation of the system from mid-June to remove highly radioactive materials from the water accumulating at reactor facilities to eventually recycle it for cooling crippled reactors.

The government's Nuclear and Industrial Safety Agency said it is evaluating the plant operator's plan, adding that it hopes to approve the move by the end of the day.

With **highly radioactive water likely continuing to leak from damaged reactors**, the planned launch of the decontamination process has been an urgent task as the operator, known as TEPCO, seeks to restore stable cooling functions for the reactors.

The plant in Fukushima Prefecture has been critically damaged since the March 11 quake and tsunami knocked out its power.

During the trial run, low-level radioactive water that has been kept at a tank on the plant premises will be sent into the new installation to see if it can **remove radioactive cesium and other contaminants from the water, lower its radiation levels and desalinate it.**

**TEPCO wants to process a total of roughly 250,000 tons of highly radioactive water at the new facility by the end of next March.**

**TEPCO also began testing seawater treatment equipment in the sea near the plant Thursday for removing leaked radioactive cesium**, with plans to begin full operations after monitoring the trial run for two to three days.

To help slow the spread into the Pacific Ocean of the highly tainted water that leaked from around seawater intakes for the plant's Nos. 2 and 3 reactors, TEPCO has so far installed **fences around the intakes**.

(Mainichi Japan) June 9, 2011

FUKUSHIMA, [Japan](#), June 9 (AP) - (Kyodo)—The Date city office in [Fukushima Prefecture](#) said Thursday **it will distribute dosimeters to all children attending preschool as well as elementary and junior high schools in the city** amid growing worries over exposure to radiation from the crippled Fukushima Daiichi nuclear power station nearby.

The city said the distribution of about 8,000 dosimeters will be part of its efforts to ensure children's health as there are radiation "hot spots" in the city, which is adjacent to Iitate, which is within a government-set evacuation zone.

The Fukushima Daiichi plant, southeast of Date, has been crippled since the March 11 quake and tsunami knocked out its power, triggering the country's worst ever nuclear crisis.

## **Blackout hits Fukushima nuclear plant's Nos. 1, 2 units**

TOKYO (Kyodo) -- The crisis-hit Fukushima Daiichi nuclear power plant suffered power outages at its Nos. 1 and 2 reactors Wednesday, with lights cut off in the units' central control room, and **water level and pressure indicators for one of the reactors out of service for more than three hours**.

The plant's operator, Tokyo Electric Power Co., said the blackout did not affect its water injection operation to prevent the crisis from worsening and no evidence of abnormalities was found in data on the No. 2 reactor after power was restored in the evening, but **the government urged the utility again to diversify power sources at the six-reactor complex**.

The power outage occurred around 2:20 p.m. and electricity began to be restored around 5:30 p.m., the utility known as TEPCO said, adding that it is investigating the cause of the incident.

The plant in Fukushima Prefecture has been crippled since the March 11 quake and tsunami knocked out its power, triggering the country's worst nuclear crisis.

The utility said it found that a power panel linked to locations including the Nos. 1 and 2 reactors' central control room had stopped working around 2:30 p.m.

A system to transfer data from radiation monitoring posts was found to have partially stopped. The blackout also affected the nitrogen supply system for the No. 1 unit's containment vessel aimed at preventing a hydrogen explosion, **prompting the operator to stop it manually**.

Also Wednesday, TEPCO revealed a plan to leave a door linking the reactor and turbine buildings of the No. 2 unit open later this month to reduce humidity in the reactor building and help improve the efficiency of work in them.

Since radioactive materials within the reactor building could leak to the outside through the open door, the government's Nuclear and Industrial Safety Agency has instructed the utility to report on the expected environmental effects of the move by June 15.

The high level of humidity at the No. 2 unit is apparently due to the evaporation of water from a spent fuel pool in the reactor building and radioactive water believed to have accumulated in the building's basement. The humidity has hampered piping and data measuring work there.

TEPCO also said its President Masataka Shimizu took Masao Yoshida, chief of the crippled plant, to task Monday for not reporting to the head office until late last month that he had ordered the continuation of seawater injections into one of the plant's troubled reactors on March 12.

The delay in notifying the utility's head office led TEPCO to erroneously announce that the injection of water had been suspended for 55 minutes. But the utility said it judged that Yoshida's order in itself was appropriate.

(Mainichi Japan) June 9, 2011

## **Radiation leaking from Fukushima power plant should be monitored more closely**

Residents of the Tokyo metropolitan area are becoming increasingly concerned about levels of radiation spreading to their neighborhoods from the tsunami-hit Fukushima No. 1 Nuclear Power Plant.

There are some areas called "hot spots," where high levels of radiation have been detected even though they are far away from the crippled nuclear plant. When radioactive substances leak from a nuclear facility as a result of an accident and spread through the sky, they fall on some limited areas depending on geographical features, wind direction and rain, resulting in high concentration of radiation in these areas.

Following the Chernobyl nuclear crisis that was ranked level 7 -- the worst level equal to the Fukushima crisis -- an area nearly 300 kilometers away from the plant was contaminated with high levels of radiation, forcing authorities to relocate local residents.

Municipal governments in Matsudo and five other cities in northwestern Chiba Prefecture requested the prefectural government to monitor radiation levels and release the results on the grounds that some data shows comparatively high levels of radiation in the area. The prefectural authorities complied, and conducted measurements of radiation levels in these cities.

The six municipal governments are urging the prefectural government to continue to regularly monitor radiation dosages in these areas, and to have the data examined by a working group that includes experts.

In Chiba Prefecture, high levels of radioactive substances in excess of the legal limits have been detected in spinach and some other locally grown vegetables.

A private organization that monitored radiation levels in Tokyo detected higher amounts of radiation than Tokyo Metropolitan Government official data. Residents of the 23 wards in central Tokyo and cities in the Musashino district in western Tokyo have voiced concerns about their exposure to radiation, prompting many of these municipalities to launch or plan measurements of radiation levels. Similar moves are spreading in neighboring Kanagawa and Saitama prefectures.

The Education, Culture, Sports, Science and Technology Ministry has commissioned all of the nation's 47 prefectural governments to monitor radiation levels, but monitoring is conducted at only one location in each prefecture. Apart from this, only figures released by universities and data around the crippled nuclear plant are available.

On the other hand, observations by the government's System for Prediction of Environmental Emergency Dose Information hint at the possibility that on the morning of March 15 -- when it is estimated that the largest amount of radioactive substances were released from the Fukushima plant since the crisis began -- such substances were likely to have spread toward the Kanto region around Tokyo.

Even experts are divided over the levels of radiation that could cause health hazards. Therefore, it is only natural that members of the general public wonder which standards they should believe. Some have expressed anxiety over possible contamination of water in swimming pools, which they fear could affect their children's health, as summer approaches.

Local governments must be sensitive about their residents' anxiety and proactively monitor radiation levels in a bid to relieve them. If specific and detailed data is released, individual residents can use the figures to try to reduce their exposure to radiation.

However, **most municipal governments neither employ radiation experts nor have the expertise or equipment to monitor radiation levels.** The Education, Culture, Sports, Science and Technology Ministry says it intends to take action to monitor radiation levels and to reduce it in so-called "hot spots" if requested by a growing number of local residents. However, the national government is primarily responsible for responding to crises at nuclear power plants. It should step up its monitoring of radiation levels and set clear standards for monitoring methods employed by different organizations, which critics say vary from entity to entity. Prefectural governments should also proactively get involved in such efforts.

---

## Shareholders urge TEPCO to give up nuclear power

TOKYO, June 10, Kyodo

A group of 402 shareholders of Tokyo Electric Power Co. has urged the utility to give up nuclear power generation, the company, known as TEPCO, said Friday.

The request has been submitted as a proposal to be discussed at the annual shareholders meeting on June 28 in the wake of the nuclear emergency at the utility's Fukushima Daiichi power plant.

TEPCO said its board of directors will oppose the proposal for a change in the company's articles of incorporation to seek the withdrawal from nuclear power generation.

---

**Selon TEPCO, les résidus(les boues ??) de l'eau contaminée seront saturés de substances radioactives.**

**TEPCO n'a en fait aucune idée de la façon dont ils vont pouvoir stocker des résidus. Ils n'ont pas non plus prévu de site qui pourrait servir de décharge définitive. Ils comptent sur l'expérience de Kurion (USA) et Areva (France), mais même Areva reconnaît qu'ils n'ont jamais eu à traiter des résidus émanant du traitement d'eau contaminées qui émet plus de 1000 millisieverts/heure.**

**TEPCO pense qu'il restera environ 2000 m<sup>3</sup> de résidus, après traitement de l'eau. Ils ont sur place une installation de stockage mais qui ne pourra recueillir que 1200 m<sup>3</sup>. Il va donc falloir en construire une autre ; avec quels matériels ?? TEPCO admet ne pas le savoir.**

---

### **Sludge from contaminated water would be packed with radioactive substances: TEPCO**

Sludge that will be generated in the process of treating radioactive water at the tsunami-hit Fukushima No. 1 Nuclear Power Plant is estimated to contain **100 million becquerels of radioactive substances per cubic centimeter**, the plant operator said.

Tokyo Electric Power Co. (TEPCO) made the estimation in a report on the water treatment system submitted to the government's Nuclear and Industrial Safety Agency (NISA).

While trying to begin treating the increasing volumes of radioactive water at an early date, **TEPCO has failed to indicate how it will store the toxic sludge or a final disposal site** in its road map to bring the crippled plant under control.

TEPCO will launch treatment of the radioactive water on June 15 at the earliest. Specifically, it will use **special equipment produced by Kurion Inc. of the United States and France-based Areva** -- which have broad experience removing radioactive substances -- to separate sludge contaminated with radioactive substances from the water. The sludge is expected to contain such high levels of radiation because radioactive substances in it will be condensed.

TEPCO estimates that about **2,000 cubic meters of sludge** will be generated through the treatment of radioactive water at the plant by the end of this year, and intends to keep the toxic substance in the plant's intensive radioactive waste disposal facility.

However, the facility can only hold 1,200 cubic meters of the sludge because radioactive waste generated in the plant's ordinary operations is already kept there, forcing the utility to build a new facility to keep the sludge on the plant premises.

However, because it is so highly radioactive, the sludge is extremely difficult to manage. **Areva acknowledges that it has never handled sludge generated through the treatment of water emitting more than 1,000 millisieverts of radiation per hour.**

While radioactive waste generated in the plant's ordinary operations is regularly transferred to a reprocessing plant in Rokkasho, Aomori Prefecture, **the final disposal site for the sludge and other waste generated as a result of the Fukushima nuclear disaster has not been determined.**

NISA councillor Hidehiko Nishiyama fears it will take a long time to establish the radioactive sludge treatment process.

"Since such sludge has never been generated in Japan, the treatment technology must be created from scratch, from the research and development phase," he says. "It will likely take a long time, considering the safety regulations need to be enforced, development of an actual treatment method, and legal procedures."

**Junichi Matsumoto, a high-ranking TEPCO official, also admitted that it will need to develop treatment methods. "We haven't decided how to produce containers for the sludge, or how to treat it," he said.**

(Mainichi Japan) June 10, 2011

## **2 TEPCO workers confirmed with radiation doses more than twice limit**

TOKYO (Kyodo) -- The government's nuclear agency said Friday two Tokyo Electric Power Co. employees working at the Fukushima Daiichi nuclear power plant have been confirmed as having received radiation doses more than twice the limit and that it had rebuked the company over the matter.

As for the ongoing work to restore the crippled plant, the utility known as TEPCO planned to test-run on Friday a system intended to clean up highly radioactive water that is accumulating at the site, but postponed it because water leaks were found in equipment.

The operation of the system is seen as crucial to containing the nearly three-month-old nuclear crisis, as the decontaminated water is eventually expected to be recycled as a coolant for the reactors, which lost their cooling functions as a result of the March 11 earthquake and ensuing tsunami.

Water has been injected into the plant's Nos. 1 to 3 reactors to keep the nuclear fuel cool, but a large part of the water, contaminated with radioactive substances, has apparently leaked out into the reactor turbine buildings and nearby areas.

Thousands of workers have entered the plant to grapple with the country's worst nuclear accident, with the government raising the legal limit on the amount of radiation to which each worker can be exposed from 100 millisieverts to 250 millisieverts exclusively for the Fukushima crisis.

But TEPCO was found to have allowed two of its workers to be exposed to 678 millisieverts and 643 millisieverts, respectively. Their internal exposure was 590 millisieverts and 540 millisieverts.

TEPCO also said another male employee may have been exposed to radiation above the limit.

The Nuclear and Industrial Safety Agency said it ordered the utility to find out how the two workers' radiation exposure occurred and report preventive measures to the agency.

Agency spokesman Hidehiko Nishiyama said no problems had been found during health checks on the two workers, but noted the state would continue to check their health conditions.

TEPCO, meanwhile, sent workers to the upper floors of the building housing the No. 4 reactor to gear up for the creation of a system to efficiently cool the spent nuclear fuel pool inside, according to Nishiyama.

The No. 4 reactor was under maintenance at the time of the earthquake and all of its fuel is in the spent fuel tank, where water is now being periodically poured from outside because the tank also lost its cooling function.

(Mainichi Japan) June 11, 2011

## **TEPCO starts ventilating No. 2 reactor to lower radiation levels**

**Japanese firm starts ventilating reactor to lower radiation level**

**Saturday June 11, 2011 04:31:37 EDT**

Tokyo, Jun 11, 2011 (BBC Monitoring via COMTEX News Network) --

Tokyo Electric Power Co. said **on Saturday it began operating ventilation equipment at the No. 2 reactor building of the crippled Fukushima Daiichi nuclear power plant to reduce radiation levels inside the unit.**

**If airborne radioactive materials are fully removed after running the equipment for three days, the utility known as TEPCO plans to open the doors of the reactor building and begin work inside the unit.**

Highly radioactive materials and high humidity inside the building have prevented workers from entering the site to check measuring gauges and conduct piping work, hampering efforts by the utility to eventually bring the reactor to a stable cold shutdown.

The ventilation equipment has filters to absorb radioactive materials.

Source: Kyodo News Service, Tokyo, in English 0000gmt 11 Jun 11

## **TEPCO starts ventilating No. 2 reactor to lower radiation levels**

TOKYO, June 11, Kyodo

Tokyo Electric Power Co. said Saturday it began operating ventilation equipment with filters to absorb radioactive materials to reduce radiation levels inside the No. 2 reactor building of the crisis-hit Fukushima Daiichi nuclear power plant to pave the way for restoration work inside.

As earlier ventilation of steam at the plant is blamed for widely spreading radioactive substances outside, the government's nuclear safety agency is considering requiring that boiling-water reactors across Japan have steam-venting pipes equipped with filters to remove such toxic substances.

At the Fukushima plant's No. 2 reactor, highly radioactive materials and high humidity inside the building have prevented workers from entering the site to check measuring gauges and conduct piping work, hampering efforts by the utility to stabilize the reactor.

## **Japan needs to dispose nuke waste, tainted debris in Japan: Hosono**

Saturday, June 11, 2011 12:59

### **No.2 reactor air filter starts running**

The operator of the Fukushima Daiichi nuclear plant has begun running air-filtering equipment at the Number 2 reactor building on Saturday to remove airborne radioactive material.

Intense radioactivity and high humidity inside the building have been hampering work to restore the reactor's cooling system.

Humidity inside the reactor building is as high as 99.9 percent due to moisture that is believed to have come from a spent nuclear fuel storage pool and the basement. Workers cannot remain in the building for a long time even with protective gear and masks.

Tokyo Electric Power Company had set up 2 air-filtering units at a building adjacent to the reactor building. The devices will filter radioactive materials out of air pumped from the reactor building through a duct. The cleaned air will be fed back into the reactor building.

TEPCO says it plans to run the devices for about 3 days and check internal radiation levels before opening up the doors of the reactor building.

<http://japan-afterthebigearthquake.blogspot.com/>

## **Ex-adviser raps gov't for worsening local residents' radiation exposure**

TOKYO (Kyodo) -- A report by a former government adviser on the nuclear crisis at the Fukushima Daiichi power plant, obtained Friday, criticized the government for exacerbating the radiation exposure of local residents due to what he called its **impromptu initial handling of the crisis**.

Toshiso Kosako, professor on radiation safety at the University of Tokyo's graduate school, said in the report submitted to Prime Minister Naoto Kan just before he stepped down as adviser in late April that **the government had failed to make efficient use of forecasts on the spread of radioactive substances from the Fukushima plant**.

In criticizing the government's impromptu handling of the crisis in its early stages, Kosako in the report, a copy of which was made available to Kyodo News, cited a lack of leadership at the premier's office and the Nuclear Safety Commission's uncooperative attitude toward the adviser's team.

He said the government had delayed the release of forecasts on the spread of radiation from the Fukushima plant compiled by the Nuclear Safety Technology Center's computer system, called the System for Prediction of Environmental Emergency Dose Information, or SPEEDI.

He also said **an epidemiological study should be conducted in Fukushima and neighboring prefectures as thyroid cancer is expected to develop among children**.

Kosako drew up the report dated April 27, two days before he said he would step down, as an unofficial record of the activities of his team.

After the March 11 earthquake and tsunami triggered the country's worst nuclear crisis, Kosako assumed the post on March 16 with the duty of advising Kan on matters related to nuclear power plants and radiation.

The report said **the adviser's team gave more than 60 pieces of technical advice but the government failed to make use of most of them promptly and effectively**.

On local residents' exposure to radiation, the government said in a report submitted Tuesday to the International Atomic Energy Agency that nearly 200,000 people in Fukushima Prefecture had undergone screening tests and no health problems had been found.

The government also said only low-level radioactivity was detected in thyroid examinations of around 1,000 children.

(Mainichi Japan) June 11, 2011

---

I va falloir que je commence à regarder ce site de + près (je ne l'avais encore jamais vu). Les infos proviennent du NHK, (chaîne de médias nationale ?) <http://www3.nhk.or.jp/daily/english/society.html>

## Earthquake Report

[http://www.jaif.or.jp/english/news\\_images/pdf/ENGNEWS01\\_1307783131P.pdf](http://www.jaif.or.jp/english/news_images/pdf/ENGNEWS01_1307783131P.pdf)

### ●No.2 reactor air filter starts running

The operator of the Fukushima Daiichi nuclear plant has begun running airfiltering equipment at the Number 2 reactor building on Saturday to remove airborne radioactive material.

Intense radioactivity and high humidity inside the building have been hampering work to restore the reactor's cooling system.

Humidity inside the reactor building is as high as 99.9 percent due to moisture that is believed to have come from a spent nuclear fuel storage pool and the basement. Workers cannot remain in the building for a long time even with protective gear and masks.

Tokyo Electric Power Company had set up 2 air-filtering units at a building adjacent to the reactor building.

The devices will filter radioactive materials out of air pumped from the reactor building through a duct. The cleaned air will be fed back into the reactor building.

TEPCO says it plans to run the devices for about 3 days and check internal radiation levels before opening up the doors of the reactor building.

Saturday, June 11, 2011 12:59 +0900 (JST)

Bon en tout cas si tout va bien, dans 3 jours ils ouvrent les portes du réacteur no2.

I va falloir que je commence à regarder ce site de + près (je ne l'avais encore jamais vu). Les infos proviennent du NHK, (chaîne de médias nationale ?) <http://www3.nhk.or.jp/daily/english/society.html>

## Earthquake Report

[http://www.jaif.or.jp/english/news\\_images/pdf/ENGNEWS01\\_1307783131P.pdf](http://www.jaif.or.jp/english/news_images/pdf/ENGNEWS01_1307783131P.pdf)

### ●No.2 reactor air filter starts running

The operator of the Fukushima Daiichi nuclear plant has begun running airfiltering equipment at the Number 2 reactor building on Saturday to remove

airborne radioactive material.

Intense radioactivity and high humidity inside the building have been hampering work to restore the reactor's cooling system.

Humidity inside the reactor building is as high as 99.9 percent due to moisture that is believed to have come from a spent nuclear fuel storage pool and the basement. Workers cannot remain in the building for a long time even with protective gear and masks.

Tokyo Electric Power Company had set up 2 air-filtering units at a building adjacent to the reactor building.

The devices will filter radioactive materials out of air pumped from the reactor building through a duct. The cleaned air will be fed back into the reactor building.

TEPCO says it plans to run the devices for about 3 days and check internal radiation levels before opening up the doors of the reactor building.

Saturday, June 11, 2011 12:59 +0900 (JST)

Bon en tout cas si tout va bien, dans 3 jours ils ouvrent les portes du réacteur no2.

Il va falloir que je commence à regarder ce site de + près (je ne l'avais encore jamais vu). Les infos proviennent du NHK, (chaîne de médias nationale ?) <http://www3.nhk.or.jp/daily/english/society.html>

Earthquake Report

[http://www.jaif.or.jp/english/news\\_images/pdf/ENGNEWS01\\_1307783131P.pdf](http://www.jaif.or.jp/english/news_images/pdf/ENGNEWS01_1307783131P.pdf)

[http://www.lemonde.fr/week-end/video/2011/06/10/fukushima-trois-mois-apres\\_1534634\\_1477893.html](http://www.lemonde.fr/week-end/video/2011/06/10/fukushima-trois-mois-apres_1534634_1477893.html)

Yves Marignac WISE-Paris

## **Centrales nucléaires : des salariés inquiets d'une hausse des cadences**

LEMONDE.FR | 11.06.11 | 18h20

Dans les centrales nucléaires, les arrêts de tranche sont essentiels à la sûreté des installations. En France, ils ont lieu au moins une fois par an pour les arrêts simples, tous les dix ans pour les visites décennales. Ces arrêts d'une durée de un à trois mois permettent d'effectuer des opérations de maintenance, de renouveler une partie du combustible présent dans les réacteurs et de contrôler l'ensemble des installations.

Une note interne d'EDF, révélée samedi 11 juin par [Le Parisien - Aujourd'hui en France](#), préconise d'augmenter les cadences pendant les arrêts de tranche, afin d'en réduire la durée. Car un arrêt de tranche signifie un arrêt de la production d'électricité. Dans un courrier daté du 10 mai, signé par le directeur adjoint de la production nucléaire d'EDF, [Philippe Druelle](#), il est demandé aux directeurs de centrale de "demander des dérogations aux durées maximales de travail auprès des inspecteurs du travail" ou de la Direction régionale du travail.

*"Il a été convenu que les périodes d'arrêt de tranche sont des périodes de surcroît d'activité (...). Ce surcroît d'activité nous permet de justifier des demandes de dérogations aux durées maximales du travail (journalières et hebdomadaires)",* relève ce courrier. Cette préconisation qu'EDF souhaiterait appliquer "d'ici l'été 2011" provoque l'inquiétude des salariés, qui estiment qu'elle pourrait nuire à la sûreté des installations. *"EDF s'organise pour légaliser des dérives horaires inacceptables et dangereuses pour les salariés et donc la sûreté nucléaire"*, met en garde la CGT.

Pour EDF, *"il s'agit d'un malentendu"*. [Bernard Lassus](#), directeur des ressources humaines du groupe, interrogé par *Le Parisien*, assure que l'objectif d'EDF est de *"clarifier l'organisation du travail"*, de façon à *"permettre aux cadres de prendre leur repos journalier de 11 heures"*.

## **"LE RACCOURCISSEMENT DES DÉLAIS NE SE FAIT PAS SANS PRIX"**

En avril, un mécanicien sous-traitant travaillant dans la centrale de Dampierre – qui avait souhaité garder l'anonymat – avait confié au Monde.fr son [inquiétude face à l'accélération des rythmes de travail](#) pendant les arrêts de tranche. *"Il y a vingt ans, ces arrêts duraient trois mois. Aujourd'hui, ils durent trois semaines en moyenne. Et ce raccourcissement des délais ne se fait pas sans prix. EDF met la pression sur les sous-traitants. De plus en plus, nous travaillons les week-ends et enchaînons les semaines sans prendre de repos. Il arrive parfois que nous maquillions nos heures pour ne pas dépasser la limite légale des quarante-huit heures de travail hebdomadaire."*

Le directeur de la centrale de Dampierre, [Elian Bossard](#), avait alors justifié le raccourcissement des arrêts de tranche par une amélioration de l'expertise des équipes. *"Forts de notre expérience, nous améliorons nos pratiques de gestion et nous impliquons nos prestataires dans la préparation des arrêts,* expliquait-il. *Il faut compter entre six et huit mois de travail en amont pour préparer toutes les interventions."* Mais une [vidéo](#) du comité central d'entreprise d'EDF tournée en 2002 lors d'un forum sur les conditions de travail dans les centrales, et publiée par Mediapart, soulignait les risques des arrêts de tranche "optimisés" : *"On multiplie le nombre de prestataires à l'intérieur du bâtiment réacteur et tout le monde se marche dessus"*, notait un délégué syndical CGT de la centrale de Cattenom, en Moselle.

Le Monde.fr

[http://www.dailymotion.com/video/xiyzhh\\_etienne-chouard-conference-le-tirage-au-sort-comme-bombe-politiquement-durable-contre-l-oligarchie\\_news](http://www.dailymotion.com/video/xiyzhh_etienne-chouard-conference-le-tirage-au-sort-comme-bombe-politiquement-durable-contre-l-oligarchie_news)

## Water treatment system testing at Fukushima plant hits snag again

TOKYO, June 12, Kyodo

Tokyo Electric Power Co.'s preparations to begin testing a newly installed radioactive water treatment system at its troubled Fukushima Daiichi nuclear plant hit a snag again as **the piping may be clogged**, company officials said Sunday.

The utility initially planned to begin the tests for the system, intended to decontaminate highly radioactive water that is accumulating at the site and hampering work to restore the damaged plant, last Friday, but postponed it because water leaks were found in the equipment that day.

Repairs to fix the water leaks were completed by Sunday and the firm, also known as TEPCO, was getting ready to conduct the tests. But the fresh problem is likely to cause a delay in the company's plan to put the system in full operation from mid-June, as the trial run using low-level radioactive water is expected to last about a week.

---

Radioactive water treatment likely to be delayed

Treatment of highly radioactive water at the troubled Fukushima Daiichi nuclear power plant is likely to be delayed by a problem with the flow of water.

The system being installed at the plant includes a device to remove cesium using zeolite, as well as equipment that settles out radioactive substances using specialized chemicals.

Tokyo Electric Power Company, or TEPCO, said on Sunday that it has found that water does not flow in one of the 4 units as expected.

TEPCO had planned to start a test-run of the device on Friday, but it was postponed after the firm found another problem, which needed repairing first.

The operator hopes that the system will lower the concentration of radioactivity and expects to treat 1,200 tons of radioactive water a day.

TEPCO is trying to identify the cause of the problem.

Sunday, June 12, 2011 15:08 +0900 (JST)



## **Mass demonstrations against nuclear power held in Japan 3 months after quake**

TOKYO (AP) -- Protesters held mass demonstrations against nuclear power across Japan on Saturday, the three-month anniversary of the powerful earthquake and tsunami that killed more than 23,000 people and triggered one of the world's worst nuclear disasters.

Streets in parts of Tokyo were completely jammed with thousands of chanting protesters, paralyzing sections of the city. Some marchers called for the country's nuclear plants to be shut down immediately and for stricter radiation tests by the government.

The magnitude-9 earthquake that hit March 11 off Japan's northeast coast caused a massive tsunami that devastated the coastline. The disasters knocked out power and cooling systems at the Fukushima Dai-ichi nuclear power plant, about 225 kilometers northeast of Tokyo, setting off explosions, fires and large radiation leaks at the facility.

Government reports released earlier in the week said the damage and leakage were worse than previously thought, with some of the nuclear fuel in three reactors likely having melted through the main cores and inner containment vessels. They said the radiation that leaked into the air amounted to about one-sixth of the Chernobyl nuclear disaster in 1986 -- double previous estimates.

The disasters have renewed a national debate on nuclear power in Japan, which has few natural resources. Japan relied on nuclear energy for 30 percent of its electricity before the disasters and planned to raise that to 50 percent by 2030, but the government has announced it will abandon that target and promote renewable energy instead.

"Since the earthquake, I've realized that nuclear power is just too dangerous for use," said Takeshi Terada, 32, a shipping worker who marched with 10 friends in Tokyo.

Some nuclear plants across the country remain shut in the wake of the disaster, leading to fears Tokyo and other areas may not have enough electricity for the peak summer months. Residents of the capital are reducing their use of lights and air conditioning, and some companies are moving crucial operations like computer centers to parts of Japan with more stable power supplies.

At the Fukushima plant, hundreds of workers are still struggling to bring the crippled reactors to a "cold shutdown" by early next year and end the crisis. Radiation fears have forced more than 80,000 people to evacuate from their homes around the plant.

Many more people have had to leave their homes along the northeast coast because of tsunami damage. Three months after the disasters, 90,000 are still living in temporary shelters such as school gyms and community centers.

Along the tsunami-ravaged coast Saturday, residents bowed their heads in a moment of silence at 2:46 p.m., when the earthquake struck.

Embattled Japanese Prime Minister Naoto Kan visited Kamaishi, a hard-hit coastal city. Kan has been under fire for his handling of the disasters and the country's recovery plans, surviving a no-confidence vote earlier this month by promising to step down once the recovery takes hold.

Speculation about when he will quit has been rampant, with his party and the main opposition hinting at a coalition to speed the recovery. But Kan's visit Saturday was seen by some as a suggestion he will attempt to prolong his tenure.

"It is not just a matter of listening to what people say at the destroyed areas. I want to incorporate what I hear into government measures," he said.

In Tokyo, protesters carried colorful banners and banged drums as they walked in orderly rows past the Economy Ministry and the head offices of Tokyo Electric Power Co., which operates the Fukushima plant. Entire families marched, their toddlers and even dogs wearing clothing with anti-nuclear slogans.

"I'm worried about the children. It's not just in Fukushima, there are radiation problems even here in Tokyo," said Mika Obuchi, 45, who marched with her husband and 9-year-old daughter.

(Mainichi Japan) June 12, 2011

## Shareholders propose Kansai Electric give up nuclear power

OSAKA, June 12, Kyodo

A group of 124 shareholders of **Kansai Electric Power Co.** have proposed that the utility give up nuclear power generation in light of the ongoing nuclear crisis at Tokyo Electric Power Co.'s Fukushima Daiichi plant, sources close to the situation said Sunday.

The development comes after Tokyo Electric said Friday that 402 of its shareholders have submitted a request to discuss at the firm's shareholders meeting on June 28 revising the utility's articles of incorporation to say that it will give up atomic power generation.

The group of Kansai Electric shareholders also presented a proposal of agenda items to be discussed at the utility's general shareholders meeting scheduled June 29 in Osaka, but the company's board of directors are opposed to such a move, the sources said.

## **TEPCO forced to review reactor 4 cooling plan**

The operator of the Fukushima Daiichi nuclear power plant has been forced to reconsider its plan to cool the spent fuel storage pool of the No.4 reactor.

Water injection from a special vehicle has not been intense enough to cool the water in the pool, allowing the temperature to remain at more than 80 degrees Celsius.

Tokyo Electric Power Company, or TEPCO, aims to install a circulatory cooling system that will pump water out of the pool and return it there as coolant. The utility originally hoped to put the system in place next month.

On Friday, workers entered the 4th floor of the No.4 reactor building where the pool is located for the first time since the nuclear disaster took place.

They found a large hole in a wall created by the March 15th explosion. They also discovered that a nearby pipe necessary for the cooling system had been mangled.

TEPCO says the repair team found it hard to work near the pool as equipment had been destroyed and debris was scattered on the floor.

Fixing the damaged pipe is expected to be extremely difficult. In addition, it remains unclear if there is another pipe that can be used for the cooling system.

Sunday, June 12, 2011 05:07 +0900 (JST)

Sunday, June 12, 2011 11:00

### **Measures to prevent heatstroke to be added**

The operator of the troubled Fukushima Daiichi nuclear power plant says it will implement measures to **prevent workers from being hit by heatstroke.**

About 2,500 people work at the plant. Many of them wear protective suits and full-face masks to lower exposure to high radiation.

But the work is getting tougher physically and mentally as summer approaches. So far, 12 workers have been diagnosed as suffering from heatstroke.

Tokyo Electric Power Company will set up 7 more rest areas in addition to the 8 existing ones.

Workers can take off the protective gear, drink water, and lie down there.

In addition, the company will supply 2,500 vests containing cooling gel which will be worn underneath the gear.

1,300 face masks which provide extra air during inhalation will be secured.

The health ministry had given instructions to the utility to improve working conditions.

## High concentration of radioactive strontium found at Fukushima plant

TOKYO, June 12, Kyodo

Radioactive strontium **up to 240 times the legal concentration limit has been detected in seawater samples** collected near an intake at the crippled Fukushima Daiichi nuclear plant, Tokyo Electric Power Co. said Sunday.

The utility known as TEPCO said the substance was also found in groundwater near the plant's Nos. 1 and 2 reactors. The government's Nuclear and Industrial Safety Agency said it **is the first time that the substance has been found in groundwater.**

The agency said it is necessary to carefully monitor the possible effects of the strontium on fishery products near the plant.

## High concentration of radioactive strontium found at Fukushima plant

TOKYO (Kyodo) -- **Radioactive strontium up to 240 times the legal concentration limit has been detected in seawater samples** collected near an intake at the crippled Fukushima Daiichi nuclear plant, Tokyo Electric Power Co. said Sunday.

The utility known as TEPCO said the substance was **also found in groundwater near the plant's Nos. 1 and 2 reactors.** The government's Nuclear and Industrial Safety Agency said it is the first time that the substance has been found in groundwater.

The agency said it is necessary to carefully monitor the possible effects of the strontium on fishery products near the plant.

Strontium tends to accumulate in bones and is believed to cause bone cancer and leukemia.

Meanwhile, TEPCO on Sunday completed preparations to begin testing a newly installed radioactive water treatment system at the Fukushima plant soon, after it finished fixing an adsorption device designed to remove radioactive substances, company officials said.

The utility is expected to begin testing the system, intended to decontaminate highly radioactive water that is accumulating at the site and hampering work to restore the damaged plant, as early as Monday. **The company is a couple of days behind the schedule to put the system into full operation, initially planned for June 15, it said.**

The utility's preparations to begin testing the system hit a snag Sunday as the amount of water run through the adsorption device was lower than planned, indicating the possibility that piping or other parts may be clogged. The planned level of water recovered later, it said.

The utility is investigating the cause of the snag, the officials said.

TEPCO initially planned to begin testing the radioactive water treatment system last Friday but postponed it because water leaks were found in the equipment that day.

**The utility said that even if the start of the system's operation is delayed, it does not mean that leaks of contaminated water into the environment would occur "immediately." [ça nous rassure]**

The operation of the system is seen as crucial to containing the three-month-old nuclear crisis, as the decontaminated water is expected to eventually be recycled as a coolant for the reactors, which lost their cooling functions as a result of the March 11 earthquake and ensuing tsunami.

Water has been injected into some of the reactors to keep the nuclear fuel cool, but vast pools of water containing large amounts of radioactive substances have been found on the plant's premises as a side effect of the water-injection measure.

The system, set up at a facility where the highly radioactive water from the Nos. 2 and 3 units has been transferred, is expected to be able to treat about 1,200 tons per day, reducing the concentration of radioactive substances to around one-thousandth to one-ten thousandth.

(Mainichi Japan) June 13, 2011

## **Excessive levels of strontium detected in seawater**

Radioactive strontium that exceeds the government-set safety level was detected for the first time in sea water in the inlet next to the Fukushima Daiichi nuclear plant.

Tokyo Electric Power Company, or TEPCO, reported that strontium-90, at a level 53 times higher than the safety standard was detected in samples taken from inside an inlet used exclusively by the nuclear plant, on May 16.

TEPCO also said that strontium-90 was detected at a level 170 times higher than the standard in samples also taken on May 16, near the water intakes outside reactor number 2. At the reactor number 3 water intakes, the level was 240 times higher than the legal safety limit.

The Nuclear and Industrial Safety Agency says the result is not beyond their expectations because the substance was detected in an inlet used exclusively by the power plant. They say they will closely monitor the fish and shellfish in the affected area.

TEPCO announced that strontium-90 was also detected for the first time in ground water near the reactors' buildings.

A ground water sample taken on May 18, around reactor number 2, measured 6,300 becquerels per liter. And for reactor number one, the sample showed 22 becquerels.

TEPCO explained it usually takes about 3 weeks to analyze the samples.

With a comparatively long half-life of 29 years, radioactive strontium can accumulate in the bones if inhaled, and poses a risk of cancer.

Monday, June 13, 2011 06:03 +0900 (JST)

Farmland in Fukushima no-go zone to be inspected

The national and prefectural governments are to begin inspecting farmland in the no-entry zone around the Fukushima Daiichi nuclear power plant next month.

Fukushima Prefecture says rice planting has been suspended in all areas within the 30-kilometer radius from the power plant. Shipments of agricultural produce from within the 20-kilometer radius no-entry zone also remain halted.

State and prefectural authorities say they decided to study soil in paddies and farmland within the no-go zone in response to growing calls by the residents who say they want to know what's become of their farmland.

The authorities have been carrying out inspections of soil samples within the 30-kilometer zone, **but have refrained from checking the soil within the no-entry zone.** [why ?]

Fukushima Prefecture says the results of the inspections will be utilized to determine whether farming can be resumed in these areas once the ongoing crisis at the power plant is contained.

Monday, June 13, 2011 15:53 +0900 (JST)

## **TEPCO releases photo showing damage to No. 4 reactor building**



A photograph provided by Tokyo Electric Power Co. shows the fourth floor of a building housing the No. 4 reactor at the Fukushima No. 1 Nuclear Power Plant at about 2 p.m. on June 10, 2011.

Tokyo Electric Power Co. (TEPCO) has released a photograph showing the damaged inside of the building housing the No. 4 reactor at its crippled Fukushima No. 1 Nuclear Power Plant.

In the photo, which was released on June 11, the pipes and walls near a power generator inside the structure are charred black, and rubble covers the floor.

Earlier the company had released footage showing work to remotely measure the temperature of the pool for spent fuel at the No. 4 reactor, but the latest photo marks the first time since the March 11 earthquake and tsunami for the company to release a picture showing the inside of the reactor building.

The No. 4 reactor was hit by a hydrogen explosion on March 15, as well as fires on two occasions. The generator in the structure was used for a reactor recirculation pump and is thought to be the source of the fires.

(Mainichi Japan) June 13, 2011

**Disposal of nuclear waste should be made a top priority**



In this June 9, 2011 photo released Saturday, June 11, 2011 by Tokyo Electric Power Co. (TEPCO), equipment inside the cesium absorption tower, part of the newly-built radioactive water processing facilities at Fukushima No. 1 nuclear power plant in Okuma, Fukushima prefecture, is shown. (AP Photo/Tokyo Electric Power Co.)

In the June issue of the monthly journal Sekai (The World), life scientist Keiko Yanagisawa argues that **nuclear power plants must not be operated as long as we do not know how to dispose of highly radioactive nuclear waste -- which can wreak havoc on human DNA .**

Tetsuzo Fuwa, chairman of the Japanese Communist Party (JCP), is of the same view. Reading over the column he wrote in the party's daily paper Akahata (Red Flag), his position is presented in clear, unambiguous language.

**Both Fuwa and Yanagisawa are alarmed that as a result of having continued the operation of nuclear power plants without any waste disposal measures in place, highly radioactive spent fuel has accumulated to breaking point.**

Spent fuel is much more dangerous than nuclear fuel that has not yet been used, and has the potential of reaching recriticality unless its temperatures are continually kept cool. Because spent fuel continues to emit radiation even after the rate at which it releases heat diminishes, it must be isolated from human life for hundreds of thousands of years.

Since such waste currently has no place to go, however, there is nowhere to keep it except in spent fuel pools at nuclear power plants. It was just recently that the revelation that the pool water vaporized at the stricken Fukushima No. 1 Power Plant, thereby possibly melting the spent fuel, made our blood freeze.

Last month, NHK rebroadcast the striking documentary "Into Eternity," about a spent fuel disposal facility currently being built in Finland. The first of its kind, the plan for the facility is to bury nuclear waste 500 meters underground, and isolate it from human life for the 100,000 years stipulated by EU safety rules.

We don't know what sort of civilization will exist in Finland or the rest of the world tens of thousands of years from now. Advanced civilizations may have fallen by then. At any event, how can we help our descendants understand that they must not dig into the ground? There's no really good way to go about it.

It goes without saying that the issue of nuclear waste should have been resolved before we began using nuclear energy to generate power. The building of nuclear waste disposal facilities had heretofore not been carried out in Finland or anywhere else.

Initially, Japan had planned to dispose of spent fuel in the depths of the sea, but after attracting much international criticism, decided instead to bury it underground. But no concrete decisions have been made, including what kind of facility it's going to be and where it will be located. Local municipalities are reluctant even to host regular garbage treatment centers. Nuclear waste? Forget about it.

When talks between Japan and the U.S to establish a waste disposal facility in Mongolia came to light, some people said that it was acceptable as long as Mongolia was all right with it. That misses the point, though, doesn't it?

From the shell heaps of prehistoric times to the local dumps of the Edo Period, human beings disposed of their own waste. Are we going to let go of that unbroken tradition of moderation because of our thirst for electricity? (By Michio Ushioda, Expert Senior Writer)

(Mainichi Japan) June 13, 2011

## **6 more nuke plant workers exposed to radiation above limit: TEPCO**

## **Shareholders propose Tohoku Electric give up nuclear power**

SENDAI, June 13, Kyodo

---

## **Fukushima City to give dosimeters to 34,000 children from fall**

FUKUSHIMA, Japan, June 14, Kyodo

The Fukushima city office in Fukushima Prefecture said Tuesday it will give dosimeters to all children attending preschools as well as elementary and junior high schools in the city amid growing concerns over exposure to radiation from the crippled Fukushima Daiichi nuclear power plant nearby.

According to the municipal office, it will hand out the gauges for three months from September to about 34,000 children as part of its efforts to ensure their health, while it will collect data once a month and examine the results in cooperation with medical institutions.

It will also distribute the gauges to parents with children under three years old at the request of the parents.



### **Tanks at Fukushima plant**

Handout photo taken on May 27, 2011, shows tanks used to store low-level radioactive water at the crippled Fukushima Daiichi Nuclear Power Station in Fukushima Prefecture. (Photo courtesy of Tokyo Electric Power Co.) (Kyodo)

## **Italians' rejection of nuclear power expected to have repercussions in Japan**

Italian voters adamantly said "no" to nuclear power generation in a referendum on June 12 and 13, a move likely to have repercussions in Japan, which is the centerpiece of the ongoing nuclear crisis that has added to the anti-nuclear power momentum in Europe.

In Japan, a referendum is to be called over constitutional amendments but cannot be held over issues like whether to resume operations of nuclear power plants, as seen in Italy. A senior official in the electric utility industry stresses that **the situation in Italy is different from that in Japan, saying, "Italy had already pulled out of nuclear power generation, so the circumstances are different from those in Japan, where nuclear power generation accounts for about 30 percent of total power output."**

By saying this, the official implied that the outcome would not be the same even if a similar referendum was called in Japan. Prime Minister Naoto Kan has also indicated that the operation of nuclear plants apart from Chubu Electric Power Co.'s Hamaoka Nuclear Power Plant -- which was suspended following a government request -- can be restarted once their safety is guaranteed.

However, public trust in the central government and utility companies, which have long propagated the myth of nuclear power plant safety, was undermined from its very foundations among residents in areas hosting such facilities in the wake of the accident at the Fukushima No. 1 Nuclear Power Plant.

Governors of prefectures that are home to nuclear power plants have also expressed their distrust. "Safety comes first before power supply for the moment," said Saga Gov. Yasushi Furukawa, while Aomori Gov. Shingo Mimura said, "While the government maintains that there are no safety concerns for resuming the operation of nuclear power plants, it has urged the Hamaoka power plant to suspend operations. It is hard to figure out what aspects of safety the government looked at and how it assessed them in making its decision."

For nuclear power plants under suspension for regular inspections and other reasons to restart their operations, they will need approval from the governors of prefectures hosting those facilities. The prevalence of the anti-nuclear power movement in Europe could likely raise further concerns over nuclear plants in Japan and affect governors' decisions.



In this March 24, 2011 file aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE, damaged Unit 4 of the crippled Fukushima Dai-ichi nuclear power plant is seen in Okumamachi, Fukushima prefecture, northern Japan. (AP Photo/AIR PHOTO SERVICE)

Junko Edahiro, director of the Institute for the Study of Happiness, Economy, and Society, believes Italy's referendum results would affect the public in Japan.

"The move in Italy follows that of Germany and other countries in their serious attempts to break away with nuclear power generation. **The referendum results in Italy could prompt Japanese to wonder if they have seriously thought about nuclear power generation and acted appropriately,**" Edahiro said.

**"The referendum has also indicated the possibility of a political system through which voters can directly question crucial policy measures,"** she said, adding, "We in Japan would also be able to change the electric policy if we form and voice our own opinions about energy issues."

(Mainichi Japan) June 14, 2011

## **FOCUS: 1,400 Fukushima plant workers waiting for radiation exposure results**

TOKYO, June 14, Kyodo

While authorities slammed Tokyo Electric Power Co. for exposing workers at its crippled nuclear power plant to radiation levels exceeding the allowable limit, particularly for internal exposure, around 1,400 of the company's workers are still waiting for detailed checkup results.

About **3,700 people** worked at the Fukushima Daiichi nuclear power plant in the period from the March 11 earthquake and tsunami to the end of that month, but **the utility had finished detailed checks for internal radiation exposure on only around 2,300 by late May.**

Hidehiko Nishiyama, a spokesman for the government's Nuclear and Industrial Safety Agency, said **one of the reasons for TEPCO's inability to provide swift checkups for its workers is that the utility does not have enough whole body counters -- dosimeters designed specifically to measure radioactivity levels within the human body.**

## **1,400 Fukushima plant workers waiting for radiation exposure results**



In this May 10, 2011 file photo released by Tokyo Electric Power Co., workers check the status of the water level indicator at the Unit 1 reactor building at the Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan.(AP Photo/Tokyo Electric Power Co., File)

TOKYO (Kyodo) -- While authorities slammed Tokyo Electric Power Co. for exposing workers at its crippled nuclear power plant to radiation levels exceeding the allowable limit, particularly for internal exposure, around 1,400 of the company's workers are still waiting for detailed checkup results.

About 3,700 people worked at the Fukushima Daiichi nuclear power plant in the period from the March 11 earthquake and tsunami to the end of that month, but **the utility had finished detailed checks for internal radiation exposure on only around 2,300 by late May.**

Hidehiko Nishiyama, a spokesman for the government's Nuclear and Industrial Safety Agency, said one **of the reasons for TEPCO's inability to provide swift checkups for its workers is that the utility does not have enough whole body counters -- dosimeters designed specifically to measure radioactivity levels within the human body.**

The situation poses a serious problem as the nuclear crisis, triggered by the earthquake and tsunami, is still unfolding and a large number of people are desperately working to bring the plant under control. Internal radiation exposure could increase the incidence of cancer and leukemia.

On June 3, two TEPCO employees working at the Fukushima Daiichi plant were confirmed as having received radiation doses of 678 millisieverts and 643 millisieverts, more than twice the legal limit of 250 millisieverts for people working dealing with the crisis.

The Health, Labor and Welfare Ministry said earlier this week that another six workers may have been exposed to excessive radiation.



In this May 15, 2011 photo released Friday, June 10, 2011 by Tokyo Electric Power Co. (TEPCO), workers take break in a temporary rest area at Fukushima Dai-ichi nuclear power plant. (AP Photo/Tokyo Electric Power Co.)

Each worker at the Fukushima plant wears a dosimeter to gauge external exposure and keeps a record everyday. **As for internal exposure, caused by the absorption of radioactive materials through the nose and mouth, workers normally undergo detailed tests every three months using a whole body counter.**

TEPCO had four such counters at the Fukushima Daiichi power plant, according to company officials. **But they were rendered useless once the crisis broke out because radiation levels at the plant became too high to accurately gauge whole body exposure,** they said.

TEPCO is currently conducting detailed checkups for people working at the plant using four whole body counters at a different facility, and **it will take several months before the utility can increase the number of counters to over 14.**

Given the situation, the utility reportedly placed priority on examining the internal exposure of 21 workers whose external exposure had exceeded 100 millisieverts, and 19 women, for whom a lower limit has been set, engaged in non-nuclear duties at the plant.

The two men who were confirmed on June 3 as having been exposed to high levels of radiation were not in the priority group, indicating **a substantial difference in the levels of external and internal exposure,** experts said.

The external exposure of one of the men was 88 millisieverts but his internal exposure was 590 millisieverts, while the external exposure of the other was 103 millisieverts but his internal exposure was 540 millisieverts, they said.

**The experts fear that the current legal limit for workers at the Fukushima plant could be raised because the crisis is unlikely to end anytime soon and there is likely to be a shortage of workers possessing the requisite skills and knowledge.**



The inside of the No. 2 reactor building at the Fukushima No. 1 Nuclear Power Plant on May 18. (Photo courtesy of TEPCO)

People working for TEPCO's subcontractors said radiation levels at the plant have fallen overall but there are areas with high levels where dosimeters can count 1 to 2 millisieverts within a couple of hours.

Some residents of Fukushima Prefecture have said they would also like to undergo whole body counter checks, but Goshi Hosono, special adviser to Prime Minister Naoto Kan, has said such **checkups for residents may not take place for some time as the government only possesses a limited number of whole body counters.**

(Mainichi Japan) June 15, 2011

## Poor decisions leave TEPCO workers vulnerable to radiation

2011/06/15 <http://www.asahi.com/english/TKY201106140177.html>

Six more employees of Tokyo Electric Power Co. working at the Fukushima No. 1 nuclear power plant were exposed to more radiation than allowed even under the relaxed limits put in place to deal with the critical accident.

In addition, **102 workers** have been exposed to more radiation than allowed for nuclear power plant workers. Such workers are subsequently prohibited from working at nuclear power plants for up to five years **under normal circumstances.**

If more workers are discovered to have exceeded radiation exposure levels, **TEPCO may face a serious shortage of workers** even while the situation at the Fukushima plant is far from under control.

The government raised the upper limit for workers dealing with the Fukushima accident to 250 millisieverts. However, TEPCO announced June 13 that six additional employees had been exposed to more than that level of radiation. The company had previously announced that two employees had been exposed to more than 250 millisieverts.

What makes the situation serious for those six is that all have been exposed to more than 250 millisieverts through internal contamination by which they have inhaled the radiation.

The normal upper limit for workers at nuclear power plants is 100 millisieverts. TEPCO announced that a total of 102 employees had been exposed to more than that level.

TEPCO submitted a report to the Ministry of Health, Labor and Welfare on June 13 of a study into the 3,726 workers at the Fukushima No. 1 plant who worked between March 11, when the Great East Japan Earthquake struck, until March 31.

Of those workers, radiation exposure levels for 2,367 workers who were tested were reported to the labor ministry. The results of the study for the remaining workers will be submitted by June 20.

The eight workers found to have been exposed to more than 250 millisieverts were all male TEPCO employees.

The six employees who were added to the list in the latest report worked to restore equipment at the Fukushima plant as well as measure radiation levels.

The worker found to have the highest radiation exposure level was found to have been exposed to 497.6 millisieverts.

The labor ministry instructed TEPCO to remove a total of 12 workers exposed to more than 200 millisieverts from all emergency work at the Fukushima plant.

**Of workers who were not exposed to more than 250 millisieverts, 23 were exposed to more than 100 millisieverts through internal contamination alone. A total of 94 workers were exposed to more than 100 millisieverts when internal and external contamination levels were combined.**

Including the workers covered in the latest study, **a total of about 7,800 individuals have been working at the Fukushima No. 1 plant through late May to restore operations.**

The labor ministry has asked TEPCO to submit a report on total radiation exposure levels, including internal contamination, for all those workers by the end of June.

However, a problem for TEPCO is that the March 11 quake and tsunami devastated the systems to measure external and internal contamination levels.

**Dosimeters at the Fukushima plant were damaged by the disasters so TEPCO had to borrow dosimeters from other nuclear plants. While that was completed in April, the company still has not installed enough equipment to test for internal contamination.**

The local labor bureau has instructed TEPCO to improve its practices, and the Nuclear and Industrial Safety Agency has also issued a warning.

**TEPCO officials and workers admit that internal contamination may have spread because all workers were not given clear instructions to wear face masks when working at the plant.**

Another problem is that the emergency work station on the grounds of the Fukushima plant was damaged by hydrogen explosions at two reactors. That created **cracks that allowed radioactive materials to leak into the work station**, even though it is designed to prevent such leakage.

**Because workers believed that radiation would not leak into the work station, they removed face masks when in the station, leading to the internal contamination.**

**Moreover, the whole body counters at the Fukushima plant used to measure internal contamination were exposed to radiation during the nuclear accident so there was no way of differentiating if measurements reflected contamination of workers or contamination of the equipment.**

Workers had to be measured for internal contamination using two whole body counters at a facility in Iwaki, Fukushima Prefecture, away from the nuclear plant.

Labor ministry officials are caught in a bind because even with the relaxed upper limit for radiation exposure at the Fukushima No. 1 plant there could emerge a situation in which TEPCO does not have enough workers.

The labor ministry may be asked to further relax the radiation exposure levels if the work at the Fukushima plant becomes prolonged.

**The labor ministry has also asked the Ministry of Economy, Trade and Industry, which oversees TEPCO, to compile a new structure to foster individuals capable of working at nuclear plants.**

---



### **Rest area for workers at Fukushima plant**

Supplied photo shows the outside of a facility called Toshiba rest area at the troubled Fukushima Daiichi nuclear power plant in Fukushima Prefecture on May 15, 2011. The facility has been provided since May 10, 2011, and Tokyo Electric Power Co., the operator of the troubled plant, released the photographs of rest areas at the plant on June 10, 2011. (Photo courtesy of Tokyo Electric Power Co.)(Kyodo)

---

## **Gov't calls TEPCO radiation exposure standards 'overly optimistic'**

As the number of workers exposed to high levels of radiation at the crippled Fukushima No. 1 Nuclear Power Plant increases, **the government is accusing plant operator Tokyo Electric Power Co. (TEPCO) of slack radiation dose calculations.**

"From the start, the way TEPCO calculates internal radiation exposure has been **overly optimistic**," a senior Ministry of Health, Labor and Welfare official stated.

On June 14, Health, Labor and Welfare Minister Ritsuo Hosokawa directed TEPCO to withdraw any worker exposed to more than 100 millisieverts of internal radiation at the disaster-stricken plant, sparking a dispute between the company and the government over radiation dose calculation standards, and delaying the implementation of worker safety-first policies at the plant.

Meanwhile, with work at the Fukushima plant -- where three reactors have melted down -- projected to go on for some time, uncertainty over exactly how high a dose workers there are subjected to may impact TEPCO's public timetable for resolving the nuclear crisis.

On May 30, TEPCO revealed that two of its Fukushima No. 1 plant workers had been exposed to a higher radiation dose than the 250 millisievert emergency upper limit, though the firm did not state how much of that exposure had been from radioactive materials taken into the body.

The labor ministry had demanded that TEPCO calculate workers' cumulative radiation exposure starting from March 12, when a hydrogen explosion destroyed the plant's No. 1 reactor building. However, TEPCO rejected the government demand, stating, "It's impossible to say when any internal radiation exposure occurred. If workers were on the job until the end of March, then cumulative radiation calculations should be made starting March 21, about half way between the day of the earthquake and the end of the month."

Internal radiation doses are measured with a device called a **"whole body counter," which measures not only current exposure but sums up a person's total dose over time. As such, TEPCO's insistence on calculating total radiation doses starting from March 21 has resulted in significantly lower exposure figures than those the government is using.**

"We tried to persuade TEPCO to use a rigorous calculation method but the company wouldn't give in. In fact we're still at odds over the issue," the labor ministry's standards bureau told the Mainichi.

However, TEPCO's exposure estimates are only "provisional," and the utility leaves precise calculations to a radiology research laboratory that uses the government's dosage calculation standard. According to the lab, the two workers revealed on May 30 were exposed to 540-590 millisieverts of radiation internally, and 643-678 millisieverts in total.

TEPCO accepted the lab's conclusion, and submitted a revised report of worker radiation exposure totals on June 13. In that report, six more workers were revealed to have exceeded the emergency maximum exposure limit.

However, while the utility may have accepted the lab's, and thereby the government's, dosage standards, **Hosokawa's 100 millisievert internal exposure limit has little scientific foundation and was a purely political decision.**

Just after the revelation of the first two cases of workers exposed to radiation doses higher than the emergency limit, the labor ministry directed TEPCO to take internal radiation exposure measurements of the some 130 workers doing similar jobs. The results, reported on June 3, showed none of the 130 tested had exceeded the emergency upper limit, but there were three people who almost certainly had internal doses over 100 millisieverts. The ministry directed TEPCO to pull the three from the Fukushima plant.

The ministry furthermore stated that TEPCO's revised radiation dose calculations from June 13 "closely reflected actual conditions." In addition to the six workers who exceeded the maximum allowable exposure level revealed by the new figures, six more workers were shown to have doses over 200 millisieverts. Just to be on the safe side, labor ministry administrators also directed these six to be withdrawn from operations at the plant.

However Hosokawa, apparently fixated on his first June 3 directive ordering workers with internal doses exceeding 100 millisieverts be pulled from plant work, changed the administrative decision on the six workers. The change could be seen as a sign of worry that Hosokawa was pulling back set maximum dosage standards. However, a senior labor standards bureau official told the Mainichi it was "a political decision, based at least in part on TEPCO's tendency to be slow to take action."

Meanwhile, **an attorney for former nuclear plant workers suing TEPCO has called Hosokawa's 100 millisievert internal radiation exposure limit "too high."**

**"That there hasn't been an internal radiation exposure limit before is also a major problem,"** said attorney Atsushi Suzuki, adding, "There are cases of multiple myeloma (a cancer of plasma cells, a type of white blood cell) from exposure to 70 millisieverts of annual external radiation, and cases of leukemia caused by just 5 millisieverts. The internal radiation doses Fukushima plant workers have been exposed to just leave me at a loss for words."

(Mainichi Japan) June 15, 2011

## **TEPCO unveils plan to construct shelters to cover radiation-leaking buildings**



A miniature showing the planned construction of a shelter around disaster-hit Fukushima No. 1 Nuclear Power Plant's No. 1 nuclear reactor building. (Photo courtesy of Tokyo Electric Power Co.)

Tokyo Electric Power Co. (TEPCO), the operator of the troubled Fukushima No. 1 Nuclear Power Plant, unveiled on June 14 the outline of its plan to construct shelters to cover its radiation-leaking nuclear reactor buildings.

The shelters, each measuring approximately 47 meters wide, 42 meters long and 54 meters tall, consist of iron frames and vinyl chloride-coated polyester resin walls. The utility is planning to start putting up shelters on June 27 around its No. 1, 3 and 4 reactor buildings that were severely damaged in hydrogen explosions following the March 11 Great East Japan Earthquake and tsunami.

The structure is expected to contain the radioactive materials and toxic water vapor leaking from nuclear reactors and spent-fuel pools, while preventing rainwater from pouring into the buildings to be contaminated with radiation. The company said it is in the process of examining the shelter's quake and wind pressure resistance.

TEPCO first introduced its plan to construct shelters around the crippled nuclear reactors in April, when it announced a timetable for bringing an end to the ongoing nuclear crisis. In order to avoid radiation exposure of construction workers, building materials will be assembled into several large parts, each measuring tens of meters in diameter, at a TEPCO facility in the Fukushima Prefecture city of Iwaki, before they are transported by ferry to the nuclear power station and put together around the three reactor buildings using construction cranes.

On June 14, TEPCO also reported the results of a test using cesium-absorbing equipment developed by U.S. nuclear waste management firm Kurion Inc. The utility said it successfully reduced the amount of cesium 134 and 137 in the tainted water to around 1/3,000 of the levels before the decontamination treatment.

"The equipment has achieved the result we had expected," said a TEPCO official.

The company also plans to conduct a trial operation of another water treatment method developed by French nuclear engineering giant Areva SA, which removes radioactive materials from contaminated water using chemicals, with a full-fledged operation of the entire water treatment system scheduled to start on June 17.

(Mainichi Japan) June 15, 2011

---

## **U.S.: spent fuel pool never went dry in Japan quake**



This Saturday May 7, 2011 image from video footage released on Sunday May 8, 2011 by Tokyo Electric Power Co., shows spent fuel storage pool of the Unit 4 reactor building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

WASHINGTON (AP) -- Water used to cool radioactive waste at the stricken nuclear complex in Japan did not dry up, as earlier feared, U.S. regulators said Wednesday in a reversal of a claim that pitted U.S. officials against Japan in the days after that country's nuclear disaster.

U.S. officials, most notably Nuclear Regulatory Chairman **Gregory Jaczko**, had warned that all the water was gone from one of the spent fuel pools at Japan's troubled nuclear plant, which would have raised the possibility of widespread nuclear fallout. Loss of cooling water in the reactor core could have exposed highly radioactive spent fuel rods, increasing the threat of a complete fuel meltdown and a catastrophic release of radiation.

Japanese officials had denied the pool was dry and reported that the plant's condition was stable.

On Wednesday, U.S. officials said newly obtained video shows that the spent fuel pool at Unit 4 at the Fukushima Dai-ichi complex probably did not go dry, as Jaczko had insisted in March.

Bill Borchardt, the NRC's executive director for operations, said U.S. officials welcomed the video evidence as "good news" and **one indication that the meltdown at the Fukushima plant's Unit 4 reactor "may not have been as serious as was believed."**

U.S. officials never have fully explained why Jaczko made the claim but said it was based on information from NRC staff and other experts who went to Japan after the March 11 earthquake and tsunami.



The pool for spent fuel at the No. 4 reactor of TEPCO's Fukushima No. 1 nuclear power plant is pictured in this Feb. 1, 2005, file photo.(Mainichi)

Jaczko did not mention the spent fuel pool during a commission meeting Wednesday at NRC headquarters in suburban Washington. He would not comment afterward.

**Jaczko, 40, has been under fire in recent days, as the NRC's inspector general released a report indicating that he repeatedly misled fellow commissioners about his efforts to stop work on a disputed dump for high-level radioactive waste. Inspector General Hubert T. Bell said Jaczko manipulated the panel's four other commissioners by selectively withholding information on a crucial safety review of**

the proposed Yucca Mountain nuclear waste dump in Nevada. Jaczko's actions allowed him to shut down the review last year without a vote of the full commission.

Bell told the House of Representatives' Energy and Commerce Committee that Jaczko's conduct was not criminal but added, "It's not an upfront way to do business."

Several agency scientists and a former NRC chairman also have questioned Jaczko's actions, and at least two Republican lawmakers have demanded that he resign.

A spokesman for the NRC said Wednesday that the belief that the spent fuel pool may have gone dry played a role in Jaczko's controversial decision to recommend that U.S. citizens stay at least 50 miles (80 kilometers) away from the crippled Japanese plant. The Japanese authorities had ordered evacuations of people within about 12 miles (19 kilometers) of the plant.

NRC spokesman Scott Burnell said Jaczko and other U.S. officials made the recommendation based on the best information available at the time.

"The NRC felt and continues to feel that the 50-mile recommendation was appropriate," he said.



In this photo released by Tokyo Electric Power Co. (TEPCO), workers operate a modified Putzmeister 70Z, the world's largest concrete pump mounted on a truck, to pump contaminated water from the Unit 4 at the tsunami-damaged Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan, Tuesday, April 12, 2011. (AP Photo/Tokyo Electric Power Co.)

Meanwhile, Charles Miller, a senior NRC executive who is leading a 90-day safety review of U.S. nuclear plants, told commissioners that current safety rules do not adequately weigh the risk of a single event that could knock out power from the grid and from emergency generators, as the quake and tsunami did in Japan. **Safety experts until now have focused on the risk of losing electricity from the grid or from emergency sources, but not both.**

NRC officials have said they are studying whether the nation's 104 nuclear reactors can cope with such a "station blackout," which could go on for days.

Commissioner George Apostolakis questioned why current rules assume that electricity would be restored within four or eight hours. "Why do we still assume things that are now, in retrospect, unrealistic?" he asked.

Jaczko said the Japan disaster had caused everyone involved in nuclear power, from industry to regulators, to rethink their assumptions.

"I think deep-down there was a belief that you would never see an event like this, that just simply we had done everything to basically take this type of event completely off the table. And obviously, we haven't," Jaczko said.

A final report from the task force is due in mid-July.

(Mainichi Japan) June 16, 2011

## **Panel to urge Fukushima Pref. to stop relying on nuclear power plants**

FUKUSHIMA (Kyodo) -- An advisory panel set up by the Fukushima prefectural government plans to propose that the prefecture should seek to create a "safe, secure and sustainable" society without relying on nuclear power plants following the March 11 earthquake and tsunami, a draft plan showed Wednesday.

The proposal was included in a set of basic ideas compiled by the 12-member panel at its fifth meeting to provide the basis for deliberations on how to rebuild the disaster-ravaged prefecture in the northeastern Japan region of Tohoku.

With the central government continuing to retain nuclear power as a pillar of its energy policy, the panel's proposal could influence Japan's overall energy policy and other municipalities hosting nuclear power plants or related facilities.

The prefectural government set up the panel on May 13 to seek advice on reconstruction following the nuclear crisis at Tokyo Electric Power Co.'s Fukushima Daiichi power plant in the prefecture, which has been crippled since the disaster.

The panel consists of university professors and other advisers, including corporate executives, and is chaired by Hiroshi Suzuki, a professor emeritus at Fukushima University.

In its proposals, the panel envisions the prefecture drastically increasing the use of renewable energy for power generation and promoting energy-saving and recycling measures while ending its reliance on nuclear power plants.

Before the disaster, a total of 10 nuclear reactors were in operation at Tokyo Electric's Fukushima Daiichi and Daini power plants in the prefecture.

The panel also proposed that each area in Fukushima become energy-independent through a mix of various energy sources and that the prefecture host many businesses related to renewable energy to achieve environmental protection and economic revitalization at the same time.

In addition, the prefecture should introduce a variety of necessary measures related to transportation, information and telecommunications, and other infrastructure to cope with emergency situations so as to create a society where all residents can live in safety and peace, the panel said.

The panel is scheduled to compile a final set of recommendations as early as the end of July. Based on the final recommendations, the prefectural government expects to compile specific plans for post-disaster reconstruction work by the end of this year.

(Mainichi Japan) June 16, 2011

## **TEPCO continues efforts to fully operate key water treatment system**



In this June 9, 2011 photo released Saturday, June 11, 2011 by Tokyo Electric Power Co. (TEPCO), equipment inside the cesium absorption tower, part of the newly-built radioactive water processing facilities at Fukushima No. 1 nuclear power plant in Okuma, Fukushima prefecture, is shown. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Tokyo Electric Power Co. continued its efforts Wednesday to fully operate a newly installed radioactive water treatment system at its Fukushima Daiichi nuclear power plant crippled by the devastating March 11 earthquake and ensuing tsunami.

The utility known as TEPCO also worked on beginning to test whether two key components of the system that can decontaminate water including radioactive materials can work well simultaneously, following a trial run of each, ahead of its full-scale operation it plans to start Friday.

It is believed that optimal operation of the system, which is designed to remove highly radioactive materials from a massive amount of water accumulating at plant facilities, will help to contain the

three-month-old nuclear crisis as the utility plans to eventually recycle the tainted water to cool the plant's damaged reactors.

Earlier in the day, TEPCO checked a decontamination installation developed by France's Areva SA, one of the two key components of the system, which removes radioactive cesium and strontium by concentrating them with a chemical agent and depositing them as sediment.

The utility tested the other component, an installation to absorb cesium developed by Kurion Inc. of the United States, on Tuesday. In the test, TEPCO successfully reduced cesium in low-level contaminated water to the level it had expected, the government's nuclear safety agency said.



In this May 10, 2011 file photo released by Tokyo Electric Power Co., workers check the status of the water level indicator at the Unit 1 reactor building at the Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan.(AP Photo/Tokyo Electric Power Co., File)

The plant operator said it hopes to process around 1,200 tons of highly radioactive water per day.

The contaminated water accumulating at reactor facilities, including coolant liquid leaking from damaged reactors, has been diverted to other parts of the plant to prevent it from overflowing at the facilities, but those locations are nearing full capacity.

TEPCO had planned to begin a trial run of the treatment facility last Friday but was forced to postpone it after water was found leaking from a pipe, hampering the company's initial plan to fully operate the new system from Wednesday.

Regarding other progress, the utility said it started to transfer water in the No. 1 reactor's condenser to a tank earlier in the day to use it as a new place to store contaminated water.

The condenser could store 1,600 tons of such water if it becomes empty, TEPCO said.

The utility also said it will set up a water circulation system for the pool storing spent nuclear fuel in the No. 3 reactor building by the end of this month, aiming to cool it stably.



In this May 27, 2011 photo released on June 2, 2011 by Tokyo Electric Power Co. (TEPCO), temporary storage tanks for low-level radioactive polluted waters used for temporary cooling system in Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima prefecture, northeastern Japan, are shown. (AP Photo/Tokyo Electric Power Co.)

The Nuclear and Industrial Safety Agency, meanwhile, said TEPCO employees early Wednesday found a worker at the power plant smoking outside without wearing a mask, despite growing concern about the health of workers at the site.

The agency said it has called on the plant operator to implement thorough measures to prevent workers at the power station from being excessively exposed to radiation.

(Mainichi Japan) June 15, 2011

## **Fukushima No. 1 plant worker irradiated after taking off mask for smoke**

A worker at the crippled Fukushima No. 1 Nuclear Power Plant absorbed a radiation dose of 0.24 millisieverts after taking his mask off to have a smoke, plant operator Tokyo Electric Power Co. (TEPCO) announced on June 15.

According to TEPCO, the worker in his 50s was helping put together a crane on the morning of June 15 as part of preparations to build an enclosure around the plant's No. 1 reactor. He was spotted by a site manager smoking in the cabin of another crane at about 11 a.m.

The man was later tested for internal radiation exposure with a "whole body counter" in nearby Iwaki, Fukushima Prefecture, and registered a 0.24 millisievert dose -- not a serious exposure. The man had been working at the plant since March 23.

Currently, smoking, eating and drinking are forbidden on the plant grounds except in designated break rooms.

"We have informed workers of the dangers of internal radiation exposure, so this incident is unfortunate," a TEPCO representative stated. "We will take thorough measures to prevent a recurrence."

(Mainichi Japan) June 16, 2011

## TEPCO starts up water treatment system, but massive radioactive waste feared

Tokyo Electric Power Co. (TEPCO) began a trial run of a radioactive water treatment system at the crippled Fukushima No. 1 Nuclear Power Plant on June 15 in a desperate effort to break away from the vicious cycle of injecting water into reactors to cool them and ending up with more contaminated water.

But **even if the system, developed by France's Areva SA, were to operate smoothly, it would produce a massive amount of high-level radioactive waste** that could affect TEPCO's roadmap to bring the troubled nuclear reactors under control by early next year.

"The water treatment system is moving along as scheduled, although contaminated water leaked from a pipe," Hidehiko Nishiyama, spokesman for the Nuclear and Industrial Safety Agency, told a news conference on June 15.

TEPCO, the operator of the troubled Fukushima No. 1 Nuclear Power Plant, will try to reach "Step 1" of the roadmap, in which radiation emissions are steadily declining, by mid-July. It hopes to reach "Step 2," in which leakages of radiation are controlled and amounts of radiation are drastically reduced, within three to six months.

But **while contaminated water is treated, the system developed by Areva is expected to produce about 2,000 cubic meters of radioactive sludge by the end of this year.** The sludge is likely to be highly radioactive with 100 million becquerels per cubic centimeter. **In addition, about two to four 2.3-meter-tall cesium-absorbing containers are expected to be needed each day, but the roadmap does not take into account work to dispose of the containers.**

"Massive amounts of extremely high levels of radioactive waste will be produced and our work to deal with the crisis at the No. 1 Nuclear Plant will enter **unknown territory**. It could affect the roadmap," said a senior official of the Ministry of Economy, Trade and Industry. The ministry and the Nuclear and Industrial Safety Agency are considering measures, including revising laws or enacting new laws, to deal with massive amounts of radioactive waste.

In the roadmap revised in May, TEPCO included the operation of circulatory cooling systems using water that had had radioactive substances removed.

**At the No. 2 reactor, a hydrogen explosion damaged the pressure suppression pool. According to analysis by the Nuclear and Industrial Safety Agency, there is a hole of about 300 square meters there. Therefore, in order to circulate cooling water through the reactor, either damaged parts would need to be repaired or the pool would need to be covered with something like a huge concrete structure. But it is difficult for workers to approach the reactor because radiation levels in the reactor building are so high. As a result, TEPCO has not even been able to confirm damaged spots.**

**The situation is the same at the No. 1 and 3 reactors.** The buildings housing the two reactors sustained serious damage in the hydrogen explosions that hit them. Massive repair work could therefore be required to ensure that water circulates through the cooling systems. It is not clear when

the circulatory cooling systems will be made operational, and therefore contaminated water will be kept in a temporary tank after being treated.

Be that as it may, **the radioactive water treatment system will have to be kept running all the time as long as work to cool nuclear fuel continues.** It will cost a fortune to treat the radioactive water and manage radioactive waste.



In this May 27, 2011 photo released on June 2, 2011 by Tokyo Electric Power Co. (TEPCO), temporary storage tanks for low-level radioactive polluted waters used for temporary cooling system in Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima prefecture, northeastern Japan, are shown. (AP Photo/Tokyo Electric Power Co.)

**"This work has not been carried out anywhere else in the world.** While keeping the worst-case-scenarios in mind, they should quickly work out measures to treat contaminated water," said Teruyuki Honda, professor of nuclear environmental engineering at Tokyo City University.

 [Click here for the original Japanese story](#)

(Mainichi Japan) June 16, 2011

## Gov't to designate new evacuation spots near Fukushima plant

TOKYO, June 16, Kyodo

Japan has decided to designate new spots for possible evacuation near the crisis-hit Fukushima Daiichi nuclear power plant that are feared to have radiation levels which go beyond an internationally recommended benchmark, the top government spokesman said Thursday.

The policy on the areas dubbed as "hot spots" will cover specific households in a residential area, Chief Cabinet Secretary Yukio Edano said at a news conference. Currently, the government in principle imposes an evacuation order on a municipality basis.

He said that while individuals can choose to evacuate or not, children and pregnant women especially are urged to leave the hot spots, which register **radiation levels that could exceed the 20-millisieverts yardstick a year.**

## Govt sets policy to handle radiation sludge (NHK online)

The government has announced guidelines on how to dispose of sludge that contains radioactive material.

Radioactive material has been detected in sludge from waste water treatment plants in many areas, mainly in eastern Japan, since the crisis began at the Fukushima Daiichi nuclear power plant.

The guidelines released by the government's nuclear disaster taskforce on Thursday say **disposal facilities with filters will be used to prevent radiation leaks from fumes that are created when sludge is burned (?????) or dissolved.**

They say **sludge containing radiation of more than 100,000 becquerels per kilogram will be stored at facilities tightly shielded by substances like concrete.**

But the taskforce will continue discussions to determine how to ultimately dispose of it.

The guidelines say **sludge measuring over 8,000 to 100,000 becquerels of radiation can be buried in waste disposal sites,** after steps are taken to limit nearby residents' annual exposure to 10 microsieverts or lower.

They also say **sludge bearing readings of 8,000 becquerels or less can be buried after thorough waterproofing measures have been taken, as long as disposal sites are not used for housing purposes.**[Faudra pas oublier de mettre une pancarte à la surface ...]

The government has informed 13 relevant prefectures of the decision.

Thursday, June 16, 2011 18:09 +0900 (JST)

---

## Gov't allows part of radioactive tainted sludge to be buried



In this Monday, June 13, 2011 photo released by Tokyo Electric Power Co., a machine collects radioactive substances in the air for sampling at the Unit 3 of the crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- A government task force on nuclear emergency said Thursday it has decided to allow sludge containing 8,000 becquerels per kilogram or less of radioactive cesium to be buried in waste disposal sites only if residential houses are not built there in the future.

It also said sludge containing over 8,000 to 100,000 becquerels per kg of cesium could be buried after evaluating its safety individually, while sludge measuring more than 100,000 becquerels per kg should be kept under shielding but its final disposal manner is undecided.

The announcement came as radioactive materials have been detected in water and wastewater treatment plants in many regions including Tokyo since the Fukushima Daiichi nuclear power plant was crippled by the March 11 earthquake and tsunami.

Goshi Hosono, a special adviser to Prime Minister Naoto Kan in charge of the nuclear crisis, said at a press conference that the state government is considering bearing the disposal costs.

The task force said the decision targets 13 prefectures, including Fukushima, Tokyo and Shizuoka.

(Mainichi Japan) June 17, 2011

## **Full-scale operation of key water treatment system may be delayed**

TOKYO (Kyodo) -- The operator of the crippled Fukushima Daiichi nuclear power plant said Thursday that water was found leaking from a newly installed radioactive water treatment system during its trial run, hampering the firm's plan to fully operate it from Friday.

Optimal operation of the treatment system, which is designed to remove highly radioactive materials from a massive amount of water accumulating at the power station, is considered essential to containing the nuclear crisis as Tokyo Electric Power Co. plans to eventually recycle the water to cool the plant's damaged reactors.

But the utility, known as TEPCO, **will be forced to deal with the water leakage problem first**, raising the possibility that full operation of the key facility to clean up contaminated water may be postponed until Saturday.

The treatment system is composed of installations developed by Kurion Inc. of the United States and France's Areva SA that remove radioactive materials such as cesium from contaminated water, as well as devices to eliminate oil and salt.

The utility said it has tested each component for the past few days and **the installations of the two companies in combination were capable of reducing cesium in contaminated water to around a 100,000th of its original level**. It hopes to process around 1,200 tons of highly radioactive water per day.

The contaminated water accumulating at reactor facilities, including coolant liquid leaking from reactors damaged by the March 11 earthquake and tsunami, has been diverted to other parts of the plant to prevent it from overflowing at the facilities, but those locations are nearing full capacity.

Goshi Hosono, a special adviser to Prime Minister Naoto Kan, said at a press conference Thursday that **the utility will release Friday an updated version of its road map**, unveiled in April, for containing the three-month-old nuclear crisis.

But Hosono, also a lawmaker of the ruling Democratic Party of Japan tasked with handling the nuclear crisis, did not make any comment on whether the plant operator will change its broad time frame for stabilizing the troubled reactors by around January.

Meanwhile, TEPCO said Thursday it plans to open the doors of the No. 2 reactor building to reduce internal humidity, with the aim of improving the working environment.

The utility said it will open the doors after it gains approval from the Nuclear and Industrial Safety Agency and will go ahead with preparations for cooling the reactor by taking steps such as adjusting its pressure and water-level gauges as well as setting up pipes to inject nitrogen into the vessel to avoid a hydrogen explosion.

As TEPCO began operating ventilation equipment at the building last Saturday, the amount of radioactive materials that could be released to the outside atmosphere after the doors open would not reach a level that affects the environment, company officials said.

The radiation level in the No. 2 reactor building has been declining but humidity has reached as high as 99.9 percent.

(Mainichi Japan) June 17, 2011

NHK online \_Tepco a identifié l'origine de la fuite dans l'appareil de décontamination de l'eau radioactive

La Compagnie d'électricité de Tokyo, Tepco, a découvert l'origine de la fuite détectée dans le système mis en place pour réduire la contamination de l'eau hautement radioactive accumulée dans les locaux de la centrale Fukushima Dai-ichi.

Jeudi, les derniers essais du système ont dû être suspendus après la découverte d'une fuite d'eau au niveau d'un appareil américain conçu pour retirer le césium. Cet appareil est un élément essentiel du système.

D'après Tepco, l'origine de cette fuite se situe au niveau d'une soupape de ventilation fixée à un des conteneurs incluant l'appareil. Les techniciens ont également découvert qu'une soupape d'évacuation d'eau installée sur un autre conteneur était fermée. Cela signifie, estime Tepco, que la fuite a bien eu lieu au niveau de la soupape de ventilation. Cette soupape est en cours de remplacement.

---

## **Fukushima city gov't begins monitoring radiation levels in detail**

TOKYO (Kyodo) -- The Fukushima city government began **monitoring radiation levels at various locations across the city Friday**, a day after the central government decided to designate new spots near the crisis-hit Fukushima Daiichi nuclear power plant for possible evacuation.

Some areas of Fukushima Prefecture's capital city, which currently does not fall within any of the government-designated evacuation zones, are expected to be designated as "hot spots" as their radiation levels are sporadically higher than those in nearby areas.

The municipal government will monitor radiation levels **over two days at a total of 1,045 places, such as parks, meeting places, street gutters and along school routes**, as requested by neighborhood groups, city officials said.

It will mobilize 31 portable dosimeters to monitor radiation levels at each location at heights of 1 centimeter, 50 cm and 1 meter above ground level five times each at intervals of 10 seconds.

**Monitoring results will be made known to residents through the neighborhood groups and also published on the city government's website.**

The city government will listen to experts on the results and will again monitor radiation levels at places where high levels of radiation were detected.

It also plans to procure about 100 more portable dosimeters to rent to residents by the end of July.

On Thursday in Tokyo, Chief Cabinet Secretary Yukio Edano said the central government has decided to designate new spots for possible evacuation near the Fukushima Daiichi nuclear power plant. These are spots feared to have radiation levels that exceed an internationally recommended upper limit for an emergency.

The government will support those who wish to evacuate from the hot spots, which register radiation levels that could exceed the 20-millisieverts yardstick per year, according to Edano. Children and pregnant women especially are urged to leave.

The municipal governments of Date and Minamisoma, also in Fukushima Prefecture, have already launched their own monitoring of radiation levels throughout their respective cities, as some hot spots have been found.

(Mainichi Japan) June 17, 2011

## News navigator: What are radiation 'hot spots'?



In this photo from a footage of a live camera released by Tokyo Electric Power Co. (TEPCO), black smoke billows from the crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, northeastern Japan, on March 22, 2011. (AP Photo)

The Mainichi answers common questions readers may have about radiation "hot spots."

Question: The term "hot spot" has been appearing in the news lately with regards to radiation, but what does it mean?

Answer: **The term refers to areas where radiation levels are comparatively higher than the areas around them, regardless of distance from the crippled Fukushima No. 1 Nuclear Power Plant.** The village of Iitate, Fukushima, where residents were asked to evacuate after it was predicted radiation exposure levels could reach 20 millisieverts a year, is one such "hot spot." Similar concentrations of radiation have also been measured at other, smaller hot spots. Residents have expressed anxiety over these comparatively high measurements.

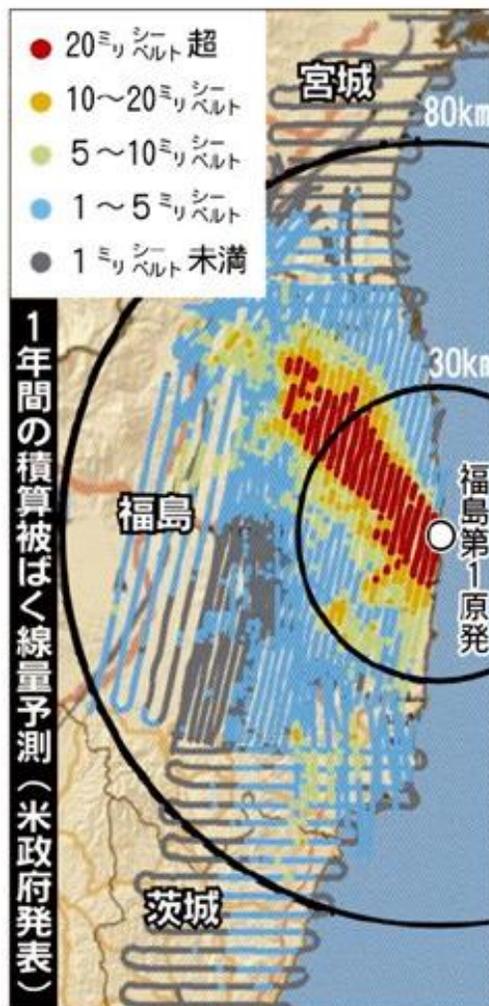
Q: Why do areas far from the plant become hot spots?

A: **Radioactive materials emitted from a damaged nuclear plant do not spread evenly.** Rather, they form into plumes that are carried by the wind. In the Fukushima disaster, large-scale emissions of radioactive materials are thought to have occurred from March 15 to 16 after hydrogen explosions damaged reactor buildings at the plant.

According to an analysis by the Japan Atomic Energy Agency, a plume of radioactive materials started heading west around noon on March 15, and from around 2 to 3 p.m. it came into contact with rain and fell over the cities of **Koriyama and Shirakawa**. Later, the plume was carried northwest and rained **over areas including Iitate** from the evening of March 15 to the predawn hours of March 16.

**In areas over which plumes happened to come into contact with rain, radioactive materials were deposited on the ground, creating hot spots.**

Q: I've heard that hot spots have been found in the Tokyo metropolitan area as well. Is that true?



The NNSA hazard map released by the U.S. federal government. The Fukushima No. 1 Nuclear Power Plant is marked by a white dot at right.

A: When the governments of Tokyo and Chiba Prefecture began taking measurements, they found a few areas where radiation levels were higher than the surroundings. The highest measurements were around 0.5 microsieverts per hour. A microsievert is 1/1000 of a millisievert. At this level, even if a person were outside at the hot spot eight hours a day for a year, they would only be exposed to 1.4 millisieverts -- less than a tenth of the exposure predicted for areas asked to evacuate in Fukushima Prefecture.

Q: Does that mean the Tokyo area is safe?

A: Many experts seem to think so. However, **it is best not to be exposed to any more radiation than is necessary** [ah !], which is why the International Commission on Radiological Protection recommends that radiation exposure be limited as much as is rationally possible.

Hiromi Yamazawa, a Nagoya University professor and expert in radiation's effects on the environment, says, "As to whether measures need to be taken to lower radiation levels in the Tokyo area, science alone cannot answer that question. It should be decided through discussion between local residents and anyone else who stands to be affected in one way or another." (Answers by Taku Nishikawa, Science & Environment News Department)

(Mainichi Japan) June 17, 2011

## **Damage found to 43 pipes in steam condenser at Hamaoka atomic plant (Kyodonews)**

### **TEPCO starts full operation of key water treatment system**

TOKYO, June 17, Kyodo

Tokyo Electric Power Co. moved closer to realizing the stable cooling of the troubled reactors at the Fukushima Daiichi power plant on Friday as a key system to clean highly radioactive water accumulating at the plant started full-scale operation.

Issuing an updated version of a road map for bringing Japan's worst nuclear accident under control, Tokyo Electric expressed its confidence in achieving stable cooling of all the spent nuclear fuel pools in one month, and made no revision to its plan to bring the reactors into "cold shutdown" by around January at the latest.

With the nuclear crisis continuing for more than three months, the plant operator known as TEPCO highlighted the need to enhance radiation exposure management of workers engaged in restoration efforts after recent findings showed some of them had far exceeded their radiation dose limit.

## **Panel to discuss radioactive sludge disposal**

Japan's land ministry has set up an expert panel to examine ways to deal with radioactive sludge.

The panel held its first meeting on Friday, one day after the government announced guidelines on the handling of sludge according to its radiation levels.

Radioactive substances have been detected in sludge at wastewater treatment facilities in at least 16 prefectures, mainly in eastern Japan, since the accident at the Fukushima Daiichi nuclear plant.

The panel will study ways to measure radiation levels at wastewater plants, standardize methods of storing sludge, and ensure nearby residents are informed.

The panel aims to conclude discussions as early as August and inform local authorities of its findings.

Friday, June 17, 2011 17:51 +0900 (JST)

## **Local govts skeptical about sludge guidelines**

NHK has found that local authorities are skeptical about government guidelines on the handling of radioactive sludge.

NHK surveyed 30 local authorities after the government announced the guidelines on Thursday. The procedures suggest how to deal with radioactive sludge that has been found in wastewater treatment plants following the crisis at the Fukushima Daiichi nuclear power plant.

The 30 respondents have either been informed of the guidelines or have checked the sludge at their treatment facilities for possible contamination.

The guidelines permit sludge with radiation levels of up to 8,000 becquerels per kilogram to be buried after waterproofing steps are taken. Even under these conditions, eight of the respondents said they cannot locate appropriate disposal sites.

Three others said they are not sure whether they can ease their residents' concerns.

Twelve said the government should provide detailed instructions on how to dispose of the sludge rather than leaving it up to them. Some said the task is too large to handle at the regional level.

Seventeen of the respondents urged the government to offer concrete methods of disposal, find appropriate disposal sites, or shoulder the costs of the operations.

Friday, June 17, 2011 19:44 +0900 (JST)

## Commentaire sur le problème de l'eau contaminée

Dans notre commentaire d'aujourd'hui, nous avons interviewé Akio Koyama, professeur à l'institut de recherche sur les réacteurs nucléaires, qui dépend de l'université de Kyoto. Nous avons évoqué avec lui le traitement de l'eau hautement radioactive, qui est considéré comme une étape essentielle à la résolution des problèmes à la centrale de Fukushima.

Akio Koyama :

Tepco, la Compagnie d'électricité de Tokyo, ne pourra pas passer à l'étape suivante ou progresser selon le calendrier qu'elle s'est fixée sans avoir résolu ce problème. Il y a beaucoup de travail à fournir pour refroidir le carburant des réacteurs 1, 2 et 3 et les barres de combustible usagé. Les techniciens doivent entrer dans les bâtiments des réacteurs et des turbines. Mais la présence d'eau hautement radioactive freine leurs travaux.

La quantité d'eau contaminée augmente tous les jours, au fur et à mesure de refroidissement des réacteurs. Le pire des scénarios serait que cette eau se déverse dans l'océan. Son traitement est donc des plus urgent.

Radio Japon :

Que faudra-t-il faire une fois que le traitement aura commencé ?

Akio Koyama :

Le plus important sera la gestion des substances radioactives retirées de l'eau. Le système utilisé cette fois fonctionne en utilisant de la zéolite, un minéral qui absorbe du césium, et différents agents chimiques pour isoler les autres substances radioactives. Cela signifie qu'il restera d'importantes quantités d'absorbants et de dépôts très contaminés. Quand les 100 000 tonnes d'eau radioactive seront traitées, les résidus représenteront 2 à 3 pour cent de ce volume. Cela signifie qu'il restera 2 à 3000 tonnes de déchets très contaminés.

Le pire est que le niveau de radioactivité de ces déchets est 100 à 1000 fois supérieur à celui de l'eau contaminée. Or, pour l'instant, il n'y a aucun projet de traitement de ces déchets. S'en occuper représentera une tâche importante.

RJ :

C'était Akio Koyama, professeur à l'institut de recherche sur les réacteurs nucléaires, qui dépend de l'université de Kyoto.

## Tepco Suspends Water Treatment Operation

By [DAISUKE WAKABAYASHI](#)

<http://online.wsj.com/article/SB10001424052702303823104576392720295079568.html>

TOKYO—[Tokyo Electric Power](#) Co., the operator of the damaged Fukushima Daiichi nuclear power plant, said **it halted the use of a new system for decontaminating highly radioactive water after levels of radiation in one part of the system rose faster than expected.**

The suspension came only five hours after Tepco started operation of the system, which aims to reduce the vast amounts of irradiated water at the facility. The pools of highly radioactive water are a major obstacle to stabilizing the stricken power plant.

The latest hiccup reflects the ongoing struggle to get the reactors stabilized even as Tepco stands by its target of achieving a "cold shutdown" of the three most damaged reactors by mid-January 2012.

Tepco started operation of the new system, which incorporates U.S. and French technology, at 8 p.m. local time Friday, and then halted its use at 12:54 a.m. local time Saturday.

A Tepco spokesman said it is still unclear when it will restart the decontamination system.

The problem stemmed from the levels of radiation in a machine designed to absorb cesium. **The radiation levels had reached a stage requiring a change of the filtering cartridges.**

Tepco said it found that one of the cartridges was clogged with radioactive sludge and it is now trying to flush down the clogs in order to resume normal operations.

Separately, Japan's Ministry of Economy, Trade and Industry said it has verified the implementation of additional safety steps at nuclear power plants in Japan. **More than 30 of Japan's 54 commercial reactors are not in operation because checkups on the plants had not been completed following the March 11 disasters.**

The government also implemented additional safety measures in the case of damage to the reactor cores such as steps to prevent hydrogen explosions from happening inside the facilities. In order to resume operation at an idle reactor, local communities around the plants must now sign off on the resumption of service.

The ministry's announcement excludes the Fukushima Daiichi facility.

## **TEPCO likely to delay start of stable cooling of Fukushima reactors**

TOKYO (Kyodo) -- Tokyo Electric Power Co. will likely put off Saturday's planned start of stable cooling of troubled reactors at the Fukushima Daiichi nuclear power plant, having suspended a key water treatment system less than five hours after beginning its full operation.

The newly installed system, which began full operation at 8 p.m. Friday, was halted at 12:54 a.m. Saturday as the radiation level of a component to absorb cesium had reached its limit and required replacement earlier than expected, the plant operator known as TEPCO said.

The system is seen as a key step to containing the three-month-old nuclear crisis as it would clean highly radioactive water hazardously accumulating at the plant premises and preventing restoration work.

The contaminated water is a side effect of the current emergency step of injecting coolant water from outside in place of the reactors' cooling functions lost in the March 11 earthquake and tsunami

(Mainichi Japan) June 18, 2011

---

Tepco suspend le système de décontamination de l'eau à la centrale Fukushima (NHK)

La Compagnie d'électricité de Tokyo, Tepco, a suspendu l'opération d'un système de décontamination d'eau hautement radioactive à la centrale nucléaire Fukushima Dai-ichi car l'une des parties avait atteint sa limite maximale d'exposition aux radiations en moins de 5 heures.

Le système avait été mis en service hier vendredi soir.

L'un des composants du système utilise de la zéolite, un minéral qui absorbe le césium radioactif. Une pièce du dispositif de fabrication américaine était censée durer un mois. Mais la radiation dépassant les 4 millisieverts par heure, limite maximale autorisée par le constructeur, a rendu la pièce inutilisable. C'est pourquoi il a fallu la remplacer plus tôt que prévu.

Tôt ce matin samedi, Tepco a suspendu l'opération utilisant le dispositif, pour tenter de découvrir la cause d'un tel phénomène.

"Jusqu'à présent, aucune anomalie dans le système ou fuite d'eau n'a été détectée" a déclaré l'entreprise.

TEPCO suspends water decontamination system (NHK online)

Tokyo Electric Power Company has halted operation of a system to decontaminate highly radioactive water at the Fukushima Daiichi nuclear plant as **one of the parts reached its radiation exposure limit in less than 5 hours.**

The system went into service on Friday night.

**One component of the system uses the mineral zeolite to absorb radioactive cesium. A replacement part of the US-made device had been expected to last one month, but radiation exceeding the maximum 4 millisieverts per hour led to the dramatically shortened lifespan.**

TEPCO suspended operation of the device early on Saturday to determine the cause.

The utility says it has so far found no abnormalities with the system or water leakage in the system. It

adds that the device's dosimeter may have detected radiation from nearby pipes containing contaminated water or other radioactive materials.

The treatment system holds the key to halting the accumulation of highly radioactive water and recirculating contaminated water to cool the reactors.

Saturday, June 18, 2011 13:00 +0900 (JST)

---

## **Minister seeks reactor restart, says severe accident measures taken**

TOKYO, June 18, Kyodo

Industry minister Banri Kaieda on Saturday called for the restart of nuclear reactors currently suspended, to meet summertime electricity demand, saying immediate countermeasures for severe accidents have been taken "appropriately" at the nation's nuclear power plants.

Noting that power shortages facing the country could cause a "hollowing out" of Japanese industries, he called on local governments and residents to accept the restart of reactors that have been halted longer than planned due to the ongoing nuclear crisis at the Fukushima Daiichi plant.

Kaieda expressed readiness to visit areas hosting nuclear power plants to gain the acceptance of local governments and residents for the move, telling a news conference, "The state will thoroughly explain the safety of atomic energy to local people as its responsibility."

## **Mountain of problems still remains before Fukushima plant brought under control**

One cannot help but wonder how far efforts being made by the national government and Tokyo Electric Power Co. (TEPCO) to bring the Fukushima No. 1 Nuclear Power Plant under control have progressed.

Two months have passed since TEPCO first unveiled a roadmap for bringing the crippled plant under control, but various problems that have occurred since then show the roadmap was overly optimistic.

Uncertainty over the current state of the power plant and when it could be brought under control continues to disrupt the lives of locals. Many people probably wonder whether the wisdom and power of Japan and the rest of the world are effectively being brought together and applied in the ongoing efforts at the plant.

The government and TEPCO recently announced updated roadmaps on bringing the Fukushima plant under control and supporting people affected by it, and they talked about how far measures in the roadmaps have been implemented. However, they should also give a more general overview of the current situation of the nuclear power station and the outlook for stabilization of the plant, not just talk

about specific measures. It would also be good to give an updated assessment of the level of risk involving the plant.

At the Fukushima plant, of great concern now is how to treat radioactive water collected in the reactor and turbine buildings. The massive volume of the water, which is estimated to be at over 100,000 cubic meters, is obstructing work at the plant, and if removal of the contaminated water is delayed, it could leak into the ground around the structures or into the sea.

TEPCO has been setting up a system that includes parts from French and U.S. makers to decontaminate the radioactive water and return it to the reactors, which would allow cooling of the nuclear fuel without bringing in water from the outside, which could leak and increase the amount of trapped radioactive water. However, running of the system has been delayed after a water leak and other problems. Further delay-causing problems could occur if TEPCO does not first ferret out and correct their root causes.

Furthermore, although the water circulation system has started now, how long should it be run? It is also not clear what officials mean when they refer to stability of the plant, when we have not only a meltdown in the inner containment vessels, but the possibility of melted fuel having made its way to the outer containment vessels.

Dealing with the highly radioactive waste sludge that will be left after cleansing the radioactive water is another problem, and since Japan is encountering this and other issues with the nuclear disaster for the first time, work has had to start from the research and development phase. According to the roadmap, TEPCO will aim to store the radioactive sludge and will evaluate the construction of shielding walls to keep radioactive water from contaminating nearby groundwater and nearby sea in mid-July or later, but the utility and the government should take quicker action.

Measures to minimize nuclear plant workers' exposure to radiation and improve their medical care have been incorporated into the updated roadmap and are important steps needed to support workers at the plant for the years to come. Workers who had internal exposure to high levels of radiation were recently revealed, but it was months after their exposure. The government and TEPCO need to speed up full measurements of workers' exposures to radiation and efforts to minimize their exposure.

Another problem is that the evacuation of residents near the power plant is still confused. Although it is important to take care of residents near "hot spots" -- areas of relatively high levels of radiation including ones far from the plant -- the government also needs to give clear guidance to residents in areas that fall under designated evacuation zones while only having had low levels of radiation detected.

The central government and TEPCO may not have changed the time frames for their roadmaps, but the fact is that a massive number of issues remain to be addressed before the Fukushima No. 1 Nuclear Power Plant is brought under control.

(Mainichi Japan) June 18, 2011

## **TEPCO not to start stable Fukushima plant cooling till Mon.**

TOKYO, June 18, Kyodo

Tokyo Electric Power Co. cannot begin work to cool the troubled reactors at the Fukushima Daiichi nuclear power plant **until Monday at the earliest**, the utility said Saturday, adding it is fixing a problem that forced it to suspend full operation of a new water decontamination system.

The system, which began full operation at 8 p.m. Friday, was halted at 12:54 a.m. Saturday as the radiation level of a component to absorb cesium had reached its limit and required replacement earlier than expected, the operator known as TEPCO said.

The operator earlier assumed it would have to replace the component once a month, it said.

## **TEPCO to vent air from Fukushima reactor building (Kyodonews dimanche)**

### **TEPCO soon to open doors to No.2 reactor building**

Tokyo Electric Power Company says it will **soon** begin to open the doors to the No. 2 reactor building at the Fukushima Daiichi nuclear plant for ventilation, to lower humidity, and to start restoration work.

Extremely high humidity of nearly 100 percent, due to moisture apparently from the containment vessel and spent-fuel storage pool, has been hampering work inside the building.

TEPCO has been operating an air purification device for more than a week to reduce the radioactive concentration inside the building. **The company now assesses that opening the doors will raise the level of background radiation around the plant by 0.0014 microsievert per hour, far below the permissible annual limit for ordinary people of one millisievert.**

Speaking to reporters on Sunday morning, a TEPCO official stressed that the planned door-opening will have little impact on the nearby environment.

**The company plans to begin opening the doors at 8 PM on Sunday and to fully open them at 4 AM on Monday if no problems arise.**

TEPCO says the initial stage of the planned restoration work will include staff surveying radiation levels and adjusting gauges inside the building.

Sunday, June 19, 2011 12:35 +0900 (JST)

## **Difficultés grandissantes pour la décontamination de l'eau hautement radioactive à Fukushima**

La relance du système de décontamination de l'eau hautement radioactive accumulée dans les locaux de la centrale nucléaire de Fukushima pourrait prendre plusieurs jours.

La Compagnie d'électricité de Tokyo, Tepco, l'a mis en route vendredi soir. Elle a dû l'arrêter après cinq heures d'utilisation car le niveau de radiation d'un appareil d'absorption du césium avait augmenté plus vite que prévu. Cet appareil est conçu pour extraire le césium mais également le pétrole et le technétium.

Les techniciens de Tepco pensent qu'il a pu absorber une quantité supérieure aux attentes, de matières radioactives et de pétrole. Ils s'efforcent maintenant de trouver une solution au problème mais il faudra du temps.

En outre, l'évolution de la situation pourrait obliger la compagnie à revoir le fonctionnement de l'installation dans son ensemble et à mesurer les effets de la radioactivité émise des tuyaux passant à proximité de l'appareil incriminé.

Ces difficultés interviennent alors que l'eau hautement radioactive pourrait déborder dans une semaine si aucune mesure de prévention n'est mise en oeuvre.

### **TEPCO: cleanup system could take time**

The operator of the crippled Fukushima Daiichi nuclear power plant says it may take several days before a system to decontaminate highly radioactive water accumulating in the facility can be restarted.

Tokyo Electric Power Company put the system into full operation on Friday night, but had to halt it 5 hours later as the radiation level of a cesium absorption device rose higher than expected.

The device is also designed to remove oil and technetium.

TEPCO says it may have absorbed larger-than-expected amounts of radioactive materials along with oil. The utility is now working on measures to solve the issue.

TEPCO says the effort will require time. In addition, depending on the situation, it may have to reconsider the working of the entire system and examine the effect of radioactivity emitted from nearby pipes.

There are concerns that the highly radioactive water may overflow in around one week if no measures are taken.

Sunday, June 19, 2011 06:59 +0900 (JST)

## **4 out of 5 want nuclear reactors scrapped in Japan**

TOKYO, June 19, Kyodo

More than four out of five Japanese want the nation's 54 nuclear reactors to be decommissioned either immediately or gradually in the wake of the crisis at the Fukushima Daiichi nuclear plant, a poll reported by the Tokyo Shimbun daily showed Sunday.

Only 14 percent said the reactors should continue operations while 82 percent backed their decommissioning, showing a marked lack of confidence in the nation's atomic energy policy, according to the June 11-12 poll.

In a breakdown, a total of 54 percent of respondents said the reactors should be decommissioned "while taking into account the power supply-and-demand situation," followed by 19 percent who want decommissioning to "start with ones undergoing periodic checks" and 9 percent who called for immediate scrapping of nuclear plants.

### **Fukushima parents decontaminate school building**

Parents and teachers decontaminated an elementary school building in Date City, Fukushima Prefecture, on Sunday.

About 80 parents and teachers at Tsukidate elementary school thoroughly washed windows and verandas with high-pressure water jets and brushes.

The school has not detected radiation levels in excess of the legal limit, but has still suspended activities on the playground in response to concern by parents.

Meanwhile, radiation levels exceeded the limit in some parts of the city, and the government plans to help households in the designated areas to evacuate, raising concern among residents.

One parent who participated in the clean-up said he wanted to do something for children because the government's response has been slow.

School principal Masayoshi Murakami says he hopes the clean-up will help to ease children's and parents' worries.

Sunday, June 19, 2011 16:54 +0900 (JST)

### **Radioactive reactor equipment may be exposed at Fukushima plant (kyodonews 19 juin)**

#### **TEPCO opens doors at No.2 reactor**

Tokyo Electric Power Company says it has opened the doors and begun ventilation at the No. 2 reactor of the Fukushima Daiichi nuclear plant.

The restoration work inside the No. 2 reactor has been hampered by humidity of almost 100 percent due to steam from the containment vessel and spent-fuel storage pool.

TEPCO opened the doors halfway at 8:51 PM on Sunday. **It plans to fully open them at 4 AM on Monday if there are no problems.**

The utility has been using an air purification device for more than a week to reduce the radioactive

concentration inside the building.

The firm calculated that the level of background radiation around the plant after opening the doors would be 0.0014 microsieverts per hour. The annualized figure would be far below the permissible limit of one millisievert a year.

**A TEPCO official told reporters on Sunday that the planned door-opening will have almost no impact on the nearby environment.**

TEPCO says it has explained the plan to Fukushima Prefecture and 13 local municipalities. It says that when the doors are fully open, it will begin checking radiation levels and adjusting meters inside the building.

Monday, June 20, 2011 00:03 +0900 (JST)

## **Decontamination equipment failure to be analyzed**

Tokyo Electric Power Company started an experiment on Sunday night to determine the cause of a sudden rise in radiation levels that caused a water decontamination system to shut down.

The operator of the Fukushima Daiichi nuclear power plant **suspects that greater than anticipated amounts of contaminated oil and sludge entered part of the system.**

The utility put the new system into full operation on Friday night to remove radioactive materials from the highly contaminated water that has accumulated in the plant.

The operation had to be suspended after just 5 hours as the radiation level of **equipment that removes oil and sludge** rose to 4 millisieverts per hour, the level at which it needs to be replaced.

TEPCO had initially expected the equipment to last for about a month before it had to be changed.

The utility says greater than anticipated amounts of material containing radioactive substances may have flowed into the device, causing the radiation level to rise rapidly.

**The company started an experiment on Sunday night to compare an oil absorbent with the material currently being used, to determine the cause of the sudden rise in radiation levels.**

The resumption of a full-fledged operation will depend on the outcome of the experiment.

The amount of contaminated water is growing by 500 tons a day as fresh water is continuously being injected into the reactors to cool them down.

TEPCO is working to identify the cause of the series of problems and to take measures to resolve them, as the storage facilities for the contaminated water are filling up.

A delay in resuming the system could cause the water to overflow in about a week.

## French uranium challenge to Kakadu heritage listing

Lindsay Murdoch, Darwin <http://www.theage.com.au/national/french-uranium-challenge-to-kakadu-heritage-listing-20110619-1ga6o.html>

June 20, 2011

Jeffrey Lee, the senior custodian of the land that includes the Koongarra project area, would be one of Australia's richest people if he allowed the uranium mine to go ahead. *Photo: Glenn Campbell*

**A FRENCH government-owned company attempted to block countries discussing an Australian request to expand the World heritage-listed Kakadu National Park to include land that contains uranium worth billions of dollars.**

Paris-based Areva, the world's largest nuclear energy company, wants to extract 14,000 tonnes of uranium from its mineral lease in the Koongarra area, which is surrounded by the park. But federal Labor made an election promise last year to incorporate Koongarra into Kakadu, removing the possibility of future uranium mining there.

Areva formally requested Australia to withdraw its nomination for heritage listing from the agenda of the 35th World Heritage Committee meeting, which will be held in Paris this week, *The Age* has learnt.

But the government rejected the request and has sent a six-member delegation to Paris to push the nomination.

Jeffrey Lee, the sole member of the Djok clan and senior custodian of the land that includes the 12.5 square kilometre Koongarra project area, has also travelled to Paris hoping to speak at the meeting.

Mr Lee, 40, who would be one of Australia's richest people if he allowed the mine to go ahead, told *The Age* he wanted to tell the story of his country, which he wanted to see protected forever in the park.

"I've waited too long for this to happen," said Mr Lee, who works as a ranger in Kakadu.

**Koongarra is an ecologically sensitive area three kilometres from Nourlangie Rock, one of Kakadu's most visited sites.**

According to Aboriginal beliefs, the land has places where the rainbow serpent entered the ground and a giant blue tongue lizard still lurks.

The area also has rock art dating back thousands of years.

Federal Environment Minister Tony Burke told *The Age* his government would fight any opposition to the heritage nomination.

"I'm confident of the merit of our case," he said.

A high level World Heritage Committee delegation to Australia in 1998 recommended Koongarra be listed as "in danger" because of threats posed by uranium mining operations.

Areva Australia's website says the company owns the Koongarra uranium deposit, which was discovered in 1971, but there is currently a moratorium on mining it.

■ Mr Burke has put off until August a decision on whether to make a large part of Kimberley in Western Australia a national heritage-listed area.

He said he needed more time to consult and study the values of the recommended area and sites.

Under heritage listing the federal government would have to approve environmentally and culturally sensitive development projects.

Nuclear 1 to 10 incl

## **Another TEPCO worker exceeds radiation limit**

Preliminary research shows another worker at the troubled Fukushima Daiichi nuclear power plant may have been exposed to radiation above the limit.

Tokyo Electric Power Company reported the results of radiation checks on more than 1,100 workers at the plant to the health and labor ministry on Monday.

The ministry said one of the workers -- part of the maintenance staff at the plant -- is suspected of having been exposed to 335 millisieverts.

The figure exceeds the limit of 250 millisieverts set by the government for emergency situations.

The checks came after TEPCO found 3 additional workers had been exposed to radiation beyond the legal limit. Five more workers are suspected of having received doses of radiation above the limit.

The ministry has told the utility to conduct checks and report the results on 125 other workers, who were engaged in operations at the plant in March but have not undergone radiation screening.

Monday, June 20, 2011 19:55 +0900 (JST)

## Radioactive reactor equipment may be exposed at Fukushima plant

TOKYO (Kyodo) -- Highly radioactive equipment removed from and kept under water near a suspended reactor at the crippled Fukushima Daiichi nuclear power plant may be partially exposed and emitting radiation into the air, officials of the plant operator said **Sunday**.

**Tokyo Electric Power Co. began injecting water** for the equipment the same day at the building of the No. 4 reactor, which was suspended for regular inspection when it lost cooling functions in the March 11 earthquake and tsunami, the officials said.

Since a pool containing nuclear fuel that had been taken out of the reactor cannot be cooled, water is evaporating and causing a pit connected to it, with equipment including a shroud to adjust the flow of coolant water and a steam dryer inside, to also lose water.

**The 7.6 meter-deep pit contained water, which shields against radiation, only up to 2.5 meters as of June 11 and the highly radioactive part of the shroud, that was originally 6.8 meters** in height but has been cut to fit in the pit, may be exposed to the air, the officials said.

But the fuel in the storage pool is not believed to have been exposed or suffered damage, probably because water from the pit helped slow the reduction of water in the pool, company spokesman Junichi Matsumoto told a press conference.

The utility known as TEPCO, meanwhile, began releasing air possibly containing low levels of radioactive substances from the No. 2 reactor building in the evening by gradually opening the doors through early Monday.

The step, which will take hours to prevent the stirring up of dust containing toxic materials, is aimed at lowering the over 99 percent humidity inside to enable work to be conducted there, TEPCO said, denying that the move will have an impact on the environment.

**After the venting, TEPCO will start injecting nitrogen into the reactor to prevent a hydrogen explosion and adjusting measuring equipment,** it said.

(Mainichi Japan) June 20, 2011

## Test of decontamination system continues

The operator of the damaged Fukushima power plant is struggling to fix the problem that caused the suspension of a system to decontaminate highly radioactive wastewater.

The system is designed to filter radioactive material, oil and salt from the contaminated water and to reuse the treated water to cool the reactors.

Tokyo Electric Power Company, or TEPCO, halted the filtering system only 5 hours after it went into full operation on Friday. Readings around one of the system's devices indicated higher-than-expected radiation levels.

TEPCO engineers suspect that the density of radioactive substances in the contaminated water was greater than had been predicted.

They initially thought that the device had absorbed large volumes of oil and sludge containing radioactive material. But in a test conducted on Sunday, high radiation levels were registered for equipment set to the lowest of 3 absorption levels.

In another test on Monday, TEPCO adjusted the flow of the contaminated water through the equipment.

The radioactive wastewater is hampering work to bring the plant under control. The amount is increasing by 500 tons a day as fresh water is continuously being injected to cool the reactors. Storage facilities are filling up and a delay in restarting the filtering system could cause the water to overflow in about a week.

Monday, June 20, 2011 14:17 +0900 (JST)

## Lowering humidity underway at reactor No.2

The operator of the damaged Fukushima Daiichi plant says the high humidity inside one of the reactor buildings has been lowered after an entrance was opened to vent air. It plans to bring the humidity low enough for workers to work inside by opening up another entrance.

Restoration work inside the No. 2 reactor building has been hampered by nearly 100% humidity caused by steam believed to be from the containment vessel and spent-fuel storage pool.

Tokyo Electric Power Company opened the entrance early Monday morning after it had filtered

radioactive substances from the air inside the building.

The utility says the humidity levels near the entrance and at other points has been lowered to around 60%.

But it says the reading near a cargo entrance, that utility plans to open on Monday afternoon, was still nearly 90%.

It hopes workers will be able to enter the building to begin calibrating a water level gauge for the reactor and other tasks.

The utility says radiation readings were between 5 and 27 millisieverts per hour inside, but no significant change in radiation levels has been observed outside the plant.

The No.2 reactor is believed to have released more radioactive substances than the other reactors at the plant after an explosion apparently damaged its suppression chamber.

The government has asked the utility to look into what exactly happened after the disaster along with efforts to stabilize the reactor.

Monday, June 20, 2011 13:21 +0900 (JST)

## **Tepco s'efforce de restaurer rapidement le système de décontamination d'eau radioactive**

La Compagnie d'électricité de Tokyo, Tepco, s'efforce de restaurer un système de décontamination d'eau radioactive qui a dû être désactivé vendredi après une courte période de fonctionnement.

L'opérateur de la centrale a effectué un test de plus de quatre heures dans la nuit de dimanche pour déterminer les causes d'une élévation rapide de la radioactivité dans le système.

Les ingénieurs de Tepco pensent que la densité de substances radioactives dans l'eau contaminée dépassait les prévisions.

Ils pensaient à l'origine que le dispositif avait absorbé de grandes quantités d'huile et de boue contenant des substances radioactives. Mais un test effectué dimanche a montré que des taux élevés de radiation étaient enregistrés lorsque le dispositif était réglé sur le niveau d'absorption le plus faible des trois disponibles.

Le volume d'eau radioactive augmente de 500 tonnes par jour, de l'eau douce étant continuellement injectée dans les réacteurs pour les refroidir.

Les installations de stockage d'eau contaminée se remplissent et tout retard pris dans la remise en marche du système pourrait aboutir à des débordements dans environ une semaine.

## **Tepco aère le bâtiment du réacteur 2 pour abaisser le taux d'humidité**

Selon Tepco, l'humidité élevée à l'intérieur d'un des bâtiments des réacteurs a baissé après que la compagnie a pratiqué une ouverture pour évacuer l'air.

Les travaux de restauration à l'intérieur du bâtiment du réacteur 2 ont été rendus difficiles par un taux d'humidité de près de 100 pour cent provoqué par de la vapeur qui s'échapperait de l'enceinte de confinement et de la piscine de stockage de combustible irradié du réacteur.

La compagnie a pratiqué l'ouverture lundi matin après avoir filtré les substances radioactives contenues dans l'air à l'intérieur du bâtiment.

L'opérateur de la centrale estime que le taux d'humidité à proximité de l'ouverture et en plusieurs autres points a été abaissée à environ 60 pour cent.

Tepco espère que les techniciens pourront pénétrer dans le bâtiment pour commencer à étalonner une jauge de niveau d'eau pour le réacteur et effectuer d'autres opérations.

## **TEPCO injects water to No.4 reactor storage pool**

Tokyo Electric Power Company has been trying to reduce a high level of radiation discovered in the Number 4 reactor of the troubled Fukushima Daiichi nuclear power plant.

The utility started to inject water into a pool on the top floor which was used for storing large equipment contaminated by radiation on Sunday.

The Number 4 reactor was shut down for a routine inspection when it was hit by the earthquake and the tsunami on March 11th.

Large hardware in the reactor was removed and was submerged in the pool to block the release of radiation.

Tokyo Electric Company discovered that the water level of the pool had dropped to about 1/3 of its capacity as of June 11th.

The machinery is thought to have been exposed and releasing high amounts of radiation.

The operator fears it could hamper restoration work in the Number 4 reactor.

TEPCO says the radiation level on the top floor is so high that workers cannot enter, but if the equipment is submerged again, the radiation level will decline enabling operations to restart.

Monday, June 20, 2011 05:53 +0900 (JST)

[http://www3.nhk.or.jp/daily/english/20\\_03.html?play](http://www3.nhk.or.jp/daily/english/20_03.html?play) voir la video sur le réacteur no 4 !!

## **Tepco injecte de l'eau dans une piscine de stockage du réacteur 4**

La Compagnie d'électricité de Tokyo, Tepco, s'efforce de réduire le taux élevé de radiation découvert dans le réacteur 4 de la centrale nucléaire Fukushima Dai-ichi.

L'opérateur de la centrale a commencé dimanche à injecter de l'eau dans une piscine au niveau supérieur du bâtiment du réacteur 4, utilisée pour stocker du matériel lourd contaminé par les radiations.

Le réacteur numéro 4 était fermé pour une inspection de routine lorsqu'il a été frappé par le séisme et le tsunami du 11 mars.

Du matériel lourd provenant du réacteur a été enlevé et plongé dans la piscine pour enrayer la production de rayonnements ionisants.

Tepco a découvert que le niveau de l'eau de la piscine avait baissé à environ un tiers de sa capacité le 11 juin.

Le matériel en question aurait été exposé à la radioactivité et produirait des taux élevés de radiation.

L'opérateur craint un ralentissement des travaux de restauration dans le réacteur 4 du fait de la radioactivité élevée.

Ainsi, selon Tepco, le taux de radiation au niveau supérieur du bâtiment est si élevé que les techniciens ne peuvent pas y entrer. Néanmoins, si le matériel est de nouveau submergé la radioactivité baissera, permettant la reprise des opérations.

It doesn't take a tsunami...

June 15, 2011  
admin

...as this AP picture shows, with the Ft. Calhoun nuclear power plant in Nebraska now completely surrounded by water as levels continue to rise in the Missouri River.



Following the June-July 1993 flooding along the Missouri River, the NRC published [Information Notice 94-27](#) which revealed that while giving safety assurances to the public during the flooding around the Cooper nuclear power station near Brownville, Nebraska, water was actually coming into the reactor building and rising on safety-related electrical circuits vital to reactor cooling even with the unit in shutdown. Floor drains can become fountains. There is additional concern from rising flood water inundating an on-site auxiliary building and the reactor's "spent" fuel storage pool now located on the nuclear island in our midwest.

---

Article originally appeared on Beyond Nuclear (<http://www.beyondnuclear.org/>).

See website for complete article licensing information.

Le ministère de l'Environnement a décidé d'approuver l'incinération de décombres contaminés par la radioactivité (post catastrophe de Fukushima) dans les usines d'incinération existantes équipées de filtres et de dispositifs d'absorption (?)

Mise en place de cette mesure dès la fin du mois de juin.

L'idée est que les résidents ne seront pas exposés à + de 10 microsieverts de radiation par an.

Les décombres contenant moins de 8000 becquerels de césium par kilo pourront être enfouis une fois brûlés dans des décharges ordinaires. Mais le gouvernement interdira que ces sites puissent servir à la construction de zones résidentielles à l'avenir.

**Provisoirement** les cendres (moins de 8000 becquerels de césium) récupérées par les filtres spéciaux et les cendres résultant de l'incinération devront être conservées dans des « bidons spéciaux capables de bloquer la radioactivité ».[ça existe ce genre de bidon ?] Les cendres contenant plus de 100 000 becquerels devront être conservées dans des installations protégées par des murs de béton.

Il n'existe actuellement aucune loi sur les façons de disposer des déchets radioactifs résultant de la destruction d'une centrale nucléaire (donc le gouvernement a fait avec les lois existantes).

## Environment Ministry to approve incineration of rubble contaminated with radiation



Rubble piles up at a temporary disposal site in Iwaki, Fukushima Prefecture. (Mainichi)

The Environment Ministry has decided to approve the proposed incineration of rubble contaminated with radiation from the tsunami-hit Fukushima nuclear power plant at existing incineration facilities equipped with exhaust gas filters and absorption devices, officials said.

It made the decision after discussing how to safely dispose of rubble contaminated with radiation from the crippled Fukushima No. 1 Nuclear Power Plant.

The ministry had initially urged local governments not to move radioactive rubble out of temporary storage sites. However, it will explain its decision to local governments concerned and ask them to resume their disposal of contaminated rubble **as early as the end of this month.**

In working out basic policy for the disposal of radioactive rubble, the ministry principally followed the procedure of treating radioactive sludge from sewage disposal facilities near the plant.

The policy is based on the assumption that residents near disposal sites will be exposed to less than 10 microsieverts of radiation a year.

The ministry will allow local governments to bury burned rubble containing less than 8,000 becquerels of radioactive cesium per kilogram of rubble at waterproof final disposal sites for ordinary waste. However, the ministry will ban such disposal sites from being converted to residential areas in the future.

Authorities will also require local bodies to temporarily store ash caught by exhaust gas filters and ash from burned rubble containing more than 8,000 becquerels of radioactive cesium in **special drums that can block radiation** and ash containing over 100,000 becquerels of radiation at facilities shielded by concrete walls.

The ministry has ordered that levels of radiation must be thoroughly monitored at facilities where incinerated radioactive rubble is temporarily stored.

Moreover, the ministry will permit local governments to bury sludge created by the tsunami generated by the March 11 Great East Japan Earthquake, concrete fragments and other nonburnable waste at final disposal sites for ordinary waste.

Metal and other recyclable waste can be reused on condition that they emit less than 0.01 millisieverts of radiation per year and therefore are not legally regarded as radioactive substances.

**No law currently provides for ways to dispose of waste contaminated with radiation from a crippled nuclear power plant.** After consultations between ministries and agencies concerned, the government decided to apply the Waste Disposal and Public Cleaning Law to the disposal of radioactive rubble.

The government will also try to form a consensus among Fukushima residents about its plan to build final disposal sites for radioactive waste in the prefecture.

(Mainichi Japan) June 20, 2011

## **TEPCO struggles to resume key water treatment system at Fukushima**

TOKYO (Kyodo) -- Tokyo Electric Power Co. continued struggling Monday to figure out how to cope with difficulties in operating a newly installed water treatment system at its troubled Fukushima Daiichi nuclear power plant, aiming to resume its full operation as early as Tuesday.

Smooth operation of the system, which is designed to remove highly radioactive materials from a massive amount of water accumulating at the station, is considered essential to containing the three-month-old nuclear crisis, as the utility plans to eventually recycle the water to cool the plant's damaged reactors.

But the newly installed system was halted at 12:54 a.m. Saturday, after becoming fully operational at 8 p.m. Friday, because the radiation level of a component to absorb cesium had reached its limit and required replacement earlier than expected, the plant operator said.

The utility, known as TEPCO, has been analyzing why the component has not worked well and how to solve the problem, the firm's officials said.

"I think we can resume operating the system in a day or so," TEPCO spokesman Junichi Matsumoto said at a press conference, emphasizing that it will not take a long time before the company will come up with measures to decontaminate high-level radioactive water.

While dealing with the tainted water, TEPCO said Monday it fully opened the doors of the No. 2 reactor building at the power station to lower humidity inside to enable people to work there, denying the move would have an impact on the environment.

The ventilation has helped reduce the humidity inside, the government's nuclear safety agency said, adding that the level declined to 58.7-89.9 percent from as high as 99.9 percent measured before the doors were opened.

If the level of humidity decreases to around 70 percent, people can work inside the building with full-face masks, which could allow TEPCO to start injecting nitrogen into the reactor to prevent a hydrogen explosion and adjust measuring equipment there, the Nuclear and Industrial Safety Agency said.

In other progress, a robot called "Quince" -- jointly developed by Japan's Chiba Institute of Technology, Tohoku University and other institutions -- will be sent to the Fukushima power complex, the agency said.

Quince is capable of operating in places where rubble is scattered and is believed to be able to measure levels of radiation inside buildings and depths of contaminated water, as well as obtain samples of such water, as it can climb wet and slippery steps, the agency added.

Still, TEPCO also said Monday that one more worker involved in efforts to tackle the nuclear crisis at the power station was found to have been exposed to radiation above the maximum allowable limit of 250 millisieverts, bringing the total number of such workers to nine.



In this May 27, 2011 photo released on June 2, 2011 by Tokyo Electric Power Co. (TEPCO), temporary storage tanks for low-level radioactive polluted waters used for temporary cooling system in Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima prefecture, northeastern Japan, are shown. (AP Photo/Tokyo Electric Power Co.)

The latest announcement was made as the utility is checking the external and internal radiation exposure of a total of more than 3,500 workers who were engaged in the emergency work in March, after the devastating March 11 earthquake and ensuing tsunami crippled the plant.

The government will "have the responsibility to implement thorough measures" to prevent workers at the complex from being excessively exposed to radiation, Goshi Hosono, a special adviser to Prime Minister Naoto Kan on the handling of the nuclear disaster, said at a press conference.

(Mainichi Japan) June 20, 2011

---

quand le maintien des actions TEPCO à un niveau acceptable pour les actionnaires est plus important que d'essayer d'empêcher la contamination de la nappe phréatique (et de l'océan) par la radioactivité.

Comment TEPCO est incapable de voir la « barrière souterraine » sous les réacteurs autrement qu'en fonction de la réaction de ses actionnaires.

## **Preventing radiation contamination more important than TEPCO's stock prices**



In this June 1, 2011 file photo released by Tokyo Electric Power Co. (TEPCO), workers inspect equipment inside the cesium absorption tower, part of the radioactive water processing facilities at the Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture. (AP Photo/TEPCO)

Some people have suggested that I start to write about something other than nuclear power plants, but with the situation as it is, that's not going to happen. The crisis at the Fukushima No. 1 Nuclear Power Plant is still not over. Far from it, there are signs that it is getting worse. I can't stand by and look at the political situation without focusing on this serious event.

One figure who has entered the public spotlight in the wake of the nuclear crisis is 61-year-old **Hiroaki Koide**, an assistant professor at the Kyoto University Research Reactor Institute and a controversialist in the anti-nuclear debate. A specialist in nuclear power, Koide has garnered attention as a persistent researcher who has sounded the alarm over the dangers of this form of energy without seeking fame.

In a TV Asahi program on June 16, Koide made the following comment:

"As far as I can tell from the announcements made by Tokyo Electric Power Co. (TEPCO), the nuclear fuel that has melted down inside reactors at the Fukushima nuclear plant has gone through the bottom of the containers, which are like pressure cookers, and is lying on the concrete foundations, sinking into the ground below. **We have to install a barrier deep in the soil and build a subterranean dam as soon as possible to prevent groundwater contaminated with radioactive materials from leaking into the ocean.**"



In this photo taken on Thursday, March 31, 2011 by Japan Maritime Self-Defense Force and released by Japan Defense Ministry Friday, April 1, JMSDF personnel all in protective suits are aboard a tugboat towing a U.S. military barge carrying pure water towards the quay of the tsunami-stricken Fukushima Dai-ichi nuclear complex in Okumamachi, Fukushima Prefecture, northeastern Japan. (AP Photo/Japan Defense Ministry )

His comment captured public interest and when I asked a high-ranking government official about it, the official said that construction of an underground dam was indeed being prepared. But when I probed further, I found that the project was in limbo due to opposition from TEPCO.

Sumio Mabuchi, an aide to Prime Minister Naoto Kan who is dealing with nuclear power plant issues, holds the same concerns as those expressed by Koide and has sought an announcement on construction of an underground dam, but TEPCO has resisted such a move.

The reason is funding. It would cost about 100 billion yen to build such a dam, but there is no guarantee that the government would cover the amount. If an announcement were made and TEPCO were seen as incurring more liabilities, then its shares would fall once again, and the company might not be able to make it through its next general shareholders' meeting.

In my possession, I have a copy of the guidelines that TEPCO presented to the government on how to handle press releases. The title of the document, dated June 13, is "Underground boundary' -- Regarding the press." It is split into five categories on how to handle the announcement of construction of an underground boundary. In essence, it says, "We are considering the issue under the guidance of prime ministerial aide Mabuchi, but we don't want to be seen as having excess liabilities, so we're keeping the details confidential."

Possibly the silliest response to envisaged questions from reporters is TEPCO's suggestion for a reply to the question, "Why hasn't construction been quickly started?" The response reads: "Underground water flows at a speed of about 5 to 10 centimeters a day, so we have more than a year before it reaches the shore."

Initially an announcement on the underground barrier was due to be made to the press on June 14, but it was put off until after TEPCO's general shareholders meeting on June 28.

In the meantime, the state of the nuclear power plant continues to deteriorate and radioactive materials are eerily spreading and contaminating the area around the plant.

**Which is more important: upholding share prices or stopping pollution?** The Japanese political and business world has sunk to a level where it can't even answer such a question.

One government official recently commented, "I think I can understand now why the leaders during the war couldn't precisely and steadily accomplish their strategies."

Today, announcements from the "imperial headquarters" -- namely TEPCO's releases on its roadmap for bringing the nuclear crisis under control, which nobody believes -- are still being issued.

Some people have compared Kan to former Japanese Prime Minister Hideki Tojo, because he yells at his subordinates over the smallest details. Tojo resigned in July 1944, after the fall of Saipan, when it had become likely that Japan would lose the war. His successor, Kuniaki Koiso, was in office for 8 1/2 months before being replaced by Kantaro Suzuki. After this, two atomic bombs were dropped on Japan and then the war ended after a decision from the Emperor.



In this Friday, March 18, 2011 satellite image released by DigitalGlobe, the Fukushima Dai-ichi is shown. (AP Photo/DigitalGlobe)

Why wasn't an armistice quickly implemented to put an end to further wartime damage? It was because impossible solutions to Japan's situation in the war were flying about, common sense was lost, and the government was slow to reach a decision. Yet the same sort of situation has arisen today.

The most important issue now is preventing contamination from radiation. We need leaders who can focus on the core issue without being swayed by empty theory. (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) June 20, 2011

## **Accidents de réacteur Inondation à Fort Calhoun (Reactor Accidents FLOOD at FORT CALHOUN)**



de : **un anonyme**  
lundi 20 juin 2011 (15h29)

**2 commentaires**



Traduction (anglais > français) Juin 15, 2011, mis à jour Juin 19, 2011

Inondation de la rivière Missouri menace Nebraska Fort Calhoun réacteur nucléaire, détenue et exploitée par le District Omaha Public Power. Ci-dessus est une photo du site de Fort Calhoun prise le 11 juin 2011. Une brève vidéo du site le 14 juin est disponible ici (la partie montrant Fort Calhoun commence à 1 minute 21 secondes dans la vidéo et dure environ 5 secondes, de sorte que vous pouvez mettre en pause).

Le réacteur de Fort Calhoun est actuellement en arrêt à froid et a été depuis le 9 avril 2011, quand il a commencé un arrêt pour rechargement. Le processus de ravitaillement est terminé et le réacteur est maintenant une gamme complète de carburant - 1 / 3 frais (inutilisées) de combustible et de carburant 2 / 3 âgés et hautement radioactifs. Le réacteur n'a pas été redémarré depuis l'arrêt pour rechargement commencé.

La piscine Fort Calhoun de carburant se trouve dans le bâtiment des auxiliaires (bâtiment marron à la droite du bâtiment de confinement blanc en photo ci-dessus). La piscine elle-même est d'environ 30 pieds au-dessus du niveau du sol. La piscine contient actuellement environ 670 tonnes de combustible irradié. A propos de 165 tonnes de combustibles irradiés sont entreposés dans des fûts de sécheresse sur le site (emplacement de la photo ci-dessus inconnu). Ensemble, ce carburant contient environ 100 millions de curies de radiation, de 40% de ce qui est Césium-137. Des déchets irradiés Ce seul réacteur contient donc plus que de césium-137 a été rapporté avoir été libérés à ce jour par les réacteurs de Fukushima quatre.

Le site du réacteur est 1004 pieds au-dessus du niveau de la mer. Le niveau d'eau est actuellement, selon la Nuclear Regulatory Commission, à 1005 pieds, 7 pouces au-dessus du niveau des mers et il est prévu d'augmenter à 1006 pieds, 4 pouces. Ce niveau d'inondation est projeté pour durer pendant des semaines. Toutefois, cette projection suppose une pluviométrie normale dans les prochaines semaines et aucune défaillance de digues en amont - deux facteurs qui pourraient causer une étape supérieure d'inondation. L'utilitaire (Omaha Public Power District) a mis une berme de 8 pieds en caoutchouc

contre les inondations autour de la centrale et elle pense qu'elle peut résister à une crue jusqu'à environ 1010 pieds au-dessus du niveau des mers.

Deux événements importants ont eu lieu à Fort Calhoun, depuis que les eaux ont commencé à augmenter. Le 7 Juin, un incendie dans une switchroom électriques privé de courant, et la capacité de ce refroidissement, à la piscine de combustible pendant environ 90 minutes. Utilitaires responsables affirment qu'il faudrait 88 heures de perte de refroidissement de l'eau pour bien faire bouillir. Toutefois, puisque certains des combustibles dans la piscine a été chargé depuis le 9 avril et est donc très chaud, cela peut avoir été une estimation trop optimiste.

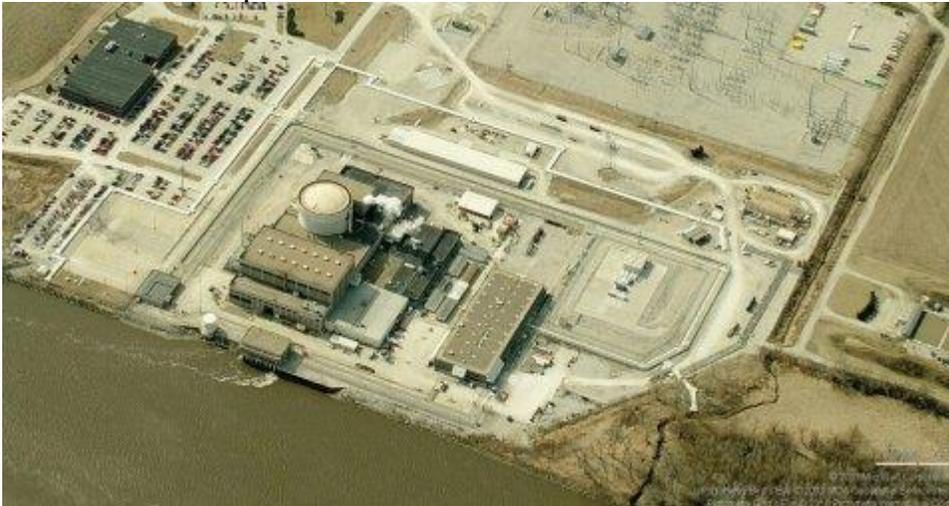
Le 13 Juin, les eaux usées de la construction de l'administration du site a été libéré dans la rivière Missouri au taux de 105 gallons par minute. Nous avons été incapables de déterminer combien de temps cette libération a eu lieu. Depuis les eaux usées seraient venus de l'immeuble administratif, il n'était pas susceptible d'avoir contenu des rayonnements.

Le 17 Juin, OPPD émis un avis d'une vulnérabilité potentielle des inondations - un trou dans un sol - qui pourraient avoir affecté un système de sécurité. OPPD devait sceller le trou plus tard ce jour.

Selon une entrée mise à jour dans Wikipedia : «Une évaluation réalisée par les inondations de la Nuclear Regulatory Commission en 2010 a indiqué que la station de Fort Calhoun nucléaire», n'a pas de procédures adéquates pour protéger la structure d'admission et bâtiment des auxiliaires contre les inondations externes "[. 6] L'évaluation a également indiqué que l'installation n'était pas suffisamment préparé pour un "pire" scénario d'inondation. Un certain nombre de points d'inondation potentiel de pénétration de l'eau ont été découverts qui pourraient avoir affecté l'approvisionnement en aliments crus d'eau pour le système de refroidissement, l'eau axillaires l'offre et de commutation principal (électrique) chambre. Au début de 2011, des mesures correctives avaient été mises en œuvre [6]. "

Fort Calhoun est un 500 MW Combustion Engineering réacteur à eau pressurisée. Il a reçu sa licence d'exploitation initiale en Octobre 1973, et un renouvellement de sa licence en 2003. Il est maintenant autorisé à opérer jusqu'en août 2033. La Nuclear Regulatory Commission considère actuellement Fort Calhoun à être l'un des trois réacteurs les plus problématiques dans les Etats-Unis en raison de problèmes de sécurité en cours dans le réacteur, et le site a été sous surveillance accrue pendant quelque temps. Sur Juin 16, le CNRC a envoyé des inspecteurs supplémentaires sur le site pour examiner les préparatifs d'inondation.

est au-dessous une photo de Fort Calhoun dans des conditions normales.



Le réacteur nucléaire de Cooper dans le Nebraska, également sur la rivière Missouri, est également l'objet de préoccupations des inondations. Cooper est un réacteur de GE Mark I, comme les réacteurs qui ont échoué à Fukushima. Trois travailleurs ont été exposés aux radiations ce printemps à la Cooper, et à la mi-Juin de l'utilité a été cité par le CNRC pour les carences prévention des incendies. Une notification de cas inhabituel - le plus bas des catégories du CNRC de sécurité 4 - a été déclaré dimanche, Juin 19 à réacteur Cooper en raison de crue des eaux. A cette époque, cependant, les inondations ne devrait pas contester le réacteur, mais beaucoup dépend de la hauteur des eaux atteint au cours des prochaines semaines.

Info NIRS <http://www.nirs.org/reactorwatch/ac...>

post scriptum : croisons les doigts pour que tout aille bien ! prions ensemble ! Sortons du nucléaire Maintenant !

June 15, 2011, updated June 19, 2011

Flooding on the Missouri River is threatening Nebraska's Fort Calhoun nuclear reactor, owned and operated by the Omaha Public Power District. Above is a photo of the Fort Calhoun site taken June 11, 2011. [A brief video of the site on June 14 is available here](#) (the portion showing Fort Calhoun starts at 1 minutes 21 seconds into the video and lasts about 5 seconds, so you may want to pause it).

The Fort Calhoun reactor is currently in cold shutdown and has been since April 9, 2011, when it began a refueling outage. The refueling process is complete and the reactor is holding a full complement of fuel--1/3 fresh (unused) fuel and 2/3 older and highly radioactive fuel. The reactor has not been restarted since the refueling outage began.

The Fort Calhoun fuel pool is in the auxiliary building (brown building to the right of the white containment building in photo above). The pool itself is about 30 feet above ground level. The pool currently contains about 670 metric tons of irradiated fuel. About 165 tons of irradiated fuel are stored in dry casks at the site (location in photo above unknown). Together this fuel contains about 100 million curies of radiation, 40% of which is Cesium-137. This single reactor's irradiated waste thus

contains more Cesium-137 than has been reported to have been released to date from the four Fukushima reactors.

The reactor site is 1004 feet above sea level. The water level is currently, according to the Nuclear Regulatory Commission, at 1005 feet, 7 inches above sea level and is projected to rise to 1006 feet, 4 inches. This flood stage is projected to last for weeks. However, that projection assumes normal rainfall in the coming weeks and no failure of upstream levees--two factors which could cause a higher flood stage. The utility (Omaha Public Power District) has put an 8-foot rubber flood berm around the plant and believes it can withstand a flood up to about 1010 feet above sea level.

Two significant events have occurred at Fort Calhoun since the flood waters began to rise. On June 7, [a fire in an electrical switchroom](#) knocked out power, and thus cooling capability, to the fuel pool for about 90 minutes. Utility officials claim it would take 88 hours of loss of cooling for the water to fully boil off. However, since some of the fuel in the pool has been loaded since April 9 and is thus quite hot, this may have been an overly optimistic estimate.

On June 13, sewage from the site's administration building was released into the Missouri River at the rate of 105 gallons per minute. We have been unable to determine how long this release took place. Since the sewage reportedly came from the administration building, it was not likely to have contained radiation.

On June 17, OPPD issued a notice that of a potential flooding vulnerability--a hole in a floor--that could have impacted one safety system. OPPD was expected to seal the hole later that day.

According to an updated entry in [Wikipedia](#): "A flood assessment performed by the Nuclear Regulatory Commission in 2010 indicated that the Fort Calhoun Nuclear Generating Station, "did not have adequate procedures to protect the intake structure and auxiliary building against external flooding events."<sup>[6]</sup> The assessment also indicated that the facility was not adequately prepared for a "worst-case" flooding scenario. A number of potential flood water penetration points were discovered that could have impacted the raw feed water supply to the cooling system, the auxiliary water supply and main switchgear (electrical) room. By early 2011, corrective measures had been implemented.<sup>[6]</sup>"

Fort Calhoun is a 500 MW Combustion Engineering Pressurized Water Reactor. It received its initial operating license in October 1973, and a renewal of its license in 2003. It is now licensed to operate until August 2033. The Nuclear Regulatory Commission currently considers Fort Calhoun to be one of the three most problematic reactors in the U.S. because of ongoing safety issues at the reactor, and the site has been under enhanced oversight for some time. On June 16, the NRC sent additional inspectors to the site to review flood preparations.

below is a photo of Fort Calhoun under normal conditions.

## **Commentaire sur l'arrêt du système de décontamination**

Pour notre commentaire d'aujourd'hui, nous avons demandé au professeur Akio Koyama, de l'Institut du réacteur de recherche de l'université de Kyoto, de nous parler de l'arrêt provisoire du système de décontamination d'eau à la centrale nucléaire Fukushima Dai-ichi.

Radio Japon

Ce système de décontamination d'eau est constitué de plusieurs modules, parmi lesquels un dispositif d'élimination d'huile, une unité pour absorber les substances radioactives et une autre pour les précipiter. Le problème le plus récent dont a été victime le système s'est produit lors de la deuxième étape, c'est-à-dire celle de l'absorption des substances radioactives. Quelle est l'origine de ce problème ?

Akio Koyama

Le dispositif d'élimination d'huile est conçu pour enlever une quantité suffisante d'huile et de boue radioactives. Mais je pense qu'un volume insuffisant a été éliminé dans ce cas. Après avoir traité l'eau avec ce dispositif, l'opérateur a fait passer l'eau dans l'unité chargée d'absorber les substances radioactives. Cette unité a pour fonction d'absorber les substances ionisées et dissoutes dans l'eau, ce qui la rend peu efficace pour traiter les impuretés telles que l'huile et la boue.

L'étape suivante consistait à précipiter les substances radioactives. Mais avant d'effectuer cette opération à l'aide de produits chimiques, le dispositif commence par retirer diverses impuretés.

Lors de la dernière opération en date, le dispositif chargé de précipiter les impuretés allait être utilisé après l'unité d'absorption.

Cette décision a probablement été prise parce que l'élimination de l'importante quantité de césium présente dans l'eau était prioritaire. Je pense que la priorité aurait dû être d'éliminer les impuretés, dans ce cas.

Des enquêtes sont menées sur les raisons de l'arrêt du système de décontamination. En règle générale, il est préférable de ne pas laisser de l'huile s'introduire dans les dispositifs, ce qui pourrait provoquer un dysfonctionnement. Je propose par conséquent d'améliorer les fonctions du dispositif d'élimination d'huile avant que de l'eau soit injectée dans le système.

Radio Japon

Des problèmes similaires au dernier en date risquent-ils d'affecter le calendrier de restauration tout entier ?

Akio Koyama

A mon avis, l'opérateur de la centrale a essayé de trop faire et trop tôt, dans l'espoir de respecter la date limite qu'il s'était fixée. Mais même si le processus dans son ensemble subissait du retard à cause du dernier incident, ce retard n'aggraverait pas la situation dans la centrale, tant que l'état des réacteurs ne se dégrade pas.

Des problèmes supplémentaires pourraient survenir, aussi le calendrier pourrait nécessiter des modifications.

C'était le professeur Akio Koyama, de l'Institut du réacteur de recherche de l'université de Kyoto, qui nous parlait de l'arrêt provisoire du système de décontamination d'eau à la centrale de Fukushima.

## Key water treatment system halts at Fukushima plant

FUKUSHIMA, Japan, June 21, Kyodo

Tokyo Electric Power Co. said Tuesday that a pump of a newly installed radioactive water treatment system at its crippled Fukushima Daiichi nuclear power plant **halted automatically** during its trial run early that morning, freezing the operation of the entire apparatus.

The utility said it believes that the pump, which is a component developed by France's Areva SA to inject chemicals into the key system to decontaminate radioactive materials, had stopped as it was **overburdened by excessive liquid flow**.

The plant operator, known as TEPCO, said it aimed to restart a trial run as early as Tuesday afternoon after adjusting the liquid flow.

## **Water decontamination test at Fukushima stops**

The test run of a water decontamination system at the crippled Fukushima Daiichi nuclear power plant has again been halted due to a malfunction.

The operator, Tokyo Electric Power Company, had resumed testing the system early Tuesday morning after a previous stoppage.

Last Friday, the operation of the entire water treatment system was stopped after only 5 hours of its test-run as higher than expected radiation was detected in US-made equipment for absorbing radioactive materials. It replaced the key elements for their absorption.

The utility says this time a pump for the French-made decontamination equipment automatically stopped at around 7:20 AM on Tuesday, causing the operation of the entire system to halt.

It says the pump is used to add water to decrease the density of chemicals which break down radioactive substances. Apparently its malfunction was caused by too much water.

Tokyo Electric says it wants to resume operation as early as Tuesday afternoon by adjusting the amount of water input.

Tuesday, June 21, 2011 13:10 +0900 (JST)

## **Nouvel arrêt des essais du système de décontamination**

L'essai d'un système de décontamination d'eau à la centrale nucléaire Fukushima Dai-ichi a de nouveau été arrêté à cause d'un dysfonctionnement.

L'opérateur de la centrale, la Compagnie d'électricité de Tokyo, ou Tepco, a repris l'essai du système ce mardi matin après un arrêt. Vendredi dernier, son fonctionnement avait dû être interrompu cinq heures seulement après le début du test, un taux de radiation plus élevé que prévu ayant été détecté dans un dispositif américain d'absorption de substances radioactives. Tepco avait alors remplacé plusieurs

pièces vitales du dispositif.

La compagnie indique que cette fois-ci, **une pompe du matériel de décontamination d'origine française s'est automatiquement arrêtée vers 7h20 du matin, entraînant la désactivation du système tout entier.**

Tepeco explique que la pompe était utilisée pour ajouter de l'eau et réduire la densité des produits chimiques destinés à décomposer les substances radioactives.

**Le dysfonctionnement serait apparemment dû à un volume d'eau trop important.**

Tepeco dit souhaiter reprendre les essais dès ce mardi après-midi en réglant le volume d'eau admis dans la machine.

---

## Pool reinforcement continues at No.4 reactor

Tokyo Electric Power Company is continuing work to reinforce a spent fuel pool at the Number 4 reactor of the Fukushima Daiichi nuclear power plant.

The walls supporting the pool were heavily damaged by a hydrogen blast on March 15th, following the earthquake and tsunami 4 days earlier.

**The pool contains 1,535 spent fuel rods** and its weakened structure makes it vulnerable to future earthquakes.

TEPCO on Monday completed one stage of the reinforcement that began late last month. 32 iron pillars, each 8 meters tall and weighing 40 tons, were installed beneath the pool on the 2nd floor of the reactor building.

The utility plans to wrap the pillars in concrete by the end of next month.

**TEPCO then plans to install the same type of circulatory cooling system used for the spent fuel pool at the No. 2 reactor.**

It hopes to lower the temperature of the pool at the No. 4 reactor, which remains high at **around 86 degrees Celsius.**

**But TEPCO found that the March 15th explosion damaged water pipes connected to the pool, which are integral parts of the cooling system.**

Tuesday, June 21, 2011 07:20 +0900 (JST)

---

<http://www.ft.com/intl/cms/s/0/dc3dba1e-9aa4-11e0-bab2-00144feab49a.html#axzz1PIRr2QuE>

Les neuf Etats nucléaires du monde dépenseront 1 000 milliards de dollars dans les 10 prochaines années pour moderniser leur arsenal nucléaire

the US, Russia, China, the UK, France, Pakistan, India, Israel and North Korea

---

## City in Saitama Prefecture sets independent maximum radiation dose for children

KAWAGUCHI, Saitama -- The city government here has set the maximum radiation dose for children at **1.64 millisieverts per year**, making it the first local government in Japan to implement its own radiation exposure standard.

The tentative figure announced on June 20 is based on the International Commission on Radiological Protection (ICRP)'s 1 millisievert recommended maximum exposure to man-made radiation sources, plus Japan's average background radiation dose of 0.34 millisieverts and the average 0.3 millisieverts of annual exposure to cosmic radiation.

According to the Kawaguchi city government, the new annual exposure limit breaks down to a maximum hourly dose of 0.31 microsieverts, assuming a child spent eight hours a day outside. **Officials will take radiation measurements at 10 sites in the city once a week**, starting in mid-July. **If they find radiation levels at a site have exceeded the new municipal maximum, the city will restrict outdoor activities at surrounding nursery schools, kindergartens, primary and junior high schools to three hours a day.**

The Kawaguchi city government has already taken radiation measurements twice at the 10 sites, recording a top hourly dose of 0.16 microsieverts.

The new maximum dosage was set after the city received inquiries from worried parents and guardians, asking what they should do about their children should radiation exposure rise.

Asked if the city's move wouldn't spark confusion in other local governments, Kawaguchi Mayor Koshiro Okamura replied, "We shouldn't all have different regulations. The central government really needs to set a national radiation dose standard."

(Mainichi Japan) June 21, 2011

## Accidental water flow into pool may have prevented fuel melting: TEPCO



This Saturday May 7, 2011 image from video footage released on Sunday May 8, 2011 by Tokyo Electric Power Co., shows spent fuel storage pool of the Unit 4 reactor building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Tokyo Electric Power Co. (TEPCO) has released the results of an investigation into developments surrounding the No. 4 reactor at the Fukushima No. 1 Nuclear Power Plant and advised that water accidentally flowed into a spent fuel pool from an adjacent pool, barely avoiding fuel from melting.

If water had not been poured into the spent fuel pool, the No. 4 reactor would have been "in a very serious situation," TEPCO spokesman Junichi Matsumoto said, adding that the worst-case scenario would have been the melting of nuclear fuel.



The pool for spent fuel at the No. 4 reactor of TEPCO's Fukushima No. 1 nuclear power plant is pictured in this Feb. 1, 2005, file photo.(Mainichi)

According to the utility, the No. 4 reactor's fuel pool had been connected with a storage pool containing radioactive substances through mobile shield plates and their water levels were the same prior to the March 11 earthquake and tsunami.

The fuel pool lost its cooling functions due to power loss caused by the tsunami and its water level dropped due to evaporation. But the hydrogen explosion at the No. 4 reactor and other factors on March 15 shifted the shield plates, allowing water from the adjacent pool to pour in and restore the water level.

On March 20, TEPCO started pumping water into the fuel pool from outside, probably causing the shield plates to shut again and keeping the device storage pool's water at a low level.



In this March 24, 2011 file aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE, damaged Unit 4 of the crippled Fukushima Dai-ichi nuclear power plant is seen in Okumamachi, Fukushima prefecture, northern Japan. (AP Photo/AIR PHOTO SERVICE)

TEPCO plans to pump 1,000 cubic meters of water into the storage pool to keep the devices submerged. "The devices do not generate heat but will be submerged because of the radiation dosage problem," a TEPCO official said.

TEPCO will finish installing 32 steel posts to support the fuel pool on June 20 before building a concrete wall to cover the pillars by the end of July to make the structure more quake-resistant.

---

## **Whereabouts of 30 nuclear power plant subcontractors unknown: Health Ministry**

The whereabouts of **about 30 subcontractors who helped deal with the crisis at the crippled Fukushima No. 1 Nuclear Power Plant** is unknown, the Ministry of Health, Labor and Welfare said on June 20.

The workers are among some 3,700 who worked to control the disaster in March, the month the plant was struck by the Great East Japan Earthquake and tsunami.

The workers' names were listed in records showing that they had been loaned dosimeters, but when the plant's operator, Tokyo Electric Power Co. (TEPCO), contacted the companies they were associated with, **the companies replied that there was no record of those workers.**

The ministry has branded TEPCO's administration of workers "sloppy" and ordered the company to conduct an investigation to identify the workers.

"We don't know why there is no record of the workers. The records and dosimeters were managed by TEPCO and its administration can only be described as **sloppy**," a representative of the ministry's Labor Standards Bureau said.

Ministry officials said that 3,639 emergency workers were enlisted to handle the nuclear crisis in March. As of June 20, TEPCO had reported provisional radiation exposure figures for 3,514 workers to the ministry. The other 125 had not undergone tests for internal radiation exposure as of June 20. **TEPCO has asked cooperating companies to have 69 of these 125 workers tested.** The remaining 56 were either about to undergo tests or could not undergo tests due to illness.

Officials said that TEPCO managed records of workers who had been loaned dosimeters between the outset of the disaster and mid-April. **When workers were loaned dosimeters at the base isolation structure of the power plant and another area, the serial numbers of the dosimeters, the names of the companies involved in the work and the workers' names were recorded in handwriting.** But when TEPCO contacted the cooperating companies there was no record of some 30 of the 69 workers.

All of the workers who were not found on company records have returned their dosimeters. Records of their external radiation exposure remained, but none of the workers was exposed to radiation exceeding the limit of 250 millisieverts, officials said.

Since mid-April, records have been managed with bar codes and other means of identification, but the only way to identify workers at the plant before then is through handwritten records.

(Mainichi Japan) June 21, 2011

Personne ne semble savoir où sont passé 30 des sous-traitants qui ont travaillé au début de la crise à la centrale.

Ces ouvriers étaient censés avoir eu un dosimètre (qu'ils devaient rendre) mais jusqu'à la mi-avril, les papiers/documents ont été écrits à la main et c'est TEPCO qui en était responsable. C'est en fait la seule façon d'identifier les ouvriers qui sont passés à la centrale jusqu'à cette date. On notait apparemment le numéro de série du dosimètre, le nom de la compagnie de sous-traitance et bien sûr le nom de l'ouvrier.

Une fois contactées, les entreprises pour lesquelles ces ouvriers étaient censés travailler ont affirmé qu'elles n'avaient pas trace de ces gens-là.

Le ministère de la santé trouve que l'administration de TEPCO est du travail de cochon (« sloppy work »)

Au 20 juin il restait 125 ouvriers qui n'avaient pas encore été testés par TEPCO pour mesurer leur taux d'irradiation interne et TEPCO a demandé à certaines entreprises de bien vouloir s'occuper elles-mêmes des tests de 69 ouvriers. C'est à ce moment-là que TEPCO s'est rendu compte que personne ne savait où étaient passés 30 des ouvriers (sur les 69 en question).

La fin de l'article est très bizarre et on dirait qu'il manque quelque chose : il est dit « tous les ouvriers qui n'ont pas été trouvés dans les papiers/registres des entreprises ont rendu leur dosimètre ; leur exposition externe a été enregistrée mais aucun d'eux n'a été exposé à plus de 250 millisieverts (la limite), ont dit les responsables [de TEPCO] »

C'est un heureux hasard ils sont tous gentiment revenus rapporter leur dosimètre à TEPCO et en plus ils ne sont même pas (méchamment) irradiés !

Je me demande ce que tout cela peut vouloir dire. Qui sont ces 30 mystérieux sous-traitants ? Où étaient-ils entre temps (dans une autre centrale ?) et si je comprends bien, ceux-là en tout cas n'ont pas eu droit aux tests pour mesurer leur exposition totale.

## France to raise funds for nuclear safety

VIENNA, June 20 | Mon Jun 20, 2011 12:08pm EDT

<http://www.reuters.com/article/2011/06/20/france-nuclear-safety-idUSLDE75J1Q020110620>

(Reuters) - [France](#) will unveil in the next few weeks a substantial rise in research funds for nuclear safety in the aftermath of Japan's nuclear crisis, a ministerial source told Reuters on Monday.

Japan's crisis has prompted a rethink of energy policy worldwide, underlined by Germany's decision to close all its reactors by 2022 and Italy's vote to ban nuclear for decades.

But France, the world's second largest nuclear energy producer after the United States, has not ceased for the past three decades to support nuclear energy even after the 1986 Chernobyl disaster or the [Japan](#) nuclear accident. "It (the decision) will be unveiled within the next two weeks," the source said on the margins of a ministerial conference of the International Atomic Energy Agency.

"This will come, in part, under the form of credits from (France's) big investment plan," the source said.

France has already asked EDF ([EDF.PA](#)), which operates the country's 58 nuclear reactors, to test the reactors' capacity to resist flooding, earthquakes, power outages, failure of the cooling systems, and operation management of accidents.

EDF will have to deliver its report on Sept. 15, which will then have to be examined by the ASN, France's nuclear watchdog.

The U.N. nuclear chief called on Monday for countries to carry out risk assessments on their reactors within 18 months and for strengthened international safety checks to help prevent a repeat of Japan's atomic crisis.

## **Sacrifices forced on rural sites of nuclear power plants do not bring true wealth**

How does the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant appear to those who were once embroiled in disputes over the possible construction of a nuclear power plant in their backyard?

It is predicted that a major earthquake will hit Wakayama Prefecture, where I work, in the near future. Talk of constructing nuclear power plants within the prefecture has emerged numerous times in the past, but thanks to the help of researchers from Kyoto University, such facilities do not exist. The reason for that is simple: **we have no need for dangerous nuclear power plants.**

Most noteworthy of the cases in Wakayama were the protests against plant construction in the town of Hidaka and of Hikigawa, which has since been merged with Shirahama. In Hidaka, the issue had been festering since 1967 when the then mayor revealed his vision for the construction of a nuclear power plant. **In 1988, the Kansai Electric Power Co. (KEPCO) offered the local fisheries cooperative some 700 million yen in compensation for surveys to be conducted in preparation for plant construction.**

Family members and relatives belonging to the cooperative were divided on the appropriate response, leading to opposing sides refusing to attend weddings, funerals, and boat-launching ceremonies. Kazumi Hama, 61, a fisherman who led anti-nuclear plant efforts said that family relationships suffered because of talk of a possible plant.

"If nuclear power plants were safe, we wouldn't have had any infighting. **KEPCO weighed the lives of city dwellers against ours,**" he said.

**In Hikigawa,** meanwhile, even students on school buses were split into pro-plant and anti-plant sections. According to Tomoaki Nishio, 59, the current head of the town council who was then against the construction of the power plants, **the proposed site for the nuclear power plant had been privately-owned. In 1973, however, the town's land development bureau bought the land, with the promise that it would "make the land into a quasi-national park and protect it from reckless development," and resold it to the municipal government. When town government officials signed a sales contract with KEPCO, a man who had sold his land to the development bureau committed suicide.**

"My father was ashamed that he had been conned by the town government," a 78-year-old bereaved family member said.

The question on the minds of all anti-nuclear plant residents was: **"Why aren't nuclear power plants built in urban areas, where a massive amount of electricity is consumed every day?"** Sharing this

same line of thinking, assistant professors Hiroaki Koide, 61, and Tetsuji Imanaka, 60, of Kyoto University's Research Reactor Institute supported anti-plant protests.

Koide had gone to study at Tohoku University with the belief that nuclear power was going to be the world's future power source. However, he encountered the protests against the construction of Onagawa Nuclear Power Plant in Miyagi Prefecture, and switched over to an anti-nuclear power stand himself.

**"Nuclear power plants are dangerous facilities that cities refuse to build within their own borders, which is why they are built in sparsely-populated areas despite the cost of laying down power lines," Koide said. "Once you realize that, there's only one choice.** There's no way we can allow such a thing."

Imanaka, too, went to graduate school at Tokyo Institute of Technology with faith in the future of nuclear power, but ended up participating in protests against the construction of the Kashiwazaki-Kariwa Nuclear Power Plant in Niigata Prefecture. He found the power company's claim that nuclear power plants were safe and that they helped local economies dubious. After the Three Mile Island accident in 1979, Imanaka's doubts about nuclear safety turned into conviction about its dangers.

In a lawsuit seeking the reversal of permission given for the construction of Ikata Nuclear Power Plant in Ehime Prefecture, the two researchers served as expert witnesses for the plaintiffs' legal team. They also visited Wakayama on numerous occasions to distribute anti-plant fliers.

**Koide's argument is clear-cut: machines sometimes break, and people sometimes make mistakes. It is only natural for nuclear power plants operated by people to break down. When nuclear power plants break down, they cause catastrophes.**

As such, the accident in Fukushima was well within the scope of Koide's expectations. And yet, the general public remained under the spell of the "safety myth," and arguments like his went ignored. Koide now blames himself for not having stopped the construction of nuclear power plants, but he also says that **the public is "responsible for being duped."**

The phrase brings to mind the 1946 essay "Senso sekininsha no mondai" (The problem of who is responsible for the war), in which film director Mansaku Itami argued that the general public were partially responsible for the war, for having been "fooled." In the essay, the same man who had penned an extremely compassionate screenplay for the film "Muhomatsu no issho" (Rickshaw man), launched a social critique that cut at the very nature of mankind: "Those who are okay with themselves saying they were 'deceived' will probably be deceived again and again. No, they are surely in the process of being taken in by new lies already."

It is a matter of course that the national government and power companies that went around touting the "safety myth" are criticized. However, we must also hold the public accountable for its part in the disaster by falling for the myth. **The public, through the work of politicians, has distributed millions of yen to rural areas as compensation for the use of their land -- and it is that very distribution system and the safety myth that have forced people to live in danger, alongside nuclear power plants.**

Hama said that there was a time, during the infighting at the fisheries cooperative, that the opposing blocs cooperated to search for a colleague who had gone missing at sea. The body was found a week later.

It was these words from Hama that changed the mind of the Hidaka town mayor, who had been pushing for the construction of the nuclear power plant in their town: "There's a saying that 'for fishermen, hell is one plank away.' Those of us who work under such dangerous conditions have to get along. Hey mayor, do you understand that?"

Does forcing sacrifices upon rural residents and being dependent on nuclear power plants signify true wealth? What we should be aspiring to as a society seems clear enough. (By Takashi Yamashita, Wakayama Bureau)

---

## Temperature at No.3 reactor rises

The operator of the troubled Fukushima Daiichi nuclear power plant says **temperatures at the No.3 reactor have started to rise after it reduced the injection rate of cooling water**. The cutback is part of efforts to prevent possible overflows of radioactive water at the facility.

On Tuesday, Tokyo Electric Power Company reduced the amount of fresh water it has been injecting into 3 of the plant's reactors. The volume was cut back by 0.5 tons per hour at the No. 1 and 2 reactors, and by 1 ton at the No.3 reactor.

TEPCO says that by 5 AM on Wednesday, temperatures at the upper and lower parts of the No.3 reactor had risen by 4 and 7 degrees Celsius, respectively, from the day before. But it says temperatures at the other 2 reactors remained relatively stable.

The company says it will carefully monitor the No.3 reactor but will keep the rate of water injection unchanged. It added that it will further reduce the rate of water injection into the other 2 reactors by 0.5 tons per hour.

**TEPCO is facing difficulties in striking a balance between cooling down the reactors and limiting the amount of highly radioactive water threatening to spill out.**

More than 110,000 tons of such water is believed to have accumulated at the nuclear complex. Tuesday's start of the annual rainy season has also added to fears of overflows.

TEPCO has yet to start full operation of a crucial system to decontaminate the wastewater. It hopes to use the treated water to cool the reactors.

Wednesday, June 22, 2011 13:04 +0900 (JST)

## Hausse des températures dans le réacteur 3

La Compagnie d'électricité de Tokyo, Tepco, a détecté une hausse de la température dans le réacteur 3 de la centrale nucléaire Fukushima Dai-ichi, après avoir réduit le volume d'eau injecté à des fins de refroidissement.

Cette réduction entre dans le cadre des efforts visant à prévenir un débordement d'eau radioactive.

Mardi, l'opérateur a réduit le volume d'eau douce qu'il pompait jusqu'à maintenant dans trois des réacteurs de la centrale.

Tepco a annoncé qu'à 5 heures, ce mercredi matin, la température dans les parties inférieure et supérieure du réacteur 3 avait augmenté de 4 et 7 degrés respectivement, par rapport à la veille.

La compagnie éprouve des difficultés à trouver le juste équilibre entre la nécessité de refroidir les réacteurs et celle de réduire le volume de l'eau contaminée qui menace de déborder.

Le début de la saison des pluies annuelle dans la région, hier mardi, fait craindre encore plus d'éventuels débordements.

## **Rainy season adds to troubles at Fukushima plant**

Tokyo Electric Power Company is stepping up efforts to prevent possible overflows of highly radioactive water building up at the troubled Fukushima Daiichi nuclear plant as the region enters the rainy season.

More than 110,000 tons of highly contaminated water is believed to have accumulated in the basements of reactor and turbine buildings at the plant. The water is increasing by about 500 tons a day, as fresh water must be injected into reactors to cool them down.

**The annual rainy season began on Tuesday in the region** where the nuclear plant is located, raising concerns that the wastewater could overflow. **If 100 millimeters of rain falls over the complex, it may raise water levels in the basements of the turbine buildings by about 50 to 70 millimeters.**

TEPCO has been trying to operate a crucial system to decontaminate the highly radioactive water so that it can be recycled to cool the reactors. But as a series of problems has surfaced, **it may take 2 more days to finish test runs on the system before full-scale operation.**

In an effort to slow down the increase of contaminated water as much as possible, TEPCO decreased water injection into troubled reactors by up to 1.5 tons per hour each from Tuesday.

**The company also piled up sandbags around building entrances to prevent rainwater from pouring in. But the measure may have only a limited effect, as some of the buildings had their roofs blown off by explosions.**

Wednesday, June 22, 2011 11:23 +0900 (JST)

## TEPCO considers new locations for storing contaminated water as overflow threatens

Tokyo Electric Power Co. (TEPCO) **has begun considering new locations for storing contaminated water** from the Fukushima No. 1 Nuclear Power Plant as the water threatens to overflow, the utility announced on June 21.

Furthermore, on June 21 a system being used to treat the contaminated water was halted because of a problem with a French-made pump. The system had been in test operation, and with the new delay **workers are now aiming for a resumption of full-scale operations in two to three days' time.**

The system has had stability problems since it was put into full-scale operation on June 17. A previous problem that occurred with a section of American-made equipment also caused a shutdown.

There are estimated to be over 100,000 cubic meters of contaminated water collected on the plant grounds. With the area having entered the rainy season on June 21, it is feared that the contaminated water could overflow within the month if nothing is done.

**TEPCO is checking on the safety of tanks it is setting up to take water with low-level radioactive materials to see if they can store highly radioactive water.**



In this May 27, 2011 photo released on June 2, 2011 by Tokyo Electric Power Co. (TEPCO), temporary storage tanks for low-level radioactive polluted waters used for temporary cooling system in Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima prefecture, northeastern Japan, are shown. (AP Photo/Tokyo Electric Power Co.)

"We can't release the contaminated water into the environment," said TEPCO spokesman Junichi Matsumoto at a press conference. "We will take every measure we can."

Goshi Hosono, advisor to Prime Minister Naoto Kan, said, "We have a considerable number of tanks for storing low-concentration contaminated water. We apologize for the worry we have caused to the public. The government will support the response to this problem."

(Mainichi Japan) June 22, 2011

## Improper water flow blamed for filter failure

The operator of the Fukushima Daiichi nuclear power plant has resumed testing a water decontamination system after making repairs to improve the flow of the water.

Tokyo Electric Power Company has been testing the system to filter highly radioactive wastewater that has been accumulating at the plant.

The utility discovered on Wednesday that a US-made device in the system only succeeded in lowering the concentration of radioactive cesium in the water to 1 percent of the previous amount, instead of to 0.1 percent as initially expected.

Contaminated water was supposed to pass through 3 absorbent chambers. But it was found that **some water passed through only one chamber, because "open" and "shut" indications on a valve had been incorrect.**

The utility inspected all the valves and resumed test runs early on Thursday.

TEPCO began full-scale operation of the decontamination system last Friday, but it was stopped after only 5 hours.

Thursday, June 23, 2011 12:35 +0900 (JST)

## Radioactive dust from Fukushima plant hit N. America soon after meltdown: researchers



A computer simulation-generated map of the diffusion of radioactive materials leaked from the Fukushima No. 1 Nuclear Power Plant. (Image courtesy of the University of Tokyo and Kyushu University)

Radioactive materials spewed out from the crippled Fukushima No. 1 Nuclear Power Plant reached North America **soon after the meltdown and were carried all the way to Europe,** according to a simulation by university researchers.

The computer simulation by researchers at Kyushu University and the University of Tokyo, among other institutions, calculated dispersal of radioactive dust from the Fukushima plant beginning at 9 p.m. on March 14, when radiation levels around the plant spiked.

The team found that radioactive dust was likely caught by the jet stream and carried across the Pacific Ocean, its concentration dropping as it spread. **According to the computer model, radioactive materials at a concentration just one-one hundred millionth of that found around the Fukushima plant hit the west coast of North America three days later, and reached the skies over much of Europe about a week later.**

According to the research team, updrafts in a low-pressure system passing over the disaster-stricken Tohoku region on March 14-15 carried some of the radioactive dust that had collected about 1.5 kilometers above the plant to an altitude of about 5 kilometers. The jet stream then caught the dust and diffused it over the Pacific Ocean and beyond.

The computer model used was designed to simulate the diffusion patterns of yellow sand and air pollution based on real-time weather conditions, and they presupposed particles of radioactive material 10 micrometers -- 0.00001 of a meter -- in diameter.

The simulation results will be published in an upcoming issue of the "Scientific Online Letters on the Atmosphere" (SOLA), an Internet-based publication of the Meteorological Society of Japan.

(Mainichi Japan) June 23, 2011

## **Work begins inside No.2 reactor building**

The operator of the damaged Fukushima nuclear plant reports **considerable lessening of humidity at the Number 2 reactor but radioactivity remains high in some parts of the building.**

Extreme humidity was one of the factors hampering work inside the reactor building. The humidity level stood at 99.9 percent until Sunday when the Tokyo Electric Power Company opened the doors to lower the level after filtering radioactive air inside.

On Wednesday afternoon, workers found humidity levels inside the building to be between 46 and 65 percent.

Following the findings, they began fixing a water gauge and installing surveillance cameras on the ground floor.

High radiation levels were measured at some spots **on the second floor. In one area readings came in at 97.2 millisieverts per hour,** compared 15 to 60 millisieverts per hour on the ground floor.

**Wastewater contaminated with nuclear material was 6.1 meters deep in the basement, with surface radiation levels between 388 and 430 millisieverts per hour.**

**Work on the second floor was scheduled to start on Thursday but was postponed because of the high radiation levels there.**

Wednesday, June 22, 2011 18:41 +0900 (JST)

## Water treatment system not working as expected

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that part of a newly installed radioactive water treatment system at its crippled Fukushima Daiichi nuclear power plant is operating only at 10 percent of its expected decontamination capacity.

The utility said that although the system as a whole is performing above the minimum targeted decontamination level, it is investigating the cause of the insufficiency of a cesium-absorbing device developed by Kurion Inc. of the United States.

During recent trial operations, the installation of the device reduced the level of cesium-134 and cesium-137 in toxic water to one hundredth, although a reduction to one thousandth of the level had been anticipated.

The contaminated water is a side effect of the current emergency step of injecting coolant water from outside, as reactors' cooling functions were lost after the March 11 earthquake and tsunami.

Smooth operation of the system, which is designed to remove highly radioactive materials from a massive amount of water accumulating at the station, is considered essential to containing the three-month-old nuclear crisis, as the utility plans to eventually recycle the water to cool the plant's damaged reactors.

Highlighting the difficulty in containing the water problem, the utility, known as TEPCO, said that possibly toxic water has been found again in the basement of the No. 2 reactor building.

The 6.1 meter-deep water in the basement **may be contaminated due to the effects of damage to the reactor** as radiation doses of 430 millisieverts per hour have been found in the stairs of the building, a TEPCO official said.

(Mainichi Japan) June 23, 2011

## Valve likely set incorrectly from the beginning

The operator of the crippled Fukushima nuclear plant says it was unaware of an incorrectly opened valve that caused another disruption in its ongoing test run to filter radioactive water.

Tokyo Electric Power Company found on Wednesday that a US-made device attached to the water treatment system had lowered concentration of radioactive cesium by just 10 percent the planned amount.

The open valve meant that some contaminated water passed through only one of the system's 3 absorbent chambers. The valve is believed to have been incorrectly set since the device was installed.

The amount of contaminated water on site is growing by about 400 tons a day, as fresh water is injected into reactors to cool them. The rainy season threatens to raise the water levels further.

The test-run was interrupted on Tuesday after a pump to send water into French-made decontamination equipment stopped, also due to the wrong setting of a valve.

Thursday, June 23, 2011 19:40 +0900 (JST)

## **Fukushima Dai-ichi : une valve mal ouverte retarde les tests de filtrage de l'eau contaminée**

L'opérateur de la centrale de Fukushima n'était pas conscient du fait qu'une valve mal ouverte était à l'origine d'un nouveau dysfonctionnement du système de filtrage de l'eau radioactive, sur le site.

La Compagnie d'électricité de Tokyo a réalisé mercredi qu'un appareil de fabrication américaine relié au système de traitement de l'eau n'avait permis de réduire la concentration en césium radioactif que de 10 pour cent du résultat escompté.

La valve étant restée partiellement ouverte en raison d'une erreur d'installation, de l'eau contaminée s'est écoulée dans l'une des 3 chambres d'absorption.

Le volume de liquide contaminé augmente chaque jour de 400 tonnes sur le site, de l'eau fraîche étant continuellement injectée dans les réacteurs pour les refroidir. La saison des pluies risque par ailleurs d'empirer la situation.

### **Checks of Russian nuclear reactors fail safety hopes - and worse, leaked report reveals**

[http://www.bellona.org/articles/articles\\_2011/rosatom\\_report](http://www.bellona.org/articles/articles_2011/rosatom_report)

**A report stunning in its candor prepared for Russian President Dmitry Medvedev by the county's state nuclear monopoly in the wake of Japan's Fukushima disaster reveals that Russia's atomic reactors are grievously under-prepared for both natural and man-made disasters ranging from floods to fires to earthquakes or plain negligence. [Charles Digges, Maria Kaminskaya, 21/06-2011](#)**

[The report of the first round of stress tests on Russia's nuclear reactors](#), prepared by Russian state nuclear corporation Rosatom, was obtained by Bellona Web and other environmental groups and distributed to Norwegian and Russian media.

The report comes as several countries have given up on hopes of a nuclear future. Germany had voted to phase out its last nuclear power plant by 2022, and Switzerland plans to follow suit by 2035. Last week, Italy sent a strong message in a referendum when 95 percent of Italian voters turned down the

opportunity to have a future lighted by nuclear power. Russians have similarly expressed in polls, that they would like to see Russia pursue a different energy strategy.

The Rosatom report would seem to indicate that as the only reasonable alternative. In it, 31 serious flaws that make Russia's nuclear industry extremely vulnerable to natural disasters are catalogued.

As such, the report is one of the few documents to surface in recent history that actually flatly contradicts Russia's own rosy assessment that its reactors are safe – a propaganda campaign that was kicked into high gear by Prime Minister Vladimir Putin and President Medvedev after the March 11 quake and tsunami hit Fukushima Daiichi, causing three meltdowns.

Bellona nuclear physicist Nils Bøhmer called the Rosatom report “shocking.”

“It makes for dramatic reading with a view to the fact that the report comes from the owner of the nuclear plants,” he said, describing it as “the most serious description of the status of Russian nuclear plants I have ever seen from Rosatom.”

#### *Report confirms long-held fears*

The two Russian nuclear power plants that are closest to Finland and Norway – Leningrad Nuclear Power Plant (NPP) and Kola NPP, respectively – are of the most concern to the international community. Both are in close proximity to Western Europe.

“The report reveals deficiencies which have never before been mentioned publicly, nor reported internationally,” chief engineer Ole Reistad of the Norwegian Institute for Energy Technology (IFI) told Norway's NRK television.

Of particular concern at the Leningrad NPP (LNPP) is its use of the fatally flawed Chernobyl-type RMBK-1000 reactors. LNPP operates four RMBK-1000s, while the Kola NPP runs four aged VVER-440 reactors, two of which received engineering life span extensions in 2003 and 2004.

The Rosatom report, stating what many have asserted since Chernobyl, detailed “flaws and defects” in the design of the RMBK-1000 series that could lead to severe accidents - specifically, problems with control rod mechanisms, which are necessary to keep the nuclear reaction in the reactor under control.

The report's revelations have alarmed the government of Norway. Norwegian State Secretary Erik Lahnstein of the Foreign Ministry, who received an overview of the report, told Aftenposten he wanted a full copy of the report sent to the International Atomic Energy Agency, saying “this confirms what Norwegian authorities have claimed for a long time.”

He stressed that Russia should shut down its oldest reactors. The Rosatom document said four reactors have been in shutdown mode for 20 years, and no decommissioning plans have yet been set in motion. This would arguably present difficulties in decommissioning other aged reactors in Russia.

Ole Harbitz, head of the crisis commission for the Norwegian Radiation Protection Authority, said of the report that it showed Russia was rethinking the vulnerability of its nuclear reactors to natural phenomena in the post-Fukushima era.

The dangers have been proven before: In the 1990s a severe storm knocked out primary and back-up power supplies to Kola NPP and Norway had to deliver enormous power generators to keep coolant flowing. In 2006, another power outage threatened coolant systems at the plutonium reactor at the Mayak Chemical Combine.

In Finland, Keijo Valtonen, an official at the Radiation and Nuclear Safety Authority Finland (STUK) somewhat soft-pedalled the dangers posed by Russia's reactors, particularly those at Kola and Leningrad NPPs.

Valtonen told Helsingin Sanomat that most of Russia's nuclear plants meet Western safety standards, but that new threats might arise in inspections made after the catastrophe at Fukushima.

But Valtonen has an agenda of his own: By some estimates, some 30 to 40 percent of power produced at Leningrad NPP is exported to Finland, and annual inspections of the plant by representatives of STUK consistently give it high marks, despite environmental dangers that are regularly revealed and confirmed there.

#### *What the report said*

Among the more critical safety failings relayed to Medvedev in the report, Rosatom found that Russia's plants do not have relevant regulations in place for personnel to know how to deal with large-scale natural disasters or other serious contingencies; protective shelter for workers would not accommodate the largest teams on any given shift in the event of an accident, and Rosatom does not keep records of previous accidents, meaning workers do not have the benefit of learning from previous mistakes or improving remedial measures, among other shortcomings.

Elsewhere in the report, Rosatom points out that electrical and safety-significant systems do not receive the attention they need, resulting in a lack of required protection.

**The Rosatom document also questioned the capability of reactors to remain safe for extended periods of time if cooling systems fail. There is no guarantee that power backup systems will be effective should this happen - the primary difficulty that beset Fukushima Daiichi when the quake and tsunami hit.**

Additionally, key equipment involved in the cooling process suffers from metal fatigue and welding flaws – yet another problem that was ignored at Fukushima Daiichi's reactor No 1 when regulators there agreed to give it a 10-year operational life span extension – which contributed to a total failure of cooling at the reactor.

Hydrogen control systems also do not correspond to regulations, meaning Russian reactors are vulnerable to the kinds of hydrogen explosions that tore through three reactor buildings at Fukushima Daiichi.

Most importantly, in light of the Fukushima disaster, the report also said that the risk of earthquakes has not been considered as a safety factor for Russian nuclear facilities. Furthermore, not all of Russia's reactors have automatic shutdown mechanisms like the Fukushima Daiichi plant, should an earthquake occur.

Nor are there currently clear guidelines or sufficient infrastructure for spent nuclear fuel (SNF) management, leading to fears of SNF leaks during a disaster – as also happened in Japan. With respect to Russia’s RBMK-1000 reactors, spent fuel is simply allowed to accrue in onsite storage because of lack of space to store it and because no technologies have been developed to reprocess it. Solid and liquid waste facilities across Russia are filled to at least 60 percent, and these facilities at Leningrad, Kursk and Smolensk NPPs – all of which run RBMK 100 reactors – are filled to 85 percent capacity.

Reactor buildings at many of Russia’s nuclear power plants are also aged and susceptible to structural failure - meaning the buildings could collapse without the help of mother nature.

Further, the Federal Service for Environmental, Technological and Nuclear oversight, or Rostekhnadzor – Russia’s nuclear industry watchdog – lacks safety inspectors, and there is a shortage of qualified maintenance workers at NPPs across the country.

Rosatom Chief Sergei Kiriyenko was quick to comment on the report once Norwegian news outlets and Russian environmentalists had publicized its findings, saying it was just a matter of money to fix Russia’s shortcomings in the area of back-up power and coolant system deficiencies.

In the Vedomosti business daily, he cited a figure of 5 billion rubles (\$986 million) to bring Russia’s reactors up to specifications by enhancing their back-up power and coolant systems. To counter cost overruns, Kiriyenko told the paper, Rosatom would rely on the government.

#### *Choking on earlier words*

Vladimir Sliviyak, co-chair of Russia’s Ecodefence – one of the first Russian environmental groups to get hold of the report – was quick to point out the contrast between the Russian government’s initial statements that what had happened at Fukushima could never be repeated in Russia with the report, which says that it could.

“Soon after March 11, Premier Putin ordered a check of Russias nuclear power plants. Later the announcement was heard that all reactors had been checked and Fukushima will not be repeated here,” wrote Sliviyak in his [June 9 blog for Ekho Moskvyy radio](#) (in Russian).

“No information that would allow the confirmation or refutation of these conclusions was released,” he wrote.

“So what did we get as a result?” continued Sliviyak. “That the announcements of authorities at different levels – all the way to the prime minister – that the checks carried out after the Fukushima crisis revealed that Russia’s nuclear power plants were completely safe is a complete fantasy.”

## **TEPCO working to prevent overflow of toxic water**

The operator of the Fukushima Daiichi nuclear plant is striving to prevent highly radioactive water from overflowing the facility amid delays in restarting a key water decontamination system.

**Tokyo Electric Power Company has been reducing the volume of water injected into the first 3 reactors**

since Tuesday to curb a further build-up of highly radioactive water at the plant.

On Friday, it further reduced the volume of water injected into the No.3 reactor by 0.5 tons to 9 tons per hour.

But limiting the amount of water could allow the temperature of the reactors to rise.

To aggravate the situation, rain is continuing to fall in the area where the power plant is located.

Last month, accumulated rainfall of 100 millimeters pushed up the water levels by around 50 to 60 millimeters.

TEPCO is plugging holes in the roofs of the turbine buildings and stacking sandbags to prevent rain water from entering the facility.

The power company is continuing test runs of the decontamination system to work out ways to ensure its optimal operation.

It says it has so far processed around 2,500 tons of radioactive water with the system. On Friday, it began work to desalinate treated water with the aim of recycling it to cool down the overheating reactors.

Friday, June 24, 2011 12:51 +0900 (JST)

## **High level of radiation exposure** estimated

A group of doctors has found that the estimated level of accumulated internal radiation exposure for people living in Fukushima Prefecture has exceeded 3 millisieverts.

The researchers, including doctors who have provided medical care to A-bomb survivors, conducted analysis on the food and urine of 15 residents in Iitate Village and Kawamata Town in Fukushima Prefecture. These areas are about 40 kilometers from the Fukushima Daiichi nuclear power plant.

They estimate that residents have been internally exposed to up to 3.2 millisieverts for about 2 months, measuring from the date of the accident in March until early May.

Three millisieverts is 3 times higher than the long-term annual limit for ordinary people recommended by the International Commission on Radiological Protection.

One of the researchers, Nanao Kamada, says people should refrain from eating vegetables grown in the area where high levels of radiation have been detected.

Friday, June 24, 2011 07:00 +0900 (JST)

## **De hauts niveaux de radiation estimés dans la préfecture de Fukushima**

Des chercheurs estiment que des habitants de la préfecture de Fukushima ont subi une exposition interne aux radiations supérieure à 3 millisieverts.

Les scientifiques, dont des médecins ayant soigné des survivants des bombardements atomiques, ont effectué une étude auprès de 15 habitants du village de Iitate et de la ville de Kawamata, qui se trouvent à une quarantaine de km de la centrale nucléaire Fukushima Dai-ichi.

Ils ont étudié l'alimentation et les urines et estiment que l'exposition interne des habitants a atteint 3,2 millisieverts entre le jour de l'accident et début mai, soit pendant deux mois environ.

Or 3 millisieverts représentent trois fois le niveau maximum de contamination annuelle recommandé par la Commission internationale de protection radiologique.

## **Efforts à Fukushima contre le risque d'inondation**

La Compagnie d'électricité de Tokyo, Tepco, s'efforce d'empêcher l'eau hautement radioactive d'inonder la centrale nucléaire de Fukushima.

Alors que le redémarrage de l'installation de décontamination de l'eau radioactive prend du retard, Tepco a décidé dès mardi de réduire les injections d'eau dans les réacteurs 1, 2 et 3, avec pour objectif de limiter l'accumulation de l'eau dans la centrale.

Vendredi, la compagnie a à nouveau réduit les injections d'eau dans le réacteur numéro 3, de 0,5 tonne à 9 tonnes par heure. Mais la baisse des injections d'eau pourrait se traduire par une hausse des températures.

La situation est compliquée par la pluie qui continue de tomber sur la région. Tepco s'efforce de boucher les trous des toits des bâtiments abritant les turbines et entasse des sacs de sable pour empêcher la pluie d'entrer dans les installations.

---

On soupçonne maintenant fortement que TEPCO n'a jamais en fait ventilé le réacteur no1 le 12 mars pour faire baisser la pression et éviter l'accident, comme ils l'avaient pourtant affirmé (disant qu'ils avaient réussi)

Le gouvernement a repris cette affirmation, SANS en VERIFIER (durant 3 mois) la véracité.

TEPCO dit maintenant qu'ils ne peuvent pas confirmer avoir réussi ou non à ventiler non seulement le réacteur 1, mais le réacteur 2 également !!

Tout ceci soulève, conclut l'article, des questions quant aux mesures de sécurité prises par les agences de régulation gouvernementales à propos des centrales nucléaires. [\[ah bon ?\]](#)

## Suspected failure to vent Fukushima reactor casts doubt on accountability standards



The No. 1 reactor building at the Fukushima No. 1 Nuclear Power Plant is seen from the air in this April 10 file photo provided by TEPCO.

Revelations that Tokyo Electric Power Co. (TEPCO) highly likely failed to vent a crippled reactor at its tsunami-hit Fukushima No. 1 Nuclear Power Plant have raised doubts about the utility's and government's accountability standards.

**TEPCO had claimed that it had successfully vented the plant's No. 1 reactor to decrease pressure inside it prior to a hydrogen explosion, and the government had supported the power supplier's claim.**

The power company attempted to vent the reactor on March 12, the day after the tsunami triggered by the Great East Japan Earthquake hit the plant. After confirming that the pressure inside the containment vessel of the reactor had declined, TEPCO announced at around 3 p.m. that it had succeeded in venting the reactor.

However, the pressure still remained above the designated upper limit of 427 kilopascals and rose moderately after the announcement. Moreover, the monitoring post on its premises showed no signs of radioactive materials being released out of the reactor following the venting attempt. TEPCO insiders say they were unable to confirm that the valve for venting had opened.

Both TEPCO and the government could have checked whether the venting was successful on many occasions. Nevertheless, the government simply mimicked TEPCO's comments on the matter in a report it submitted to the International Atomic Energy Agency (IAEA) on June 7, **without scrutinizing the utility's view for nearly three months.**

In 1992, the International Trade and Industry Ministry (the predecessor of the Ministry of Economy, Trade and Industry) urged power suppliers to equip all reactors at their nuclear power plants with valves and other venting devices as part of their accident management efforts.

TEPCO increased the pressure capacity of the reactors at the Fukushima No. 1 plant and finished equipping them with valves for venting by 2001.

**However, the power company has now admitted that it cannot confirm whether it was successful in venting not only its No. 1 reactor but also its No. 2 reactor.**

The apparent failure to vent the reactor, which the government viewed as an effective way to respond to a serious nuclear power accident, has raised **questions about government regulatory bodies' safety measures for nuclear power plants.**

The government's fact-finding panel is urged to closely scrutinize whether the utility was sufficiently prepared for a possible serious accident at its nuclear power stations as well, as it assumed that the plant could be hit by a massive tsunami like the one triggered by the March 11 quake. (By Naritake Machida and Shusaku Sugimoto, Tokyo City News Department)

(Mainichi Japan) June 24, 2011

## **TEPCO likely failed to vent No. 1 reactor at tsunami-hit nuclear plant**



This Sunday, April 10 image taken by T-Hawk drone aircraft and released by Tokyo Electric Power Co. (TEPCO) shows the damaged reactor building of Unit 1 of the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan.(AP Photo/Tokyo Electric Power Co.)

Tokyo Electric Power Co. (TEPCO) likely failed in its attempt to vent the No. 1 reactor of its tsunami-hit Fukushima No. 1 Nuclear Power Plant in mid-March shortly before a hydrogen explosion, despite its claim that it successfully vented the reactor, it has emerged.

TEPCO insiders said the valves for venting the reactor did not sufficiently open, and TEPCO's headquarters admitted that it has not confirmed whether the valves opened.

Experts have pointed out that data released by the utility suggests that one of the valves closed after it briefly opened. However, it still remains unclear whether the hydrogen explosion in the reactor building was caused by a venting failure, as experts say it is possible that hydrogen was accumulating even before the venting attempt.

Shortly after noon on March 12, the pressure inside the containment vessel in the plant's No. 1 reactor surged to 600 kilopascals -- far above the upper designated limit of 427 kilopascals -- prompting the plant manager to instruct workers to vent the reactor building.

At 6:50 a.m., the government ordered TEPCO to vent the reactor building under the Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors. Plant workers began to vent the reactor at around 9 a.m.

In venting a reactor, steam and hydrogen in its containment vessel are sent through pipes from the suppression pool at the bottom of the vessel. This passes through the AO valve unit that is driven by air on the basement of the reactor building and the MO valve on the second floor that is driven by electric power, before being released out of the building through a duct.



This Sunday, April 10 image taken by T-Hawk drone aircraft and released by Tokyo Electric Power Co. (TEPCO) shows reactor buildings of Unit 2, left, and Unit 1, right, of the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

The AO valve unit consists of a small valve and a big valve, and if one of them functions, steam can be led into the duct.

TEPCO workers operated the emergency lever to manually open the MO valve by 25 percent at around 9:15 a.m. About 15 minutes later, they attempted to manually open the small valve in the AO unit, but abandoned it because radiation levels around the unit were extremely high. At 10:17 a.m., the workers tried to open the small valve by remote control from the central control room.

More than 10 minutes afterward, radiation levels outside the No. 1 reactor building rose sharply, indicating that radioactive substances were being released from the structure. However, the levels returned to normal just 30 minutes later.

The pressure inside the containment vessel failed to decline, and TEPCO was unable to confirm whether its attempt to vent the reactor was effective.

At around 2 p.m., TEPCO used an air compressor borrowed from another company to send compressed air into the big valve in an attempt to open it.

The pressure inside the containment vessel subsequently decreased from 755 kilopascals recorded shortly before the work commenced to 530 kilopascals.

TEPCO then announced at around 3 p.m. that it had reached the conclusion that the reactor had been successfully vented at 2:30 p.m., a view that the Nuclear and Industrial Safety Agency (NISA) supported.



This satellite image provided by DigitalGlobe shows the damaged Fukushima Dai-ichi nuclear facility in Japan on Monday, March 14, 2011. Authorities are struggling to prevent the catastrophic release of radiation in the area devastated by a tsunami. (AP Photo/DigitalGlobe)

However, TEPCO insiders have admitted that the valves were not sufficiently opened. Specifically, the air compressor did not sufficiently compress the air to fully open the big valve, according to the insiders. Moreover, an indicator in the reactor did not show that the valves had opened.

The pressure inside the containment vessels stopped decreasing at around 3 p.m. and then continued to rise until the hydrogen explosion occurred at 3:36 p.m.

"We concluded that we successfully vented the reactor because the pressure inside its containment vessel declined. We haven't confirmed whether the big valve opened," a TEPCO official said.

NISA denied that it had determined TEPCO was successful in venting the reactor.

"It was TEPCO that judged that it had successfully vented the reactor, but the government hasn't mentioned whether the attempt was successful," a NISA representative said.

In a report submitted to the International Atomic Energy Agency, the government clearly stated that TEPCO had concluded that it was successful in venting the reactor, which is expected to stir controversy during discussions of the government's fact-finding panel.



## Decontamination system meets performance target

The operator of the Fukushima Daiichi nuclear plant says a trouble-hit system for decontaminating highly radioactive water at the facility **is working as planned**.

The Tokyo Electric Power Company, or TEPCO, said on Friday that the system can reduce the density of radioactive substances in the water to the targeted level of one-100,000th.

The system is seen as the key to reducing the amount of contaminated water threatening to overflow from the plant's compound.

**TEPCO said a US-made device for absorbing radioactive cesium continues to perform at one-tenth its**

intended capacity, even after workers readjusted a faulty valve setting.

But the firm says test runs have shown that the targeted level can be achieved when the device is used with a French decontaminator.

TEPCO says about 2,500 tons of radioactive water has been decontaminated so far. On Friday, workers began sending the water through salt-removing equipment.

The firm plans to return the treated water to reactors this month, to establish a stable cooling system that involves circulating the water.

But TEPCO says resuming full operation of the decontamination system may take several more days.

Friday, June 24, 2011 19:59 +0900 (JST)

## **Radiation results in Fukushima City**

Radiation levels in parts of Fukushima City, about 60 kilometers from the disaster-stricken nuclear plant, have been found to require further monitoring.

Responding to residents' demands for more information, Fukushima City released on Friday the results of radiation checks conducted on June 17th and 20th at more than 1,000 sites, including public facilities and roads in residential areas.

Six locations, including a park in a municipal housing complex, registered radiation levels of over 3.4 microsieverts per hour when measured one meter above ground. This exceeds the prefecture's threshold for re-checking.

Radiation of over two microsieverts per hour was recorded at 182 sites.

The city said that it re-checked the six sites on Friday, and all locations registered lower radiation.

But the city intends to restrict use of the park in the public housing complex, where radiation of 4.15 microsieverts per hour, which exceeds the central government's limit of 3.8 microsieverts for a park, was recorded 50 centimeters above the ground.

A municipal official says the city will continue monitoring and post the results on its website.

Friday, June 24, 2011 21:05 +0900 (JST)

## **Water treatment system at Fukushima plant achieves decontamination**



In this June 1, 2011 file photo released by Tokyo Electric Power Co. (TEPCO), workers inspect equipment inside the cesium absorption tower, part of the radioactive water processing facilities at the Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture. (AP Photo/TEPCO)

TOKYO (Kyodo) -- The glitch-plagued water decontamination system at the Fukushima Daiichi nuclear power complex has been able to lower the concentration of radioactive substances in highly contaminated water to the targeted level, the plant's operator Tokyo Electric Power Co. said Friday.

The successful trial run of the water treatment system paves the way for the start, possibly by the end of June, of operations to cool the damaged nuclear power reactors using water recycled in the decontamination system to establish a circulating cooling system as part of efforts to contain the crisis triggered by the earthquake and tsunami in March.

The utility known as TEPCO said the level of both radioactive cesium-134 and cesium-137 in the toxic water had dropped to one hundred-thousandth, achieving the target of 100 becquerels per cubic centimeter or less.



In this May 10, 2011 file photo released by Tokyo Electric Power Co., workers check the status of the water level indicator at the Unit 1 reactor building at the Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan.(AP Photo/Tokyo Electric Power Co.)

The treated water was sent to a desalination device which TEPCO started operating Friday.

The decontamination system comprising equipment from France's Areva SA and Kurion Inc. of the United States is designed to remove radioactive materials from massive amounts of highly contaminated water accumulating at the power station.

The contaminated water, which includes leaking coolant liquid injected from outside, has prevented TEPCO from starting work to restore the reactors' cooling functions.

TEPCO, meanwhile, suspended its operation using a robot to install a water gauge in the basement of the plant's No. 2 reactor to monitor the depth of highly contaminated water accumulating there.



In this June 9, 2011 image taken from a video and released by Tokyo Electric Power Co. on Wednesday, June 15, 2011, workers are seen as they measure radiation dosage inside the Unit 3 reactor building of the Fukushima Dai-ichi nuclear plant in Okuma, Fukushima prefecture, northern Japan. (AP Photo/Tokyo Electric Power Co.)

The Japanese-made robot called "Quince" could not reel out a cable attached to the water gauge, and the path to the basement was too narrow for the remote-controlled machine to maneuver, TEPCO said.

(Mainichi Japan) June 25, 2011

## **News Navigator: Are there final disposal facilities for radioactive waste?**



In this March 24, 2011 file aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE, damaged Unit 4 of the crippled Fukushima Dai-ichi nuclear power plant is seen in Okumamachi, Fukushima prefecture, northern Japan. (AP Photo/AIR PHOTO SERVICE)

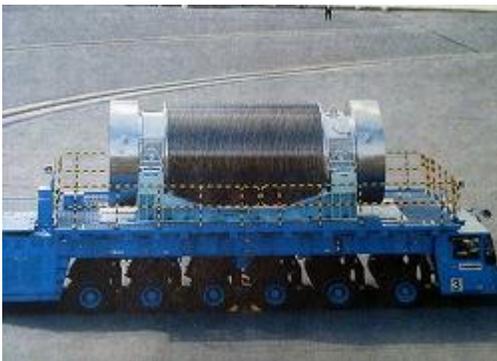
The Mainichi answers some common questions readers may have about nuclear waste disposal in the wake of the crisis at the Fukushima No. 1 Nuclear Power Plant.

Question: Where does the radioactive waste created by nuclear power plants come from?

Answer: At nuclear power plants, the radioactive material uranium undergoes nuclear fission, providing energy. The product left over after this process is referred to as "spent nuclear fuel." Japan is promoting a nuclear fuel cycle in which uranium and plutonium are extracted from this spent fuel and reused, but high-level radioactive material that can't be reused is left behind as radioactive waste.

Q: How much of this radioactive waste is produced?

A: In Japan there are about 1,700 rods of nuclear waste stored at Rokkasho, Aomori Prefecture, and Tokai, Ibaraki Prefecture. The rods, each of which stand about 130 centimeters tall and weigh some 500 kilograms, are made by mixing spent nuclear fuel with melted glass. Under government estimates there will be roughly 40,000 of these rods in Japan by about 2021.



In this undated photo released Wednesday, April 13, 2011 by Tokyo Electric Power Co., a standing man is partially seen above an example of the truck used to move spent fuel rods in the pools. Nothing is decided yet but TEPCO told the press at its Tokyo headquarters Wednesday morning that this is one option TEPCO officials are considering to use at the tsunami-stricken Fukushima Dai-ichi nuclear power plant in Okuma town in Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Q: How does Japan plan to dispose of these 40,000 rods?

A: Japan has decided to build a final disposal facility for high-level radioactive waste, enclose the glass rods in steel containers and bury them at least 300 meters below the ground. The rods emit strong radiation, and it is said that it would take tens of thousands of years for this radiation to fall to a level matching that of natural uranium deposits.

Q: That's a long time. So where is this final disposal facility?

A: So far, there are still no permanent repositories in the world for high-level radioactive waste, though Finland and Sweden have finalized building locations. In Japan, an organization authorized by the Ministry of Economy, Trade and Industry has from December 2002 been publicly seeking local bodies willing to host a final repository. By simply signing up for an initial survey into building a site, a local body could receive as much as 2 billion yen in subsidies. In January 2007 the Kochi Prefecture town of Toyo became the first municipality to apply, but the town assembly and residents opposed the project, and the mayor who was later elected withdrew the application.

Q: The government is asking that nuclear reactors not in operation be restarted, but at its current pace, Japan will one day end up with more nuclear waste than it can handle, won't it?



In this image released Saturday, April 16, 2011, by Tokyo Electric Power Co., top of the container of the nuclear reactor, painted in yellow, of Unit 4 at the Fukushima Dai-ichi Nuclear Plant is observed from its side with a T-Hawk drone Friday, April 15, 2011 in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

A: Japan has 54 nuclear reactors, the third most of any country in the world. Since the outbreak of the nuclear crisis in Fukushima Prefecture, countries in Europe and other places have moved to phase out nuclear power, but they cannot avoid the problem of settling on a final disposal facility for radioactive waste that they have already produced. All of us who have enjoyed a stable source of electricity from nuclear power must think about this issue and discuss it in greater depth. (Answers by Takayuki Hakamada, City News Writer)

[!\[\]\(bbd76383b26a98aed9b145754b1753a5\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) June 25, 2011

## **TEPCO n'arrive toujours pas à évaluer le niveau d'eau dans le réacteur no.2**

Une nouvelle jauge a été installée pour mesurer le niveau d'eau et la pression du réacteur mais elle ne marche pas correctement.

Selon TEPCO la raison en est que la température près de l'enceinte de confinement du réacteur est si élevée que l'eau à l'intérieur des tuyaux (de la nouvelle jauge, si je comprends correctement) s'est évaporée.

On peut présumer en effet que comme il y a eu fusion du cœur des réacteurs (1, 2 et 3) il est fort possible qu'il reste peu d'eau à l'intérieur du réacteur no.2.

**Des mesures précises du niveau d'eau sont essentielles pour garantir la stabilité du refroidissement du réacteur.**

## **TEPCO unable to gauge No.2 reactor water level**

The operator of the crippled Fukushima Daiichi nuclear power plant says it still cannot obtain accurate data on the water level and pressure of the Number 2 reactor. It says a provisional measuring device installed earlier this week is not operating properly.

Tokyo Electric Power Company believes that readings by the original device are incorrect due to damage suffered in the March disaster.

Workers at the utility company entered the Number 2 reactor building and installed the provisional gauge on Wednesday. The company initially planned to have the gauge begin providing data on Thursday.

But it says as of Saturday, **the device is not yet working properly.**

**TEPCO says this is because the temperature near the reactor containment vessel is so high that water inside the device's pipes has evaporated.**

**Fuel meltdowns are believed to have occurred at the Number 1 through Number 3 reactors, leading to a possibility that there is little water left inside the Number 2 reactor.**

**Accurate measurement of the water level is essential for ensuring stable cooling of the reactor.**

The utility is struggling to find ways to activate the device.

Saturday, June 25, 2011 13:21 +0900 (JST)

## **Reports on Fukushima reactors made public**

Japan's Nuclear and Industrial Safety Agency has made public on its website documents revealing what happened at the Fukushima Daiichi nuclear power plant after the March 11th earthquake and tsunami.

The agency on Friday posted on its website Tokyo Electric Power Company's reports, which were submitted to the agency between March 11th and May 31st. The documents totaled 11,000 pages.

It says the government used these documents as reference material when it compiled a report on the nuclear crisis, which was submitted earlier this month to the International Atomic Energy Agency.

Documents submitted to the government were handwritten up to March 19th, during which the Fukushima Daiichi plant was left without electricity.

Goshi Hosono, the prime minister's advisor on the Fukushima accident, spoke about the documents in a news conference on Friday.

He said he has insisted on their release since they include an account of how the plant operator came to use seawater to cool down reactors.

Hosono also said their release was delayed due to the volume of the reports.

The agency says documents submitted after June 1st will also be made available on its website.

Saturday, June 25, 2011 08:56 +0900 (JST)

## **Des rapports sur la centrale de Fukushima rendus publics**

L'Agence de sûreté nucléaire et industrielle du Japon a publié sur son site internet des documents révélant ce qui s'est passé à la centrale nucléaire Fukushima Dai-ichi à la suite de la double catastrophe du 11 mars.

L'agence a ce vendredi mis en ligne sur sa page internet des rapports qui avaient été rendus entre le 11 mars et le 31 mai par la Compagnie d'électricité de Tokyo, Tepco. Ces documents comptent au total 11 000 pages.

Les rapports soumis au gouvernement ont été écrits à la main jusqu'au 19 mars, période pendant laquelle la centrale Fukushima Dai-ichi avait été privée d'électricité.

L'agence indique que les documents qui ont été soumis après le 1er juin seront eux aussi disponibles sur son site internet.

## **OPINION: Nuclear power requires perfection**

By Jonathan Schell

WASHINGTON, June 24, Kyodo

It has been three months since the Fukushima nuclear power disaster, and a clear global consequence is emerging.

The "nuclear renaissance" that supposedly was getting under way before the accident looks as though it has been stopped, and the world may even have begun the long process of getting out of the nuclear power business altogether.

In Japan, of course, all of nuclear power is under review, and Prime Minister Naoto Kan has had to assure the country that he will step down after the Fukushima crisis is over.

In Italy, the people have voted down nuclear power. The Swiss parliament has set the same course. Germany will phase out nuclear power altogether.

The German case is of special historical importance. In 1938, the chemist Otto Hahn first split uranium atoms, releasing the energy in them, making possible both nuclear power and nuclear bombs.

In this respect, the nuclear age began in Germany. Will it also end there?

However that may be, it is interesting to inquire how this result is being reached. The basic answer is not that governments have reconsidered. Ordinary people have.

The reversal in the German policy came after the ruling party suffered defeats in local elections. In Italy, it was the voting public that vetoed the government's plans.

Ordinary people are not nuclear experts. But they know some things that many experts prefer to forget. They know that even in the best-run enterprises, things go awry.

The contractor takes a kickback. The operator at the control panel falls asleep. The battery runs out sooner than expected. The scientist shades his findings because he has received a grant from the industry under inspection.

All this forms the inescapable background when the big, rare challenges arise: the earthquake, the tsunami, the airliner crash into the containment structures.

Of course the people in charge come up with new, improved safety plans -- more batteries, more generators, thicker containment walls, more security guards.

But the truth known to ordinary people is that these are subject to the same ineradicable human foibles as the old safety plans. When the stakes are a cost overrun on a factory or heavier taxes or potholes in a highway, everyone eventually accepts the cost and moves on.

But when the cost could be six nuclear reactors belching radiation wherever the winds have to carry it, rendering large territories uninhabitable, the cost is too high.

Nuclear power requires perfection. But human life is a scene of error and turmoil. The problem is not a broken valve or an inadequate flood wall or even the earthquake or tsunami.

It is the fundamental mismatch between fallible human beings and a universal power that is too great for us to control. That is what Fukushima teaches and that is what the world is learning.

(Jonathan Schell, born in New York in 1943, is known as a journalist who has had influence on antinuclear movements in the United States. He has written books such as "The Fate of the Earth" and "The Gift of Time.")

==Kyodo

---

en gros(voir ci-dessous) TEPCO n'a pas remis en route les opérations de décontamination.

Pendant ce temps ils continuent à injecter de l'eau dans les réacteurs **de façon continue**

Pour l'instant ils ont nettoyé 4 500 tons d'eau contaminée (sur ????)

**Et maintenant on apprend que l'eau contaminée voyage sur ... 4 kilomètres durant le traitement. Ce qui signifie un certain nombre de tuyaux et de valves à vérifier "sérieusement" !! Les divers éléments du système de décontamination sont en effet situés dans différents endroits de la centrale.**

---

## **Resumption of decontamination system not in sight**

The operator of the troubled Fukushima Daiichi nuclear power plant **has still not resumed operations of a system to decontaminate highly radioactive water.**

Tokyo Electric Power Company had planned to start decontaminating and recycling the water by July 17th to cool the reactors.

**Water is being injected continuously into the reactors** and the resulting contaminated water is starting to fill up the storage facilities, raising fears that it will start overflowing around July 5th.

**So far 4,500 tons of contaminated water has been treated in a test run, and work to remove salt started on Friday.**

The company says the amount of stored contaminated water will drop significantly, once the decontamination system begins operating. It says it wants to start spraying the recycled water into the reactors by the end of this month.

**But first, pipes and valves must be checked thoroughly as the components of the system are located in different parts of the plant, and the contaminated water travels a distance of 4 kilometers during treatment.**

Tokyo Electric Power Company hopes to fully restart the decontamination system in the next few days. But it has experienced a number of problems and it is unclear whether the recycling of water can be carried out as planned.

Saturday, June 25, 2011 22:05 +0900 (JST)

### **Tepco se dit prête à injecter de l'azote dans le réacteur 2**

La Compagnie d'électricité de Tokyo, Tepco, se prépare à injecter de l'azote dans l'enceinte de confinement du réacteur 2 de la centrale nucléaire Fukushima Dai-ichi dans le but de prévenir des explosions d'hydrogène.

La compagnie a déclaré qu'elle surveillera plus attentivement les niveaux de radiation autour du

complexe, car l'azote pourrait provoquer de légères émissions de gaz contenant des substances radioactives.

Les opérations de décontamination de l'eau suivent leur cours dans la centrale nucléaire endommagée. L'eau devrait être réinjectée dans les réacteurs pour les refroidir.

Cependant, si les réacteurs sont refroidis à un niveau stable, il y aura moins d'humidité émise, augmentant ainsi la proportion d'hydrogène dans l'air.

Il y a des risques d'explosion quand l'hydrogène est en contact avec l'oxygène.

Tepeco injecte de l'azote dans le réacteur 1 depuis le mois d'avril et vient de finaliser les préparatifs pour faire de même dans le réacteur 2.

Elle prévoit le début de l'opération d'injection dès qu'elle aura obtenu l'accord de l'Agence de sûreté nucléaire et industrielle.

---

l'eau de la piscine de combustible usé du réacteur 3 était devenue alcaline (PH 11,2) sans doute à cause des décombres qui étaient tombés dedans lors de l'explosion de mars. Ce qui pourrait accélérer la corrosion des racks en alu qui portent les barres de combustible. Bref TEPCO craint que le tout ne puisse s'écrouler, ce qui pourrait amener à un pb de "re-criticalité".

Mais tout cela n'est pas grave, car en juillet, début juillet même, on aura un beau système de refroidissement pour la piscine....

### **Boric acid being added to No.3 reactor fuel pool**

Tokyo Electric Power Company has begun adding boric acid to the spent fuel storage pool of the No.3 reactor at its Fukushima Daiichi nuclear plant to prevent fuel racks from being corroded by alkaline water.

The company started the operation on Sunday morning. About 90 tons of water containing boric acid will be poured into the pool through Monday.

Concrete debris from the March hydrogen explosion of the reactor building has been detected in the fuel pool.

Last month, TEPCO found that the water in the pool had turned strongly alkaline, with its PH level reaching 11.2. The leaching of calcium hydrate from the debris is believed to be the cause. TEPCO says the condition may accelerate corrosion of aluminum racks holding spent fuel rods and may cause the rods to topple in the worst case, which could lead to re-criticality.

At the same time, TEPCO is preparing to install a circulatory cooling system at the fuel pool that will go into operation in early July.

Sunday, June 26, 2011 13:01 +0900 (JST)

### **Injection d'acide borique dans la piscine du réacteur 3**

TEPCO a commencé dimanche matin à injecter de l'acide borique dans la piscine de stockage des barres de combustible usagé du réacteur 3 de la centrale de Fukushima.

L'opération a pour but d'éviter que les étagères soutenant les barres ne soient corrodées par l'eau alcaline. D'ici lundi, la compagnie d'électricité injectera 90 tonnes d'eau enrichie d'acide borique.

Le mois dernier, l'entreprise a découvert que l'eau de la piscine était devenue extrêmement alcaline, avec un pH de 11,2. A l'origine de ce problème, il y aurait un dégagement d'hydrate de calcium émis par les morceaux de béton tombés dans la piscine au moment de l'explosion d'hydrogène survenue dans le bâtiment du réacteur au mois de mars.

## **TEPCO ready to inject nitrogen into No.2 reactor**

Tokyo Electric Power Company is ready to inject nitrogen into the containment vessel of the Number 2 reactor at its Fukushima Daiichi nuclear plant to prevent hydrogen blasts.

The company says it will monitor radiation levels around the compound more closely as the nitrogen may force out tiny amounts of gas containing radioactive substances.

Work is underway at the damaged nuclear plant to decontaminate water and inject it back into the reactor for cooling.

But if the reactors are cooled to a stable level, less moisture will be produced, raising the ratio of hydrogen in the air.

Hydrogen can cause an explosion when it reacts with oxygen.

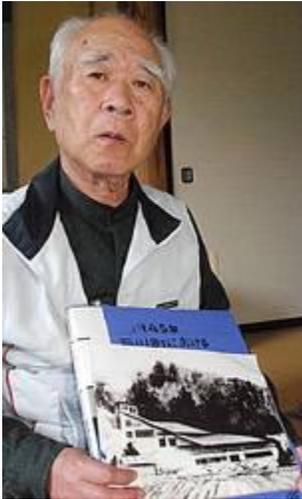
TEPCO has been pumping nitrogen into the No.1 reactor since April and has completed preparations to do the same at the No. 2 reactor.

The utility assessed the possible effects of nitrogen injection into the No.2 reactor, and submitted its report to the government's Nuclear and Industrial Safety Agency on Friday.

It plans to start the injection as soon as it obtains the consent of the agency.

Sunday, June 26, 2011 02:50 +0900 (JST)

## **WWII uranium miner questions peaceful use of nuclear power**



Kiwamu Ariga, who was mobilized for uranium mining toward the end of World War II, is pictured in Ishikawa, Fukushima Prefecture. (Mainichi)

ISHIKAWA, Fukushima -- A former elementary school principal who was once mobilized for uranium mining during World War II for Japan's development of nuclear weapons questions the peaceful use of nuclear power amid the ongoing nuclear crisis.

Kiwamu Ariga, 80, a former elementary school principal in Ishikawa, Fukushima Prefecture, has gathered testimonies by those who were engaged in uranium ore mining in the town as mobilized students toward the end of the war.

Last year, Ariga formed a citizens' group to pass on the stories of the war to future generations. Though he had believed the peaceful use of nuclear energy was inevitable, he changed his mind following the accident at the Fukushima nuclear plant. "I believe we have come to a point where we should review the peaceful use of atomic power from scratch," Ariga said.

The town of Ishikawa -- located about 60 kilometers southwest of the disaster-crippled Fukushima No. 1 Nuclear Power Plant -- has been home to rare element minerals since before the war. The then Imperial Japanese Army, which was developing atomic weapons toward the end of the war, mobilized some 120 third-year students at a private middle school in Ishikawa for uranium mining, including 14-year-old Ariga, in April 1945.

"All we did was to enter the mountain, dig minerals and carried them in baskets," recalls Eiji Fujisawa, 80, Ariga's classmate who also lives in Ishikawa.

In May of 1945, several engineer officers visited the mine and told the students, "If we make a bomb using the rocks you are mining, we could instantly wipe out New York," according to Ariga.

The amount of uranium mined in the town is said to have been too small to extract the necessary quantity for producing an atomic bomb. The Army's technical research institute, which had commissioned the development of atomic weapons to what is now Riken in Tokyo, concluded in June 1945 that even the United States would not be able to develop nuclear weapons and abandoned the idea of producing atomic bombs.

The United States, however, dropped atomic bombs on Hiroshima on Aug. 6 and Nagasaki on Aug. 9 that year, causing enormous devastation to the two cities. Ariga eventually became a teacher and started passing down his wartime experiences of mining uranium to younger generations in the hope that the tragedy of war will never be repeated.

In 1971 and 1982, the Fukushima No. 1 and No. 2 nuclear power plants started operations, respectively. Ariga had long thought the use of nuclear energy for power generation and in the medical sector was unavoidable, but the accident at the No. 1 plant in March this year prompted him to change his mind.

"Despite the fact that Japan suffered the tragedies of Hiroshima and Nagasaki, we have allowed the use of nuclear power on the grounds that it is for peaceful purposes. I think the nuclear accident occurred because we underestimated (the danger of) nuclear power," said Ariga.

For Ariga, the memory of the wartime period when people were told Japan would absolutely win the war, which proved contrary, and the postwar myth that nuclear power plants are absolutely safe, which was overturned by the Fukushima accident, overlap each other. He is planning to hold a meeting of his story-telling group this summer, hoping that he could convey the horror of atomic bombs and discuss nuclear power generation with participants.

(Mainichi Japan) June 26, 2011

## **Decontamination system to fully operate on Monday**

The operator of the Fukushima Daiichi nuclear power plant says it hopes to begin full-scale operation on Monday of a system to decontaminate highly radioactive water.

Contaminated water is still accumulating in the plant, as water is being injected to cool the reactors.

Tokyo Electric Power Company was forced to suspend the test run of the system a number of times due to problems with a device that removes radioactive substances.

The utility says it managed to resolve the problem by using a different absorbent material for the devices, and the equipment that removes salt is working normally.

The company says it will review its procedures, and will consider replacing the absorption devices more frequently than once a month.

The storage facilities for contaminated water will not fill up until July 5th, as 5,400 tons was cleaned during the test runs and the contaminated water that was about to fill the reactor buildings can now be transferred.

However, it remains to be seen if the system can operate stably, as the pump of the salt-removal device failed on Saturday.

It is also feared that heavy rain during the rainy season or a typhoon may quickly fill up the storage facilities.

Sunday, June 26, 2011 23:31 +0900 (JST)

## **Le démarrage du système de décontamination de l'eau radioactive est prévu pour lundi**

La Compagnie d'électricité de Tokyo, Tepco, prévoit de faire tourner à plein régime lundi le système de décontamination de l'eau hautement radioactive.

Cette eau continue de s'accumuler dans la centrale de Fukushima à mesure que les aspersion d'eau se poursuivent pour refroidir les réacteurs.

Tepco a été contrainte de suspendre les essais du système à plusieurs reprises en raison de difficultés avec un appareil d'absorption de substances radioactives. La compagnie s'efforce de résoudre le problème **en utilisant un absorbant différent**. Elle va également revoir ses procédures et **envisage de remplacer l'élément absorbant plus d'une fois par mois**.

Par ailleurs, l'appareil qui retire le sel fonctionne normalement.

## **Internal radiation exposure found in all 15 people surveyed in Fukushima**

HIROSHIMA (Kyodo) -- Radiation experts said Sunday **they had found internal radiation exposure in all of the 15 people they surveyed in May in areas 30-40 kilometers from the crippled Fukushima Daiichi nuclear power plant**.

The experts surveyed 15 people aged between 4 and 77 in Iitate and Kawamata in early and late May, and found radioactive cesium in both batches of their urine samples.

Nanao Kamada, a radiation biologist who led the survey, said, "**There is no cause for concern unless the residents continuing eating contaminated food such as vegetables, but it may be hard to continue living in the areas.**"

The survey also showed that radioactive iodine was detected in the first batch of urine samples from six of the 15 people but was not found in the second batch, they said.

(Mainichi Japan) June 27, 2011

## **LDP's Fukushima chapter adopts 'no nuclear plant' policy**

FUKUSHIMA (Kyodo) -- The Fukushima prefectural chapter of the main opposition Liberal Democratic Party declared Sunday that it will no longer promote nuclear power generation.

The LDP, which held power for most of the postwar period until it was defeated by the Democratic Party of Japan in the August 2009 general election, has long promoted nuclear power.

"We will definitely not promote nuclear power generation in the future," said the chapter's policy platform for fiscal 2011 adopted during its regular convention in the wake of the crisis at the crippled Fukushima Daiichi nuclear plant.

(Mainichi Japan) June 27, 2011

## **Gov't airs program pushing for resumption of Genkai reactors**

SAGA (Kyodo) -- The government sought local consent Sunday for the resumption of operations of reactors at the Genkai nuclear power plant of Kyushu Electric Power Co. in Saga Prefecture.

In a broadcast aired on the Internet, an official at the Economy, Trade and Industry Ministry said the authorities have taken sufficient measures to secure the safety of the Genkai plant following the nuclear emergency at the Fukushima Daiichi power plant.

It was the **first attempt by the central government to brief residents of municipalities that host nuclear power plants on nuclear safety measures.** The program was shot and aired at a cable TV studio in the city of Saga, and featured government officials and local residents.

Operation of the Genkai plant's Nos. 2 and 3 reactors have been suspended for regular checkups.

Despite the government's safety assurances, the local residents voiced concerns in the program as to why the state has requested only Hamaoka nuclear power plant in Shizuoka Prefecture to suspend operations.

The Hamaoka plant, which is located in a major active fault zone, was shut down in May following a government request.

In front of the cable TV station, some 150 members of an antinuclear group lodged a protest. They were led by Hatsumi Ishimaru, 59, who said, "This is a program designed to lead to approval for the resumption of operations of the Genkai reactors. We cannot accept that."

(Mainichi Japan) June 26, 2011

## **Cooling of reactors with recycled water to begin**

Tokyo Electric Power Company says it will begin using decontaminated water as a coolant at the Fukushima Daiichi nuclear plant on **Monday afternoon.**

Highly radioactive water is still accumulating at the power plant from the constant stream being injected into the reactors to cool them down.

The utility says it has about 1,850 tons of decontaminated water that was processed in test runs of a water treatment system. It plans to circulate the water around the reactors on Monday afternoon at the earliest.

TEPCO says it hopes to start full-scale water decontamination **as soon as it determines the system's optimum operating conditions.**

The system became operational a week ago but had to be suspended after one of the US-made radiation-absorbing cartridges reached its limit sooner than expected.

If successful, the process will bring the plant one step closer to TEPCO's goal of stabilization by mid-July without additional new water injections.

Monday, June 27, 2011 12:48 +0900 (JST)

## **La décontamination de l'eau radioactive va reprendre**

La Compagnie d'électricité de Tokyo, Tepco, envisage de redémarrer dès ce lundi un système de décontamination de l'eau hautement radioactive dans la centrale nucléaire Fukushima Dai-ichi.

L'eau contaminée continue à s'accumuler, les techniciens injectant de l'eau continuellement pour refroidir les réacteurs.

Tepco a dû suspendre les essais du système à plusieurs reprises, étant confronté à des problèmes liés au fonctionnement d'un dispositif d'élimination des substances radioactives.

Mais la compagnie annonce avoir réussi à résoudre le problème en utilisant un matériau absorbant différent pour le dispositif.

Tepco précise que 1850 tonnes d'eau contaminée ont été traitées au cours des essais et que l'eau recyclée sera utilisée pour refroidir les réacteurs dès ce lundi après-midi.

## **Radiation checkups start in Fukushima**

Health checkups have started for people likely to have been exposed to relatively high levels of radioactive contamination from the Fukushima Daiichi nuclear plant.

Ten people were given checkups on Monday at a specialist facility near Tokyo. The authorities plan to test more than 2 million residents of Fukushima Prefecture.

The initial checkups will focus on about 28,000 residents of 3 municipalities near the plant -- Iitate Village, and the towns of Kawamata and Namie. Relatively high levels of radioactive contamination have been measured in these areas.

They will be asked to give details of their daily lives since the March 11th accident at the nuclear plant to estimate their external exposure.

More than 2,900 people will also be examined with a whole body counter to measure their internal exposure to radioactive contamination from the nuclear plant.

Full-scale health-checkups for all the residents of the prefecture will start in August.

Monday, June 27, 2011

## **Début des contrôles d'exposition aux radiations des habitants de la préfecture de Fukushima**

Des contrôles de santé pour plus de deux millions d'habitants de la préfecture de Fukushima ont commencé ce lundi.

Les autorités préfectorales vont donner la priorité aux quelque 28 mille habitants des trois communautés proches de la centrale nucléaire Fukushima Dai-ichi, à savoir le village d'Iitate et les villes de Kawamata et Namie.

Une enquête portera sur le mode de vie de ces personnes après la double catastrophe du 11 mars qui a endommagé la centrale. Les niveaux d'exposition externes seront estimés en comparant le comportement des personnes interrogées aux données de radiation recueillies dans l'atmosphère et au sol.

Un appareil médical spécial sera utilisé pour vérifier les niveaux de radiation internes de plus de 2900 personnes.

---

## **Dilution of radioactive materials at sea is no solution to nuke-plant crisis**

Whispers have emerged that Prime Minister Naoto Kan is prepared to dissolve the House of Representatives and face a general election over the issue of whether Japan should abolish nuclear power. To me, mere talk of such an issue is the ultimate example of the blurred vision at Japan's political center.

There is nothing wrong with asking the public whether nuclear power is right or not, but now is a time of national emergency -- a time when officials should be putting full effort into bringing the nuclear crisis in Fukushima under control and preventing environmental contamination. **There isn't time now to leisurely debate mid- and long-term government policies, haggle over the dissolution of the chamber and become engrossed in election campaign strategies.**

The reason for the situation comes from **politicians' delusion, grounded in their idea that the nuclear crisis is somehow being brought under control, and that the effects from radioactive material are minimal. But the fact is, the situation at the Fukushima No. 1 Nuclear Power Plant isn't returning to normal. And we still don't know just how much damage environmental pollution from the**

**crisis will inflict on people and their DNA.** There is no proof anywhere that this pollution will be harmless.

Some of the reactors at the nuclear power plant have melted down, and the melted nuclear fuel is sinking toward water under the ground. **An underground barrier is needed to stop water that becomes contaminated from flowing into the sea.** Experts have pointed out the urgency of the situation and the government supports the idea, but Tokyo Electric Power Co. (TEPCO), the operator of the crisis-hit nuclear plant, is saying "wait."

I wrote about this problem in a column on June 20, and a question on the issue arose at a regular news conference scheduled by the Nuclear and Industrial Safety Agency. Hidehiko Nishiyama, a spokesman for the agency, responded by saying, "We are implementing fundamental measures, **but we don't believe there is a need to rush.**"

The response lay within the scope of a set of answers that TEPCO had prepared as it braces itself for a general shareholders' meeting. But why such a reaction? Because the line of responsibility between TEPCO and the government is a fine one.

There is a feeling in the government that it is shoving the handling of the unprecedented nuclear crisis into the hands of TEPCO, a private company. The government therefore has a weak spot that forces it to listen when TEPCO comes crying about measures to prop up its share prices.

**Why can the two sides only form a response marked by indecisiveness and reliance on each other as Japan faces this unprecedented crisis? I think it is because the problem is too big, and they can't grasp how far it is spreading and how serious it is.**

In April, TEPCO announced that 520 tons of water that contains substances emitting 4,700 terabecquerels of radiation had leaked into the sea through cracks in nuclear plant facilities over a six-day period. This is close to the amount that was leaked into the sea over the course of a year at the Sellafield nuclear processing site in Britain in the 1970s in the worst case of maritime radiation contamination to date.

**And the leaks that have surfaced are just the tip of the iceberg.** Water that was used to cool the cores of the damaged reactors at the Fukushima plant has overflowed and contaminated underground water is moving toward the sea. An unprecedented case of maritime pollution is about to unfold.

All things considered, one could say this is only natural. Fukushima's nuclear power plants were the heart of Japan as an economic power. **The total output of the reactors that have been crippled by the disaster was close to 3 million kilowatts,** three times the output at Chernobyl.

Chernobyl was hit by a nuclear explosion while nuclear fission was taking place, and many people died from acute radiation disease. There was a tendency in Japan to look lightly on the Chernobyl disaster as occurring against a background of a decline at the end of the Soviet era. But the potential amount of the harmful "poison" that gradually eats away human life is greater in Fukushima.

**It is common for people to simply think that if this poison were washed into the sea, it would become diluted. If that was all there was to the situation, the crisis could be easily solved. But now, experts are**

pointing to the possibility of this unprecedented pollution developing into a major disaster that would last several decades, just like the Minamata and asbestos catastrophes in Japan.



In this March 11, 2011 file photo released by Tokyo Electric Power Co., waves of tsunami gush into a complex near the Unit 4 reactor at the Fukushima Dai-ichi nuclear complex in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Delaying the construction of an underground barrier is not just an event occurring during a break in the season for general shareholders' meetings. It is a major issue that calls the essence of TEPCO's assertion of its "social responsibility as a company" into question. The prime minister needs to show leadership in initiating construction of an underground barrier. (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) June 27, 2011

## **TEPCO starts circulating cleaned water into crippled reactors**



In this photo taken on June 22, 2011 and released on Thursday, June 23, 2011 by Tokyo Electric Power Co. (TEPCO), workers in protective suits set up temporary pressure gauges in the Unit 2 reactor building at the tsunami-damaged Fukushima No. 1 nuclear plant in Okuma, Fukushima prefecture. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Monday it has started cooling the crippled nuclear reactors at the Fukushima Daiichi power complex by **using decontaminated water produced from a newly installed water treatment system.**

The start of "circulating injection cooling" is seen as a key step to achieve both the stable cooling of the Nos. 1 to 3 reactors and the reduction of highly radioactive water that is accumulating inside the plant's premises as a result of an emergency measure to keep injecting water into the reactors from outside.

"We've taken a large step" in efforts to restore the crisis-hit plant, Goshi Hosono, a special adviser to Prime Minister Naoto Kan on handling the nuclear disaster, said at a press conference announcing the start of the water circulation in the afternoon.

The plant operator known as TEPCO has recently set up a water treatment system designed to remove radioactive substances from the highly contaminated water, although it has been plagued by water leakage and other trouble with the system.

Still, **about 1,850 tons of clean water has been produced in trial runs of the system.**

Some **110,000 tons of highly contaminated water**, including coolant liquid leaking from damaged reactors, is estimated to have accumulated inside the plant's reactor turbine buildings and nearby areas, and there are fears the water may overflow into the Pacific Ocean.

Hidehiko Nishiyama, a spokesman for the government's Nuclear and Industrial Safety Agency, said at a press conference earlier Monday the main focus of the circulating injection cooling at the beginning would be on reducing the amount of polluted water to lessen the risks of overflowing.

Hit by the magnitude 9.0 earthquake and tsunami waves on March 11, the six-reactor nuclear complex lost nearly all its power sources, causing the cooling functions of the reactors and spent nuclear fuel pools at the Nos. 1 to 4 units to fail.

The Nos. 1 to 3 reactors' cores are assumed to have suffered meltdowns, although the melted fuel is now believed to be kept cool at the bottom of each reactor pressure vessel because of the emergency water injection measure.

(Mainichi Japan) June 27, 2011

---

## **Yamaguchi governor bans construction of nuclear power plant**

YAMAGUCHI -- The governor has refused to extend permission for the construction of a nuclear power plant in the prefecture, citing the central government's failure to clarify its energy policy and to reveal strengthened safety measures at nuclear power stations.

"So far, the national government has failed to clearly show its nuclear energy policy and improved safety measures at nuclear power plants. Amid such uncertainty, we can't initiate the construction of any such plant," Yamaguchi Gov. Sekinari Nii told a regular session of the prefectural assembly on June 27.

During the session, Nii strongly urged the national government to clarify its energy policy following the crisis at the tsunami-hit Fukushima No. 1 Nuclear Power Plant.

"First of all, the central government should clarify how it characterizes nuclear power generation in its new overall energy policy and how it will plan the construction of new nuclear power plants, including Kaminoseki plant," he told the assembly session.

He made the remarks in reference to an application Chugoku Electric Power Co. is expected to file for an extension of the prefectural government's permission to reclaim sea areas off the prefecture town of Kaminoseki where the Hiroshima-based power supplier is planning to build a nuclear power plant.

In a meeting with reporters following the session, Nii reiterated that the prefectural government will not extend permission under the current circumstances. "Chugoku Electric should continue its suspension of the reclamation work. As long as the current situation continues, we can't approve the extension even if we receive an application from the utility."

The governor's stance is expected to cause a considerable delay in the construction of the Kaminoseki Nuclear Power Plant.

Under the plan, Chugoku Electric Power will reclaim a 14-hectare area of the sea to develop a 33-hectare area, where it will build two nuclear reactors. Chugoku Electric Power had planned to begin construction of the No. 1 reactor of Kaminoseki Nuclear Power Plant in June 2012 and start operating it in March 2018.

However, its reclamation of the sea has been stalled as local residents opposing the construction staged an anti-nuclear power campaign. Moreover, the national government's screening of applications for permission to build nuclear reactors has been suspended since the Fukushima nuclear crisis. The permission that the power supplier has obtained is set to expire in October next year.

Furthermore, assemblies in municipalities around the area have adopted various resolutions urging that the construction of the Kaminoseki power station be either suspended or cancelled.

Chugoku Electric Power has declined to comment on the governor's comments. "Since we're trying to confirm what the governor meant, we can't comment on his remarks."

Kaminoseki Mayor Shigemi Kashiwabara, who is supporting the construction of the nuclear power station, also said, "Since I don't understand what the governor meant, I'd like to refrain from commenting on his statements."

(Mainichi Japan) June 27, 2011

---

## **News Navigator: How are nuclear reactors decommissioned?**

The Mainichi answers common questions readers may have about the decommissioning of nuclear reactors in the wake of the crisis at the Fukushima No. 1 Nuclear Power Plant.

Question: Calls have arisen across Japan for the decommissioning of nuclear reactors following the nuclear crisis in Fukushima. How are reactors decommissioned?

Answer: Decommissioning involves safely dismantling a reactor and removing all facilities on the site. After commercial operation of the reactor is halted, work begins to remove spent nuclear fuel from the reactor building using cranes. Up until now, the fuel has been shipped to a reprocessing facility such as the one in Rokkasho, Aomori Prefecture. Chemicals are used to remove radioactive materials in pipes and containers in the emptied nuclear reactor building, and the facility is left standing for about 10 years to allow any remaining radiation inside to decrease. The Japan Atomic Power Co.'s **Tokai** nuclear power plant, whose decommissioning began in 2001, is now at this stage. When the radiation levels have decreased sufficiently, dismantling work can finally begin. **The time needed to complete the work depends on the size and type of reactor, but usually the total process takes over 20 years.**

Q: That's quite a long time. How long will the decommissioning of the reactors at the Fukushima No. 1 Nuclear Power Plant take?

A: Unfortunately that remains unclear. Fuel in reactors is believed to have melted and to be lying at the bottom of the reactor pressure vessels, meaning that **the regular method of removing the fuel in its original form is not an option.** Toshiba Corp., which undertook construction of the power plant, has presented plans to Tokyo Electric Power Co. and the Ministry of Economy, Trade and Industry to complete the decommissioning of the reactors in 10 years at the earliest. It says this is possible thanks to industry know-how on the retrieval of melted fuel obtained during the cleanup of the Three Mile Island nuclear accident in the U.S.

Q: Can we expect these plans to be successful?

A: Some people are doubtful. The British journal Nature carried a paper suggesting that decommissioning would take anywhere from several decades to 100 years. Going by the testimonies of a former worker involved in the Three Mile Island cleanup and other factors, it is predicted that decommissioning of reactors in Fukushima -- where hydrogen explosions scattered radioactive material -- **will be technically difficult. Moreover, the more time that it takes, the bigger the cost will be.** It is expected to cost 37.9 billion yen to decommission the No. 1 reactor at the Hamaoka Nuclear Power Plant operated by Chubu Electric Power Co., which is the same kind as the reactors at the Fukushima plant, but at least one think-tank estimates that **the cost of decommissioning work at Fukushima could reach 15 trillion yen.**

Q: Why will it cost so much?

Because **it's necessary to build lots of new equipment designed especially to handle the accident**, such as a purification system to remove radioactive materials from contaminated water that has built up on the grounds of the power plant. **New legislation may also be needed**, as the current Act on the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors does not provide for the high concentrations of radioactive material that some fear could leak from the plant. (Answers by Hiroshi Higa, Science and Environment Writer)

(Mainichi Japan) June 27, 2011

## EPR de Flamanville : Bouygues rompt un contrat avec un sous-traitant

LEMONDE.FR avec AFP | 27.06.11 | 13h30

**AFP/JEAN-PAUL BARBIER**

Bouygues a rompu son contrat avec Atlanco, un de ses sous-traitants sur le chantier de l'EPR à Flamanville, indique, lundi 27 juin, le géant du BTP, au centre d'une affaire d'accidents du travail non déclarés relevés par l'Autorité de sûreté nucléaire (ASN).

Le contrat rompu, les soixante-dix à quatre-vingts employés polonais du sous-traitant ont été renvoyés ce week-end, selon la CGT. Bouygues, qui pilote le génie civil sur le chantier, justifie cette rupture par *"des questions de réglementations extrêmement compliquées à régler au niveau européen"*.

La semaine dernière, l'ASN, l'organe de contrôle du nucléaire français, a transmis à la justice un procès verbal recensant cent douze accidents du travail survenus en 2010 sur le chantier, dont trente-huit accidents *"à déclarer n'ayant pas fait l'objet d'une déclaration"*, selon une copie obtenue par l'AFP. D'après le procès-verbal adressé au procureur de Cherbourg, Atlanco, société de travail temporaire basée à Chypre, a omis de déclarer six accidents du travail. L'ASN déplore par ailleurs des irrégularités dans ses déclarations de cotisations sociales, selon des sources concordantes.

### **"ON LES VIRE COMME DES MALPROPRES"**

En outre, *"Atlanco s'est dépêché d'organiser en plein week-end le départ de la région de tous ses salariés dans des conditions complètement illégales"*, selon un délégué syndical CGT, [Jacques Tord](#), salarié chez EDF. *"C'est la double peine. Non seulement on les exploite, mais en plus on les vire comme des malpropres"*, a-t-il dit à l'AFP. En mai, certains salariés polonais s'étaient mis en grève : *"sur 2 000 euros bruts de salarie, on leur retirait 600 à 700 euros par mois, soi-disant de cotisations fiscales et sociales, alors qu'ils n'étaient pas assurés et payent des impôts en Pologne"*, raconte M. Tord.

Le chantier de l'EPR a déploré ces derniers mois trois accidents du travail mortels. Le 11 juin un salarié de 32 ans de la société Endel est mort après une chute de 10 mètres. Le 24 janvier, un intérimaire de 37 ans employé par la société Normetal avait fait une chute mortelle qui a entraîné l'ouverture à Cherbourg d'une enquête en flagrance pour *"homicide involontaire"*. La semaine dernière, un ouvrier qualifié d'Areva, est mort dans un accident de la route en quittant le chantier, selon EDF et les gendarmes.

Le chantier accuse un retard d'au moins deux ans alors que le réacteur nucléaire de troisième génération – EPR – de Flamanville, un des tout premiers en construction dans le monde, fait figure de vitrine.

tu te rappelles ? le coup des 4 km de tuyaux ?

## **TEPCO halts water circulation due to leaks**

The operator of the Fukushima Daiichi nuclear power plant has suspended using decontaminated water as a coolant because of leaky pipes.

Tokyo Electric Power Company began circulating recycled water through the No.1, 2 and 3 reactors at 4:20 PM on Monday.

But it halted the operation one and a half hours later after discovering water leaking from the pipes.

TEPCO has been attempting to run the decontamination system since June 14th. It has so far treated about 1,850 tons of the water.

The operator hopes to reduce the levels of radioactive wastewater accumulated at the plant as a result of injecting fresh water into the damaged reactors.

Circulating the decontaminated water around the reactors is considered an important step to stabilize them by mid-July as planned. It will also help prevent the volume of wastewater from increasing.

TEPCO says it will repair the leaks and hopes to resume water circulation soon.

Monday, June 27, 2011 20:40 +0900 (JST)

## **Radioactive ash found in waste incineration plant**

An operator of waste incineration plants in Tokyo says it has found a high density of radioactive materials in ash at one of its plants.

An Edogawa ward plant, which handles general household garbage, detected **9,740 becquerels of radioactive materials per kilogram of ash.**

The ash was collected from a device to filter exhaust fumes.

The plant's operator, an organization jointly set up by Tokyo's 23 wards, believes that radioactive cesium built up through the incinerating process.

But it says there is no danger of the toxic substances escaping into the environment as they were trapped by the filter.

**Legally, the plant can only bury ash registering 8,000 becquerels or less per kilogram.**

But ash contaminated with more than 8,000 becquerels must be stored until the government determines a safe disposal method.

**Following the latest findings, Tokyo consulted the central government and decided to temporarily store the contaminated ash inside the plant.**

Tokyo on Monday asked the government to come up with guidelines for the ash's disposal.

Tuesday, June 28, 2011

## Water recycling at Japan nuclear plant stops again

TOKYO (AP) -- A water recycling system at Japan's damaged nuclear power plant was halted for repairs Monday after a brief run that had been hailed as major progress in restoring control and improving conditions at the crippled plant.

Tons of fresh water has been pumped to the plant to cool its reactors, a process that taints the water with radiation. About 110,000 tons of tainted water has accumulated and could overflow by early July if the recycling system fails or other storage options are not enough.

Workers have struggled for weeks to use a new system to clean the tainted water and reuse it in the cooling process. The water treatment components fully operated for five hours earlier this month, and test-runs were conducted before it went fully operational Monday. It also pumped treated water into the reactors -- a long-awaited new phase that lasted only briefly.

Plant operator Tokyo Electric Power Co. said the recycling system was halted about an hour and a half after it began operating. Workers spotted water leaking from a hose that was sending the processed water into the reactors, TEPCO spokesman Junichi Matsumoto said.

The leak shut down the recycling segment of the system, while the cleaning segment is continuing to operate. **Workers switched back to fresh water injection into the reactors**, Matsumoto said.

No new leakage outside the plant has been reported. TEPCO plans to start repair work early Tuesday to restore the recycling segment as soon as possible, hopefully by the end of the day.

The multinational system has reprocessed 1,850 tons of contaminated water as coolant to be pumped back into the reactors. In full capacity, the system can treat up to 1,200 tons of contaminated water per day, more than twice as much as needed to cool the three reactors.

The March earthquake and tsunami destroyed power and cooling systems at the Fukushima Dai-ichi plant, melting reactor cores and leaking massive amount of radiation. Some contaminated water seeped into the ocean in April and May, causing criticism and concerns in and outside of Japan.

Some of the tainted water is stored in temporary tanks, but the rest has still pooled inside reactor and turbine basements and utility pits, hampering workers and risking radiation exposure.

TEPCO has sealed cracks, set up oil fences around the coastal plant, and acquired more storage tanks in case of emergency. **But as long as the cleaning segment of the recycling system is functioning, the volume of tainted water will not grow.** [not necessarily true : it depends how much water TEPCO can process at what speed]

Announcing the launch of the recycling system earlier Monday, Goshi Hosono, newly appointed nuclear crisis minister, called the system "a major step forward" toward stable cooling of the reactors. But he said he was not fully confident about the system.

"It's a problem if the system continues to be unreliable," he said. "We must turn it into something that can feed water stably."

TEPCO and the government have said they hope to achieve a cold shutdown of the reactors by January by bringing the core temperatures to below 100 Celsius (212 Fahrenheit).

(Mainichi Japan) June 28, 2011

## **TEPCO checking water circulation system**

The operator of the Fukushima Daiichi nuclear plant is checking its trouble-hit water-recycling system to try and get it running again as soon as possible.

Tokyo Electric Power Company was forced to halt the new system on Monday after only about an hour and a half of operation due to water leakage.

TEPCO said on Tuesday that water burst from a weak connection that wasn't checked in advance.

It said the leak lasted for 2 minutes at most, and that about a single ton of water seeped out.

Under the recycling system, highly radioactive water is pumped out of reactors, decontaminated and then circulated back inside the reactors as coolant.

TEPCO believes the system holds the key to cooling down the reactors, while decreasing the amount of contaminated water that is threatening to overflow.

Tuesday, June 28, 2011

## **Nuclear plant operator skipped pipe check**

The operator of the Fukushima Daiichi nuclear plant says it skipped a scheduled test of the plant's water pipes on Monday, shortly before it was forced to suspend a water recycling operation due to leaks.

The utility ran the filtering system, designed to recycle contaminated water for use in cooling the reactors, for just 90 minutes on Monday before treated water was found leaking from unfastened pipes.

The operator says it failed to check the 4 kilometers of piping as it had found no problem during an inspection more than 2 weeks ago.

The company says it will review that decision.

The utility is under pressure to commence the recycling system as the contaminated water may start overflowing around July 5th.

Tuesday, June 28, 2011

## **Gov't urges 3 more prefectures to examine radiation levels in food**

TOKYO (Kyodo) -- A government task force on the nuclear emergency said Monday it has decided to call on three more prefectures to examine radioactive materials in food, while adding tea, wheat and fishery products as individual items to be monitored.

A rule on radiation in food the panel set in early April has so far targeted four prefectures including Fukushima, where the government has banned shipments of farm products after the accident at the Fukushima Daiichi nuclear power plant, and the surrounding seven prefectures.

In addition to the prefectures, the revised rule will urge Kanagawa, Yamanashi and Shizuoka prefectures to check radiation levels in food as the crisis at the power station crippled by the devastating March 11 earthquake and ensuing tsunami is prolonged, the panel said.

The Nuclear Safety Commission of Japan has advised the panel to establish a new rule to ensure food safety against radioactive contamination instead of interim limits set under the food sanitation law as soon as possible, it said.

(Mainichi Japan) June 28, 2011

## **Radioactive strontium detected in seabed**

Radioactive strontium has been detected for the first time on the seabed near the crippled Fukushima Daiichi nuclear power plant.

Tokyo Electric Power Company says it found strontium-89 and -90 in the seabed soil. The company conducted a survey on June 2nd about 3 kilometers off the coast at 2 locations, some 20 kilometers north and south of the nuclear complex.

The substances pose a serious health risk because they can accumulate in the bones if inhaled, which could cause cancer.

Up to 44 becquerels per kilogram of strontium-90 were detected, which has a half-life of 29 years.

The substances had been detected before in soil on land and in seawater following the nuclear accident in March.

A member of the government's Nuclear Safety Commission, Shigeharu Kato, says more examination should be carried out to find out if or how the substances can accumulate in marine life.

The fishery ministry conducted separate surveys. It did not find radioactive strontium in fish and seafood samples taken off the coast of Ibaraki and Chiba prefectures. Both are located south of the Fukushima plant.

et bien voilà, on sait la somme maintenant :

## France nuclear power funding gets 1bn euro boost

France will invest 1bn euros (£0.8bn) in nuclear power despite warnings after the Fukushima disaster in Japan, President Nicolas Sarkozy says.

The new investment will **include a boost for research into nuclear safety.**

The French nuclear giant Areva is developing the fourth generation of reactors. France gets 80% of its electricity from nuclear power.

Earlier this year neighbouring Germany, Switzerland and Italy voted against nuclear power, following Fukushima.

The BBC's Christian Fraser in Paris says that as president of the G8 and G20 industrial groups, Mr Sarkozy has been pushing for an international standard on nuclear safety.

"We are going to devote a billion euros to the nuclear programme of the future, **particularly fourth-generation technology,**" Mr Sarkozy told a news conference.

"We are also going to release substantial resources from the big loan to strengthen research in the sphere of nuclear safety."

He stressed his government was still investing "massively" in renewable energy. He announced 1.35bn euros of investment for that sector.[\[je demande à voir les comptes\]](#)

But our correspondent says it is obvious how important nuclear power is to the French economy and its energy security.

The Fukushima Dai-ichi nuclear plant's cooling systems were knocked out by the 11 March earthquake and tsunami in Japan. The disaster caused a meltdown at three of the reactors and the plant is still leaking radiation. Tuesday, June 28, 2011

## Russia has 'no plans' to undergo EU nuclear stress tests: Rosatom

Brussels (Platts)--28Jun2011/609 am EDT/1009 GMT

<http://www.platts.com/RSSFeedDetailedNews/RSSFeed/ElectricPower/8049894>

Russia has no plans to submit its nuclear reactors directly to EU-style safety stress tests, Kirill Kormarov of Russian state energy corporation Rosatom told Platts in Brussels late Monday.

"We don't want to fulfill the EU stress tests--**we've done tests already**," Kormarov, who is deputy general director for global business development at Rosatom, said on the sidelines of an industry debate on the future of nuclear in central and eastern Europe.

The EU agreed common criteria in May for safety tests to be carried out on all 143 EU reactors starting June 1. The move came in response to Japan's nuclear crisis at Fukushima earlier this year, and **the EC has also pushed for the EU's neighbors to agree to a similar nuclear safety review.**

The EC's nuclear energy director Peter Faross said during the debate "that there is a will for Russia to use the EU system." But when faced with Kormarov's comments, Faross told Platts that although there were no obstacles to Russia participating in EU stress tests, currently there is only a "joint declaration to contribute to transparency and to participate in the peer review [a review of national safety reports at an EU level by the European nuclear regulators' group Ensreg]."

**The declaration was signed on June 23 by the EC and Armenia, Belarus, Croatia, Russia, Switzerland, Turkey and Ukraine.**

"First we'll have to see [Russia's] national report and there will be a meeting in July on this," Faross said.

**Russia's state energy regulator completed its own tests on nuclear reactors in May and will be spending some \$200 million in additional safety measures this year, including additional pumps and generators for the plants, said Kormarov.** Russia is ready to exchange the results of the two independent stress tests it has completed, he added.

Russian reactors have also undergone tests from **Wano**, the world association for nuclear energy operators, which includes technical expertise from French utility EDF, Kormarov said.

For its part, the EC has no estimates of how much the EU stress tests will cost.

"It is the first time that we [group together] countries and industry using stress tests," Faross said.

Necessary work outlined by national regulators would fall under national government budgets, but any work deemed necessary by the EU peer reviews, which would follow national analysis, would fall under the EU budget, he said.

The EC is to give a first progress report on the tests to EU leaders on December 9, and the full process is to be completed by mid-2012.

The EC's next step is to push for an international accord on set measures for nuclear safety in September, Faross said.

--Jane Morecroft, newsdesk@platts.com

## **EPCO restarts water-circulation cooling**

The operator of the troubled Fukushima Daiichi nuclear power plant has restarted its new water-recycling cooling system after repairing leaky pipes.

The Tokyo Electric Power Company, or TEPCO, activated a pump for the water injection system on Tuesday afternoon, after checking pipe connections and taking measures to prevent a sharp rise in water pressure.

The Nuclear and Industrial Safety Agency says the system is working steadily.

TEPCO was forced to halt the system on Monday after only about 90 minutes of operation due to a water leak. The firm said the leak lasted for 2 minutes at most, and that about one ton of water seeped out.

TEPCO said water burst from a weak connection, and that the firm had not taken originally planned measures to prevent a sharp rise in water pressure.

The system is designed to pump highly radioactive water out of reactor buildings, decontaminate it and circulate it back into the reactors as coolant.

TEPCO says the system is the key to cooling the reactors while decreasing the amount of contaminated water threatening to overflow.

Tuesday, June 28, 2011

## **TEPCO starts covering No.1 reactor building**

The operator of the Fukushima Daiichi nuclear plant has begun building a **giant polyester shield over the damaged Number 1 reactor building to contain the spread of radiation.**

One of the largest cranes in Japan has been brought to the site for the construction. It has a 140 meter-long arm that can lift up to 750 tons.

The crane will be used to install a fabric cover around the reactor building. Before that, it will be used to remove debris from the top of the building, which was shattered by a hydrogen explosion one day after the earthquake and tsunami on March 11th.

Tokyo Electric Power Company says that when the shield is installed, the entire structure will be about

54 meters high.

Meanwhile, offsite at Onahama Port about 50 kilometers from the nuclear plant, the utility is preassembling **62 steel components that will be joined to create a rigid frame. The frame will support one millimeter-thick polyester fiber panels.**

The components will start arriving at the plant in July. Work to assemble them will be done by the crane. The utility says the process will minimize the number of workers who must spend time at the site and lessen their radioactive exposure. TEPCO hopes to complete the cover by late September.

Tuesday, June 28, 2011

## **U.S. defends plutonium tests in response to protests from Hiroshima**

HIROSHIMA (Kyodo) -- U.S. officials have defended the recent experiments conducted by the United States to examine the effectiveness of nuclear weapons using minute amounts of plutonium in letters to local leaders in Hiroshima, the Hiroshima prefectural and city governments said Tuesday.

Replying to letters from the leaders protesting against the tests conducted in March and last November, the officials said the experiments "support" President Barack Obama's speech made in Prague in April 2009, in which he declared his intention to create a world free of nuclear weapons and said it is time for nuclear weapons testing to be banned.

The officials' letters noted that the experiments conducted using the Sandia National Laboratory's "Z Machine" in New Mexico in March "produce essential scientific data and technical information" as part of efforts to "maintain the safety, security and effectiveness of the U.S. nuclear stockpile without conducting underground nuclear tests."

One of the letters, signed by U.S. Ambassador to Japan John Roos, was addressed to Hiroshima Gov. Hidehiko Yuzaki, and the other was addressed to Hiroshima Mayor Kazumi Matsui and signed by Robert Luke, minister-counselor for political affairs at the U.S. Embassy in Tokyo.

Yuzaki and Matsui had separately sent letters of protest to Obama in May.

(Mainichi Japan) June 29, 2011

## **Evacuation areas from crippled nuclear plant may be reduced: Hosono**



Japanese policemen gather as they prepare search for bodies in the area devastated by the March 11 earthquake and tsunami in Minamisoma, Fukushima Prefecture, northeastern Japan, Thursday, April 21, 2011. (AP Photo/Sergey Ponomarev)

TOKYO (Kyodo) -- Areas subject to evacuation near the crippled Fukushima Daiichi nuclear power plant could be narrowed down as early as the middle of next month, Goshi Hosono, newly appointed minister to deal with ongoing nuclear crisis, said Tuesday.

"We are making efforts to enable some people to return to their homes after Step 1 is completed (around July 17) and we are sure that no hydrogen explosion will take place," Hosono said in a speech.

According to the timetable revealed on April 17 by plant operator Tokyo Electric Power Co. to bring the plant under control, Step 1 refers to the first three months to achieve "steady reduction" in radiation.

Hosono said it is "unlikely now that the nuclear reactor will run out of control" but stressed the need for caution since some experts cannot rule out the risk of a hydrogen explosion.

Meanwhile, Chief Cabinet Secretary Yukio Edano struck a positive note in reviewing the current evacuation areas, telling a news conference that there are "more than a few areas in places subject to evacuation that have levels of radiation that do not pose health risks."



A bicycle is left near the station in the part of the town of Minamisoma, which is inside the 20-kilometer (12-mile) evacuation zone, in Fukushima Prefecture, Japan, Thursday, April 21, 2011. (AP Photo/Sergey Ponomarev)

After the devastating March 11 earthquake and tsunami triggered the nuclear emergency, the government ordered the evacuation of people living within a 20-kilometer radius of the plant and directed those in the 20- to 30-km ring to stay indoors or voluntarily leave the area.

The government later added some municipalities outside the designated list of areas for evacuation due to concerns over high cumulative levels of radiation exposure, and banned people from entering areas within the 20-km area.

## **TEPCO halts reactor cooling system again**

The operator of the Fukushima Daiichi nuclear plant has had to halt its new reactor cooling operation once again after finding more leaks in the system.

Tokyo Electric Power Company says it suspended operations on Wednesday morning after workers detected water leaking from 2 small holes in the system's piping.

It plans to restart the system as soon as it has fixed the faulty sections and checked for more leaks.

On Monday, TEPCO was forced to halt the system after only 90 minutes of operation due to water leakage from a displaced joint that connects plastic hoses.

The system was restarted on Tuesday afternoon, but small water leaks from another joint were later found.

The cooling system is designed to decontaminate radioactive wastewater accumulating at the plant and reuse the treated water to cool the reactors.

TEPCO says the system holds the key to stabilizing the reactors and reducing the amount of contaminated water.

But achieving stable operation of a system with 4-kilometers worth of piping is proving to be a challenge.

Wednesday, June 29, 2011

### **TEPCO restarts new cooling system**

The operator of the Fukushima Daiichi nuclear power plant restarted its new reactor cooling system on Wednesday after fixing faults in the hosing.

Tokyo Electric Power Company was forced to suspend the system's operation earlier in the day after plant workers detected water leaking from 2 holes in the hosing.

On Monday, TEPCO halted the system after 90 minutes of operation due to water leakage from a displaced joint connecting plastic hoses.

The system was restarted on Tuesday afternoon, but more leaks from another joint were found.

After the series of leaks, TEPCO says it will look at ways to strengthen the system's hosing.

Also on Wednesday, workers found water leaking from a storage tank for decontaminated water.

TEPCO says the leak stopped after about 2 hours. It is now investigating the cause.

The cooling system is designed to decontaminate radioactive wastewater accumulating at the plant and reuse the treated water to cool the reactors. The leaky tank is part of its devices to filter radioactive materials and salt.

TEPCO says the system holds the key to stabilizing the reactors and reducing the amount of contaminated water.

Wednesday, June 29, 2011

## **TEPCO repeatedly halts water treatment system due to alarm**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that it was repeatedly forced to suspend operation of a newly installed radioactive water treatment system at its crippled Fukushima Daiichi nuclear power plant after an alarm, warning of malfunction, sounded.

The utility company, known as TEPCO, resumed operation of the "circulating injection cooling" system late Wednesday night. It was halted twice earlier in the day -- once due to water leakage from holes in a hose connecting a storage tank and a pump that sends water to the reactors and again after an alarm went off, warning of troubles at water treatment devices.

While the system was down, TEPCO continued operations to cool the troubled nuclear reactors at the power plant using decontaminated water, company officials said.

Repeated problems with the water treatment system have prevented the utility from commencing stable cooling operations using recycled water.

Faced with the impending overflow of highly radioactive water accumulating in the complex into the sea and high radiation levels in reactor buildings, the system's continuous operation is vital for containing the crisis.

The first alarm went off around 2:50 p.m. as water leaked from a tank that temporarily stores water decontaminated by an installation developed by France's Areva SA, the company said, adding that water overflowed from the tank onto its pan after workers opened its lid.

The hose in which the holes were found is made of polyvinyl chloride, measuring 10 centimeters in diameter and 20 meters long, the utility said.

Regarding the water treatment devices, around 50 tons of water was also found to have leaked from a drainpipe under a tank of a component that removes salt from decontaminated water, but the leak stopped after workers closed off the pipe, TEPCO said.

The plant operator restarted the operation around 6:45 p.m., but again halted it when an alarm indicating an abnormality sounded.

TEPCO said that workers also entered the fifth floor of the building housing the No. 4 reactor Wednesday to check the working environment and equipment in preparation for the creation of a system to efficiently cool the spent nuclear fuel pool inside, which lost its cooling function after the devastating March 11 earthquake and tsunami.

The "circulating injection cooling" system has run into repeated problems. On Monday, TEPCO halted water injection shortly after it started sending cooling water into reactors because water leaked from a hose carrying cleaned water to reactors from a storage tank. The utility resumed operation Tuesday but problems continued, with water found trickling near a pump.

(Mainichi Japan) June 30, 2011

## **Improperly set valve halts water treatment system**

Tokyo Electric Power Company, or TEPCO, says an improperly adjusted valve has led to a halt in the operation of a key water decontamination system at the Fukushima Daiichi nuclear power plant.

TEPCO has repeatedly suspended the water decontamination operation. The operation is vital to reducing the amount of highly radioactive water building up in the plant. The treated water is also circulated to cool down the reactors.

At around 7 PM on Wednesday, TEPCO had to shut down the system again after contaminated water was found overflowing in a French-made radiation removal unit. An investigation found that an incorrectly set valve is most likely to blame.

The decontamination operation resumed two hours later.

**At the Number 6 reactor's turbine building, low-level contaminated water is increasing. TEPCO plans to start on Thursday afternoon transferring low-level radioactive water stored in make-shift tanks into a giant steel barge called "megafloat" attached to a quay on the plant's premises.**

**The tanks are nearing their full capacity of 12,000 tons. TEPCO aims to pump around 8,000 tons of contaminated water into the giant barge in three or four months.**

## **L'AIEA plaide en faveur d'un renforcement de la sûreté nucléaire... sans en avoir les moyens**

A l'issue de la conférence ministérielle post-Fukushima de l'Agence internationale de l'énergie atomique (AIEA), réunie à Vienne du 20 au 24 juin, les 151 pays membres ne se sont pas dotés de normes contraignantes en matière de sûreté nucléaire.

Tout a semblé joué d'avance à la conférence ministérielle extraordinaire de l'[AIEA](#) organisée à Vienne (Autriche), siège depuis 1957 de cette agence onusienne, trois mois après l'accident de la centrale de Fukushima. Dès le premier jour, la déclaration finale était diffusée, soulignant "*les bénéfices du renforcement d'une expertise internationale de haute qualité, en particulier dans le cadre de l'AIEA, à travers des évaluations périodiques des cadres réglementaires nationaux*", résumant un compromis qui, cependant, ne prévoit pas l'élargissement du mandat de l'AIEA mais se bornera à conduire à l'adoption d'un plan d'action en septembre. A la tribune de la plénière, les discours des ministres se sont succédés, plaidant tous pour une [sûreté et une transparence renforcées](#), gage de reconquête d'une opinion publique inquiète.

Un des temps forts de la semaine aura été la présentation par M. Weightman, inspecteur nucléaire britannique, des [résultats de la mission internationale](#) qu'il a conduite à Fukushima pour l'AIEA du 24 mai au 2 juin. Tout en se gardant de critiquer directement la [gestion de l'accident par l'opérateur TEPCO](#) et par les autorités japonaises, la mission a présenté la liste des enseignements de l'accident. M. Weightman a enjoint les Etats à "*ne jamais être complaisants, toujours chercher à améliorer la sûreté, car ce sont toujours les plus aptes qui survivent*", faisant allusion à la théorie de l'évolution de Darwin.

### **Proximité des parties prenantes**

Le rapport d'évaluation présenté par M. Weightman a souligné l'importance "*essentielle*" d'améliorer l'indépendance des régulateurs chargés de contrôler la sûreté des centrales. Dans son discours prononcé lors de la plénière du 20 juin, Banri Kaieda, ministre japonais de l'économie, du commerce et de l'industrie, a annoncé, dans le même ordre d'idées, que l'agence japonaise chargée de la sûreté nucléaire ([NISA](#)) serait rendue indépendante du METI (ministère de l'industrie).

Mais l'intrication entre industrie nucléaire et élaboration des régimes de sûreté demeurera, comme l'a affirmé Daniel Poneman, vice-ministre américain de l'énergie, pour qui elle semble aller de soi : "*Les compagnies d'énergie nucléaire et l'industrie nucléaire internationale continueront à jouer un rôle central dans la prévention et le traitement des accidents*". Cette proximité du régulateur et du régulé est une caractéristique assumée du secteur. L'association mondiale des opérateurs nucléaires (WANO), pilotée par le Français Laurent Stricker, et l'association mondiale du nucléaire (WNA), dirigée par l'Américain John B. Ritch, ont été les chevilles ouvrières du groupe de travail sur l'amélioration de la sûreté nucléaire réuni cette semaine à l'AIEA.

Lors d'une conférence de presse le 21 juin, Gregory Jaczko, directeur de la Nuclear Regulatory Commission (NRC), l'autorité de sûreté nucléaire des Etats-Unis, a annoncé que les audits en cours des 104 réacteurs américains n'avaient pas conclu à la nécessité de mettre à l'arrêt une centrale. La centrale californienne de Diablo Canyon, située sur une faille sismique majeure, ne présente pas de danger, selon M. Jaczko. Les systèmes de refroidissement des 27 réacteurs BWR américains - du type de ceux de Fukushima - sont opérationnels, selon M. Jaczko, qui a approuvé l'idée de renforcer les *peer reviews*, ces inspections internationales prônées par le Japonais Yukiya Amano, directeur général de l'AIEA. Mais le directeur de la NRC a souligné que l'AIEA n'aurait pas les moyens d'effectuer des

inspections dans chaque centrale américaine et souscrit à l'idée d'inspections effectuées au hasard. Au final, selon les [conclusions des groupes de travail](#) diffusées ce 24 juin, ce seront d'abord les installations les plus anciennes qui pourront être inspectées en priorité. Une décision laissée à la discrétion des Etats, dont l'AIEA dépend statutairement pour toute extension de ses futurs mandats en matière de nucléaire civil.

Agnès Sinai

© Tous droits réservés Actu-Environnement

## **Trace amounts of radioactive materials found in Fukushima kids' urine**

TOKYO (Kyodo) -- Trace amounts of radioactive substances were found in urine samples of all of 10 surveyed children from Fukushima Prefecture in May, where a crippled nuclear power plant is located, a local citizens group and a French nongovernmental organization said Thursday.

David Boilley, president of the Acro radioactivity measuring body, said at a press conference in Tokyo that the results of the survey on 10 boys and girls in Fukushima City aged between 6 and 16 suggest **there is a high possibility that children in and near the city have been exposed to radiation internally.**

The citizens group, the Fukushima Network for Saving Children from Radiation, comprising parents in the prefecture, said the finding is "certainly" due to the nuclear crisis at the Fukushima Daiichi power plant crippled by the March 11 earthquake and tsunami.

The group added it will urge the central and local governments to have all citizens in the prefecture undergo detailed tests soon using whole body counters.

Chief Cabinet Secretary Yukio Edano said later in the day at a press conference, "The government is concerned" about the finding. He added the government wants to obtain detailed results of the survey so they can be thoroughly examined.

Edano said the government also intends to accelerate work to analyze similar surveys conducted by itself and Fukushima prefectural authorities.

According to the urine test, 1.13 becquerels of radioactive cesium-134 per 1 liter of urine, the largest amount for the isotope among the 10 surveyed children, was found from an 8-year-old girl, while the largest amount of cesium-137 at 1.30 becquerels was found in a 7-year-old boy.

Acro also investigated radiation exposure of children who resided near the site of 1986 Chernobyl nuclear disaster.

(Mainichi Japan) June 30, 2011

## Circulation cooling system hits another snag

The newly installed reactor-cooling system at the Fukushima Daiichi nuclear power plant has suffered another problem, as its water treatment equipment has stopped.

The system that decontaminates and re-uses radioactive water from the facilities is believed to be the key to the stable cooling of the reactors.

But Tokyo Electric Power Company, or TEPCO, says the decontamination equipment stopped automatically on Thursday afternoon when the alarm went off.

TEPCO says the problem turned out to be a **malfunction of a gas exhaust on a French-made device that removes radioactive material from the water.**

The utility says the device was undergoing engineering work to prevent gases from flowing backward, when the alarm set off.

It is looking into the cause of the malfunction, including a possible link to the engineering work.

TEPCO says it has continued injecting circulated water into the reactors, as it has already treated about 2,000 tons of water to be used for cooling.

Since its start on Monday, the cooling system has experienced a series of problems, including leaky piping.

Thursday, June 30

## TEPCO moves low level contaminated water

Workers at TEPCO's Fukushima Daiichi nuclear power plant have started moving low level contaminated water to a giant steel barge for storage.

The transfer from the plant's make-shift tanks started on Thursday afternoon to the barge called **the "mega float."** The barge is attached to a quay on the plant's premises.

**The make-shift tanks have been almost full since Wednesday with low-level radioactive water pumped from the basement of the reactor Number 6 turbine building.** The water is threatening to damage equipment and gauges and thus hamper cooling efforts.

TEPCO says the water is treated to lower the level of contamination before it is transferred to the barge. The utility also says it will do everything to ensure the stored water doesn't leak into the sea. The utility aims to pump around 8,000 tons of the water into the giant barge over three or four months.

The barge, 136 meters long and 46 meters wide, **can hold a maximum of 10,000 tons of water.**

**But the company says it has no final plan to dispose of the water stored in the barge.**

Thursday, June 30, 2011

## **Evacuation de l'eau contaminée présente dans la centrale Fukushima Dai-ichi**

Les techniciens de la centrale Fukushima Dai-ichi ont commencé à transvaser de l'eau faiblement contaminée dans une immense barge d'acier.

Le transfert a débuté ce jeudi, entre les citernes improvisées de la centrale et une barge appelée "mega float", amarrée à un quai à même le site.

Depuis mercredi, les citernes de la centrale sont quasiment remplies d'eau faiblement radioactive. Ce liquide, qui provient de la partie inférieure du bâtiment de la turbine du réacteur 6, menace d'endommager l'équipement et les jauges de la centrale, compromettant de fait les travaux de refroidissement.

Selon Tepco, l'eau est partiellement décontaminée avant d'être transvasée vers la barge. L'opérateur de la centrale assure que tout sera mis en oeuvre pour éviter les fuites radioactives dans l'océan.

## **Workers enter No. 4 reactor building**

Tokyo Electric Power Company says debris scattered inside the No. 4 reactor building at the Fukushima Daiichi nuclear plant is posing an obstacle to work to bring the crippled reactor under control.

Workers entered the fifth floor of the building on Wednesday for the first time since an explosion on March 15th.

Photos taken by the workers show that most of the ceiling, except for a small part of the framework, has collapsed. Debris, steel frames, and other various things blown by the force of the explosion are scattered all over the floor.

The radiation level inside the building was less than one millisievert per hour, which TEPCO says is permissible for workers to carry out operations there.

The utility plans to install a circulatory system that will cool and circulate water inside the reactor's spent fuel storage pool. But it says one of the valves necessary to operate the system is covered by debris.

TEPCO says it will consider whether to remove the debris or attempt to work around the debris.

Thursday, June 30, 2011

**JUILLET 2011**

## Toshiba lobbying U.S. to build nuclear waste repository in Mongolia



In this image released Saturday, April 16, 2011, by Tokyo Electric Power Co., top of the container of the nuclear reactor, painted in yellow, of Unit 4 at the Fukushima Dai-ichi Nuclear Plant is observed from its side with a T-Hawk drone Friday, April 15, 2011 in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Toshiba Corp. has lobbied a senior U.S. government official to realize an international nuclear fuel supply scheme that includes the construction of a nuclear waste repository in Mongolia, according to a copy of a letter by Toshiba's president obtained by Kyodo News on Friday.

Norio Sasaki, president of the Japanese electronics giant which has U.S. Westinghouse Electric Co. as a subsidiary, sent the letter dated May 12, 2011, to Deputy Secretary of Energy Daniel Poneman.

The governments of Japan, the United States and Mongolia have already been discussing the scheme, called Comprehensive Fuel Supply, informally, according to an internal Japanese government document dated February 2011, obtained by Kyodo News.

The basic idea of the scheme is to supply countries wishing to introduce nuclear energy with reactors made by U.S., Japanese and other major companies that would use nuclear fuel produced in Mongolia, with the spent fuel returned to the country.

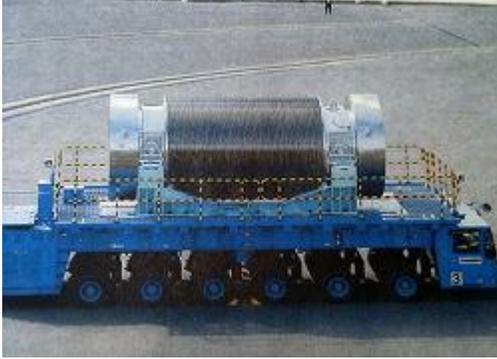
Mongolia is known to hold huge reserves of uranium.

Sasaki said in the letter, "As anti-CFS opposition can be anticipated, it is essential for the Parties to the project to promote closer coordination in order to secure continued progress."

A Toshiba public relations official confirmed that Sasaki had sent the letter to Poneman, while U.S. governmental sources said that the letter was circulated within the administration of U.S. President Barack Obama.

Early in May, the major Japanese daily Mainichi Shimbun carried a story on the project focusing on the possible building of a nuclear waste repository in Mongolia.

"We must recognize that the CFS project has now been publicized around the world," Sasaki's letter said, referring to similar news stories in April in the United States and Mongolia.



In this undated photo released Wednesday, April 13, 2011 by Tokyo Electric Power Co., a standing man is partially seen above an example of the truck used to move spent fuel rods in the pools. Nothing is decided yet but TEPCO told the press at its Tokyo headquarters Wednesday morning that this is one option TEPCO officials are considering to use at the tsunami-stricken Fukushima Dai-ichi nuclear power plant in Okuma town in Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

"Toshiba finds value in CFS because it adds value to Mongolia's natural resources and will contribute to the country's economic growth, while the interim storage solution will bring greater meaning to an international nonproliferation regime," the letter said.

The Obama administration has pushed for an international nuclear supply system as part of his call for a world free of nuclear weapons. Uranium enrichment and the reprocessing of spent fuel can be directed to both military and civilian purposes.

Obama wants to tighten control of these technologies through international supply schemes such as the envisioned CFS because there would be no need for any country that introduces nuclear power generation to develop such technologies and produce its own fuel.

Since the nuclear crisis at the Fukushima Daiichi power plant triggered by the March 11 earthquake and tsunami, antinuclear sentiment has strengthened in Japan and other countries. Some European countries such as Germany and Italy have decided to forgo nuclear power in the future.

In the letter, however, Sasaki said that Japan and the United States should stay the course to promote the CFS even after the Fukushima crisis and "Toshiba's policy of active involvement in CFS remains unchanged."

In February, the Mongolian government sent a delegation to Tokyo for consultations on the CFS project, a Japanese senior official said on the condition of anonymity.

The official criticized Toshiba's lobbying activities, saying, "Even after such a terrible incident in Fukushima, those in the 'nuclear power' inner circle have no feelings of repentance at all." The official also said Sasaki's letter seems to reflect a sense of crisis in the nuclear power industry.

Another Japanese official expressed skepticism regarding the feasibility of the scheme. "How could such a project fly in the future? We have to negotiate with China and Russia if we want to transfer nuclear waste to Mongolia. With respect to transportation, these neighboring countries would have a veto."



In this photo from a footage of a live camera released by Tokyo Electric Power Co. (TEPCO), black smoke billows from the crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, northeastern Japan, on March 22, 2011. (AP Photo)

There is also skepticism in academic circles in Japan, not only regarding the scheme's technical feasibility but Japan has its own nuclear recycling policy that excludes the option of disposing of spent nuclear fuel from other countries.

"Japan would not accept any spent fuel from any foreign country at the reprocessing plant in Rokkasho (Aomori Prefecture). On the other hand, could we thrust waste from overseas on Mongolia? It would be morally wrong," said Tadahiro Katsuta, associate professor at Meiji University who specializes in nuclear energy policy.

(Mainichi Japan) July 2, 2011

## **TEPCO: Nuclear fuel pool cooled to stable level**

The operator of the crippled Fukushima Daiichi nuclear plant has reported progress in its work to stabilize the facility's spent fuel rods.

Tokyo Electric Power Company says the cooling system that began operating at the No.3 reactor on Thursday has brought the temperature of the nuclear fuel storage pool of the reactor to just below 40 degrees Celsius from the previous level of 62 degrees.

TEPCO says the temperature of the pool was 39.9 degrees as of 5 AM on Saturday.

As cooling has progressed faster than initially expected, TEPCO says the temperature will likely stabilize at around 30 degrees in a few days. The temperature of the spent fuel pool of the No.2 reactor has already declined to that level.

As for the No.1 and No.4 reactors, the utility plans to begin operating cooling systems by the end of this month. Until then, the company needs to inject cooling water on a regular basis.

TEPCO is concerned about possible difficulty in installing the cooling system at the No.4 reactor. A hydrogen explosion in March damaged piping necessary for the system and debris left there is hampering construction work.

The company says there may be a delay in its installation plan.

Saturday, July 02, 2011 13:22 +0900 (JST)

---

## **Higher radiation detected on fields than asphalt**

A government survey has found higher levels of radiation on fields and forests than on asphalt pavements in towns about 10 kilometers from the Fukushima Daiichi nuclear plant.

The Cabinet Office and the ministry of science monitored radiation for more than 10 days from June 13th at 400 locations in Namie and Tomioka towns, which fall within a 20-kilometer no-entry zone.

The survey centered on JR Namie station, about 8 kilometers from the plant, and JR Tomioka station, about 10 kilometers from the plant. Measurements were made at one centimeter and one meter above the ground.

The highest level in Tomioka was detected on an unpaved road 2 kilometers northwest of the station, where the reading at the one-centimeter point was 39.1 microsieverts per hour.

In Namie Town, 25.4 microsieverts was detected at the one-centimeter point in a forest about one kilometer west of the station.

Readings were generally lower -- around several microsieverts -- on roads and parking lots covered by asphalt and higher on fields and forests.

Radioactive substances are believed to be easily washed away by rain on asphalt but adhere to soil and plants.

The government plans to monitor radiation at more than 3,400 locations in no-entry zones and evacuation advisory zones by the end of August.

Measurements will be taken at gardens of private homes and roof gutters, where radiation tends to be high, as well as roadside ditches.

Saturday, July 02, 2011 11:05 +0900 (JST)

## **La contamination radioactive plus forte dans les terres et les forêts**

Le gouvernement japonais a observé des niveaux de contamination radioactive dans les champs et les forêts, supérieurs à ceux détectés au niveau des rues des villes situées à une dizaine de kilomètres de la

centrale de Fukushima.

Le Bureau du gouvernement et le ministère des Sciences ont effectué des mesures entre le 13 et le 23 juin sur 400 sites des villes de Namie et de Tomioka. Les observations ont été réalisées à un centimètre et à un mètre du sol.

En général, les relevés étaient inférieurs de plusieurs microsieverts au niveau des routes et des parkings à ceux enregistrés dans les champs et les forêts. Les substances radioactives déposées sur le goudron seraient aisément emportées par la pluie. Elles se fixeraient plus fortement sur les terres et les végétaux.

Le gouvernement prévoit d'effectuer d'ici la fin août des mesures à plus de 3400 points des zones interdites et de celles où l'évacuation a été recommandée.

---

## **Les opérations de refroidissement de la piscine du réacteur 3 suivent leur cours**

Selon l'opérateur de la centrale nucléaire endommagée Fukushima Dai-ichi, les travaux de stabilisation des barres de combustible usagé progressent.

La Compagnie d'électricité de Tokyo, Tepco, a déclaré que le système de refroidissement mis en service au réacteur 3 jeudi a réussi à ramener la température de la piscine de stockage du réacteur de 62 degrés à un peu moins de 40 degrés.

Tepco a indiqué que la température de la piscine était de 39,9 degrés lors d'un relevé effectué samedi à 5h00 du matin.

L'opération de refroidissement ayant été plus rapide que prévu, la compagnie a déclaré que la température devrait se stabiliser à environ 30 degrés dans quelques jours.

La température de la piscine de stockage du réacteur 2 a elle aussi baissé et a atteint le même niveau.

En ce qui concerne les réacteurs 1 et 4, la compagnie prévoit d'entamer les opérations de refroidissement des systèmes avant la fin de ce mois, ce qui sera rendu possible par la mise en route d'une injection régulière d'eau.

## **TEPCO uses robot to clean No.3 reactor**

For the second day in a row, a robot has been sent into one of the damaged reactors at the Fukushima Daiichi nuclear power plant.

It checked radiation levels after a robot on Friday removed radioactive-contaminated dust and rubble from the No. 3 reactor building.

The move was taken before nitrogen is injected into the reactor to prevent another of hydrogen explosion.

Tokyo Electric Power Company has already injected nitrogen into the containment vessels of the No. 1 and 2 reactors. It hopes to complete the injection of nitrogen into the No. 3 reactor by July 17th.

**But radiation levels in the No.3 reactor are still too high for workers to safely enter.**

On Friday, TEPCO used a US-made robot to begin cleaning inside the building.

The robot removed contaminated dust and rubble near the entrance using a strong vacuum cleaner.

A second robot on Saturday checked the radiation levels. Officials say the levels were lower than before the cleaning.

TEPCO is studying data obtained by the robot.

Sunday, July 03, 2011 03:11 +0900 (JST)

## **Hose leaking water at Fukushima No.5 reactor**

The operator of the troubled Fukushima Daiichi nuclear plant says a hose has been leaking seawater used to cool the No.5 reactor, which is currently in a state of cold shutdown.

Tokyo Electric Power Company, or TEPCO, is set to replace the hose, but will have to suspend the reactor's cooling function to do so. It says this will raise the water temperature, but the reactor will still remain in a state of cold shutdown.

TEPCO says workers patrolling around the No.5 reactor found a hose leaking water on Sunday morning around the outlet of a temporary pump sending seawater into the reactor's cooling system. The company says the polyvinyl chloride hose has a crack about 30 centimeters long and 7 centimeters wide.

TEPCO stopped sending water at around 10 AM to replace the hose. The reactor's cooling system stopped 15 minutes later, meaning its cooling function was temporarily lost.

The water temperature inside the reactor was 43.1 degrees Celsius at 8 AM. TEPCO expects the temperature to rise 2.5 degrees per hour while the cooling function is halted.

The company says that if the replacement work finishes during the night and the cooling system is restarted, the water temperature will not exceed 100 degrees, the level needed to keep the reactor in a state of cold shutdown.

**The No.5 reactor was hit by a pump failure on May 29th, when a delay in recovery briefly sent the water temperature to 94.8 degrees.**

Sunday, July 03, 2011 12:58 +0900 (JST)

## **Cooling resumes at Fukushima No.5 reactor**

The operator of the troubled Fukushima Daiichi nuclear plant says cooling functions have resumed at the No.5 reactor.

On Sunday morning, Tokyo Electric Power Company, or TEPCO, found seawater was leaking from a crack in a hose around the outlet of a temporary pump sending seawater into the reactor's cooling system.

The company says the polyvinyl chloride hose had a hole about 30 centimeters long and 7 centimeters wide.

The utility stopped sending water at about 10AM to replace the hose. The cooling system halted 15 minutes later and the reactor's cooling function was temporarily lost.

Following the replacement, **the cooling system resumed operation 3-and-a half hours later.**

The water temperature at the reactor rose by some 5 degrees Celsius to **47.7 degrees Celsius** during the suspension. **But the reactor is said to have remained in a state of cold shutdown.**

TEPCO says the crack happened because the pleated flexible tube was constantly moved by tides and had come under hydraulic pressure.

The firm is considering preventive measures to avoid similar incidents in the future.

Sunday, July 03, 2011 16:58 +0900 (JST)

## **TEPCO improves circulation cooling system**

The operator of the troubled Fukushima Daiichi Nuclear Plant says **the reactor cooling system is now fully recycling its water.**

Tokyo Electric Power Company said the system no longer requires fresh water input, and no contaminated water is being released.

Previously, the system required 2 to 3 tons of fresh water per hour. [[wasn't it much more than that ?](#)]

Water recycling resumed on Saturday evening after being suspended while the plant's operator installed stronger piping to prevent leaks.

Tokyo Electric Power Company had switched off the plant's cooling system for a day and a half after a series of problems.

The operation started a week ago, but was twice halted because of leaks. A water-decontamination device in the system also had to be shut down due to human error.

TEPCO cited a lack of preparation due to the speed of installing the system, which consists of Japanese and foreign devices.

The utility has set a target of July 17th to complete the first stage of its plan to bring the facility under control.

Sunday, July 03, 2011 07:56 +0900 (JST)

## Preparations underway for nitrogen injection

Preparations are underway to start injecting nitrogen into the Number 3 reactor at the Fukushima Daiichi nuclear plant **by July 17th**.

Tokyo Electric Power Company, which operates the plant, had planned to start injecting nitrogen into the first 3 reactors by that date **to prevent hydrogen explosions**.

But high levels of radiation on the floor of the Number 3 reactor building, caused by contaminated dust spread by the previous explosion, have delayed the start of the work.

The utility started cleaning the floor with a robot on Friday, but radiation levels remained **between 50 to 186 millisieverts per hour as of Saturday**, although they fell at 9 of the 16 locations measured.

**The company began covering the floor with steel sheets on Sunday to reduce the radiation levels by two-thirds. [???**

The utility will investigate the piping to be used for the injection on Wednesday, and start connecting the pipes on Friday, so the injection can begin by July 17th, as scheduled.

Nuclear Crisis Minister Goshi Hosono said he wants to consider lifting the order to prepare for the emergency evacuation of certain areas after confirming that another hydrogen explosion will not occur.

All eyes are on whether the injection can be started as planned.

Sunday, July 03, 2011 23:21 +0900 (JST)

## New nuke minister inspects radiation monitoring

Japan's new nuclear crisis minister has inspected the monitoring of radiation levels in the evacuation zone around the Fukushima Daiichi nuclear power plant.

Goshi Hosono on Sunday visited Iitate Village in Fukushima Prefecture, more than 30 kilometers northwest of the troubled plant.

Hosono, who assumed the new position just last week, was guided to see how the Science Ministry carries out the survey.

**He saw the figure was 13.9 microsieveverts per hour, far exceeding the legal limit forcing the evacuation of local residents.**

He was told that the **data are collected at one meter above ground level**. He asked officials to keep as

accurate a record as possible for the safety of the people.

Hosono said after the inspection that the collected data is also important to create a framework for finding ways to remove radioactive materials in the future.

He said he hopes the close monitoring will continue, adding that he wants to consider the possibility of having people return home as soon as possible.

Sunday, July 03, 2011 16:58 +0900 (JST)

## **Tsuruga reactor not equipped with vent to relieve pressure**



A photograph shows the Tsuruga Nuclear Power Plant in Tsuruga, Fukui Prefecture.(Mainichi)

TOKYO (Kyodo) -- **The No. 1 reactor at the Tsuruga nuclear power plant in Fukui Prefecture is not equipped with a vent to discharge steam from the reactor container to relieve inside pressure in case of emergency**, sources close to the matter said Sunday.

Among 30 boiling-water reactors in Japan, the Tsuruga reactor is the only one that lacks the system as its operator, Japan Atomic Power Co., believed it is less likely the container would be damaged due to pressure buildup, and thus setting up of the system had low priority.

However, the company decided to install the system during ongoing regular checkups as venting has been needed to put crippled reactors at the Fukushima Daiichi nuclear power plant under control, according to the sources.

It has been estimated that the probability that pressure increase would damage the reactor is around 1 percent, but that at the No. 1 reactor at the Fukushima plant was also 1 percent, leading the company to install the system, according to the company.

The No. 1 reactor at the Tsuruga plant, the oldest reactor in Japan, started operations in 1970 and has been undergoing a 14-month inspection since January.

The company announced in 2002 that it would suspend operation of the reactor in 2010 and eventually decommission it, but it later decided to continue operations through 2016.

(Mainichi Japan) July 4, 2011

## **Hoses at Fukushima to be checked**

Tokyo Electric Power Company, or TEPCO, is set to replace leaky plastic hoses that brought cooling to a halt at the Number 5 reactor at the Fukushima Daiichi nuclear plant.

TEPCO is now searching for potential leaks and will replace these hoses. A large number of the polyvinyl chloride hoses are being used in the reactor's heat removal system.

TEPCO found water leaking from a large crack in a hose around the outlet of a temporary pump sending seawater into the Number 5 reactor's cooling system on Sunday. The cooling system was stopped for 3-and-a-half hours to replace the hose.

The operator says the hose cracked because it was bent at an acute angle and was under pressure.

The company fears other hoses may crack and will search for possible trouble and replace them.

TEPCO adds that **no replacement is required for hoses that transfer highly radioactive water because they are not bent at extreme angles.**

Monday, July 04, 2011 06:15 +0900 (JST)

## **Lack of responsibility between state, TEPCO for nuclear disaster has deep roots**

Is compensation over ongoing nuclear disaster the responsibility of Tokyo Electric Power Co. (TEPCO) which operates the stricken nuclear power plant, or the national government?

According to a new nuclear disaster compensation bill that has been submitted by the Cabinet and is slated for deliberations in the Diet this week, the answer is this: "TEPCO, of course, but the government will provide TEPCO with some assistance." The outlook for the bill's passage remains uncertain.

The lacking presence of this bill and the challenges that lie ahead of it are symbolic of Japan's uneasiness stuck between the promotion of nuclear power and its elimination.

**If nuclear power is to be given another chance, it is obvious that the only viable way would be for the national government to take over its promotion.** The government, however, has yet to clarify its stand. The proposed bill ambiguously states that the government will "aid" the power company. It's an

equivocal stopgap measure that neither pardons nor kills off TEPCO, and can be interpreted as the willingness or lack thereof on the part of the government to actually shell out any money. This sums up the essence of the nuclear disaster compensation bill.

There was a tussle within the Cabinet prior to the creation of the bill, between 72-year-old Minister of State for Economic and Fiscal Policy Kaoru Yosano and Chief Cabinet Secretary Yukio Edano, 47.

Article 3 of the existing law on nuclear damage compensation states: "When nuclear damage has occurred owing to or during the operation of a reactor, etc., the nuclear operator who is engaged in the operation of the reactor, etc. on that occasion shall be liable for the damage." However, it goes on to make an exception "for the case where the damage is caused by an extraordinarily grave natural disaster or by a serious social disturbance.

Yosano argued that the latest case constituted "obvious exemption (from liability)," to which Edano objected: "Unless we make law revisions, we cannot reach that conclusion about the situation."

Yosano is a favored disciple of former Prime Minister Yasuhiro Nakasone, a pioneering figure in Japan's nuclear power policy. After graduating from college, Yosano joined the newly established Japan Atomic Power Co. on Nakasone's recommendation, where he dealt with insurance. Edano, meanwhile, is a lawyer. This makes the dispute one between two experts.

In the end, Edano won out. This meant that TEPCO, which faces a massive excess of debts, will not be able to newly procure funds, threatening the stable supply of electricity. This was what led the Cabinet to concoct the new nuclear disaster compensation bill.



Demonstrators parade past the headquarters of Tokyo Electric Power Co. (TEPCO) during their anti-nuclear power protest, in Tokyo, Sunday, May 1, 2011. (AP Photo/Shizuo Kambayashi)

Asked why Yosano buried the hatchet, he responded: "I was told by the Finance Ministry that the national government does not compensate disaster victims, and if TEPCO were to be exempted from paying restitution, then there would be no one to act as the agent of compensation."

The conflict has deep roots. I found through some research that **the Kishi Cabinet, in stepping up its efforts toward the peaceful use of nuclear power, established a team of experts in 1958 led by renowned civil-law scholar Sakae Wagatsuma, to advise the government on the issue of compensation in the case of a nuclear disaster.**

The team, which looked into how the issue of compensation was being handled in industrialized nations, submitted a report stating that state compensation payments were necessary in worst-case scenarios. However, in the process of deliberating and passing the current law on nuclear damage compensation, which took the experts' recommendations into account and went into effect in **1961**, state compensation was effectively eliminated.

A section chief at the then Ministry of International Trade and Industry who worked on the bill revealed in a roundtable discussion that the **watering down of state liability** had been the wish of the Ministry of Finance at the time. In the discussion, featured in the Oct. 15, 1961 issue of legal journal *Jurist*, the section chief said that the Finance Ministry had brushed off possible stipulation of state redress, declaring that "the state had never assumed direct responsibility for victims since the Meiji era."

Wagatsuma, who moderated the roundtable discussion, expressed regret upon hearing what had happened behind the law-making scenes. "To say that because the operator has no responsibility, neither does the state, and to deal with nuclear disasters in the same way as natural disasters like the (1959) Isewan Typhoon (Typhoon Vera) ... this is such a shame. If things were going to turn out this way, I feel we should have given things more thought."

**As it turns out, the irresponsibility of the government and TEPCO in the latest nuclear disaster has its roots in events that transpired half a century ago. Nuclear power plants were still in their planning stages at the time, but today we live in a nuclear-dependent society. And still, the avoidance of responsibility continues,** and it is by extension that the latest nuclear disaster compensation bill has emerged.

The three criteria that Prime Minister Naoto Kan has listed as conditions for his resignation are the passage of the second supplementary budget for fiscal 2011, a special government bond bill and a renewable energy bill. The new nuclear disaster compensation bill didn't make the cut. This points to Kan's glaring lack of awareness regarding the significance of the problem. I question his sensibilities. (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) July 4, 2011

## **Work underway for nitrogen injection**

Work is underway at the damaged nuclear power plant in Fukushima to reduce radiation levels in the Number 3 reactor container. The move is necessary before nitrogen gas can be pumped in to prevent a hydrogen explosion.

According to Tokyo Electric Power Company's schedule to stabilize the plant, the utility needs to inject nitrogen into the containers of the first 3 reactors by July 17th. Nitrogen has already been injected into the Number 1 and 2 reactor containers.

On Friday, a US-made robot began clearing contaminated dust and debris from the floors of the Number 3 reactor building. However, radiation levels inside the building are still high with **readings of between 50 and 186 millisieverts per hour.**

**The radiation levels need to be reduced to one-third before workers are able to begin the nitrogen injection.**

On Sunday, more than 50 sheets made of steel were laid on the floor. Work continues on Monday to fill the gaps between the steel sheets.

TEPCO plans to start connecting the pipes to inject the nitrogen on Friday and hopes to complete the nitrogen injection by July 17th. Cooling the reactors and preventing more hydrogen blasts are the top priorities in TEPCO's plan to stabilize the plant.

The minister in charge of the nuclear disaster, Goshi Hosono, says **once the government is able to verify that the blast prevention measures are in place, it will consider lifting an evacuation advisory for certain areas 20 to 30 kilometers from the plant.**

Monday, July 04, 2011 13:42 +0900 (JST)

## **Robot to gauge radiation in No.3 reactor**

The operator of the crippled Fukushima Daiichi nuclear plant says it will send a robot inside the No.3 reactor to measure radiation and determine if it is safe to begin injecting nitrogen.

**Tokyo Electric Power Company is rushing to implement the procedure,** which has already been carried out in the No.1 and 2 reactors to prevent further hydrogen explosions.

High levels of radiation are hampering work inside the building housing the reactor. TEPCO workers on Monday covered parts of the floor with steel plates to block the radiation.

TEPCO says the remote-controlled robot is equipped with a special camera that shows radiation in different colors.

The firm plans to begin the operation on Wednesday after preparations on Tuesday. Once it has confirmed that radiation is falling, **it will inspect pipes that will be used to inject nitrogen.** It says if there are no problems, it will begin the injection **before July 17.**

**Nuclear crisis minister Goshi Hosono said he wants to shrink the evacuation zone around the plant by that date,** so attention is focused whether the plant operator can implement the operation as scheduled.

Tuesday, July 05, 2011 13:37 +0900 (JST)

## **Water flow falls at No.1 reactor, but restored**

The volume of cooling water flowing into the No.1 reactor of the Fukushima Daiichi nuclear plant fell on Monday, forcing workers to inject additional water.

A cooling system is in place at the number 1, 2 and 3 reactors. The system injects 3.7 tons of water every hour into the No.1 reactor.

Tokyo Electric Power Company says the reactor's water flow began to decrease gradually around 9 PM on Sunday night. By 8:13 AM on Monday, only about 3 tons of water was flowing into the No. 1 reactor, setting off an alarm.

Workers immediately began injecting double the usual amount of water. They managed to restore normal water flow in the reactor before 9 AM.

TEPCO says there was no change in temperature or pressure in the No.1 reactor.

The utility says some kind of debris may have clogged the hoses, reducing the water flow, and that it is checking to see how the failure occurred.

Monday, July 04, 2011 17:29 +0900 (JST)

## **45% of kids in Fukushima survey had thyroid exposure to radiation**



Teachers see children onto a bus after the end of lessons at Oguni Elementary School in Date, Fukushima Prefecture, on June 30. The school has instructed children to wear masks, hats and long sleeves to protect them from radioactive materials. (Mainichi)

TOKYO (Kyodo) -- Around 45 percent of children in Fukushima Prefecture surveyed by the local and central governments in late March experienced thyroid exposure to radiation, although in all cases in trace amounts that did not warrant further examination, officials of the Nuclear Safety Commission said Tuesday.

The survey was conducted on 1,080 children aged 0 to 15 in Iwaki, Kawamata and Iitate on March 26-30 in light of radiation leakages from the Fukushima Daiichi nuclear power plant crippled after the March 11 earthquake and tsunami disaster.

Separately, a survey of soil at four locations in the city of Fukushima on June 26 found that all samples were contaminated with radioactive cesium, measuring 16,000 to 46,000 becquerels per kilogram and exceeding the legal limit of 10,000 becquerels per kg, citizens groups involved said Tuesday.

The city, about 60 kilometers northwest of the crippled plant, does not fall within the 20-km no-entry zone or nearby evacuation areas.

One location registered as much as 931,000 becquerels per square meter, **surpassing the 555,000 becquerels per sq meter limit for compulsory resettlement in the 1986 Chernobyl nuclear accident.** Samples from the other three locations measured between 326,000 and 384,000 becquerels per sq meter.

Among children who tested positive for thyroid exposure, the amounts measured 0.04 microsieverts per hour or less in most cases. The largest exposure was 0.1 microsieverts per hour, equivalent to a yearly dose of 50 millisieverts for a 1-year-old.

None of those surveyed was exposed to over 0.2 microsieverts per hour, the government's benchmark for conducting more detailed examinations, according to the officials.

**Babies and young children are at highest risk of developing thyroid cancer after exposure to radioactive iodine released into the atmosphere in nuclear accidents. In the case of Chernobyl, most victims who developed the cancer in following years had been babies or young children living in the affected regions at the time of the accident.**

(Mainichi Japan) July 5, 2011

## **4 local governments seek to scrap nuclear plants**

An NHK survey of local governments with nuclear power plants has found that 4 of 28 respondents are ready to break with nuclear energy.

Last week, NHK asked local governments with nuclear plants, except those in Fukushima Prefecture, how their thinking about the plants has changed since the Fukushima Daiichi crisis began.

Of the 28 prefectures and municipalities that responded, 15 said they could not make an immediate decision on whether to pursue closure of their plants.

Five municipalities said they would not seek to have their plants scrapped, because nuclear power remains a vital source of energy.

Shizuoka Prefecture, however, said it wants to immediately launch a campaign to have its plants decommissioned.

Three other local governments said they hope to launch such campaigns in the near future.

Shizuoka Governor Heita Kawakatsu said the nuclear crisis in Fukushima has underscored the need for a fundamental review of Japan's energy policy. He said the country must make efforts to shift to new sources of energy.

Mayor Tatsuya Murakami of Tokai Village, where a criticality accident occurred in 1999, said it's become impossible to predict the extent of impact a nuclear disaster would have.

He said Japan should take the global initiative in moving toward the abandonment of nuclear energy.

Tuesday, July 05, 2011 19:08 +0900 (JST)

## **Emergency generators faulty at 2 nuclear plants**

Japan's Nuclear and Industrial Safety Agency says the defective components discovered in emergency generators at 2 nuclear power plants have been replaced.

Agency inspections found faulty parts in the back-up generators for the No. 1 reactor at Hokuriku Electric Power Company's Shika plant, and the No. 1 reactor at Kansai Electric Power Company's Mihama plant.

The inspections followed the discovery of defective parts in an emergency generator for a fast-breeder reactor in Tsuruga City, on the Japan Sea coast.

Last December, a crack in a component of the cylinder of the generator for the "Monju" reactor caused a malfunction.

The crack was blamed on weakness of the component due to its lead content having been wrongly mixed with other metals in the manufacturing stage.

Tuesday, July 05, 2011 17:53 +0900 (JST)

---

## **Japan to conduct nuclear plant 'stress tests' amid safety concerns**

(Mainichi Japan) July 6, 2011



In this June 12, 2011 photo released on July 5, 2011 by Tokyo Electric Power Co., masked workers in protective outfits prepare to drop one of sliding concrete slabs into a slit of the upper part of the sluice screen for Unit 2 reactor at the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan, in their effort to decrease the leak of radiation contaminated water to the ocean. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Japan plans to conduct safety assessments called "stress tests" on all its nuclear power plants to allay heightened public concerns over their safety, industry minister Banri Kaieda said Wednesday, as the government struggles to resume operation of reactors that are suspended for regular checkups.

In a sign such stress tests could further delay the resumption and possibly deepen the country's power shortage problem, Saga Gov. Yasushi Furukawa said after Kaieda's announcement that "it's appropriate to wait for the test results" before deciding whether to approve the restart of two reactors at the Genkai plant in the prefecture.

None of the reactors in the country has resumed operations since the nuclear crisis at the Fukushima Daiichi power plant.

The Nos. 2 and 3 reactors at the four-reactor Genkai plant were initially expected to have been reactivated by now, but their resumption has been postponed following the crisis.

In Tokyo, Kaieda told reporters that the safety of the Genkai plant has been confirmed through safety measures taken in the wake of the Fukushima emergency, but said there is a need to quickly carry out stress tests like those conducted by the European Union to offer a "sense of assurance" to local residents.

He also said he would like to make sure that no problems occur regarding stable supply of electricity.

Furukawa is scheduled to meet with Chief Cabinet Secretary Yukio Edano in Tokyo on Thursday about the Genkai plant issue, the Saga prefectural government said.

Under the stress tests, plant operators are expected to assess how far nuclear reactors can withstand major earthquakes and tsunami that have an impact going beyond expectations, and find the weak points, according to officials of the government's nuclear safety agency.

While details have yet to be decided, it may take several months to finish the tests. The European Union started similar stress tests in June.

The need for stress tests on nuclear power plants was touched on during a ministerial meeting of the International Atomic Energy Agency on nuclear safety in late June, which was convened in the wake of the crisis at the Fukushima plant operated by Tokyo Electric Power Co.

The Fukushima complex, which was only designed to withstand tsunami waves of a maximum of 5.7 meters high, lost nearly all of its power sources, and thus the cooling functions of many reactors, after being hit by a magnitude 9.0 earthquake and tsunamis more than 14 meters high on March 11.

Based on lessons learned from the crisis, the Economy, Trade and Industry Ministry announced June 18 that utilities have appropriately implemented measures to enable their nuclear power plants to handle severe accidents, such as steps to prevent hydrogen explosions.

Kaieda visited Saga Prefecture in late June to seek approval for the resumption of the Genkai reactors, saying their safety has been confirmed through such safety measures.

The head of the local municipality hosting the plant agreed on the resumption, but adjacent municipalities and the prefectural assembly are reluctant about giving the green light.

Although Saga Gov. Furukawa was expected to make a decision on the issue in mid-July, he said the plan "completely blew up" after the government announced about the stress tests.

## **TEPCO says reactor cooling on target at 80 percent**

Tokyo Electric Power Company says its system for recycling highly-radioactive water at the Fukushima Daiichi nuclear plant is operating slightly below target at 80 percent capacity.

The company says it will try to stabilize operation at 80 percent, rather than raising the target to 90 percent as planned.

The process of decontaminating and re-circulating wastewater to cool the damaged reactors began on June 27th.

It was disrupted 3 times last week, partly due to human error. Filtering of wastewater was just 55 percent of capacity at the start. The power company must stabilize the cooling system to get the nuclear crisis under control.

Wednesday, July 06, 2011 12:41 +0900 (JST)

## **Radioactive strontium to be closely monitored**

Japan's science and technology ministry says tests have found no radioactive strontium in the seabed off the northern Pacific coast.

The test follows last month's detection of the radioactive material in the seabed near the damaged Fukushima Daiichi nuclear plant. The operator of the plant took samples 3 kilometers off the coast at 2 locations -- 20 kilometers south and north of the plant. Radioactive strontium can cause cancer as it accumulates in bones if inhaled.

No radioactive strontium was found this time in samples taken at 6 locations between 10 and 30 kilometers off a section of the Pacific coast that includes Fukushima Prefecture and two prefectures to the south and north.

The Nuclear Safety Commission, an independent body advising the ministry, says more evidence is needed to prove that no strontium has reached these locations.

The current system cannot detect amounts below 0.8 becquerels of strontium per kilogram of soil. It has advised the ministry to use a method that can detect smaller amounts of the radioactive substance.

The fisheries ministry is also testing marine products caught off Ibaraki and Chiba prefectures, near Tokyo, but found no strontium.

Wednesday, July 06, 2011 08:33 +0900 (JST)

## **Parts of reactor cover arriving at Fukushima plant**

Sections for covers that will contain radioactive materials released from the damaged reactors at the Fukushima Daiichi plant have begun arriving at the site.

The covers will be installed at the No.1, 3 and 4 reactors. Buildings housing these reactors sustained severe damage from hydrogen blasts triggered by the March 11th earthquake and tsunami.

Pillars, beams and other parts are being pre-assembled at a port 50 kilometers away from the plant.

The concrete bases of the structure will be delivered on Wednesday with more sections arriving from mid-July.

The operator of the plant, Tokyo Electric Power Company, says it hopes to complete assembly work by late September using a crane with a 140-meter long arm.

Reducing radiation released from the reactor buildings is crucial to getting the crisis under control.

This month, TEPCO will estimate the current amount of radiation released from the reactors. The figures will be used as a reference to gauge the effectiveness of the covers when they are installed.

Wednesday, July 06, 2011 07:11 +0900 (JST)

[\[What happened to the idea of shielding the reactors from underneath too, to protect underground water?\]](#)

## Microbes used to remove cesium in water and soil

Japanese researchers have found that microbes could help remove cesium from water and soil, raising hopes for their use in decontamination efforts around the Fukushima Daiichi nuclear plant.

A team led by Professor Ken Sasaki of Hiroshima Kokusai Gakuin University has for 10 years been studying **ways to remove metals using microbes called phototrophic bacteria.**

**Such removal is possible because negative ions on the microbes attract positively charged metals.**

The team recently experimented with 2.5 grams of cesium mixed in water, and about 90 grams of microbes.

The cesium dropped to one-twelfth its original density in 24 hours, and was gone by the third day. The same effect was confirmed in soil.

The team says the microbes could very likely also remove radioactive cesium from around the plant, and plans to test soil and water in Fukushima Prefecture to put the method into practical use.

Wednesday, July 06, 2011 16:28 +0900 (JST)

## [Did earthquake cause meltdown at Fukushima Daiichi even before tsunami hit? \(Beyond Nuclear\)](#)

[The Atlantic Wire](#), in an article entitled "[Meltdown: What Really Happened at Fukushima?](#)" by [Jake Adelstein and David McNeill](#), reports -- based on interviews with eyewitnesses, as well as a careful review of the catastrophe's timeline and even documented admissions made by Tokyo Electric Power Company itself -- that major damage to piping and other safety significant structures at Fukushima Daiichi Unit 1 -- the oldest reactor at the site -- may very well have begun the first meltdown, even before the tsunami hit. The article reports:

"The reason for official reluctance to admit that the earthquake did direct structural damage to reactor one is obvious. Katsunobu Onda, author of *TEPCO: The Dark Empire*, who sounded the alarm about the firm in his 2007 book explains it this way: **'If TEPCO and the government of Japan admit an earthquake can do direct damage to the reactor, this raises suspicions about the safety of every reactor they run.** They are using a number of antiquated reactors that have the same systematic problems, the same wear and tear on the piping.' "

The article adds:

"On May 15, TEPCO went some way toward admitting at least some of these claims in a report called 'Reactor Core Status of Fukushima Daiichi Nuclear Power Station Unit One.' The report said there might have been pre-tsunami damage to key facilities including pipes. **'This means that assurances from the industry in Japan and overseas that the reactors were robust is now blown apart,'** said Shaun Burnie,

an independent nuclear waste consultant. **'It raises fundamental questions on all reactors in high seismic risk areas.'** "

Tsunamis are even more rare than already rare earthquakes. Thus, tsunami risks -- including to U.S. reactors -- can more easily be portrayed by the nuclear establishment in industry and government as exceedingly improbable -- even though a radioactively catastrophic one has just happened in Japan. Not only Tepco and the Japanese federal government were quick to obscure earthquake damage at Fukushima Daiichi, focusing attention on the tsunami's impact instead. Exelon Nuclear's CEO, John Rowe, who "serves" on President Obama's and Energy Secretary Chu's "Blue Ribbon Commission on America's Nuclear Future," was quick to downplay the earthquake's impact at Fukushima, instead highlighting the tsunami. [An Exelon statement dated March 14th began:](#)

"Exelon is closely monitoring the situation in Japan as it continues to unfold. While there is still a great deal we don't know, from all information the company received so far, it appears that the damage to the Japanese plants was primarily related to the tsunami, not the earthquake."

**A common "red herring" refrain of the U.S. nuclear industry since March 11th is that tsunamis are impossible at the many inland reactors across the U.S., while largely or entirely ignoring earthquake risks themselves, as well as other pathways (tornadoes, hurricanes, floods, fires, power outages, mechanical failure, human error, intentional attack, etc.) that could plunge reactors into station blackout, followed within hours by core meltdown and days by high-level radioactive waste storage pool fires.**

## **Utility admits to dishonest e-mails on restart**

It has come to light that the operator of the Genkai nuclear power plant had requested its staff and affiliates to send e-mails supporting the restart of the reactors to a meeting to explain the government's safety measures.

On June 26th, the government held a meeting in Saga City to answer questions from residents in preparation for the resumption of the operation of the nuclear reactors.

The meeting was shown live by a cable TV station and via the Internet, and viewers were invited to send in their opinions by e-mail or fax.

On Wednesday, Kyushu Electric Power Company President Toshio Manabe revealed that 4 days before the meeting, its head office instructed some company members and 4 affiliated firms to send in e-mails expressing support for restarting the reactors.

Manabe offered an apology, saying that **his company's action undermined the credibility of the meeting.**

He said he does not know how many e-mails were sent.

Manabe also said the company hoped to help deepen residents' understanding by stating its opinion as the plant operator.

He said he is responsible for the inappropriate act, but added that he is not considering stepping down as president.

Industry minister Banri Kaieda issued a statement saying it is outrageous to do such a thing and the incident undermines the aim of the meeting.

Thursday, July 07, 2011 02:57 +0900 (JST)

## **Kyushu Electric sought to distort local views over reactors restart**

FUKUOKA (Kyodo) -- Kyushu Electric Power Co. said Wednesday that companies linked to the utility ordered their employees to post online comments in favor of the resumption of the utility's two nuclear reactors for a local cable television program aimed at seeking support for the resumption.

Industry minister Banri Kaieda said in a statement that such conduct by the employees, acting as general citizens, fundamentally undermined the purpose of the industry ministry-organized event to respond to their candid questions.

"This is outrageous," Kaieda said, adding that Kyushu Electric President Toshio Manabe was strongly warned over the issue.

The two nuclear reactors at the Genkai power plant in Saga Prefecture are drawing attention because they are yet to restart in the wake of the March nuclear crisis, even though their regular checkups were initially expected to have finished by now.

Manabe apologized over the matter during a press conference at the company's headquarters in the city of Fukuoka and explained that the act was intended to stress the importance of nuclear power to the local people, but denied his involvement.

The program was shot and aired at a cable TV studio in the city of Saga on June 26 and featured government officials and local residents. It was also aired via the Internet.

According to Kyushu Electric, one of its male employees sent e-mails on June 22 to seven people at three Kyushu Electric offices and the utility's four subsidiaries, asking them to post comments supportive of the resumption of the reactors.

The program was the first attempt by the central government to brief residents of municipalities that host nuclear power plants on nuclear safety measures.

(Mainichi Japan) July 7, 2011

## Wastewater filters not working to capacity

The operator of the crippled Fukushima Daiichi nuclear plant says it will look into **why the filters in its cooling system to recycle radioactive wastewater are working at a rate far below the initial estimate.**

Tokyo Electric Power Company says about 14,670 tons of wastewater had been decontaminated as of 10:00 AM on Wednesday.

The filters were processing 43 tons of wastewater per hour, which is 14 percent below the initial estimate of 50 tons per hour.

This has resulted in the filters working at just 76 percent capacity over the week through Tuesday. That is 4 percentage points below the initial target.

Recycling of wastewater is key to cooling the reactors.

**But if the process takes too much time, the utility's schedule for bringing the nuclear crisis under control could be delayed.**

Wednesday, July 06, 2011 19:15 +0900 (JST)

## Reactor cooling to be accelerated in August

The operator of the Fukushima Daiichi nuclear plant says a new cooling system is now working well so it will accelerate the cooling of the plant's reactors in August.

The system, which recycles decontaminated radioactive wastewater, suffered a series of problems at its launch in late June.

But Tokyo Electric Power Company says it has been working almost as planned since the start of this month.

The utility says that with radioactive water still leaking from 3 reactors, it had to limit the amount of wastewater used in the system. The leaks mean that the level of toxic water already accumulated is not decreasing.

The utility says if the water decontaminator keeps working properly, the water level will drop over one meter below the risk of overflowing by next month.

That in turn would allow it to ease restrictions on the amount of water used to cool the reactors.

**But the company is still concerned about the extent of damage to the reactor containment vessels. Injecting more water into the damaged vessels could release more radioactive steam into the environment.**

Thursday, July 07, 2011 07:57 +0900 (JST)

## Nitrogen injection could be delayed at Fukushima

The operator of the troubled Fukushima Daiichi power plant is having trouble injecting nitrogen gas into one of the reactors to prevent a hydrogen explosion.

Tokyo Electric Power Company on Wednesday examined the **No.3 reactor** to see if it can connect injection pipes to the containment vessel.

A camera-mounted robot was used for the operation because high radioactive levels are preventing workers from remaining in the reactor building for long periods.

But TEPCO failed to confirm the situation because **the robot couldn't reach the necessary part of the reactor.**

**Radiation levels as high as about 50 millisieverts per hour were registered in the area.**

**The reading means a worker would be exposed to radiation on par with the government-set 250-millisievert safety limit in 5 hours.**

**TEPCO is now considering sending personnel or a robot into the reactor building to conduct another survey.** The new survey would happen on Friday at the earliest.

There is a growing likelihood that the planned nitrogen injection will be delayed.

Thursday, July 07, 2011 12:58 +0900 (JST)

## Japan's nuclear crisis affects farm exports

Japan's exports of farm, marine and forest products in May posted a year-on-year plunge of more than 16 percent, due to the nuclear crisis at the Fukushima Daiichi power plant.

The Agriculture, Forestry and Fisheries Ministry says exports in the 3 sectors dropped 16.6 percent from the same month last year to 378 million dollars. That's the second straight month of a drop of more than 10 percent.

The ministry attributes the plunge to restrictions imposed by 41 countries and territories on imports of foodstuffs from Japan since the nuclear crisis began in March.

Total food exports to China dropped 48.4 percent, to South Korea 40.4 percent, and to Hong Kong 22.3 percent.

Shipments of salmon, trout, bonito and other fish to mainly Asian countries plunged 29.6 percent while shipments of apples, yams and other agricultural products dropped 9.8 percent.

The Ministry says the discharge of radioactive contaminated water into the ocean after the nuclear

accident prompted many countries to restrict fish imports from Japan.

The Ministry says it will further urge those countries to make decisions based on scientific evidence.

Thursday, July 07, 2011 02:57 +0900 (JST)

## **Animals suffer the effects of Fukushima nuclear devastation**

The Fukushima nuclear accident in Japan has taken a massive toll on animals. The fate of wildlife is largely unknown, but domestic pets and livestock continue to suffer.

[Livestock](#) were forcibly abandoned and left behind to starve. [Cows contaminated](#) with cesium five times the permissible level have been slaughtered. Buried in the ground, their radioactive carcasses will continue to contaminate the land for decades if Chernobyl is any indication.

[Family pets](#) were left behind, tied, abandoned in homes, or left to roam the streets in search of food. Their owners were forbidden to return or were allowed to make brief visits to feed them, often too late.

A [rabbit born without ears](#) is stoking fears of birth defects and genetic damage among humans while whales have been caught that are found to be [contaminated](#) with radioactive cesium.

In the event of US reactor accidents, citizens are encouraged to evacuate with their pets. However, evacuation shelters and most hotels do not allow animals. Livestock, of course, cannot be evacuated.

Sign our petition to [protect animals](#) from nuclear devastation by supporting safer renewable energy.

De Beyond Nuclear

## **TEPCO temporarily halts cooling Fukushima Daini reactor**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Thursday that it stopped the cooling system for a reactor at the Fukushima Daini power plant in Fukushima Prefecture for three and a half hours **due to an electrical system problem**.

Cooling operations were suspended for the No. 1 reactor and an adjacent pool for spent nuclear fuel from around 5:30 p.m. to shortly past 9 p.m. while the operator, known as TEPCO, looked into why sparks came from a power panel at a building adjacent to that housing the reactor.

Temperatures for the reactor and the fuel storage pool are believed to have risen slightly from about 25 C to 35 C and from 26 C to 27 C, respectively, during the suspension.

The reactor and the pool must be kept cooled because nuclear fuel inside them emits heat as it decays, even though the reactor has gone offline and has been brought into a stable condition called "cold shutdown" following the March earthquake and tsunami.

The other three reactors at the Fukushima Daini plant, located to the south of the crisis-hit Fukushima Daiichi nuclear power complex, have also been in cold shutdown-mode since the disasters.

A plant worker found sparks coming out of a power panel in the basement of the No. 1 reactor's adjoining facility shortly after 2 p.m., prompting the company to cut power to the facility so that it could be inspected, TEPCO said.

The reactor has two sets of cooling systems for sustaining cold shutdown, but one of them has remained crippled since the tsunami in March.

(Mainichi Japan) July 8, 2011

## Nuke plant equipment fails quake-resistance check

The Japanese government has found that electrical equipment at a nuclear power plant in eastern Japan does not meet earthquake-resistance standards.

The Nuclear and Industrial Safety Agency inspected nuclear power plants nationwide after the March 11th earthquake damaged equipment at the Fukushima Daiichi nuclear power plant. The plant was unable to cool its reactors after losing power.

The agency found that the level of quake-resistance of the electrical equipment at Tokai Daini nuclear power plant in Ibaraki Prefecture was below the standard set by power companies.

The Tokai Daini plant is currently undergoing regular inspections. The operator plans to strengthen the quake-resistance of its equipment during the inspection period.

The agency says the electrical equipment in other nuclear power plants are up to standards.

Once it identifies what caused the damage to the equipment at the Fukushima Daiichi plant, the agency plans to re-examine all nuclear power plants in the country.

Friday, July 08, 2011 03:25 +0900 (JST)

## TEPCO to send workers into No.3 reactor building

The operator of the Fukushima Daiichi nuclear plant will send personnel, instead of a robot, into one of the reactor buildings to take steps to prevent a hydrogen explosion. But the work is likely to face difficulty because of the high radiation levels.

Tokyo Electric Power Company plans to inject nitrogen into the No.3 reactor to prevent another hydrogen explosion.

The utility used a camera-mounted robot on Wednesday to examine the No.3 reactor building to determine if it can connect injection pipes to the containment vessel. But TEPCO was unable to assess the situation because the robot couldn't reach the area.

**TEPCO says it will send workers inside the reactor building instead.** A few more days will be needed for the government to confirm safety before nitrogen can be injected.

The company hopes to complete the injection by July 17th according to its schedule, but the prospects remain unclear. Removing the risk of hydrogen explosions and stably cooling down the reactors are the keys to bringing the situation under control.

Friday, July 08, 2011 13:06 +0900 (JST)

## **Systematic involvement suspected in Genkai scandal**

Kyushu Electric Power Company says its nuclear energy division may have been involved in a **systematic effort to manipulate public opinion** to support the restarting of its Genkai nuclear power plant.

Last month, the government held a meeting to explain safety measures to local residents before restarting the No.2 and 3 reactors at the plant in Saga Prefecture.

The meeting was broadcast live on TV and the internet, and viewers were invited to submit their opinions by e-mail or fax.

It was learned on Friday that the 2 of the utility's executives, including a vice president in charge of the nuclear energy division, instructed their subordinates to help with the effort, referring to the meeting.

**The company previously admitted that employees of the utility and 4 affiliated firms -- more than 1,500 people in total -- were instructed to send e-mails during the meeting in support of the reactors' restart.**

The 2 reportedly felt that the meeting was important because it took place just prior to Kyushu Electric's general shareholders' meeting.

They were also reportedly interested in the opinions sent to the meeting.

Industry Minister Banri Kaieda said he was deeply disappointed at the utility's behavior in light of the crisis at the Fukushima Daiichi nuclear power plant. He said he would like to prevent a recurrence of the scheme by keeping power utilities in check.

Friday, July 08, 2011 14:48 +0900 (JST)

## **TEPCO to inject nitrogen into No. 3 reactor**

The operator of the crippled Fukushima Daiichi nuclear power plant is preparing to connect pipes to the plant's No. 3 reactor to inject nitrogen to prevent a hydrogen explosion.

Tokyo Electric Power Company **workers spent 10 minutes in the reactor building on Friday** to determine whether pipes can be connected to the reactor's containment vessel.

The utility says the workers confirmed that the reactor's connections are intact, and that work to lay the pipes can start on Saturday.

The firm had sent a robot equipped with a camera into the building to check the situation, but the device was blocked and could not finish the work.

Stably cooling the plant's reactors and preventing hydrogen explosions are the pillars of the utility's plan to bring the facility under control.

Nuclear crisis minister Goshi Hosono says that around July 17th, he hopes to begin studying whether to lift advisory designating areas where residents are required to be prepared to evacuate in case of emergency.

**But the work to lay the pipes has already been delayed, and the Nuclear and Industrial Safety Agency must confirm safety for several days before beginning the nitrogen injection.**

It remains uncertain whether the injection can be carried out by July 17th as scheduled.

Friday, July 08, 2011 19:48 +0900 (JST)

## **Residents in radiation hotspots anxious about evacuating as deadline for decision looms**



Teachers see children onto a bus after the end of lessons at Oguni Elementary School in Date, Fukushima Prefecture, on June 30. The school has instructed children to wear masks, hats and long sleeves to protect them from radioactive materials. (Mainichi)

FUKUSHIMA -- Residents in areas where radiation hotspots have been detected are voicing worries that their communities will be split up, as the deadline for residents to decide whether or not to evacuate approaches.

Over one week has passed since 113 households in four areas of the Fukushima Prefecture city of Date have been placed under special evacuation recommendations. Residents in these hotspots must decide

for themselves whether or not to evacuate by July 8, but the level of support they will receive if they leave remains unclear.

Among the households to receive evacuation recommendations are 32 in the Kamioguni area of Date's Ryozenmachi district, and 54 in the Shimooguni area. Oguni Elementary School, which students in these two areas attend, has a total roll of just 57 children, of which 20 are in households subject to evacuation recommendations.

At a local information session on the recommendation designation, residents voiced concerns about the remaining students.

"Will the children who are left behind have to go to school along routes where there are high amounts of radiation?" one resident asked.

The school's 53-year-old principal said the district would have to work out measures such as using buses and taxis to get children to school. Residents in both regions have decided to submit requests to the central and Date municipal governments to have the whole regions placed under evacuation recommendations, rather than restricting recommendations to specific households.

In the Aiyoshi area of Date's Tsukidate district, the home of 83-year-old farmer Satsu Takahashi was placed under a special evacuation recommendation. The area is just two kilometers away from the edge of the village of Iitate, which was designated a "planned evacuation zone" and is now almost completely empty.



Workers measure the ground near a rain water outlet in Minamisoma, Fukushima Prefecture, on June 12. (Mainichi)

"I was feeling sorry for the people in Iitate, but I never thought that this would happen to me," Takahashi said. Thinking there would be no evacuation orders, Takahashi only recently planted a crop of kidney beans.

By selling the crop, Takahashi would get about 300,000 yen, but evacuating would leave the 83-year-old empty-handed. Residents of Iitate can receive provisional compensation payments from Tokyo Electric Power Co. (TEPCO), the operator of the Fukushima No. 1 Nuclear Power Plant behind the crisis, but it remains unclear whether residents in Date will get anything if they evacuate.

"I'm worried about whether or not to evacuate," Takahashi said. "We're one rank below Iitate and I wonder how compensation will work out."

Besides the rent for the places that residents who evacuate will move into, financial support measures for residents have been left all but blank. The government's dispute reconciliation committee for nuclear damage compensation will establish interim guidelines for compensation over the nuclear crisis at the end of this month, but measures for households under special evacuation recommendations in radiation hotspots have been left unaddressed.

The government's headquarters on local nuclear disaster countermeasures has already indicated that residents whose households are under special evacuation recommendations will not receive the same level of support as those in evacuation zones.

At a meeting to explain the situation to residents, the Date Municipal Government said that evacuees would be provided free rent wherever they moved to, but the issue of damages for the nuclear disaster had not been settled.

"We have absolutely no idea how many households will apply to evacuate," a city official said. "The designations came as a snap decision. Unless the situation is quickly reviewed, it will cause a lot of confusion locally."

 [Click here for the original Japanese story](#)

(Mainichi Japan) July 8, 2011

## **Man freed after arrest for collecting radiation-contaminated rubble in Fukushima**

A man has been freed after being held on suspicion of collecting rubble allegedly contaminated with radiation from the crippled Fukushima No. 1 Nuclear Power Plant without permission, the Mainichi has learned.

The man was arrested on March 26 after allegedly collecting about 1.8 metric tons of broken brick walls and other rubble from a house in Koriyama for a 42,000 yen fee without a license in violation of the Waste Disposal and Public Cleansing Law.

The Koriyama branch of the Fukushima District Public Prosecutors Office, however, decided to set him free without charge after **concluding that the law does not apply to waste contaminated with radioactive materials, and the rubble gathered by the man may be contaminated with radiation.** The prosecutors office declined comment on the case.

Police and other authorities concerned are asking the central government to quickly write a law to regulate contaminated waste to prevent the spread of radioactive materials through dumping.

The Environment Ministry's Office of Waste Recycling Program Planning said, "**The current exclusionary regulations do not define the density and dose of radioactive materials and may abet crime**, so we are looking into the possibility of revising the law."

[!\[\]\(0cb440c11db1240a44ffaaa34cbdc4e6\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) July 8, 2011

## Hopes for water purification, cooling system to bring Fukushima nuke plant under control



The No. 1 reactor building at the Fukushima No. 1 Nuclear Power Plant is seen from the air in this April 10 file photo provided by TEPCO.

One week has passed since a system to purify water contaminated with radioactive substances began operations at the tsunami-hit Fukushima No. 1 Nuclear Power Plant.

Stable operation of the system, which plays the role of cooling down the reactors and reducing the amount of radioactive water, is a prerequisite for bringing the crisis to an end.

However, **as the system was hastily installed over only a two-month period**, experts have expressed fears that it may develop trouble such as water leaks and that it may be vulnerable to aftershocks and typhoons.

**"The total length of the piping in the system is four kilometers.** No one can tell what kind of potential risks it has," said a Toshiba Corp. expert, who is responsible for operating part of the system.

In the water purification system, radioactive materials are removed from contaminated water after going through four devices -- an oil separation device produced by Toshiba, a cesium absorption unit made by U.S.-based Kurion Inc., a decontamination device manufactured by France-based Areva SA, and a Toshiba-made desalting machine.

The purified water is then injected into the reactors to cool them down.

By the end of June, approximately **120,000 cubic meters of radioactive water** had accumulated on the premises of the plant.

The plant's operator, Tokyo Electric Power Co. (TEPCO), managed to put the water purification system into operation on June 27 -- shortly before the water was feared to leak into the sea. Since July 2, the system has been able to treat enough water to cool down the reactors. **The system had treated over 16,800 cubic meters of radioactive water by July 8.**

Immediately after the tsunami generated by the March 11 Great East Japan Earthquake hit the plant, fresh water from outside sources, such as a nearby dam, had been used to cool down the reactors.

However, cooling water contaminated with radioactive substances began to leak outside the reactor buildings from containment vessels and other devices that sustained damage in the disaster. At the same time, if the amount of cooling water had been reduced, it would have caused the temperature and pressure inside the reactors to rise sharply. This problem had been regarded as a stumbling block to bringing the crisis to an end.

Since a roadmap to bring the plant under control, worked out by TEPCO, sets a goal of ensuring that the amount of radiation at the plant is on a steady decline by mid-July, TEPCO is now aiming to put the water recycling system into full operation.

The system can now treat slightly more than 1,000 cubic meters of contaminated water a day even though its target is 1,200 cubic meters. Furthermore, the system needs to be occasionally shut down to replace the radioactive cesium absorption filter. Therefore, the system's current operating rate is only 76 percent. If the rate remains as it is, TEPCO is expected to finish treating all radioactive water in early November. If the rate rises to 80 to 90 percent, the process will likely be completed in late October.

**However, the prediction is based on the assumption that rain water and underground water will not infiltrate into the plant as a result of typhoons or other disasters and cause the level of contaminated water to rise.**

**"Bringing the crisis to an end largely depends on the weather,"** a TEPCO official says.

 [Click here for the original Japanese story](#)

(Mainichi Japan) July 9, 2011

## **TEPCO to start injecting nitrogen into No. 3 Fukushima reactor soon**



This March 24, 2011 aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE shows damaged Unit 3 of the crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan. (AP Photo/AIR PHOTO SERVICE)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Saturday it will begin injecting nitrogen into one of the reactors at the Fukushima Daiichi power plant to prevent a hydrogen explosion, as soon as it gets the green light from the government's Nuclear and Industrial Safety Agency and local governments.

The latest move at the No. 3 reactor will be a strong indication that the utility, known as TEPCO, can achieve stable cooling of the crippled reactors by mid-July as initially planned as it has already begun injecting the substance at its Nos. 1 and 2 reactors.

The injection of nitrogen into the No. 3 reactor is part of what is known as "step one," which is likely to be achieved by July 17. The utility began injecting nitrogen in the No. 1 unit from April. But for the No. 3 unit, there was no prospect of doing so due to stalled preparation work in the building because of excessively high radiation there.

TEPCO said it can start injecting nitrogen as early as within several days after connecting the hoses to the pipes at the reactor. **It found out on Friday that the pipes and hoses are easy to connect and would take only a few days to connect them.**

TEPCO also said the government agency instructed the utility to submit a report concerning nitrogen injection and the utility decided to proceed with the preparation for the procedure at the No. 3 reactor.



In this photo taken on June 22, 2011 and released on Thursday, June 23, 2011 by Tokyo Electric Power Co. (TEPCO), workers in protective suits set up temporary pressure gauges in the Unit 2 reactor building at the tsunami-damaged Fukushima No. 1 nuclear plant in Okuma, Fukushima prefecture. (AP Photo/Tokyo Electric Power Co.)

Under the current road map, TEPCO plans to achieve a cold shutdown of the reactors during the three to six months after step one is cleared.

(Mainichi Japan) July 9, 2011

## **Govt., TEPCO draw roadmap to reactor decommission**

A roadmap toward decommissioning of the damaged Fukushima Daiichi nuclear power plant indicates that the removal of melted nuclear fuel rods at the plant may begin in 10 years.

NHK has obtained the mid- and long-term roadmap which was presented when officials from the operator of the Fukushima plant, government officials in charge of nuclear safety, and manufacturers of nuclear reactors met last week.

The draft roadmap drawn up by the government's Nuclear Safety Commission and Tokyo Electric Power Company says they tentatively set a target date to begin removing fuel rods that melted and fell to the bottom of the reactor.

The work is considered to be the most important phase in the decommissioning process. The roadmap indicates that removal will start in 2021 if technology essential for the work has been developed before that.

The timeline is believed to have been set based on measures taken following the 1979 Three Mile Island accident in the United States.

But unlike the US case, as reactor containment vessels were damaged at the Fukushima complex, they need to be fixed and filled with water.

The roadmap shows that reactor buildings could be finally demolished and cleared away after the removal of melted fuel rods is completed, and that it will possibly take dozens of years.

Saturday, July 09, 2011 13:49 +0900 (JST)

## **Survey: radioactive materials found in plankton**

A scientific survey has found radioactive substances in plankton collected from the seafloor off Fukushima Prefecture.

A group of researchers from the Tokyo University of Marine Science and Technology ended its 8-day survey on Friday. The goal was to study the spread of radioactive materials into the Pacific Ocean from the Fukushima Daiichi nuclear power plant. The group collected samples from the seabed along a 120-kilometer stretch off the coast of Fukushima.

Radioactive cesium was found in animal plankton collected 35 kilometers off Iwaki City. The level was measured at 6 becquerels per kilogram.

The researchers say this level does not exceed the national safety standard. They added that the level would still be under the limit even if the cesium were to enter the bodies of larger fish that eat the contaminated plankton.

Professor Takashi Ishimaru, a member of the research group, says he and his colleagues will continue the survey to check the effects of radioactivity on the local ecosystem.

Saturday, July 09, 2011 06:14 +0900 (JST)

## **Radiation detected in beef from Fukushima**

Beef from Fukushima Prefecture has been found to contain levels of radiation that exceed Japan's safety standards.

The Tokyo Metropolitan Government announced on Friday that it had detected 2,300 becquerels per kilogram of radioactive cesium in beef from a cow raised in a Minami Souma. The national limit is 500 becquerels per kilogram.

The Tokyo Government says the beef was not made available to consumers.

Japan's Health Ministry says this is the first time that beef has been found with such high levels of radioactivity following the accident at the Fukushima Daiichi nuclear power plant. The ministry has requested 6 prefectures near Fukushima to step up checks on beef.

Saturday, July 09, 2011 06:14 +0900 (JST)

## **Four cities request bigger nuclear safety zone**

Four municipalities around a nuclear power plant in Shizuoka Prefecture have asked the central government to expand the plant's official emergency zone, so their communities can be included in the event of a nuclear accident.

Mayors and representatives from the cities of Fujieda, Yaizu, Fukuroi and Iwata handed a petition requesting the change to nuclear crisis minister Goshi Hosono on Friday.

The mayors asked that the emergency planning zone around the Hamaoka nuclear power station be expanded from the current 10-kilometer radius to 30 kilometers.

The municipalities are all located 10 to 30 kilometers from the Hamaoka plant.

The petition notes that in the Fukushima accident, evacuation areas have now expanded beyond the zone initially mandated by the government.

The mayors said the municipalities are unable to draw up evacuation plans unless their locations are recognized within the emergency zone. They said the matter is raising concern among residents.

Hosono agreed the Fukushima accident revealed the inadequacy of a 10-kilometer radius, and said the government must promptly review the matter.

Friday, July 08, 2011 20:59 +0900 (JST)

## La décontamination de Fukushima prendra des décennies selon le gouvernement

LEMONDE.FR avec AFP | 09.07.11 | 18h57 • Mis à jour le 09.07.11 | 19h16



### Une photo aérienne de la centrale de Fukushima montre les dégâts provoqués par le tsunami du 11 mars.AP

Le premier ministre japonais a déclaré samedi 9 juillet que la décontamination du site de la centrale nucléaire de Fukushima prendrait plusieurs dizaines d'années. [Naoto Kan](#) présentait pour la première fois un programme de très long terme pour cette opération.

Les systèmes de refroidissement de la centrale nucléaire de [Fukushima Daiichi](#), située à 220 km au nord-est de Tokyo, ont été endommagés entraînant une fusion au sein de trois réacteurs après le tsunami ayant suivi le séisme du 11 mars, provoquant l'une des pires catastrophes du nucléaire civil. *"Un grand nombre d'habitants ont été contraints d'évacuer" la zone, a déploré M. Kan au cours d'un meeting du [Parti Démocratique](#) au pouvoir au Japon. "Il faudra trois, cinq, voire 10 ans pour parvenir à en reprendre le contrôle, et même plusieurs décennies pour remédier aux conséquences de l'accident", a-t-il ajouté.*

La Commission japonaise à l'énergie atomique et l'exploitant de la centrale de Fukushima, [Tokyo Electric Power](#) (Tepco), sont convenus dans un premier temps de commencer à retirer le combustible nucléaire fondu vers 2021, selon la chaîne de télévision publique NHK. La chaîne de télévision a rapporté que les autorités, l'opérateur et les fabricants d'équipements estimaient qu'il faudrait *"plusieurs décennies"* avant de pouvoir démanteler les réacteurs de la centrale, citant un programme de long terme pour reprendre le contrôle de la centrale.

Le Japon a annoncé un programme de court terme pour stabiliser la centrale nucléaire de Fukushima Daiichi, responsable d'émissions radioactives de très haut niveau après la panne de ses systèmes de refroidissement. Mais avant samedi, le gouvernement n'avait encore présenté aucune estimation de la durée du programme de décontamination nécessaire pour mettre fin à la crise.

Le projet, que s'est procuré NHK, s'inspire d'une étude des données sur la manière dont les [Etats Unis](#) ont procédé lors de l'accident nucléaire de la centrale de [Three Mile](#) en 1979, a précisé la chaîne. Tepco espère réduire les fuites radioactives d'ici à fin juillet et parvenir à refroidir les réacteurs pour les arrêter au plus tard d'ici à janvier prochain. Goshi Hosono, le ministre chargé de gérer les conséquences de l'accident nucléaire, a déclaré à [Jiji Press](#) que le gouvernement annoncerait le 19 juillet un nouveau programme de décontamination du site et sa vision à long terme de la gestion de l'accident

## **A Fukushima, des taux de radioactivité quatre fois supérieurs à la limite légale**

LEMONDE.FR avec AFP | 05.07.11 | 12h22 • Mis à jour le 09.07.11 | 19h15



### **Une photo aérienne de la centrale de Fukushima montre les dégâts provoqués par le tsunami du 11 mars.AP**

Des niveaux de radioactivité jusqu'à quatre fois supérieurs à la limite légale ont été mesurés dans les sols de la ville de Fukushima, à 60 kilomètres de la centrale nucléaire accidentée, selon des associations de résidents. Elles réclament désormais l'évacuation des enfants et des femmes enceintes de la ville, pour éviter les risques sanitaires.

Une des mesures effectuée dans cette cité de près de 300 000 habitants a fait état d'un taux de césium radioactif de 46 540 becquerels par kilogramme, alors que le taux maximum légal est de 10 000 becquerels au Japon. Un niveau qui dépasse le seuil à partir duquel les autorités soviétiques ont procédé à l'évacuation des populations après la catastrophe nucléaire de Tchernobyl en 1986, selon les associations à l'origine des analyses.

### **"LA CONTAMINATION DES SOLS S'ÉTEND"**

Les trois autres prélèvements effectués dans le sol de la ville de Fukushima ont fait apparaître, après analyse, des taux compris entre 16 290 et 19 220 becquerels par kilogramme.

*"La contamination des sols s'étend dans la ville", a prévenu l'auteur des analyses, Tomoya Yamauchi, professeur à l'université de Kobé spécialiste des radiations. "Les enfants jouent avec la terre, ils jouent donc avec des substances hautement radioactives", a-t-il ajouté, soulignant qu'il fallait procéder à des évacuations "au plus vite."*

Quelque 160 000 personnes riveraines de la centrale ont évacué leur maison depuis l'accident nucléaire. Environ la moitié a regagné son domicile depuis mais les autres, qui vivaient dans un rayon de 20 km du site pour la plupart, ne sont pas retournées chez elles.

Provoqué par le séisme de magnitude 9 et le tsunami géant qui ont dévasté le nord-est du Japon le 11 mars, l'accident de la centrale Fukushima Daiichi (Fukushima n° 1) a entraîné d'importants rejets radioactifs dans l'atmosphère, l'eau de mer et les sols de cette préfecture.

## Scientists launch 'operation sunflowers' to decontaminate farmland near nuclear plant



Professor Masamichi Yamashita measures radiation levels around sprouting sunflower seeds in Katsurao, Fukushima Prefecture, on July 2, 2011. (Mainichi)

NAMIE, Fukushima -- Scientists have launched "operation sunflowers" in a bid to remove radioactive cesium from the ground in an evacuation zone near the Fukushima No. 1 Nuclear Power Plant so that local residents could return and farm the land again.

A group of scientists, led by space agriculture professor Masamichi Yamashita at the Japan Aerospace Exploration Agency (JAXA), had planted sunflower seeds on farmland in three locations in Namie and Katsurao, Fukushima Prefecture, on an experimental basis after receiving approval from the owners of the farmland. The group visited the farmland again on July 2 and confirmed the seeds were sprouting. The levels of radiation one meter above the ground in the area were rather high, ranging from 7 to 21 microsieverts per hour.

According to Yamashita, radioactive cesium is similar to kalium used as an agricultural fertilizer. When sunflowers grow tall and large, they could absorb large quantities of cesium, and therefore they were used to decontaminate toxic soil in the wake of the 1986 Chernobyl nuclear accident.

If the sunflowers that have absorbed cesium are burned, the radioactive cesium could be dispersed into the atmosphere. Therefore, Yamashita and other researchers are planning to use bacteria to decompose the sunflowers and reduce the volume of the plants and treat them as radioactive waste.

"If we can verify that sunflowers absorb cesium efficiently, we want to expand the area for growing sunflowers," said Yamashita. Michio Konno, 55, who offered his rice field for the project, said, "Farmers left Namie with an unbearable feeling. We want to have the soil back to normal so that everyone can come back to Namie."

[!\[\]\(336f12480ae1269df0d9c120da4e1a85\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) July 10, 2011

## **TEPCO suspends decontamination system**

The operator of the Fukushima Daiichi nuclear power plant has suspended part of the activity of the radioactive water decontamination system as **a liquid substance was found leaking from the device.**

Tokyo Electric Power Company, or TEPCO, said that it stopped the system on Sunday morning. The liquid was found leaking from the hose for injecting chemicals to break down radioactive materials in the French-made device.

About **50 liters** of liquid is believed to have leaked.

TEPCO said it is **examining whether the liquid was the chemicals or radioactive water**, as well as the cause of the leak. The company added that it is doing its best to resume the operation as soon as possible.

The system to recycle decontaminated water is the key to cooling reactors.

But TEPCO has to shut down the system frequently as it has been having continued problems since the start of its use on June 27th.

The utility has only one week left until July 17th, when it is scheduled to complete the first stage of the plan to bring the facility under control.

But the operating rate of the system during the week through last Tuesday was below the target, showing the difficulty the firm is facing.

Sunday, July 10, 2011 16:46 +0900 (JST)

## **TEPCO temporarily halts water decontamination system after leak**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Sunday it temporarily halted the system to decontaminate radioactive water at the crippled Fukushima Daiichi nuclear power plant in Fukushima Prefecture after discovering that about 50 liters of contaminated water and chemicals used in the system were leaking from a pipe after a part broke.

The utility known as TEPCO has been using the decontaminated water to cool the Nos. 1-3 reactors at the plant, and even during the temporary suspension to fix the part, it was able to continue the cooling function using water that had already been decontaminated, it said.

"The concentration of radioactive substances in the leaked contaminated water was not at levels that would cause problems involving workers' exposure to radiation," a TEPCO official said.

The leak occurred in a section of a device developed by France's Areva SA where the chemicals, which are used to condense and precipitate radioactive materials in the contaminated water, are injected from a hose into a pipe through which the polluted water passes, according to TEPCO.

The plastic part broke, causing the chemicals and contaminated water to leak, the company said, adding that workers replaced the part with a steel one and resumed operation of the water treatment system.

The chemicals are not toxic, TEPCO said.

Smooth operation of the treatment system, which is designed to remove highly radioactive materials from the massive quantities of contaminated water accumulating at the power station, is essential for containing the nuclear crisis, as TEPCO recycles the water to cool the plant's damaged reactors.

The contaminated water accumulating at reactor facilities, including coolant liquid leaking from damaged reactors, has been diverted elsewhere at the plant to prevent it from overflowing from the facilities, but the storage locations are nearing full capacity.

(Mainichi Japan) July 11, 2011

## Experts warn that drug's benefits unproven for low-dose radiation dosages



Prussian blue, sold as a medical product in Japan and elsewhere. (Mainichi)

The government is warning people to only take radiation medicine as prescribed by doctors, saying that the pigment Prussian blue, meant to be taken after heavy doses of radioactive cesium, is not known to have an effect on low-dose radiation and might even cause side effects such as irregular heartbeat.

The pigment Prussian blue, which is also used in paints, was found to encourage the ejection of cesium-137 when it was used on 46 people exposed to the isotope in an incident in Brazil in 1987. It was found to be particularly effective on adults. However, almost no other data on Prussian blue's

medical use exists. A German pharmaceutical company put the pigment into capsule form and began selling it in 1997 under the name Radiogardase.

Prussian blue is said to cut down the length of time that cesium-137 stays in the human body by two thirds, and the World Health Organization has recommended that all countries keep stocks on hand. It was approved for sale in Japan in October last year. Possible side effects are feared such as constipation and potassium deficiency in the blood, which can lead to irregular heartbeat.

At a June 30 press conference by the government and Tokyo Electric Power Co.'s disaster response team, Kazuhiko Maekawa, professor emeritus of emergency medicine at the University of Tokyo, said that "the effects (of Prussian blue) on low-dose radiation dosages are completely unknown."

After the crisis at the Fukushima No. 1 Nuclear Power Plant began, Tokyo-based pharmaceutical company Nihon Medi-Physics made an emergency import of 72,000 capsules from Germany and gave them for free to the Japanese government. However, none of the capsules have yet been reported used.

Regular medical institutions do not handle Prussian blue. According to Nihon Medi-Physics, very soon after the nuclear disaster began, multiple drug importers started offering sales of Prussian blue direct to consumers via the Internet.

The Ministry of Health, Labor and Welfare's disaster response headquarters has commented that its intended use of Prussian blue is for "workers engaged in repair work at the power plant who are subjected to acute radiation dosages." It added that, "side-effects are considered possible, and we do not recommend that people obtain or use Prussian blue on their own."

On the website of the National Institute of Radiological Sciences (NIRS), it is suggested that if a patient's internal radiation exposure is around 300 millisieverts then there is reason to give Prussian blue, but if the exposure is a tenth of that at 30 millisieverts, then the drug should not be administered.

The NIRS has asked medical facilities to give radiation medicine based on doctors' prescriptions, use whole-body counters -- which can measure internal radiation doses -- to measure the effects of the treatment, and report data on treatment to the NIRS.

 [Click here for the original Japanese story](#)

(Mainichi Japan) July 10, 2011

## **Dismantling Fukushima Daiichi nuclear plant to take several decades**

TOKYO (Kyodo) -- The full dismantling of the crisis-hit Fukushima Daiichi nuclear power plant, including removing nuclear fuel and tearing down reactors and the buildings housing them, is expected to take several decades, sources familiar with the matter said Saturday.

Under a medium- to long-term plan being discussed by the government, the plant's operator and reactor manufacturers, **the removal of spent fuel rods in cooling pools would start three years after the nuclear**

**crisis comes under control and the removal of fuel from reactors would start in fiscal 2021**, the sources said.

Despite the tentative targets for removing fuel rods, the specific tasks involved has not been worked out as fuel in the Nos. 1, 2 and 3 reactors has melted through the pressure vessels and the containment vessels of the Nos. 1 and 2 reactors are likely damaged, they said.

The plan has been discussed separately from the already established timetable for bringing the critical situation at the six-reactor plant under control by around January.

The Japan Atomic Energy Commission in the Cabinet Office is leading the discussions among organizations involved, such as the government's Nuclear and Industrial Safety Agency and Tokyo Electric Power Co., which runs the Fukushima complex damaged by the March 11 earthquake and tsunami.



In this image released Saturday, April 16, 2011, by Tokyo Electric Power Co., top of the container of the nuclear reactor, painted in yellow, of Unit 4 at the Fukushima Dai-ichi Nuclear Plant is observed from its side with a T-Hawk drone Friday, April 15, 2011 in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Experts say the dismantling process could take longer as the containment vessels of some of the reactors have been damaged and there are still instances of leaks involving water injected into the reactors to keep nuclear fuel cool.

(Mainichi Japan) July 11, 2011

## **Makeshift equipment at Fukushima hit by problems**

The operator of the Fukushima Daiichi nuclear power plant has been struggling for months to bring the plant's troubled reactors under control using **makeshift equipment**.

Since the March 11th disaster, Tokyo Electric Power Company has installed a number of **improvised devices and systems** to cool down the reactors and decontaminate radioactive water building up at the plant.

But these makeshift facilities have been plagued by glitches.

Earlier this month, the No. 5 reactor's cooling system was temporarily shut down after sea water leaked from a crack in the system's makeshift hose.

TEPCO says the hose was installed in a wrong way. It is reinstalling it on Monday.

The company says it is necessary to make the plant's makeshift equipment more durable, as it is expected to take some time to bring the reactors under control.

It says the makeshift hosing, in particular, requires more elaborate measures, as it carries highly contaminated water.

Monday, July 11, 2011 13:13 +0900 (JST)

## Cesium found in hay fed to beef cattle

Radioactive cesium far exceeding the legal limit has been detected in hay at a cattle farm in Fukushima Prefecture. The prefecture has been investigating how the cattle became contaminated with the radioactive substance.

Officials took samples of feed and well water at the farm in Minamisoma City on Sunday.

They say cesium far exceeding the government's safety limit of 300 becquerels per kilogram has been detected in the feed.

The farmer says the cows had been kept inside but were fed with hay left outdoors after the March nuclear accident.

Eleven cows from the farm were sent to Tokyo to be slaughtered. The beef from the animals contained levels of cesium that were more than triple the legal limit. The prefecture has asked farmers in the city to suspend beef cattle shipments.

Fukushima Prefecture will continue to investigate the feed and water and check if there were any problems with the way the cattle were raised.

Monday, July 11, 2011 12:50 +0900 (JST)

## Long-term response needed for radioactive water

The operator of the Fukushima Daiichi nuclear power plant is struggling to deal with radioactive water that is pooling in reactor buildings as the crisis goes into its 5th month.

Water being injected to cool reactors is becoming highly radioactive and accumulating in the basements of reactor buildings. In some facilities, contaminated water is just 20 centimeters from filling the basement.

On July 2nd, Tokyo Electric Power Company stopped using fresh water to cool the reactors and instead, began running a circulatory cooling system. The system pumps out and decontaminates

radioactive water before recycling it as a coolant.

But the system has suffered from a series of problems. **On Sunday it was suspended for 12 hours as radioactive water leaked from a decontamination device.**

Many of the glitches were caused by **non-durable materials used in parts of the system.**

The power firm is replacing some of the troublesome materials with more durable ones. Preparing a long-term response to deal with contaminated water will require making the entire decontamination device sturdier.

Monday, July 11, 2011 05:42 +0900 (JST)

## **Minami-soma starts internal radiation checks**

Minami-soma City in Fukushima Prefecture has begun checking the internal radiation levels of its residents.

**Two locations in the city have measured radiation of 20 millisieverts or higher per year,** a level that prompts the authorities to recommend the evacuation of nearby residents.

State and prefectural authorities are continuing their monitoring with the aim of designating the areas as radioactive hotspots, despite being outside the government-designated evacuation zone around the Fukushima Daiichi nuclear plant.

The residents who were examined at the city-run general hospital on Monday are living near these 2 areas.

After completing a questionnaire, the residents were checked for radiation with a whole body counter.

A 20-year-old man says he's very concerned about the outcome of the tests.

Minami-soma City says it will give priority to checking the radiation levels of residents and children, and **7,000 residents will undergo the checks by the end of next March.**

Monday, July 11, 2011 15:10 +0900 (JST)

## **TEPCO suspends water decontamination system**

[http://www3.nhk.or.jp/daily/english/18\\_10.html](http://www3.nhk.or.jp/daily/english/18_10.html)

Tokyo Electric Power Company has halted operation of a system to decontaminate highly radioactive water at the Fukushima Daiichi nuclear plant as **one of the parts reached its radiation exposure limit in less than 5 hours.**

The system went into service on Friday night.

One component of the system uses the mineral zeolite to absorb radioactive cesium. A replacement part of the US-made device had been expected to last one month, but radiation exceeding the maximum 4 millisieverts per hour led to the dramatically shortened lifespan.

TEPCO suspended operation of the device early on Saturday to determine the cause.

The utility says it has so far found no abnormalities with the system or water leakage in the system. It adds that the device's dosimeter may have detected radiation from nearby pipes containing contaminated water or other radioactive materials.

The treatment system holds the key to halting the accumulation of highly radioactive water and re-circulating contaminated water to cool the reactors.

Saturday, June 18, 2011 13:00 +0900 (JST)

## Spent fuel causing headaches for nuclear power plants

2011/06/29 <http://www.asahi.com/english/TKY201106280424.html>

The accident at the Fukushima No. 1 nuclear power plant has brought to light the cascading problem of spent nuclear fuel that threatens to overwhelm Japan's nuclear power plants.

Local governments are demanding that electric power companies remove the spent nuclear fuel from nuclear power plants, but plans for a reprocessing facility and an off-site storage facility are on hold.

According to a survey by The Asahi Shimbun, **while the nation's 17 nuclear power plants are capable of holding 83,000 spent nuclear fuel assemblies in storage pools, 70 percent of the combined storage capacity has already been used.**

Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant has the highest ratio of 93 percent, followed by Japan Atomic Power Co.'s Tokai No. 2 nuclear power plant in Ibaraki Prefecture with 86 percent.

The figure exceeds 60 percent at 10 other nuclear power plants.

**If storage pools are filled, a nuclear power reactor cannot continue to operate because newly created spent nuclear fuel cannot be removed from the reactor.**

At the Fukushima No. 1 and Tokai No. 2 nuclear power plants, operators have put some spent nuclear fuel in containers and stored them in a separate building on the plant premises.

Spent nuclear fuel needs to be cooled in storage pools because it emits large amounts of heat and radiation even after it is removed from a reactor.

**But fuel in storage pools, mainly located in reactor buildings, is separated from the outside only by the buildings' concrete walls,** while a pressure vessel within a container vessel holds nuclear fuel in a reactor.

In the accident at the Fukushima No. 1 nuclear power plant, storage pools lost cooling functions, raising the possibility that spent nuclear fuel is damaged and large amounts of nuclear materials are released.

Electric power companies are resorting to a last-ditch measure known as "**re-racking.**"

In storage pools, spent nuclear fuel is usually put into grid-like containers called racks and placed at certain intervals.

Re-racking means that racks are repositioned and intervals are narrowed so that more spent nuclear fuel is stored in a given space.

A survey by The Asahi Shimbun found that electric power companies have taken this approach at 29 nuclear power reactors.

TEPCO repositioned spent nuclear fuel at the Fukushima No. 1 and No. 2 nuclear power plants in the past.

At the Hamaoka nuclear power plant in Shizuoka Prefecture, Chubu Electric Power Co. more than doubled the capacity of the No. 2 reactor's storage pool to 1,820 spent nuclear fuel assemblies from the initial 840.

Currently, the pool contains 1,164 assemblies. The No. 2 reactor, which started operations in 1978, has been shut down for decommissioning.

**But experts say narrowing intervals between spent nuclear fuel could increase risks.**

Tadahiro Katsuta, associate professor of nuclear engineering at Meiji University, said re-racking is a stopgap measure.

"Nuclear fuel assemblies will be located closer to each other than initially designed," Katsuta said. "At least theoretically, the possibility will increase that criticality (self-sustaining nuclear chain reaction) occurs when assemblies are damaged in a severe accident."

To lower such risk, boron is added to rack materials because the chemical element absorbs neutrons, which cause nuclear fission.

Electric power companies are also considering **plans to build intermediate facilities to store spent nuclear fuel in steel containers that can shield radiation.**

An official of Kansai Electric Power Co., which operates 11 nuclear power reactors in Fukui Prefecture, said, "We are aware of the need of building an intermediate storage facility and are considering it."

Japan aims to recover plutonium from spent nuclear fuel at a reprocessing facility for use as nuclear fuel again.

**The spent nuclear fuel reprocessing facility is scheduled to begin operations in Rokkasho, Aomori Prefecture, in October 2012.**

But the plant was suspended during trial runs due to a series of technical problems, and no date has been set for resuming trial operations.

The reprocessing plant has accepted spent nuclear fuel from nuclear power plants, but there is little room left because the amount has exceeded 90 percent of its capacity.

TEPCO and Japan Atomic Power are planning to build an intermediate storage facility in Mutsu, Aomori Prefecture, to accept 5,000 tons of spent nuclear fuel that cannot be held at their nuclear power plants for 50 years.

But construction was suspended after the Great East Japan Earthquake.

"I think the government is considering reviewing safety guidelines," Mutsu Mayor Junichiro Miyashita told a news conference in April. "With such a move in mind, we have to take a cautious stance to the intermediate storage facility."

## **Longtime anti-nuclear engineer prepared to fight from within field to right wrongs**

It was dim in the narrow office at Kyoto University's Research Reactor Institute, where Hiroaki Koide, an assistant professor, sat at his desk one afternoon. The florescent lights were kept off, and despite the heat, so was the air conditioning.

"I don't use any unnecessary energy," said Koide, who has long been an anti-nuclear power activist. "Everyone has come to lead excessively luxurious lives, using things they don't need."

Stacks of documents and other literature on nuclear power were packed inside the small space, and once I took a seat, there was no room left for either of us to move.

An expert in radiation metrology and nuclear safety, Koide for years has rallied behind victims of radioactive materials. He served as a witness for the plaintiffs in a lawsuit seeking to revoke the construction permit given for the Ikata Nuclear Power Plant in Ehime Prefecture, and when the Tokaimura nuclear accident took place in 1999, he took on the task of measuring soil radiation levels. In another case, he was involved in estimating the number of cancer deaths in a certain area.

Ever since the disaster at the Fukushima No. 1 Nuclear Power Plant emerged, Koide has voiced criticism of the government and plant operator Tokyo Electric Power Co (TEPCO) over their handling of the crisis in various forums including newspapers, television, radio and lectures. His book, "Genpatsu no Uso" (Lies about nuclear power plants) released in June, has sold 200,000 copies. He has never been busier.

Born in Tokyo's Taito Ward, Koide graduated from Kaisei Senior High School and went on to study nuclear engineering at Tohoku University's School of Engineering, where he says he never missed a class.

"At the time, I believed that nuclear power was the energy of the future. I had it in my head that I wanted to use the incredible energy of atomic bombs for peaceful purposes," he said.

In 1969, the same year that he witnessed the violent clash between student activists and riot police at Tokyo University's Yasuda Hall on television, Koide learned about the controversy surrounding the planned construction of Onagawa Nuclear Power Plant straddling the Miyagi Prefecture town of Onagawa and city of Ishinomaki. Local fishermen were protesting the plant, questioning why a power plant that would supply most of its energy to the prefectural capital of Sendai had to be built in their backyard.

Koide was forced to rethink the issue of nuclear power plants, and reached a conclusion: If there were ever an accident at Onagawa Nuclear Power Plant, local residents would suffer health problems if they continued to live in the vicinity. At the same time, preventing residents from suffering such problems would mean they could no longer live in their hometowns.

It was 42 years later -- albeit in Fukushima Prefecture -- that Koide's concerns became reality.

Nuclear engineering departments at universities exist for the purpose of churning out scientists and technical experts who will go on to take a role in nuclear power generation. While some of his colleagues left the field for moral reasons, Koide decided he would stay and continue blowing the whistle on its problems.

Learning by chance that the **Kyoto University Research Reactor Institute** had an assistant professorship open, Koide applied and was accepted in the spring of 1974. By the time he joined the institute, there already were four assistants on staff who objected to nuclear energy. Koide went on to support lawsuits that involved nuclear power plants, and he, along with the four other anti-nuclear engineers and Tetsuji Imanaka, who joined the staff later, were dubbed the "**Anti-nuclear Gang of Six**" -- a twisted reference to the "Gang of Four" (a group of four Chinese Communist Party officials who were notorious for promoting the policies of the Cultural Revolution). The six scientists were at times even accused of being anti-national.

The Kyoto University Research Reactor Institute was established in 1963 for joint use by universities around the country, enabling them to conduct research utilizing its nuclear reactors. So why were Koide and the others who expressed opposition to the use of nuclear energy able to stay on the staff?

"The reactors here were built as a tool for producing neutrons. Whether one is pro- or anti-nuclear power is irrelevant, because the use of neutrons is applicable to the fields of physics, chemistry, and

medicine for cancer treatment," Koide said. "That said, the culture at Kyoto University of respecting the free will of its staff probably had something to do with it."

Koide avoids directly answering the question of why he has remained an assistant -- not a full -- professor for so many years by saying: "I'm an outsider (even considering the university where I received my degree)." Yet, he doesn't hold back on his criticism of Japan's "nuclear power village," a term referring to the cozy ties among the nuclear industry, academics, media and government.

"There's a vigorous screening process (for membership to "the village"). For example, if you're at the University of Tokyo and don't support state policies, you're out. The success of your career depends on the extent of your cooperation with the government," Koide said.

Called upon to testify before the House of Councillors Government Oversight Committee on May 23, Koide brought up the Seven Social Sins taught by Mohandas Gandhi. Of those, Koide said that "commerce without morality" described TEPCO and "science without humanity" applied to the nation's academic traditionalism, of which he himself declared to be guilty.

"The lives that people have led have been pulled out by the roots," Koide said quietly. "Considering the land, lives, and health that are going to be lost, it's impossible for me to say that nuclear power will somehow work out through scientific progress."

Koide has a large photo of Shozo Tanaka posted on a partition that divides his part of the office from his officemate's. He says that he holds the Meiji-era politician, who spent his life trying to help the victims of Ashio Copper Mine pollution incident, in the highest esteem.

When the industrial pollution incident took place, Japan was about to rush headlong into the Russo-Japanese War as it sought to become one of the great powers of the world. It was under such circumstances that Tanaka blew the whistle on the mineral poisoning of the Watarase River basin in Gunma and Tochigi prefectures. The story of Tanaka's direct appeal to the Meiji emperor and his efforts to save the local farmers in exchange for his own life is all too famous in Japan.

Coincidentally, on March 8, just days before the Great East Japan Earthquake and tsunami triggered the nuclear disaster in Fukushima, a handwritten tanka poem penned by Tanaka during his later years was found in Tochigi Prefecture. In it, Tanaka says that there is no point in begrudging criticism, and that joy is bound to come from sacrificing one's life and throwing oneself into something wholeheartedly.

"Up until his death, Shozo was there for the farmers who had been abandoned by the state," Koide explained. "Even when he was dying, he was more concerned about the mineral poisoning than he was about his own illness, and continued to encourage the local residents. It was a very gracious way to live one's life."



In this photo from a footage of a live camera released by Tokyo Electric Power Co. (TEPCO), black smoke billows from the crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, northeastern Japan, on March 22, 2011. (AP Photo)

Today, the nuclear crisis mirrors the industrial pollution case to which Tanaka dedicated himself.

Koide says that nuclear power plants force burdens on people on various levels.

"Nuclear power plants are fraught with risks that urban areas are unable to take on. Urban residents are forcing those risks onto people living in sparsely-populated areas, who are in a more vulnerable position in society. Even if we were able to prevent nuclear accidents, the volume of radioactive waste on our hands will continue to increase, and mankind does not have a way to render such waste harmless," he said. "Our generation is forcing that 'poison' onto future generations who have no say in the matter."

This "responsibility to future generations" is something on which Koide has long placed great importance.

"As someone in the field of nuclear power, I have a different responsibility from that of the layperson. But I believe that the general population also has a responsibility. Maybe you were conned by nuclear power proponents. But you must claim responsibility for having been duped."

Koide, a self-proclaimed maverick, seems prepared to face the long, grim battle that awaits Japan, where there currently are 54 nuclear reactors -- the third highest number in the world after the U.S. and France.

"The adults are the ones who have been promoting nuclear power, but it is our children who will likely bear the burden that comes with it. I want to fulfill my own responsibilities in order to somehow reduce their suffering," Koide says. (By Mamoru Shishido, Mainichi Shimbun)

(Mainichi Japan) July 11, 2011

1/07 | 07:00 | **Thibaut Madelin**

## Réchauffement des relations entre EDF et Areva

### **Luc Oursel, le successeur d'Anne Lauvergeon à la tête d'Areva, et Henri Proglio, le patron d'EDF, sont attendus le 25 juillet en Bourgogne aux côtés du ministre de l'Energie, Eric Besson. Les salariés de l'équipementier espèrent une grosse commande.**

Tout un symbole. Un mois après le départ de la patronne d'Areva, Anne Lauvergeon, son successeur Luc Oursel devrait se trouver, le 25 juillet en Bourgogne, au côté d'Henri Proglio, le patron d'EDF, à l'occasion de l'installation du comité stratégique de filière nucléaire par le ministre de l'Energie Eric Besson. A croire que le changement de casting permettra enfin une relation apaisée entre les deux fleurons de l'atome tricolore. « *Il y aura un certain nombre d'inflexions, et l'une des inflexions les plus importantes, c'est que nous voulons un dialogue serein, et de grande qualité, entre EDF et Areva* », a répété vendredi Eric Besson sur Europe 1.

En Saône-et-Loire, où se trouvent plusieurs usines d'Areva, on veut voir dans cette visite le signe d'un gros contrat imminent. « *Ils veulent annoncer une commande conséquente pour Areva de remplacement par EDF de générateurs de vapeur dans les centrales nucléaires françaises, croit savoir Patrick Buchot, délégué syndical central CFDT chez Areva NP, la filiale de réacteurs. On pourrait se voir attribuer un marché compris entre 28 et 36 générateurs de vapeur sur 44, ce qui permettrait de relancer pleinement la production du secteur équipement d'Areva en Saône-et-Loire.* »

La perspective d'une commande importante semble se confirmer, mais EDF reste très prudent sur la question. « *Les discussions sont en cours. Cela peut aller très vite comme cela peut traîner* », indique sobrement une source proche du dossier. Elle assure que la décision ne sera connue qu'en septembre, après l'accord du conseil d'administration. Une précaution d'usage dans le cadre d'un appel d'offres européen de cette ampleur -entre 1 à 2 milliards d'euros -comme c'est le cas pour ces gros composants.

Historiquement, Areva était le fournisseur exclusif d'EDF pour ce genre de produits. Mais le groupe a dû accepter la concurrence du japonais Mitsubishi Heavy Industries lors d'appels d'offres récents. Cette fois-ci, il se trouve en compétition avec le même japonais ainsi que l'américain Westinghouse. EDF veut faire jouer la concurrence, mais aussi diversifier ses risques. « *On veut être sûrs d'être livrés dans les délais* », indique un responsable, citant un retard d'un an d'Areva pour la livraison d'un générateur de vapeur pour la centrale de Bugey.

Sur le fond, l'Etat, actionnaire d'EDF et Areva, ne peut pas se permettre de délaissier l'équipementier nucléaire au moment où son avenir est assombri par la catastrophe de Fukushima. De son côté, Luc Oursel affiche son intention de travailler étroitement avec EDF, dont il ne conteste par le leadership de la filière nucléaire. Ce qui fait parfois grincer des dents en interne, certains se rappelant ses anciennes échauffourées avec l'opérateur historique. Le nouvel homme fort d'Areva a rencontré Henri Proglio début juillet.

T. M., Les Echos

## **Expert: contaminated beef poses no problem**

An expert on nuclear medicine says eating meat contaminated with the radioactive substance cesium on a few occasions will not cause health problems.

Keigo Endo is the president of Kyoto College of Medical Science.

He says **Japan's safety limit for cesium is stricter than in the United States or Europe** where a large amount of meat is consumed.

Endo says eating 500 grams of meat containing the safety limit of cesium for at least 200 days would add up to 1 millisievert of radiation.

However, he says the government should work out measures immediately to prevent beef containing cesium above the safety limit from reaching the market including stepping up checks.

Monday, July 11, 2011 21:31 +0900 (JST)

## **High level contamination in reactor building found**

The operator of the troubled Fukushima Daiichi nuclear power plant says it has detected **airborne radioactive materials up to 65 times above the government's standard inside the No. 2 reactor building.**

Tokyo Electric Power Company has been conducting an investigation inside the 3 reactor buildings and in areas surrounding the buildings since early this month.

On Monday, the plant operator said robots have detected airborne cesium-134 inside the No.2 reactor building ranging from 40 to 65 times above the government's standard.

The buildup of the radioactive air inside reactor buildings is believed to have originated from **explosions and steam leaking from the damaged reactors.**

TEPCO says that it's necessary to confirm the origin and amount of radioactive materials and to reduce the density of the contamination so that work can begin to bring the reactors under control.

Monday, July 11, 2011 21:52 +0900 (JST)

<http://www.flickr.com/photos/tepcos311/>

<http://www.asianweek.com/2011/04/23/tepcos-releases-fukushima-nuclear-up-pictures/>

## **High-level cesium detected at waste disposal facilities in Chiba**



In this photo released by Tokyo Electric Power Co. (TEPCO), gray smoke rises from Unit 3 of the tsunami-stricken Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, Japan, Monday, March 21, 2011. (AP Photo/Tokyo Electric Power Co.)

CHIBA, Japan (Kyodo) -- High levels of radioactive cesium have been detected in incinerated ashes at waste disposal facilities in Kashiwa, Chiba Prefecture, in apparent effects from the nuclear crisis at the Fukushima Daiichi power plant, the local municipal office said Monday.

At one waste disposal center in Kashiwa, up to 70,800 becquerels of radioactive cesium per kilogram were detected from ashes collected on June 24 and more than 60,000 becquerels were observed from ashes collected on July 1 and 2, the city office said.

Up to 48,900 becquerels of radioactive cesium were also detected at a facility for burying the ashes from waste disposal centers in the city, while a maximum of 9,780 becquerels were observed at another waste disposal center, the office said.

The figures far exceed the 8,000-becquerel per kilogram cap set by the state for waste disposal facilities to temporarily store such ashes.

(Mainichi Japan) July 12, 2011

## **Decontamination system fails again**

Workers at the Fukushima Daiichi nuclear plant are still struggling to stably cool its reactors. Operator Tokyo Electric Power Company says a key system to decontaminate highly radioactive water has been halted yet again.

TEPCO says workers spotted a leak near a feeding pipe for a French-made device on Tuesday morning. TEPCO is trying to find out the cause and conduct repairs.

Water leaked from the same device on Sunday, forcing operations to halt.

The decontamination facilities are a key part of a system to treat and recycle radioactive water as coolant inside the disabled reactors. But the system has suffered one problem after another since going into operation at the end of June.

This could undermine TEPCO's target of stably cooling the reactors by July 17th as the first step in its schedule to bring the plant under control.

Tuesday, July 12, 2011 12:34 +0900 (JST)

## Checking internal radiation of people begins

An atomic energy research facility in Ibaraki Prefecture has begun screening residents from neighboring Fukushima in northeast Japan for internal radiation.

**Fukushima Prefecture plans to check its entire population of about 2 million** to assess the effect of the accident at the Fukushima Daiichi nuclear plant. [\[but how at that rhythm ?\]](#)

It is now checking internal radiation levels for residents in the evacuation zone and areas near the nuclear plant as well.

Similar checks have also begun at the government-affiliated Japan Atomic Energy Agency in Tokai Village, Ibaraki where a total 28 pregnant women, parents and their small children from Namie Town arrived on Tuesday.

A piece of equipment called a **Whole Body Counter** will be used to determine if they have absorbed radioactive materials through food and drinks.

The facility will examine about **2,800 people** from Fukushima through next month.

Takumaro Momose at the facility says he knows that people in Fukushima are fretting about internal radiation and that he explains to each person the details of their test results to help ease their anxiety.

Tuesday, July 12, 2011 14:41 +0900 (JST)

## TEPCO prepares for nitrogen injection

The operator of the crippled Fukushima Daiichi nuclear power plant will begin fixing pipelines at the No. 3 reactor on Tuesday afternoon in preparation for injecting nitrogen into its container.

Tokyo Electric Power Company says workers confirmed last Friday that pipes could be connected to the container.

TEPCO plans to inject nitrogen into the container in an effort to avoid a hydrogen explosion. The utility has set a target of July 17th to complete the operation. Nitrogen was injected into the No. 1 reactor in April and No. 2 reactor in June.

The utility on Monday reported its plan to the Nuclear and Industrial Safety Agency and described safety measures to limit workers' radiation exposure.

**TEPCO also told the agency how the injection will impact the container.**[\[???](#)

The company says it wants to begin the injection as soon as it obtains approval from the safety agency.

TEPCO also said that **6 workers have been exposed to a level of radiation higher than the 250-millisieverts emergency limit since the accident. It said the levels ranged from 308 to 678 millisieverts.**

Tuesday, July 12, 2011 03:29 +0900 (JST)

## **Nuclear crisis minister wants underground barrier built quickly**



In this June 12, 2011 photo released on July 5, 2011 by Tokyo Electric Power Co., masked workers in protective outfits prepare to drop one of sliding concrete slabs into a slit of the upper part of the sluice screen for Unit 2 reactor at the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan, in their effort to decrease the leak of radiation contaminated water to the ocean. (AP Photo/Tokyo Electric Power Co.)

Goshi Hosono, minister in charge of the ongoing nuclear crisis, suggested July 11 that the government should push ahead with the construction of an underground barrier to block the flow of highly contaminated water from the Fukushima No. 1 Nuclear Power Plant as soon as possible.

Construction of such a barrier will cost more than 100 billion yen, according to some estimates. Hosono suggested that the government should help the plant's operator, Tokyo Electric Power Co. (TEPCO), with the project.

"Can a private company such as TEPCO handle this itself? I think the government should move into action, even if that means going a step ahead," Hosono said.

Contaminated water has leaked from reactor and turbine buildings at the crippled nuclear plant. **To stop this water from spreading through underground water and flowing into the sea,** TEPCO plans to construct underground walls extending to a depth of 30 meters. Under its roadmap for bringing the nuclear crisis under control, which was revised in June, consideration of the best way to block the flow of contaminated water, as well as selection of a solution and construction, had been deemed "mid-term issues" after Step 2 of the roadmap that began in July and continues for three to six months.

"Construction of a barrier is an important process. We finished considering plans at an early stage of Step 2, and have started considering whether we can quickly begin construction," Hosono said.



In this June 30, 2011 photo released on July 5, 2011 by Tokyo Electric Power Co., sliding concrete slabs, seen above orange floats, are all set in the upper part of the sluice screen for Unit 2 reactor at the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan, in TEPCO's effort to decrease the leak of radiation contaminated water to the ocean. (AP Photo/Tokyo Electric Power Co.)

The minister's comments, made at a meeting of the House of Representatives' special committee on restoration following the Great East Japan Earthquake and tsunami, came in response to an inquiry from Liberal Democratic Party lawmaker Masayoshi Yoshino.

(Mainichi Japan) July 12, 2011

## **Wife to seek work accident compensation over Fukushima plant worker's death**

The wife of a man who died from a heart attack while working at the crippled Fukushima No. 1 Nuclear Power Plant plans to seek recognition of his death as a workplace accident, it has been learned.

The 60-year-old worker, Nobukatsu Osumi, a plumber from the Shizuoka Prefecture city of Omaezaki, died on May 14, after being dispatched to the nuclear power plant from a company cooperating with Toshiba Corp. to help bring the nuclear crisis under control.

Osumi's 53-year-old wife, a Thai national, plans to file to have his death recognized as a workplace accident eligible for compensation at the Yokohama Minami Labor Standards Inspection Office, which deals with Toshiba's workplace accident insurance, as early as this week.

Toshiba and other sources said that Osumi had experience working at the Hamaoka and Shimane nuclear power plants in the past. **From Toshiba's perspective he was a temporary employee for a construction company designated as a fourth-level subcontractor.**

In a shift between 6 and 9 a.m. from May 13, Osumi was involved in work that included laying pipes for a facility to treat waste at the plant. At about 6:50 a.m. the following day, while he was carrying a special saw, he complained that he felt unwell. He was eventually taken to a hospital in the Fukushima

Prefecture city of Iwaki, but shortly after 9:30 a.m. he was confirmed dead as the result of a heart attack.

During the course of his work at the plant he received only a small radiation dosage of 0.68 millisieverts, and it was judged his health was not affected by exposure to radiation. However, it was pointed out that there were deficiencies in the emergency care system for workers, as **it took more than two hours for Osumi to reach hospital from the time that he complained of feeling ill.** Since Osumi's death, Tokyo Electric Power Co. (TEPCO), the nuclear power plant's operator, has placed a doctor on standby for workers.

Neither Toshiba nor TEPCO have paid consolatory money or other compensation to Osumi's wife. Her lawyer has criticized their treatment as "cold."

"Mr. Osumi was working in a harsh environment wearing a mask and protective clothing. Their treatment of this worker, who was putting his life on the line in his work, is too cold."

A TEPCO representative said the company did not believe there was a strong connection between the work and Osumi's death. Toshiba's public relations office, meanwhile, commented, "The relationship between the work and the heart attack is unclear, and at this stage we cannot judge whether or not it was a workplace accident."

Noboru Yanagisawa, an emeritus professor in labor law at Yamaguchi University, said that workplace accident compensation should be granted to Osumi's case.

"With workplace accidents, problems emerge over the acknowledgement of whether psychological and mental ailments occurred in the course of the person's work or not, but work environments that grossly lack life-saving measures are also taken into consideration. It is difficult to determine whether the heart attack occurred due to the work this time, but it is clear that there were delays in life-saving measures, and this case should be recognized as a workplace accident."

(Mainichi Japan) July 12, 2011

## **Residents get together to decontaminate city after discovery of radiation hotspots**



Radioactive pool water is decontaminated at Tominari Elementary School in Date, using tanks containing zeolite absorbents. (Mainichi)

FUKUSHIMA -- Residents in the Fukushima Prefecture city of Date have banded together to decontaminate the city after the discovery of radiation hotspots that led to 113 households being placed under special evacuation recommendations.

Their move comes in response to fears that that the government system placing only certain households in the city under evacuation recommendations could create rifts in the local community.

The city of Date covers an area of about 265 square kilometers. In the wake of the crisis at the Fukushima No. 1 Nuclear Power Plant, many areas besides the city's radiation hotspots have shown high radiation levels, prompting the municipality to hammer out its own decontamination measures.

On June 27 a decontamination project team was formed, with Shunichi Tanaka of the Japan Atomic Energy Commission serving as an advisor and the Japan Atomic Energy Agency in Tokai, Ibaraki Prefecture, providing technical support.

From the beginning of this month, work to decontaminate Tominari Elementary School, which has a roll of 60 pupils, began. Water in the school's outdoor pool contained cesium with a radioactivity of 100 to 600 becquerels per kilogram, but the water was purified using zeolite absorbents, reducing the radiation to 20 becquerels per kilogram -- below the safety limit of 50 becquerels per kilogram set for seaside bathing spots. At the same time, officials confirmed that using electric planers to shave the surface of asphalt, cutting the grass on slopes and removing surface soil could reduce radiation to one-tenth of the original level.

The Date Municipal Assembly passed a supplementary budget including about 400 million yen for decontamination countermeasures, but due to limited funds the city started seeking volunteers on July 11. On July 16 and 17, the city will mobilize a large team of people to cut grass and remove surface soil. It hopes to open the school's pool on July 18.

"By having the cheerful voices of children return, we hope this will create a foothold for the city to recover," Date Mayor Shoji Nishida said.

About 200 people are needed to carry out the work on July 16 and 17. Volunteers can register at <http://www.fukushima.coop/> (Japanese language only).

(Mainichi Japan) July 12, 2011

## **TEPCO restarts decontamination system**

The operator of the Fukushima Daiichi nuclear power plant has restarted a system to decontaminate highly radioactive water **after an 8-hour halt** to replacing a faulty part.

Tokyo Electric Power Company had stopped running the system on Tuesday morning after workers spotted a leak from a joint that connects a pipe. The pipe feeds chemicals to a French-made device designed to break down radioactive materials.

TEPCO says the original metal joint was corroded by the chemicals and that it has now replaced it with a stainless-steel part.

The original joint had been replaced with a polyvinyl joint only 2 days ago due to another leak.

The decontamination facilities are a key part of TEPCO's plan for treating and recycling radioactive water as coolant inside the disabled reactors.

But the system has suffered one problem after another, raising question about TEPCO's announced target of stably cooling the reactors by July 17th, the first step in its plan to bring the plant under control.

Also on Tuesday, TEPCO completed work to connect pipes for the injection of nitrogen into the containment vessel of the No. 3 reactor to prevent a hydrogen explosion.

The utility plans to start nitrogen injections in a few days after receiving approval from the government's Nuclear and Industrial Safety Agency.

Tuesday, July 12, 2011 19:35 +0900 (JST)

### **Press Release WISE/SOMO Report on uranium mining**

Amsterdam, 12 July 2011

#### **Uranium mines threaten African people and nature**

**Uranium exploitation leads to large-scale radiological and toxic contamination around many mining sites in Africa. Multinational mining companies remain largely unregulated and unaccountable, public participation in decision making regarding uranium mining is minimal, and long-term effects are insufficiently addressed. These are the findings of a report published today by the Dutch research organisations WISE and SOMO entitled *Uranium from Africa: Mitigation of uranium mining impacts on society and environment by industry and governments*.**

Over the past year, the World Information Service on Energy (WISE) has conducted research in South Africa, Namibia, and the Central African Republic and has compared the situation in those countries with conditions in Canada and Australia, both of which are historically important uranium producing countries. The research involved extensive interviews with representatives of African governments, civil society, and five uranium mining companies: **France-based AREVA**, South African AngloGold Ashanti, English-Australian Rio Tinto, Australian Paladin, and Canadian First Uranium

The rising demand for uranium to produce nuclear energy has led to an increase of uranium mining activities in Africa in recent years. In countries such as Niger, Namibia, South Africa, the Central African Republic, Malawi, and Tanzania, companies have expanded their mines or are opening new mines.

Uranium mining is associated with high environmental impacts and human health risks. The costs of rehabilitation of the mining area are often many times higher than the total revenues derived during the mine's entire lifetime. Nevertheless, uranium mining operations are welcomed in many African countries due to the short-term economic benefits they provide.

The report describes how multinational uranium mining companies are generally not held accountable for their social and environmental performance at African operations, and how governments and populations are struggling with a lack of knowledge and means to exert influence over companies and to address irresponsible corporate behaviour. Public participation in decision making is minimal and protection of human rights is insufficient. Radioactive and toxic contamination of water, land, and air is often not effectively addressed.

The social and environmental conditions at uranium mines is an increasingly relevant issue given mounting pressure on electricity companies to take responsibility for the conditions in the commodity chains that supply fuel for generating electricity.

Fleur Scheele, researcher at WISE and author of the report: "The serious problems associated with uranium mines in Africa raise doubts about the genuineness of electricity companies' commitment to supply chain responsibility."

The report was carried out as part of a larger SOMO/WISE project on uranium mining in Africa that included the February 2011 publication of a study entitled *Radioactive Revenues: Financial Flows between uranium mining companies and African governments*. Both reports can be downloaded from [www.somo.nl](http://www.somo.nl).

Direct link to the report: [www.antenna.nl/wise/uranium.pdf](http://www.antenna.nl/wise/uranium.pdf)

For more information, please contact Fleur Scheele at WISE: +31 20 612 63 68 or [wiseuranium@antenna.nl](mailto:wiseuranium@antenna.nl)

## Gov't to set up body to study reactor decommissioning

TOKYO (Kyodo) -- The government asked its nuclear policy commission to set up a body to consider medium- to long-term steps for handling the troubled Fukushima Daiichi nuclear power plant after the current crisis is over, such as how to remove melted fuel and decommission the crippled reactors, a Cabinet minister said Tuesday.

The remarks came as plant operator Tokyo Electric Power Co. is expected to realize the stable cooling of troubled reactors later this month and move toward the next goal of stabilizing them by so-called cold shutdown, although the plant's key water treatment system again saw a leakage problem Tuesday.

Discussions of the kind have already begun centering on the Atomic Energy Commission, comprising five commissioners, but Goshi Hosono, minister in charge of nuclear accidents, said in a press conference in the morning he has asked the commission, an organ of the Cabinet Office, that discussions be conducted at a formal forum.

As for the melted nuclear fuel rods and spent fuel being left inside the plant, Hosono said, "We must find a way not to make Fukushima Prefecture the final disposal site. But I'm sorry for the people in Fukushima because (the fuel) will remain there for an extremely long time."



In this photo released by Tokyo Electric Power Co. (TEPCO), a small fire breaks out from facilities sampling seawater located a few dozen meters from Unit 4 inside the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan, Tuesday morning, April 12, 2011. The

fire was put out soon and the ongoing cooling operations at the main units were not affected according to TEPCO. (AP Photo/Tokyo Electric Power Co.)

Efforts to restore the plant continued Tuesday, with a system to decontaminate highly radioactive water resuming operations in the afternoon after replacement of a leak-causing component, according to Tokyo Electric spokesman Junichi Matsumoto.

Designed to recycle decontaminated water as a coolant for the Nos. 1 to 3 reactors, the system must run smoothly to eventually contain the ongoing nuclear crisis triggered by the March 11 massive earthquake and tsunami. It also reduces the massive amount of highly radioactive water accumulating on the plant premises as a side effect of injecting water to cool the reactors.

The latest leakage was found in the installation developed by France's Areva SA. After similar trouble detected Sunday, Tokyo Electric had replaced the component from a plastic one to an iron one, apparently to no avail.

Matsumoto said during a joint press conference with Hosono and other government officials that workers used a component made of stainless steel on Tuesday to address the trouble.

Meanwhile, workers also prepared to inject nitrogen into the No. 3 reactor to reduce the risk of further hydrogen explosions. Nitrogen is already being injected into the Nos. 1 and 2 reactors.

Hosono said he was happy that workers finished installing a hose to inject nitrogen into the No. 3 unit by overcoming the high radiation level seen inside the building.

(Mainichi Japan) July 13, 2011

## **TEPCO halts reactor cooling to replace hose**

Tokyo Electric Power Company says it has resumed cooling of the **No. 5 reactor** at the Fukushima Daiichi nuclear power plant after a brief stop to replace a hose.

TEPCO said it had stopped cooling at 6:30 AM on Wednesday to replace a vinyl hose feeding seawater into the cooling system. It says the hose was touching the edge of a concrete structure and could have ruptured.

The utility says cooling resumed shortly before 11 AM.

It says the reactor's temperature rose more than 6 degrees during the repair, to 49.3 degrees Celsius, but the cooling process remained stable.

The utility has been checking all the hoses at the No. 5 reactor since a leak earlier this month forced it to halt cooling for more than 3 hours.

Wednesday, July 13, 2011 13:02 +0900 (JST)

## Moms set up network to protect kids from radiation

Japanese mothers have set up a **nationwide network to protect their children from food contaminated with radioactive substances.**

About 450 mothers and others from across the country gathered to kick off the organization in Tokyo, on Tuesday.

A mother from Fukushima said that the national and local governments simply repeat that food on the market is safe, but she cannot trust their words. She said the group should urge prefectural governments to take sufficient measures to ensure children can eat safe food.

Participants were then divided into groups based on the areas they are from, and discussed their worries.

A mother who lives near Tokyo said she hopes members will share information to protect their children from radiation exposure.

Another mother said she now knows that many parents share their worries. She said that she hopes their efforts will gain momentum and bring about change.

Tuesday, July 12, 2011 20:37 +0900 (JST)

## New cooling devices set for Fukushima fuel pools

The operator of the troubled Fukushima Daiichi nuclear plant is to set up two more cooling systems for reactors' spent fuel storage pools.

**The planned devices are to start operating in late July at the No. 4 reactor pool and in early August at the No. 1 pool.**

Spent fuel rods are currently kept in the storage pools of each of the 4 reactor buildings. The No. 2 and No. 3 reactor buildings already have cooling systems and water temperatures in these pools is at the normal level of below 40 degrees Celsius.

The Nuclear and Industrial Safety Agency has instructed Tokyo Electric Power Company to report details of the installation plan by Wednesday.

TEPCO also needs to report the earthquake-resistance of the new systems and measures to prevent water leakage.

Wednesday, July 13, 2011 10:25 +0900 (JST)

## Fukushima to conduct radiation tests on all beef in evacuation zones before shipping meat

FUKUSHIMA -- The prefectural government has decided to kill all beef cows kept at about 260 livestock farms in evacuation zones in the prefecture and conduct radiation tests on them locally before shipping their meat, officials said.

The decision follows revelations that beef cows contaminated with high levels of radioactive cesium were shipped from a livestock farm in Minamisoma, Fukushima Prefecture.

The Fukushima Prefectural Government has deemed that the measure is indispensable to alleviate consumers' concerns and prevent groundless rumors that beef produced in the prefecture is contaminated with radiation.

Livestock farms in Fukushima Prefecture ship approximately 33,000 beef cows a year. Of them, only 10 percent are processed into meat inside the prefecture, while the remainder are shipped out of the prefecture before being slaughtered. Most of the cows are sent to markets in the Tokyo metropolitan area.

Shortly after the crisis at the tsunami-hit Fukushima No. 1 Nuclear Power Plant, the prefectural government had asked the Health, Labor and Welfare Ministry and the Agriculture, Forestry and Fisheries Ministry to create a system in which municipalities that have slaughterhouses can conduct radiation tests on all cows after they were shipped out of the prefecture.

However, the prefecture has recently been forced to change its initial policy because **it is extremely difficult to ask local governments, which are preoccupied with conducting radiation tests on fruit and vegetables, to examine beef cows as well.**

There are also other challenges. A slaughterhouse in Koriyama is the sole such facility in the prefecture, and it can process only 36 cows a day. The prefectural government intends to consult with the industry organization over how to create a system to ensure that all the beef cows can be slaughtered and that radiation tests can be conducted on them in the prefecture before being shipped.

Moreover, since **there is not enough equipment to detect and measure radioactive substances in the prefecture,** the prefectural government is poised to commission the National Institute for Agro-Environmental Sciences to conduct radiation tests on some of the beef cows.

 [Click here for the original Japanese story](#)

(Mainichi Japan) July 13, 2011

## PM Kan wants to wean Japan from nuclear power

By [Kiyoshi Takenaka](#) and [Yoko Kubota](#)

TOKYO | Wed Jul 13, 2011 7:03am EDT <http://www.reuters.com/article/2011/07/13/us-japan-nuclear-kan-idUSTRE76C19O20110713>

(Reuters) - Japanese Prime Minister Naoto Kan said on Wednesday the Fukushima nuclear crisis had convinced him that [Japan](#) should wean itself from nuclear power and eventually have no atomic plants.

The radiation crisis at Tokyo Electric Power Co's Fukushima plant, triggered by the March 11 earthquake and tsunami, has sparked debate about the role of nuclear power in quake-prone, resource-poor Japan, as well as concerns about power shortages with 35 of the nation's 54 reactors now halted.

"Given the enormity of the risks associated with nuclear power generation, I have realized **nuclear technology is not something that can be managed by conventional safety measures alone,**" Kan told a news conference. "I believe we should aim for a society that is not dependent on nuclear power generation."

The Fukushima plant is still leaking radiation four months on, although Kan said workers were on track to achieve a target of stable cooling of the reactors by mid-July and that the government hoped to move forward its deadline of putting the crippled reactors into cold shutdown by January.

Kan said it was premature to set a time frame for achieving the goal of a nuclear power-free society but said it would be a gradual process.

The unpopular prime minister has become increasingly sensitive to public concern about nuclear power, but whether he oversees an overhaul of energy policy is in doubt since he has promised to resign, although he has not said when.

Kan also said Japan would be able to avoid summer and winter power shortages through energy conservation efforts and companies' in-house power supplies, despite the large number of reactors now off-line for inspections or other work.

He said the government would take steps to alleviate the impact on consumers and businesses from the short-term loss of nuclear power due to idled reactors, but gave no details.

## RISKS OF ZERO NUCLEAR POWER

**Nuclear energy accounted for about 30 percent of Japan's power supply before the March 11 disasters** crippled Tokyo Electric's Fukushima plant, 240 km (150 miles) north of the capital. That ratio slipped to 18 percent in June.

Nuclear power advocates have warned that abandoning atomic energy would itself entail risks, although of a different kind.

"Phasing out nuclear power is not risk-free," said Tatsujiro Suzuki, vice chairman of the Japan Atomic Energy Commission, which advises the government on nuclear policy.

"Probably the immediate risk would be increased consumption of fossil fuels that would lead also to CO2 emissions increases and other air pollution," Suzuki told Reuters in an interview.

Japan has set a target for 2020 of reducing greenhouse gas emissions by 25 percent from 1990 levels.

"Another possible risk would be energy prices could go up and possibly dependence on the Middle East or other fossil fuel exporting countries," Suzuki said.

"Having a vision of being nuclear energy-free is one thing. How to achieve it is another thing. It is very difficult to phase out nuclear power in a real sense," he said.

Economics Minister Kaoru Yosano, an ardent supporter of nuclear power, echoed concerns about economic costs, telling a news conference that substituting fossil fuel for atomic energy would be equivalent to a large rise in Japan's corporate tax and slice several trillion yen (tens of billions of dollars) off gross domestic product.

But he gave no time frame for that prediction.

Energy experts said Japan would have to boost fuel imports to make up for any short-term decline in nuclear power.

"It takes time to reduce reliance on nuclear power and replace it with alternatives, maybe a span of 10 years or so," said Koki Ota, senior economist at Sumitomo Shoji Research Institute, adding that demand for low-sulphur waxy residue and gas imports would strengthen the most.

Kan, who has come under fire for his handling of the nuclear crisis, defended his introduction of stress tests for reactors to soothe public safety concerns but apologized once again for the apparent abruptness of the move.

He said that idled reactors that completed the first stage of the two-stage stress tests could resume operations if experts and relevant cabinet minister agreed.

Last week's decision to introduce the tests, simulations to confirm nuclear plants' safety and check their ability to withstand extreme events, fanned corporate worries about power shortages if idled reactors stay off-line, and outraged some local officials who had been ready to approve restarts after earlier government safety assurances.

Kan said he was not thinking about calling a snap election over energy policy and sidestepped a question on when he would quit.

Among the conditions he has previously cited for resigning is passage of a bill that would promote renewable energy sources such as solar and wind power. (\$1 = 78.740 Japanese Yen)

## **Wastewater filters still working below target**

A system installed to recycle radioactive wastewater at Fukushima Daiichi nuclear plant continues to work below its target capacity, due to a series of filter problems.

The plant's operator, Tokyo Electric Power Company, started running the system on June 27th to decontaminate radioactive wastewater pooled in reactor buildings, and send it back into the reactors as coolant.

The utility aims to have the system's decontaminating device working at 80 percent capacity.

However, the operating rate for the first week was below target. During its second week, the system was only operating at **73 percent capacity**.

Tokyo Electric blames the failure to reach the target on repeated problems with filters used to remove radioactive substances.

**The decontaminating device was halted again on Wednesday afternoon because of leaks.**

The utility considers the system to be critical in cooling the reactors and bringing them under control in line with the timetable it has set.

Wednesday, July 13, 2011 19:22 +0900 (JST)

## **Quake damage to turbine blades found at Tokai**

Damage to turbine blades, apparently caused by the March 11th earthquake, has been found at a nuclear power plant in Ibaraki Prefecture, eastern Japan.

The Tokai Daini plant, about 100 kilometers north of Tokyo, automatically shut down in the quake. The operator of the plant, Japan Atomic Power Company, has been checking the plant closely since May in a regular checkup scheduled to last 6 months.

It says it discovered friction marks on the blades and other parts of the reactor's turbines.

The company believes the damage was caused by the March 11 quake as similar marring had been reported in another plant in Niigata Prefecture in the wake of an earthquake in 2007.

The utility says some parts were also found missing from a device that injects coolant into the reactor. It also discovered cracks in equipment attached to the upper parts of the reactor.

It says it is investigating whether those defects were also caused by the March quake.

In the giant quake, the Tokai Daini plant lost its outside power sources, and had to rely on emergency generators until regular power returned.

Earlier this month the government nuclear safety body found the level of quake-resistance of the electrical equipment at the plant was below the standard set by power companies.

Wednesday, July 13, 2011 22:26 +0900 (JST)

## **Utility's campaign to outvote opposition to atomic plants worked**

FUKUOKA (Kyodo) -- Kyushu Electric Power Co.'s email campaign mobilizing utility and nuclear power plant employees apparently worked in drawing more e-mail opinions supporting the restart of reactors than those against in a TV program aired in late June, utility sources said Wednesday.

The TV program received a total of 286 opinions in support by e-mail and fax, while those opposed totaled 163. While the margin was 123, the utility sources said around 130 people associated with the utility posted their opinions and most of them were thought to be in support.

Kyushu Electric Power has also identified its former Executive Vice President Mamoru Dangami as having instructed his deputy to launch a campaign to send e-mails to the TV program in favor of restarting its nuclear reactors, the sources said.

The utility will admit its organized e-mail campaign in a report that it will submit to the Ministry of Economy, Trade and Industry possibly on Thursday, the sources said.

Dangami instructed Akira Nakamura, deputy head of the utility's nuclear power control department, to enliven discussions on the TV program, which was designed to win support for restarting two reactors after regular checks at the Genkai nuclear plant in Saga Prefecture, the sources said.

Nakamura then conveyed the instruction to his deputy who asked Kyushu Electric employees, including those at affiliates of the company, to send e-mails supporting the restart for the TV program aired June 26, they said.

Kyushu Electric had earlier denied an organized e-mail campaign, indicating it was initiated voluntarily by a senior employee.

Dangami resigned as executive vice president in charge of nuclear plants in late June.

The TV program was aimed at paving the way for restarting Genkai and other nuclear reactors after regular checks, but they had not been restarted due to the crisis at the Fukushima Daiichi nuclear plant caused by the March 11 earthquake and tsunami in northeastern Japan.

(Mainichi Japan) July 14, 2011

## **Kan seeks shift from nuclear power**

Prime Minister Naoto Kan says Japan should gradually decrease its dependency on nuclear energy, and aim toward creating a society that can get along without it.

Kan announced the shift in the country's energy policy at a news conference in Tokyo on Wednesday.

Kan said the Fukushima nuclear plant crisis that followed the March 11th disaster made him realize that nuclear technology could become uncontrollable.

He added that until the accident, he had backed the use of nuclear energy as long as it was safe.

Referring to restarting idled reactors, Kan said his government could make a final decision on the

restart, if government assessments find them to be safe.

On a positive note, Kan said his ministers have told him that power supplies for peak consumption this summer and the coming winter will be adequate, thanks to nationwide power-conservation efforts.

He also said that the government will consider increasing the use of natural gas to secure electric power supplies for next year and beyond.

Presently nuclear generated power accounts for about 30 percent of Japan's electricity.

Wednesday, July 13, 2011 20:14 +0900 (JST)

## **Mixed reaction greets shift from nuclear power**

Prime Minister Naoto Kan's new initiative to reduce Japan's dependence on nuclear power has drawn both support and criticism.

Kan announced the shift in nuclear and energy policy on Wednesday.

He said Japan should gradually but systematically reduce its dependence on nuclear power and work toward becoming a society that can do without nuclear energy.

The announcement drew a positive response from the governing coalition as well as some opposition lawmakers.

They welcomed the idea of reducing nuclear dependence and promoting renewable energy sources.

But Economic and Fiscal Policy Minister Kaoru Yosano says the possible economic impact of such a policy shift should be taken into account.

The Japan Business Federation is also cautious, saying nuclear plants continue to play an important role in the stable supply of electricity.

Following the prime minister's initiative, the government will begin a review of its basic energy policy, which is based on building more nuclear reactors.

An energy and environmental panel made up of Cabinet ministers will first make a list of issues to be studied to reduce nuclear dependency.

Thursday, July 14, 2011 10:22 +0900 (JST)

## **Kyushu Electric delays restart of Sendai reactor**

Kyushu Electric Power Company on Thursday announced the postponement of the restart of operations of the Number One nuclear reactor at its Sendai plant in the southwestern prefecture of Kagoshima,

citing local opposition.

The reactor was initially scheduled to resume operations in late July.

A regular checkup on the reactor began in May and has been completed.

The utility cited as another reason a lack of a timetable for the central government's plan to carry out additional safety assessments called "stress tests" on nuclear plants.

The mayor of Satsumasendai City, where the plant is located, says one condition for the restart would be the restart of operations at the Genkai nuclear power plant in Saga Prefecture.

Kagoshima Governor Yuichiro Ito has demanded the central government hold a briefing on the issue for local residents.

The Number 2 reactor at the Sendai plant is also scheduled to stop operations for regular checks in September.

Analysts say electric power supplies for the Kyushu region in the southwestern part of Japan could be affected when consumption peaks in the summer.

Thursday, July 14, 2011 16:59 +0900 (JST)

## **Kansai Power to halt more than half its reactors**

Kansai Electric Power Company says it will temporarily shut down 2 nuclear power reactors in Fukui Prefecture next week for regular inspections.

The decision will leave the operation of a total of 6, or over half the utility's 11 nuclear plants, suspended.

The company announced on Thursday that the No.4 reactor of its plant in Takahama Town will be brought to a halt for regular inspections on July 21st, and the No.4 reactor of the plant in Oh Town, on July 22nd.

Regular inspections are nearly complete at 2 other reactors. But the government's plan to introduce safety stress tests for the nation's nuclear plants leaves it unclear when they can be brought back on line.

To avoid power shortages in high summer, the utility will continue to call on households and companies to cut power use by around 15 percent, as well as stepping up efforts to boost supply.

Thursday, July 14, 2011 18:24 +0900 (JST)

## **Kansai Power to shelve MOX fuel plan in Takahama**

Kansai Electric Power Company has postponed a plan to introduce recycled plutonium fuel at a reactor in its nuclear power plant in Fukui Prefecture.

The utility told NHK on Thursday that a lack of local understanding means it cannot proceed with feeding the No.4 reactor of the Takahama plant with plutonium-uranium mixed oxide, or MOX fuel, in regular checkups starting on July 21st.

The revelation came shortly after the Mayor of Takahama Town, Yutaka Nose, told reporters that lack of transparency in the government's energy policy in the wake of the nuclear crisis makes it impossible to understand why the reactor needs MOX fuel.

Consent from Fukui Prefecture and Takahama Town is vital for the utility to carry out the plan.

The No.4 reactor was supposed to become the fifth in Japan to introduce recycled nuclear fuel, after the company began using MOX at the No.3 reactor of the plant in January.

Two power plants in Saga and Ehime Prefectures that had already used MOX fuel are not in operation.

The No.3 reactor of the Takahama plant, the only working reactor on MOX fuel, is scheduled to be suspended for regular checkups early next year.

Kansai Electric Power Company's decision is likely to affect the so-called "pluthermal" project, the pillar of the nation's nuclear recycling policy.

Thursday, July 14, 2011 19:49 +0900 (JST)

## **Fukushima plant suffers a leak in water filtering**

A system for decontaminating and recycling radioactive wastewater at the Fukushima Daiichi nuclear power plant has been halted again after operating in fits and starts.

Plant operator, Tokyo Electric Power Company, found a leak through a broken plastic joint in a French-made facility on early Wednesday afternoon, **forcing a shutdown for more than a day.**

As of late Thursday afternoon, Tokyo Electric has not finished replacing the damaged polyvinyl chloride joint. The PVC joint, which was the cause of earlier leaks, is thought to be structurally too weak.

The company says the latest shutdown does not affect its operation to pump coolant into the reactors.

The system is designed to filter radioactive wastewater pooled in the basement of reactor buildings, and then sent the cleaned water back into the reactors as coolant.

A series of troubles since the start of operations in June has resulted in operation rates of only about 73 percent during the past week, far below the targeted 90.

Tokyo Electric considers the system critical in meeting its target of putting in place a stable reactor cooling system by July 17th. The date would mark the end of phase one in a timetable it has set for bringing the reactors under control.

Thursday, July 14, 2011 19:26 +0900 (JST)

## Toshiba develops nuclear decontamination system

Japanese electronics maker Toshiba has developed a system to decontaminate radioactive wastewater at the Fukushima Daiichi nuclear power plant **from early August.**

The system, nicknamed **Sarry**, was shown to media at a plant in Yokohama on Thursday. It consists of **a series of 14 tanks, each 1.4 meters wide and 3.6 meters high.**

**Minerals put inside the tanks are to absorb radioactive cesium and strontium and reduce levels of radioactivity in contaminated water by a factor of about one million.**

A decontamination system in place at the Fukushima plant since June has been accident-prone and running at 73 percent capacity, far below the target of 90 percent.

The new equipment is expected to be used in parallel with or as a supplement to the existing one.

A Toshiba official says the firm made the new system simpler than the existing one by studying problems it developed.

Thursday, July 14, 2011 19:26 +0900 (JST)

## TEPCO urged to tighten workers' radiation control

Japan's Nuclear and Industrial Safety Agency has urged the operator of the Fukushima Daiichi nuclear plant to tighten controls on workers' radiation exposure.

**About 3,000 workers are struggling daily at the plant to contain the nuclear crisis.**

The safety agency has been inspecting Tokyo Electric Power Company's measures to protect them from exposure to radiation.

The agency says it has found 8 areas of concern and ordered TEPCO on Wednesday to take appropriate measures.

The agency said that **TEPCO lacks information about subcontracting employees** and ordered the company to boost the number of safety managers for such workers.

It also urged the utility to **provide more full-face protective masks and make sure that plant workers wear them properly.**

Since the nuclear crisis began in March, 6 workers have been exposed to radiation doses above the allowable emergency limit of 250 millisieverts. **About 1,500 have still to receive medical checks for exposure to radiation.**

Thursday, July 14, 2011 07:51 +0900 (JST)

## **Nitrogen injection starts at No. 3 reactor**

The operator of the Fukushima Daiichi nuclear plant has started injecting nitrogen into the plant's No. 3 reactor's containment vessel to prevent a hydrogen explosion.

The Tokyo Electric Power Company **started the procedure on Thursday evening** after Japan's Nuclear and Industrial Safety Agency confirmed the plan's safety.

Tokyo Electric had already begun injecting nitrogen into the plant's No. 1 and 2 reactors. The work at the No. 3 reactor was delayed due to high radiation levels.

Nitrogen injection is essential for the utility to complete the first step of its plan to bring the plant under control by the target date of July 17th.

Thursday, July 14, 2011 21:52 +0900 (JST)

## **TEPCO deadline looms**

The operator of the Fukushima Daiichi nuclear plant is aiming to meet its first stage deadline to bring the plant under control by injecting nitrogen into its No.3 reactor containment vessel. But a problematic wastewater system may delay their goal.

The Tokyo Electric Power Company **started the injection on Thursday evening** to prevent a hydrogen explosion.

The utility had already begun the procedure at the plant's No.1 and 2 reactors, but the work was delayed due to high radiation levels.

The injection is essential for the utility to complete the first step of its plan to bring the plant under the control by the target date of July 17th.

But a French-made system installed to recycle radioactive wastewater continues to work below its

target capacity. The device is meant to decontaminate radioactive wastewater and send it back into the reactors as coolant. Tokyo Electric says the problem has been malfunctioning filters.

The utility plans to introduce a newly developed device as an alternatives in August.

Friday, July 15, 2011 02:16 +0900 (JST)

## **TEPCO starts injecting nitrogen into No. 3 Fukushima reactor**



In this July 3, 2011 photo released by Tokyo Electric Power Co., iron sheets that protect workers from radiation are placed on the ground floor of the Unit 3 reactor building at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture, northeastern Japan. The photo was taken through a window of a fork lift. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- The operator of the crippled Fukushima Daiichi nuclear power plant said Thursday it started to inject nitrogen into the No. 3 reactor to reduce the risk of further hydrogen explosions, a move marking further progress toward containing the four-month-old nuclear crisis.

The injection of the substance into the plant's three troubled reactors has been one of the key goals Tokyo Electric Power Co. has intended to achieve by mid-July, and the No. 3 reactor was the only remaining one that was not receiving the inert gas.

As Tokyo Electric has also started to operate a new system that enables water to circulate around the three reactors to stably keep the nuclear fuel inside cool, **the utility and the government believe they are basically moving ahead with the restoration work as planned in a roadmap.**

Under the roadmap, the utility, known also as TEPCO, would aim to **bring the crippled reactors to a stable condition by mid-July as a first step,** and to a further stable "cold shutdown" by January at the latest as a second step.

TEPCO and the government will announce a new roadmap Tuesday that will highlight their work schedule to be implemented during the second step and beyond.

Nitrogen injection into the reactor's primary containment vessel is important to prevent an explosion from occurring inside the vessel, which may lead to the release of massive amounts of radioactive substances outside. The step is intended to keep the ratio of hydrogen inside the vessel to a certain low level.

The move may cause radioactive substances to further leak out from the containment vessel, but the utility said that the amount would not be at a level to affect the surrounding environment.

Nonetheless, TEPCO decided to strengthen radiation monitoring inside the plant.

Hit by a magnitude-9.0 earthquake and massive tsunami on March 11, the six-reactor Fukushima complex lost nearly all of its power sources, and thus the cooling functions of many of the reactors and spent fuel pools.

Hydrogen explosions occurred at the Nos. 1 and 3 units in the early days of the nuclear crisis, blowing off the walls and roofs of the buildings housing the reactors and leading to the release of radioactive materials into the environment.

(Mainichi Japan) July 14, 2011

## TEPCO again stops key reactor cooling system

The operator of the Fukushima Daiichi nuclear power plant continues to struggle in its efforts to stably cool the facility's reactors. Workers have again halted a key wastewater system after discovering that it was operating below capacity.

Early Friday morning, Tokyo Electric Power Company stopped the system, which decontaminates and recycles radioactive wastewater. The system had resumed operation only a day before to repair a leak.

TEPCO says it found that even after the repair, the system was able to treat only 37 tons [????] of contaminated water per hour, which is 20 percent below target. The company is now inspecting the cause.

TEPCO says the latest shutdown had not led to a rise in fuel rod temperatures, as cooling operations are continuing with water that had previously been decontaminated.

Steady operation of the water treatment system is critical to achieving the company's goal of having a stable reactor cooling system in place by Sunday. That would mark the end of the first phase of bringing the reactors under control.

Meanwhile, on Thursday night, TEPCO began injecting nitrogen into the No.3 reactor's containment vessel to prevent a hydrogen explosion.

It says the measure has not led to a rise in radiation levels around the facility.

Friday, July 15, 2011 12:51 +0900 (JST)

## **Finding that radiation-tainted straw was produced far from nuclear plant causes shock**

Revelations that radiation-contaminated rice straw used as feed for beef cattle was produced far away from the crippled Fukushima No. 1 Nuclear Power Plant have sent shockwaves through the livestock farming community in Fukushima Prefecture.

Consumers have also been filled with a sense of growing distrust in the government over delays in responding to the problem of radiation-tainted beef.

Forty-two beef cows that ate rice straw contaminated with radioactive cesium were found to have been shipped from a livestock farm in the Fukushima Prefecture town of Asakawa from April 8. The rice straw had been supplied by a farmer in Shirakawa, about 75 kilometers away from the tsunami-hit nuclear power station.

"It's unbelievable that this (contamination) occurred in an area so far away from the nuclear plant," said a 34-year-old man who has run a livestock farm in Minamisoma, Fukushima Prefecture, for nearly 10 years.

On July 8 the government asked livestock farmers in the city to refrain from shipping beef.

"Fukushima-produced beef cows will no longer sell unless we switch to feed produced outside the prefecture and suspend shipments of beef cows until the safety of all feed produced in the prefecture is confirmed," the Minamisoma farmer said.

Officials with the local governments of areas to which the cows had been shipped were busy confirming meat distribution routes until late on July 14.

Top officials of the Tokyo Metropolitan Government have consulted with officials in Tokyo's Bureau of Social Welfare and Public Health over how to conduct follow-up surveys. Thirteen of the cows had been shipped to Tokyo by June 16.

The metropolitan government had just finished an investigation on July 13 into the distribution routes of six other contaminated beef cows which had been shipped from Minamisoma.

"We have no choice but to diligently track down tainted beef that has been marketed," said a senior official.

Of the 42 cows shipped from Asakawa, 32 have been sent to slaughterhouses in Tokyo, Yokohama and Chiba -- causing unrest among residents of the metropolitan area.

Keiko Endo, a 68-year-old woman who was shopping at a supermarket in Nakano Ward, Tokyo, expressed anger at the government's slow response to the case. "I buy goods at store shelves, believing that they are safe. I wonder why the government failed to check the safety of cows before their meat was shipped," she said.

A 40-year-old housewife who has 12- and 7-year-old children expressed worries about the safety of domestic meat while shopping at a supermarket in Mihama Ward, Chiba. "If something like this repeatedly happens, you become increasingly worried about food safety," she said. "I'll choose Australian meat for the health of my children."

At the same time, some consumers have expressed sympathy with farmers in Fukushima Prefecture who have been affected by the crisis at the crippled nuclear power station.

"I lately choose not to eat beef at barbecue restaurants. But I feel sorry for Fukushima people," said 74-year-old Akiko Suwabe, a housewife living in Tokyo's Nakano Ward.

"I don't think the farmer in question shipped the rice straw as feed while knowing it was contaminated with radiation. Experts say, 'If you eat the beef, it won't pose an immediate threat to your health'," said a 63-year-old woman from Chiba. "Consumers' overreaction will only make farmers suffer."

The livestock farm in Asakawa that shipped the 42 cows expressed an apology for the incident in an interview with the Mainichi Shimbun.

"I'm really sorry for this. I've been losing sleep since yesterday. I'm acquainted with the Shirakawa farmer who sold the rice straw to me," he said. "I can't immediately comment on the matter any further because I haven't resolved my feelings."

(Mainichi Japan) July 15, 2011

## **Disaster-hit Miyagi town questions dependence on nuclear money**

ONAGAWA, Miyagi -- Four months after the Great East Japan Earthquake and tsunami devastated the coastal town of Onagawa, Miyagi Prefecture, collapsed ferroconcrete buildings are still visible and the middle of town, once replete with rows of shops and houses, is filled with debris.

Facing the disaster's aftermath, the Miyagi prefectural election committee announced July 7 that it would be difficult to hold a postponed prefectural assembly election by Sept. 22, as stipulated under a special law.

Onagawa itself put off a town assembly election originally scheduled for April in conjunction with many other local elections across the country. Five town election committee members have been busy dealing with the aftermath of the March 11 disaster and have had a hard time compiling a list of eligible voters.

Onagawa Mayor Nobutaka Azumi's term of office will expire on Sept. 18 but there are no prospects for a mayoral election either.

During a public hearing on the town's reconstruction plan at the prefectural Onagawa High School on May 27, some town residents asked why the town's reconstruction scheme made no mention of the Onagawa Nuclear Power Plant.

The nuclear power plant run by Tohoku Electric Power Co. came to a sudden halt due to the disaster. It is reachable from the heart of the town in about 30 minutes by car and is located in the middle of the Oshika Peninsula.

The nuclear power plant began commercial service in 1984 and created as many as 2,000 jobs. The town reaped huge benefits from the plant in fixed property tax and subsidies based on three electric power laws including the Electric Power Development Promotion Law.

Onagawa's total revenue in fiscal 2009 came to about 6.4 billion yen. The so-called "nuclear power money" including the fixed property tax and subsidies based on the three laws accounted for 65 percent of the revenue -- a national record.

The deep-pocketed town built a sports park, which is now being used as an evacuation center, various tourism spots, a hospital and other buildings.

The subsidies also helped to maintain and manage those facilities and pay salaries for nurses and nursery staff. "We could draw up a budget thanks to nuclear power money," a senior town official said.

The March 11 disaster struck the town hard, with the fisheries industry, the town's key industry, suffering catastrophic damage. The town is certain to face a big drop in revenue, and though risks associated with the Onagawa nuclear power plant have risen due to the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant the town is likely to rely more on nuclear power money.

But the Fukushima crisis is changing residents' attitudes toward nuclear power.

"I can no longer say I wholeheartedly welcome the nuclear power plant," said a 61-year-old housewife living along the coast near the Onagawa Nuclear Power Plant.

Her son has worked at the Onagawa plant for more than 20 years instead of inheriting his family's fishing business. Debate on a possible graduation from nuclear energy makes him uneasy.

Incumbent town assemblymen are noticing a change in public sentiment toward nuclear power.

"If we do not call for an end to nuclear power, when are we going to do it? We have to prepare a reconstruction plan for the town without the nuclear power plant," town assemblyman Shigeru Abe, 46, says.

But a senior town official warned, "If there is debate on the pros and cons of the nuclear power plant, restoration and reconstruction may be delayed."

Seiro Kimura, a 66-year-old, six-term assemblyman and speaker of the town assembly, commented, "I never talked about nuclear power during past election campaigns. But I honestly wonder if it is OK to build things that man cannot control."

The 14-member town assembly is also scrambling to deal with the issue of nuclear money which has been the backbone of the town's budget.

(Mainichi Japan) July 15, 2011

## **Monju fast-breeder reactor project may be reviewed**

Japan's science minister has suggested that the government may have to abandon the project to develop an experimental fast-breeder nuclear reactor.

Yoshiaki Takaki told reporters on Friday that it is natural to discuss the future of the Monju project in light of the crisis at the Fukushima Daiichi nuclear plant.

He said the issue of whether to continue or abandon Monju must be discussed in the context of Japan's overall energy policy.

The government regards the fast-breeder reactor as Japan's next-generation nuclear power plant and hope to put it into practical use in about 40 years.

Monju, located in Tsuruga City, Fukui Prefecture, has been suspended since last August due to a technical problem. The trouble occurred only 3 months after Monju resumed operation in May last year following a 14-year shutdown caused by a leakage of sodium coolant in 1995.

Friday, July 15, 2011 14:58 +0900 (JST)

## **Science minister says gov't will mull halting Monju prototype reactor project**

<http://mdn.mainichi.jp/mdnnews/news/20110715p2g00m0dm104000c.html>

TOKYO (Kyodo) -- Science minister Yoshiaki Takaki indicated Friday that the government will consider suspending the development of the prototype fast-breeder reactor Monju in the wake of the country's worst nuclear crisis that continues at the Fukushima Daiichi power plant.

Whether to halt development of the advanced power reactor is "one issue" to be determined when Tokyo comes to review its nuclear energy policy, Takaki said at a regular press conference.

"The accident (at the Fukushima plant) is serious. It's only natural to discuss" matters including the suspension of Monju located in Tsuruga, Fukui Prefecture, in central Japan, he added.

Meanwhile, Fukui Gov. Issei Nishikawa telephoned Takaki in protest after hearing news reports about the minister's remarks.

Nishikawa told reporters in Tsuruga that the science minister denied making such remarks, quoting the minister as telling the governor that he "would not say such a thing without listening to what the local people have to say."

A top official at the Fukui prefectural government said the local government is checking the details of Takaki's remarks, while another official said the remarks came as no surprise as Prime Minister Naoto Kan has called for a society free from dependence on nuclear energy.

Unlike regular light-water reactors fueled by uranium, the Monju reactor, operated by the Japan Atomic Energy Agency, runs on an oxide mix of plutonium and uranium, or MOX, made from spent nuclear fuel from existing plants.

The reactor first achieved criticality in 1994, but was shut down due to a serious accident involving a leak of sodium coolant and a resulting fire in 1995.

Monju resumed operations in May 2010 after being idled for 14 years and five months, but the launch of full operations was delayed again as a device in the reactor accidentally fell inside the vessel in August that year. The agency removed the device in June.

In the fiscal 2011 white paper on science and technology, approved by the Cabinet on Tuesday, the Ministry of Education, Culture, Sports, Science and Technology deleted a sentence saying that it will realize the establishment of a fast-breeder reactor, backpedaling on its drive for research and development on nuclear power.

(Mainichi Japan) July 15, 2011

## **TEPCO checking for gas leak from No. 3 reactor**

The operator of the Fukushima Daiichi nuclear power plant is checking for gas leaks in the No. 3 reactor, into which nitrogen is being injected to prevent a hydrogen explosion.

**Tokyo Electric Power Company has injected more than 200 cubic meters of nitrogen into the reactor's containment vessel since Thursday evening. But it says the interior air pressure has increased very little.**

TEPCO says gas may be leaking from a damaged part of the container.

Also on Friday, TEPCO restarted a system for decontaminating highly radioactive water after a 9-hour stoppage to vent air from a pipe that was slowing down operations.

But it says the system's capability is still more than 20 percent lower than the target figure.

Nitrogen injection and the operation of the water decontamination system are essential for TEPCO to complete the first step of its plan to bring the plant under control.

The utility is still suffering 1 problem after another, with just 2 days left before the first target date of July 17th.

Friday, July 15, 2011 20:14 +0900 (JST)

## Radioactive cesium detected in Fukushima shiitake

Radioactive cesium exceeding the government standard has been detected in shiitake mushrooms grown indoors in 2 cities in Fukushima Prefecture, **about 60 kilometers from the troubled Fukushima Daiichi nuclear plant**. This is the first detection of radioactive cesium exceeding the standard in **produce grown in greenhouses** in the prefecture since the nuclear accident.

The Fukushima prefectural government says 1,770 becquerels per kilogram of radioactive cesium was detected in mushrooms grown in Date City. The level is **more than 3 times the provisional government limit of 500 becquerels per kilogram**.

560 becquerels of radioactive cesium was detected in mushrooms from Motomiya City.

At least 157 kilograms of shiitake mushrooms from the 2 cities were shipped from early July through Friday to Tokyo, a supermarket in Fukushima City, and a local farmers' market.

Fukushima officials are to ask the farmers to recall their produce and refrain from making new shipments while determining the cause.

Saturday, July 16, 2011 12:26 +0900 (JST)

## Kansai Electric to shut down reactor

Kansai Electric Power Company says it will temporarily shut down a reactor at its nuclear power plant in Fukui Prefecture due to **trouble in an emergency cooling system**. The reactor is one of 19 currently operating in Japan.

Kansai Electric said pressure dropped inside a tank in a system that injects water into a reactor in the event of an emergency at around 11PM on Friday at the **Ohi nuclear plant**.

This made it impossible to inject water properly into the No.1 reactor.

The company said it will manually shut down the reactor to look into the cause of the problem, although pressure returned to normal in about one hour.

The utility plans to suspend the reactor's operation at around 9 PM on Saturday.

It says the trouble caused no leak of radioactive substances to the outside.

Kansai Electric has 11 nuclear reactors, of which 4 are now offline due to regular inspections. 2 more reactors will start undergoing regular inspections next week.

The firm says stoppage of the No.1 reactor would make this summer's limited power situation even tighter.

Kansai Electric says it will try to generate more electricity as well as asking its customers and the public to lower demand for power by around 15 percent.

Saturday, July 16, 2011 14:01 +0900 (JST)

## **Fukushima reactors 1-3 stabilized**

The Japanese government and Tokyo Electric Power Company say they have stabilized the crippled reactors at the Fukushima Daiichi nuclear power plant.

But problems continue with the system for purifying contaminated water.

**In a joint assessment, the government and TEPCO say they have completed the first step of a plan outlined in mid-April for a complete cold shutdown of the reactors. They say they completed the first step within the original 3-month deadline.**

The assessment adds that reactors 1, 2 and 3 have been stably cooled down, and that nitrogen has been injected into their containment vessels to prevent hydrogen explosions.

Pools of spent nuclear fuel are also stable.

The government and TEPCO say radiation levels in the surrounding air and seawater have been declining, and the goal of reducing the amount of radiation leaking outside the plant has been achieved.

But the crisis is far from over. The assessment admits that contaminated water has leaked out of storage tanks, and that water level settings at its water purification facilities were incorrect.

Saturday, July 16, 2011 08:04 +0900 (JST)

## **Lawyers join hands to stop nuclear power plants**

Lawyers from around Japan are joining hands to take legal action to shutdown nuclear power plants.

Over 50 lawyers from 20 prefectures that host nuclear plants convened in Tokyo on Saturday.

They decided to file a lawsuit to stop the resumption of reactor 1 at the Oi plant in Fukui Prefecture, which is about to be taken offline because of a malfunction. They will also file to prevent the restart of

reactor 1 at the Takahama plant, which is undergoing regular inspections.

The lawyers intend to launch a procedure in autumn to stop the construction of the Oma plant in Aomori Prefecture. The project has been suspended since the March 11th disaster.

Similar lawsuits have been rejected in the past, as courts ruled that safety measures did not present any flaws.

The lawyers argue that the government's current guidelines are seriously compromised, because they do not require plant design to assume an extended interruption of power supply.

Saturday, July 16, 2011 22:17 +0900 (JST)

## **More beef cattle fed with contaminated hay**

Fukushima Prefecture has identified 5 additional farms where straw contaminated with high levels of radioactive cesium was used as cattle feed.

The prefecture says 84 cows that ate contaminated straw were shipped to markets across 5 prefectures, including Tokyo, between late March and mid-July.

The straw was found to contain radioactive cesium up to 379 times above safety standards.

Fukushima Prefecture has conducted on-site inspections at the farms and asked them to stop shipping and transferring cattle on a voluntary basis.

It also ordered local authorities to trace back the meat and recall any products with excessive levels of radioactive contamination.

Fukushima Prefecture launched the inspections earlier this week after it emerged that contaminated straw had been used to feed cattle at one farm.

**So far, an investigation has shown that meat from 42 animals raised at the farm was sold to wholesale dealers and supermarkets across 30 prefectures. At least 1,700 kilograms of meat have already been consumed.**

Saturday, July 16, 2011 22:18 +0900 (JST)

## **Gov't to review Fukushima no-entry zone when cold shutdown realized**

UKUSHIMA (Kyodo) -- Prime Minister Naoto Kan and Goshi Hosono, state minister in charge of dealing with the nuclear crisis, met Saturday with the leaders of municipalities near the crippled Fukushima No. 1 nuclear power plant and said that the central government will consider reviewing its policy on the no-entry zone near the plant when the reactors at the complex are stabilized.

According to participants, the two said the government will consider reviewing the areas within a 20-km radius of the Fukushima plant, which continues to spew radiation, and also said the government is aiming to bring forward the schedule for stabilizing the reactors from January as previously planned.

Kan's meeting with the leaders of local municipalities came as it appeared almost certain that the Step 1 phase of stably cooling down the nuclear reactors will be achieved on time by Sunday.

The first phase of plant operator Tokyo Electric Power Co.'s time schedule for bringing the troubled nuclear power plant under control includes injecting nitrogen into the No. 3 reactor to prevent a hydrogen explosion.

"To enable a large number of people to go home, we will put all our efforts into realizing Step 2 sooner than planned," Kan said during the meeting with the mayors of Minamisoma, Futaba and other local municipalities at a hotel in Koriyama, Fukushima Prefecture.

The second phase of work to contain the crisis includes achieving a "cold shutdown" of the damaged reactors by January and reducing the amount of water at the plant contaminated with radioactive substances.

The government also plans to consult with the heads of local municipalities to narrow down areas designated for possible evacuation near the nuclear plant, Hosono said.

Hosono said the scaling down of the designated areas should occur after taking necessary steps such as radioactive decontamination, but he did not comment on when the designated areas would be revised.

Hosono told reporters after the meeting that the central government will decide on the timing for narrowing down the areas designated for possible evacuation after confirming their safety and thoroughly consulting with local leaders.

In April, a zone covering nine municipalities within a 20 km radius of the Fukushima plant was designated as off-limits by the government, affecting around 10,500 people. A zone 20 to 30 kilometers from the plant was established in which residents were ordered to prepare for possible evacuation or to remain indoors during an emergency situation. About 58,500 residents are subject to the directive.

Hosono also said that the central government will provide full financial support for the disposal of radioactive waste at the nuclear complex, which has been crippled since the March 11 earthquake and tsunami.

Earlier in the day, Hosono said during a meeting with Fukushima Gov. Yuhei Sato that the government will consider addressing the issue of radioactive waste "on its own responsibility -- without leaving the matter to local municipalities."

Hosono made the remarks in response to Sato's demand that all expenses in connection with the disposal of radioactive waste related to the crisis should be covered by the state coffers.

(Mainichi Japan) July 17, 2011

## **1st phase of work to contain nuke crisis completed on time: Hosono**

TOKYO (Kyodo) -- Goshi Hosono, state minister in charge of handling the nuclear accident, said Sunday that "Step 1" or the first phase of work to bring the crippled Fukushima Daiichi nuclear power plant under control was completed on Sunday as scheduled.

"We believe Step 1 of stably cooling (the reactors) and eliminating risks of a hydrogen explosion has been achieved," Hosono said in a TV program, referring to the road map and time schedule issued April 17 by plant operator Tokyo Electric Power Co.

The utility, known as TEPCO, shares that view. But going forward, concerns linger about whether the country's worst nuclear crisis will be contained as planned as some Step 1 goals were not achieved, including targets for decontaminating radioactive water accumulating at the site.

Under the road map, TEPCO aimed to bring the reactors crippled by the devastating March 11 earthquake and tsunami to a stable condition by Sunday as a first step, and to a "cold shutdown" by next January at the latest as a second step.

TEPCO and the government will announce a new roadmap Tuesday that will highlight the work to be accomplished over the next three to six months, during Step 2 and beyond.

The government-ordered no-entry zone within a 20-kilometer radius of the plant is expected to be reviewed after cold shutdown is achieved under Step 2, government officials said.

During Step 1, TEPCO set up a system to recycle decontaminated water to cool the plant's damaged reactors, while taking measures to cool spent-fuel pools there ahead of schedule.

It also has been injecting nitrogen gas into the Nos. 1-3 reactors to prevent a hydrogen explosion, which could release massive amounts of radioactive substances.

The utility had aimed to process around 1,200 tons of highly radioactive water per day using the new system, but the achievement rate has been only 70 percent so far, company's officials said.

(Mainichi Japan) July 18, 2011

## **Fukushima water purifying system plagued by failures**

July 16, 2011 - <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201107164715>

By NAOYA KON / Staff Writer

Problems stemming from complicated procedures, as well as dumb human errors, have plagued Tokyo Electric Power Co.'s key weapon in ending the crisis at its Fukushima No. 1 nuclear power plant.

In less than a month of operations, the cyclic water injection and cooling system, which purifies accumulated radioactive water and recycles it to cool down fuel rods, has experienced more than 10 suspensions and water leakages.

The system contains 4 kilometers of piping that connects the nuclear reactor buildings, a radioactive water purifying plant and storage tanks. Most of the failures have occurred at the purifying plant.

Water leakages were reported on July 10 and 12 at a purifying unit manufactured by France's Areva SA.

A polyvinyl chloride pipe junction found damaged was replaced by a metal part. But a similar failure occurred at another junction on July 13.

Workers had to fix the problem quickly amid high radiation levels within the site.

A number of failures also hit a unit manufactured by Kurion Inc. of the United States that uses zeolite to absorb and eliminate radioactive substances.

The unit stopped immediately after entering full operations on June 17.

This was the first time for both Areva and Kurion units to be used in such a complicated system to treat saline radioactive water.

Many failures revealed poor preparations.

On June 22, after the performance of Kurion's purifying unit was unusually low, workers found that a valve that should have been closed was actually open in part of the piping. That allowed radioactive water to pass through freely without being purified.

The "open" and "closed" symbols were mixed up near the valve.

On June 29, the equipment stopped and an alarm sounded because a valve that should have been set on "automatic" was erroneously set on "manual."

The following day, Areva's purifying unit stopped automatically because a wrong figure had been set for the water level in a tank.

In the face of these failures, TEPCO has only reiterated: "The system is of an unprecedented large scale. We hope to arrive at stable operations after reviewing the initial glitches."

But the problems do not end there.

Water is still not flowing smoothly within the purifying unit, with the hourly flux only about 70 percent of the original projection.

The cause has not been specified, although TEPCO suspects a flaw in the piping structure.

The water for the entire system is flowing at only 73 percent of capacity. If the utilization rate does not improve, it may compromise TEPCO's goal of removing all accumulated contaminated water in the reactor building basements and elsewhere by the end of this year.

## **Fukushima Daiichi prepares for typhoon arrival**

Tokyo Electric Power Company, or TEPCO, is rushing to put a makeshift roof over a turbine building at the Fukushima Daiichi nuclear power plant as typhoon Ma-on approaches Japan.

TEPCO released a new photo on Sunday showing its preparation work.

The metal roof will cover the turbine building of reactor Number 3. The hole in its roof was caused by a hydrogen blast in March.

The new roof is 5-meters long and 16-meters wide. It is designed to cover up the hole to prevent an increase of radioactive water in the building.

TEPCO says the roof is scheduled to be installed with a crane on Monday.

Fearing high waves, a hose was temporarily disconnected from the "megafloat" barge, which contains relatively low-level radioactive water.

But no measures have been taken to prevent rainwater from entering reactor buildings 1, 3, and 4. The structures were damaged by hydrogen blasts.

However TEPCO says it does not expect any drastic increase of the water level in those 3 buildings.

At the Fukushima Daiichi nuclear power plant the doorway of reactor number 1 was also repaired to prevent rainwater leaks.

Monday, July 18, 2011 05:50 +0900 (JST)

## **TEPCO covers turbine building as storm approaches**

The Tokyo Electric Power Company, or TEPCO, has built a makeshift roof over a turbine building at the Fukushima Daiichi nuclear power plant as typhoon Ma-on approaches.

TEPCO started work to cover a hole in the roof of the No. 3 turbine building on Monday morning. The hole was caused by a hydrogen explosion in a neighboring reactor building in March.

The work ended 6 hours later when the makeshift metallic roof's three parts, each 5 meters long and 16 meters wide, were installed by a crane.

The roof is designed to prevent an increase of radioactive wastewater in the building.

TEPCO plans to cover another hole in the building's roof on Tuesday.

It is also stacking sandbags to prevent rainwater from entering the facility.

Monday, July 18, 2011 23:24 +0900 (JST)

## **Trouble in water injection at Fukushima Daiichi**

Tokyo Electric Power Company, or TEPCO, says it discovered a drop in the amount of water injected into a reactor at the Fukushima Daiichi nuclear plant.

TEPCO says water was moving at a rate of 3.8-cubic-meters per hour to cool down nuclear fuel in reactor number 1 on Sunday morning.

But an alarm warned that the rate had decreased to 3-cubic-meters per hour.

This was third time this month that such trouble had occurred, causing TEPCO to replace the pump in order to stabilize water injection.

Reactor number 2 shares the same pump but has not seen similar trouble. TEPCO says some deposits in the plumbing might have been behind the unstable flow of water.

TEPCO says a decrease in water injection of this level should not trigger a sudden temperature rise in the reactor.

Monday, July 18, 2011 05:50 +0900 (JST)

## **TEPCO installs cover over No. 3 reactor's turbine building as typhoon approaches**



Tokyo Electric Power Co. installs a cover on the No. 3 reactor's turbine building at the Fukushima No. 1 Nuclear Power Plant. (Photo courtesy of TEPCO)

Tokyo Electric Power Co. (TEPCO) carried out repair work on the No. 3 reactor of the Fukushima No. 1 Nuclear Power Plant on July 18 as Typhoon No. 6 approached the nation's Pacific coast.

TEPCO mended one of two holes in the roof of the No. 3 reactor's turbine building by installing a cover over it. The utility was to conduct similar repair work on the other hole on July 19.

The turbine building apparently suffered the damage after a hydrogen explosion rocked the No. 3 reactor building following the March 11 Great East Japan Earthquake and tsunami.

Highly radioactive contaminated water was found in the turbine building, and rain coming through the holes was threatening to raise the water level. The repair work was carried out to prevent the contaminated water from overflowing.

TEPCO installed the cover over the hole, 11 meters long and 14 meters wide, by using three structural objects, each 5 meters long, 16 meters wide and 40 centimeters thick.

**During the repair work, radiation doses of two workers were 10 millisieverts above their projected levels, with one of them exposed to a maximum 12 millisieverts.**

On July 19, TEPCO will cover the smaller hole measuring 5 meters long and 2 meters wide, along with a roof skylight whose top was destroyed by a blast triggered by the hydrogen explosion.

TEPCO will also use sandbags to cover holes in two gutters whose plumbing had been damaged, company officials said.

 [Click here for the original Japanese story](#)

(Mainichi Japan) July 19, 2011

## **Draft accord notes Mongolia as home for spent nuclear fuel**

TOKYO (Kyodo) -- A draft Japanese-U.S.-Mongolian agreement over the creation of a nuclear fuel production and spent fuel disposal cycle clearly refers to Mongolia as the destination of such fuel, according to its text, which was obtained by Kyodo News on Monday.

The draft statement of intent among the three countries on the so-called "comprehensive fuel services" would **create the world's first framework in which Mongolia exports uranium fuel to other countries and disposes on its soil of the fuel spent there.**

The draft agreement mentions the role of the International Atomic Energy Agency, the U.N. nuclear watchdog, in possibly providing technical support to Mongolia in developing used fuel storage facilities there.

While the concept appears difficult to implement in light of the disaster at the Fukushima Daiichi nuclear power plant, hopes for such an initiative linger among those involved, including some private-sector firms.

Establishing a system of permanently disposing of spent fuel that gets generated at nuclear power reactors presents a significant challenge to countries intent on adopting atomic power. Even Japan and the United States, advanced nuclear power users, have yet to establish such a system.

At the same time, Japanese and U.S. companies are eager to capitalize on the initiative as a possible deal-making solution as they go about marketing nuclear power infrastructure to countries interested in adopting nuclear power, critics say.

The draft agreement notes the importance of developing "multilateral approaches" to the nuclear fuel cycle and possibly creating mechanisms for assuring nuclear fuel supply to such countries.

The document also says **the three countries should meet regularly to develop "commercial arrangements to provide comprehensive fuel services at the front-end and back-end of the fuel cycle in a safe, secure, responsible and peaceful manner."**

In Japan, the initiative was led by the Economy, Trade and Industry Ministry. The ministry aimed to have the agreement, drafted by the United States, signed last February, but the move was postponed after the Foreign Ministry lodged an objection, Japanese sources said.

An internal document at the industry ministry's Agency for Natural Resources and Energy, which was created in February and later obtained by Kyodo, noted that **the Japanese ministry and Toshiba Corp. were engaging in behind-the-scenes talks with the U.S. Department of Energy and the Mongolian government over the initiative.**

The document went on to say Mongolia had already begun contacting the United Arab Emirates over the possible supply of Mongolian uranium fuel and acceptance of the fuel after its use.

(Mainichi Japan) July 19, 2011

## **Anti-nuke groups to fight Manhattan Project parks**

ALBUQUERQUE, New Mexico (AP) -- Anti-nuclear activists are lining up against legislation to create national parks at Los Alamos National Laboratory and two other sites where the world's first nuclear bombs were developed, calling the plan an expensive glorification of an ugly chapter in history.

"It is a debasement of the national parks idea," said Greg Mello, a co-founder of the anti-nuclear watchdog, Los Alamos Study Group.

Interior Secretary Ken Salazar released a study to Congress last week that recommends establishing a national historical park to commemorate the top-secret Manhattan Project that developed the atomic bomb. The United States dropped atomic bombs on Hiroshima and Nagasaki, hastening Japan's surrender and ending World War II.

Sen. Jeff Bingaman, a Democrat from New Mexico, said he is drafting legislation to create sites at Los Alamos; Hanford, Washington; and Oak Ridge, Tennessee.

"The secret development of the atomic bomb in multiple locations across the United States is an important story and one of the most transformative events in our nation's history," Salazar said in a release announcing the project. "The Manhattan Project ushered in the atomic age, changed the role of the United States in the world community, and set the stage for the Cold War."

Anti-nuclear activists were appalled.

"Are we really poised to make a national park out of a few shabby ruins where we built instruments of mass murder, delivered to statesmen the instruments of universal destruction, and destroyed the marriage between science and human values?," Mello wrote in an email to board members and others.

"Absolutely disgusting," responded Darwin Bond-Graham in an email. "From a fiscally conservative perspective (which everyone claims these days): surely in this 'time of belt-tightening' the Feds shouldn't waste one cent on crap like this. If the nuclear weaponeers want to do it with all private money, well good for them and their sickened and misguided souls. But not one federal or state cent!"

National Park Service spokesman David Barna defended the idea Monday, noting that there a number of national parks dedicated to significant events in the country's history that are "viewed by some people as not part of our glorious past," including sites of famous Civil War and Native American battles. There are also national parks commemorating tragedies, like the Ford Theater where President Lincoln was assassinated and Pearl Harbor.

Barna said the Park Service would be working to make the sites educational.

The Manhattan Project sites, he said, "are significant parts of our national cultural history. And before they get bulldozed over, we are in favor of preserving these places so future generations can study these events, for good or bad."

(Mainichi Japan) July 19, 2011

## **Radioactive water in Fukushima poses challenge**

The Japanese government and Tokyo Electric Power Company will announce on Tuesday a revised plan to bring the reactors at the Fukushima Daiichi nuclear power plant under control.

They are expected to say that the first stage of the plan has been almost completed on schedule.

But a system to decontaminate radioactive water, which began operating at the end of last month, is working below the target capacity due to leaks and other problems.

The system's decontamination rate dropped to 37 tons of water per hour at one point, more than 20 percent below the target capacity.

It increased to 39 tons per hour after TEPCO workers released air from the pipes on Friday. They also

replaced a hose connecting the tanks to ease water circulation.

However, the rate dropped again to 37 tons per hour on Monday morning. TEPCO says the reason for the decrease is unknown.

Tuesday, July 19, 2011 06:53 +0900 (JST)

## Govt to define "cold shutdown"

The second-stage target to bring the nuclear disaster under control will involve achieving a cold shutdown, under which the disabled reactors are to be cooled down to about 100 degrees Celsius or lower.

The Japanese government is due to make this clear on Tuesday when it releases a revised plan to contain the accident at the Fukushima Daiichi nuclear power plant.

The government has so far failed to specify what a cold shutdown entails. It now plans to define the term as bringing reactor-bottom temperatures to about 100 degrees or lower, and substantially reducing the public's radiation exposure by controlling the release of radioactivity.

Achieving a cold shutdown has been cited as one of the conditions for lifting the 20-kilometer no-entry zone around the Fukushima Daiichi plant.

It remains unclear, however, when the lifting would come, as the government still hasn't decided on benchmark levels of radiation that it deems safe enough for people to return to the restricted zone.

Tuesday, July 19, 2011 09:42 +0900 (JST)

## Japan to unveil updated roadmap to achieve cold shutdown of reactors

TOKYO (Kyodo) -- Japan is set to release later Tuesday an updated work schedule to achieve a "cold shutdown" of the crippled reactors at the Fukushima Daiichi power plant now that a new water circulation system has stabilized cooling operations and the risk of hydrogen explosions has been eliminated.

Prime Minister Naoto Kan told a parliamentary committee in the morning, "We are starting to see a tremendous critical condition **heading toward a certain level of settlement**," with the completion "almost as scheduled" of the initial phase of Tokyo Electric Power Co.'s timetable to bring the nuclear disaster under control.

Under the timetable initially drawn up by the utility, the cold shutdown is scheduled to be achieved by January at the latest, but Kan said earlier that the government and the plant operator would try their

best to move up the schedule so that people forced to evacuate their homes because of the crisis can return.

Restoration efforts have continued since the March 11 magnitude 9.0 earthquake and tsunami hit the six-reactor complex and led the cooling functions of the reactors and spent nuclear fuel pools at the Nos. 1 to 4 units to fail.

One of the key challenges during the past months has been how to deal with the massive amount of highly radioactive water that has accumulated in the reactor turbine buildings and nearby areas as an outcome of an emergency measure to keep injecting water into the reactors to cool the fuel inside.

Workers have now succeeded in installing devices to remove radioactive substances from the polluted water and recycle the decontaminated water to cool the crippled Nos. 1 to 3 reactors.

Nitrogen, an inert gas, is also being injected into the three reactors to prevent hydrogen explosions from occurring inside the reactors, since such explosions may lead to the release of massive amounts of radioactive substances.

As for the No. 4 unit, where all of its fuel rods had been stored in the spent fuel pool for maintenance work before the disaster struck, work is proceeding to create a system involving a heat exchange device to stably and efficiently cool the water inside the pool.

Kan said that the goals stipulated in the so-called "step one" of the restoration roadmap had been achieved by July 17 almost as scheduled. But not all of the process has gone smoothly.

Most notably, the key water decontamination devices, which started operating in June, have repeatedly faced problems such as water leakage. The system was operating at 73 percent of its capacity by mid-July, lower than the 80 percent target.

During the so-called "step two," which is expected to be implemented in the three to six months following the completion of the first phase, the utility known as TEPCO aims to achieve not only a cold shutdown of the reactors but also a reduction in the total amount of contaminated water in the plant's premises.

TEPCO would also consider creating an underground "shielding wall" to surround the reactor buildings and reactor turbine buildings so as to prevent contaminated water seeping from the buildings and get mixed in with groundwater. The wall is expected to extend 30 meters deep to a layer that does not absorb water.

The utility said in its earlier roadmap that completing the processing of contaminated water is one of the medium-term tasks to be dealt with after the "step two" process ends, but the new roadmap is expected to show that **a maximum period of about three years is to be spent on the medium-term issues**, according to sources close to the matter.

(Mainichi Japan) July 19, 2011

## **NRC to compile nuclear safety overhaul in 90 days**

The top US nuclear chief says his agency will come up with directions on regulatory changes for safety at US nuclear power plants within 90 days.

The chairman of the US Nuclear Regulatory Commission, Gregory Jaczko, says the NRC will quickly evaluate what kind of overhaul is needed at plants, based on the results of a report by its task force.

The NRC ordered a review of safety measures at nuclear power stations around the United States following the accident at the Fukushima plant in Japan.

The task force came up with its **interim report last week**.

The report calls for a reassessment of preparedness for natural disasters such as earthquakes and for each plant to be equipped with enough backup power to keep the facility running in case of blackouts.

In a speech given in Washington DC on Monday, Jaczko stressed that the United States should ensure there is no repetition of what happened in Japan.

**In the past, US utilities took more than several years to boost nuclear plant security following an order by the NRC.**

The comment by Jaczko suggests that he is determined to speed up the process.

Tuesday, July 19, 2011 11:17 +0900 (JST)

## **Govt renews Fukushima plant stabilization plan**

The Japanese government has announced new stages of a plan to bring the troubled Fukushima Daiichi nuclear power plant under control.

The announcement came at a meeting of the government's nuclear disaster taskforce attended by all Cabinet ministers on Tuesday evening.

The taskforce said the first stage of the plan outlined in mid-April for the stable cooling of the reactors has been completed on schedule by mid-July. It added radiation levels in the plant's surrounding areas have been steadily reduced.

The meeting approved a renewed plan, including the second stage to be completed by next January, and mid-term targets to be achieved within about three years after that.

Under the renewed plan, **the government will carry out regular health checks for about 30 years on residents in Fukushima Prefecture**, where the plant is located. **The checks will include thyroid cancer screening tests for children, the estimate survey of external exposure, and the measurement of internal exposure.**

The government will also start a safety assessment of radiation levels in the evacuation advisory zone around the plant, in an aim to lift the advisories currently in place there.

As for the evacuation zone and the 20-kilometer no-entry zone, the government will start monitoring

radiation levels earlier than planned. The government will start lifting its evacuation orders for areas where safety has been confirmed, after the plan's second stage is achieved by next January.

Also on Tuesday, the government and Tokyo Electric Company formally announced that the target of the first stage to steadily reduce radiation levels from the plant has been achieved, according to a joint assessment.

The assessment said **the radiation level from the turbine buildings of the plant's reactors has been reduced to 1 two-millionth of what it was just after the nuclear accident in March.**

In the second stage of the plan for the cold shutdown of the reactors, TEPCO plans to improve its systems to decontaminate wastewater and to cool reactors and fuel rod pools at the plant.

The government and the utility will have to face tough challenges, as the decontamination system has been developing one problem after another and the plant's reactor buildings have been seriously damaged.

Tuesday, July 19, 2011 20:44 +0900 (JST)

## **Japan moves on to stage to seek cold shutdown of crippled reactors**

TOKYO (Kyodo) -- Japan said Tuesday it has succeeded in stably cooling the crippled nuclear reactors at the Fukushima Daiichi power plant and reducing the radiation dose around the site, an announcement that would lead restoration efforts to move on to the next stage of seeking a "cold shutdown" of the reactors by January.

In an updated road map to contain the four-month-old nuclear crisis, unveiled the same day, the government said it plans to work out by around autumn safety guidelines to maintain the ravaged plant's stability for a long period, while plant operator Tokyo Electric Power Co. will seek to start removing spent nuclear fuel within three years following the stabilization of the reactors.

"We're starting to see a tremendous critical condition heading toward a certain level of settlement," Prime Minister Naoto Kan told a parliamentary committee as he welcomed the completion "almost as scheduled" of the so-called "step one" phase of the utility's restoration road map.

"Some progress has been made earlier than originally scheduled" in the step one phase," Kan also told a meeting of the government's task force on the world's worst nuclear crisis in 25 years.

The government left unchanged the originally set timeline to achieve the "step two" phase, which includes the goal of realizing a cold shutdown of the Nos. 1 to 3 reactors, in the latest scenario.

Industry minister Banri Kaieda said the government could lift a directive that requires residents in a zone 20 to 30 kilometers from the plant to be prepared to evacuate or stay indoors in an emergency, before completing the next phase.

The road map also showed that the government will consider lifting a ban on people entering areas within a 20-kilometer radius of the plant towards the end of the step two phase, which is to be implemented in the three to six months following the completion of the first phase.

As for the definition of a state of cold shutdown, the government said that the bottom part of a reactor's pressure vessel should be basically kept at 100 C or below, and that radiation exposure caused by the additional release of radioactive substances should be "greatly restrained."

At present, the maximum amount of such substances leaking from the damaged Nos. 1 to 3 reactors is 1 billion becquerels per hour, around one two-millionth of the level at the time of the accident, the utility known as TEPCO said.

Based on the data, the maximum radiation dose amounts to 1.7 millisieverts per year around the plant, and TEPCO is expected to bring the level to below the legal limit of 1 millisievert per year, an official at the government's Nuclear and Industrial Safety Agency said.

TEPCO also said it will try to improve the operational ratio of water decontamination devices from around 70 percent of capacity this month as well as consider creating another system as **the current water treatment system can be used for only about a year.** [Why?]

The utility plans to design an underground wall, expected to extend 30 meters deep, to prevent contaminated water from seeping from the reactor and turbine buildings and getting mixed with groundwater, it said.

Restoration efforts have continued since the March 11 magnitude 9.0 earthquake and tsunami hit the six-reactor complex and led the cooling functions of the reactors and spent nuclear fuel pools at the Nos. 1 to 4 units to fail.

One of the key challenges during the past months has been how to deal with the massive amount of highly radioactive water that has accumulated in the reactor turbine buildings and nearby areas as an outcome of an emergency measure to continue injecting water into the reactors to cool the fuel inside.

Nitrogen, an inert gas, is also being injected into the reactors to prevent hydrogen explosions, which could lead to the release of massive amounts of radioactive substances. But basically all the spent fuel tanks of the Nos. 1 to 4 units are already being kept cool.

(Mainichi Japan) July 19, 2011

## **Kan defends remarks about nuclear phaseout**

TOKYO (Kyodo) -- Prime Minister Naoto Kan defended on Tuesday his comments last week about building a society that does not rely on nuclear energy, as opposition lawmakers grilled him in parliament about what they say was an out-of-the-blue statement about Japan's energy policy.

"What I said at the news conference (on Wednesday) was my basic view" about the direction of the country's energy policy, Kan told a lower house budget committee session, stressing that his comments then were personal and not government policy.

Some ministers had not been informed in advance about the premier's Wednesday remarks, and the apparent lack of Cabinet unity regarding the future of Japan's energy policy has given opposition parties another chance to attack Kan over his handling of the March 11 megaquake and tsunami and ensuing nuclear crisis at the Fukushima Daiichi power plant.

Referring to his choice of words on nuclear energy technology, Kan said that he used those words because he "had doubts about whether this technology could be completely controlled and its safety ensured considering the huge risks."

Kan had said Wednesday Japan should aim to phase out nuclear energy by gradually reducing its use over coming years, and that he felt that the technology of nuclear power generation "cannot be controlled by conventional safety measures."

The prime minister said at Tuesday's Diet session that he would not give a perfect score for his government's handling of the March 11 disaster, but insisted it has done what it can and made some progress in efforts to rebuild the disaster-hit areas and contain the nuclear crisis.

(Mainichi Japan) July 20, 2011

## **Expert: Risks remain at Fukushima Daiichi plant**

An expert says that radiation could be released from the Fukushima Daiichi nuclear plant in about 2 and half days if the injection of cooling water into reactors is halted for any reason.

Masanori Naito, director in charge of nuclear safety analysis at the Institute of Applied Energy, was speaking to NHK about the revised plan to bring the troubled plant under control. The Japanese government and Tokyo Electric Power Company, the plant's operator, announced the plan on Tuesday.

The government and TEPCO said in a joint assessment that the target of the first stage of the original plan ---- to steadily reduce the level of radiation being released from the plant ---- has been met over the past 3 months.

They said the amount of radioactive substances spewing from the No.1 to No.3 reactors has been cut to one 2-millionth of the peak recorded just after the nuclear accident in March.

The effort to stabilize the nuclear facility now shifts to the second stage, when workers will focus on further cutting the release of radioactive substances over the next 6 months. Emphasis will be on reactor cooling systems that recycle contaminated water. The goal is to achieve cold shutdown by reducing reactor water temperatures to below 100 degrees Celsius.

**Naito says nuclear fuel levels at the plant have dropped below one-tenth of what they were immediately after the accident, but warns of remaining risks.**

He says the government and TEPCO should explain these risks to nearby residents and whether the existing measures will be sufficient.

Wednesday, July 20, 2011 10:26 +0900 (JST)

## Cleanup rate at Fukushima plant remains low

A system to decontaminate radioactive water at the crippled Fukushima Daiichi nuclear power plant continues to work below its target capacity.

The plant's operator, Tokyo Electric Power Company, has found that the **system's decontamination rate was about 53 percent during the past week**, compared with the target rate of 70 percent. **It has been unable to reach the target rate for 3 consecutive weeks.**

The utility says the system's low performance rate is due to water leaks as well as the fact that its capacity to remove radioactive materials is 30 percent lower than the catalog states.

TEPCO says the system's performance has not improved even after its piping was changed, and that the cause of the problem is still unknown.

At the troubled plant, water used to cool down reactors has become radioactive and has been accumulating in the basements of the reactor buildings.

TEPCO has operated the cyclical system since late last month, using the water to cool down the reactors after decontaminating it.

On Tuesday, the utility company and the government said that the reactors are being cooled down in a stable manner. However, the system to recycle cooling water is not working well.

**At the Number 1 reactor building, the level of polluted water in the basement at 7 AM on Wednesday was 13 centimeters higher than the previous day. TEPCO says a tropical storm has raised the water levels.**

Wednesday, July 20, 2011 21:14 +0900 (JST)

## A-bomb survivors criticize US tests

Atomic bomb survivors' groups in Hiroshima and Nagasaki have lodged protests against the United States for conducting subcritical nuclear tests.

In Hiroshima, Sunao Tsuboi, head of the Japan Confederation of Atomic and Hydrogen Bomb Sufferers Organizations, said while the tests are not accompanied by nuclear explosions, they are definitely designed to produce lethal weapons.

He added that if the US believes the tests are justifiable, it should announce them forthrightly, but it appears uneasy instead.

He said the group will file a strong protest against the tests, hoping to make slow but steady progress toward the abolition of nuclear weapons.

The head of an atomic bomb survivor's group in Nagasaki, Sumiteru Taniguchi, said that they were betrayed by US President Barack Obama despite their expectations for the president.

He said **the US government appeared to have delayed announcing the tests to avoid criticism and that subcritical tests are in defiance of the international community.**

Wednesday, July 20, 2011 15:07 +0900 (JST)

## **U.S. Completes Two More Nonexplosive Atomic Tests**

Wednesday, July 20, 2011 - [http://gsn.nti.org/gsn/nw\\_20110720\\_6188.php](http://gsn.nti.org/gsn/nw_20110720_6188.php)

The U.S. National Nuclear Security Administration on Tuesday confirmed the United States had completed in the past year two additional nuclear tests that did not involve the fission process necessary for atomic detonations, Kyodo News reported (see [GSN](#), Sept. 17, 2010).

The subcritical tests, conducted on December 1 and February 2, built on last September's "Bacchus" experiment and aided in ensuring the dependability of the U.S. nuclear deterrent, an NNSA representative said. **The September test was the first subcritical trial to have been conducted since August 2006.**

The newly revealed tests were the second and third of President Obama's term, and they **highlighted his administration's commitment to sustaining U.S. strategic offensive capabilities** while other nations also hold nuclear weapons, according to Kyodo. Disclosure of the events could prompt criticism by nuclear weapons opponents, the news service said.

The U.S. Energy Department office publicly cited the two experiments for the first time in a quarterly ["Summary of Experiments Conducted in Support of Stockpile Stewardship"](#) issued in May.

Washington has contended subcritical nuclear tests do not violate the Comprehensive Test Ban Treaty because they produce no atomic detonation (see [GSN](#), July 18). The United States conducted its first such experiment in 1997, following its last nuclear test blast five years earlier (Kyodo News/[Mainichi Daily News](#), July 20).

Subcritical Experiments: High explosive driven experiments to obtain information critical to certifying weapons performance in the

absence of underground testing while still employing nuclear materials. No critical mass is formed due to the amount and quality of the

nuclear material. As such, no self-sustaining nuclear chain reaction can occur in these nuclear experiments. These are therefore not

nuclear explosions. They generally take years to plan, months to execute, and months to analyze. They are all conducted at the NNSS

facilities, usually U1a, to take advantage of containment and entombment.

## **Decontaminating soil, lowering radiation levels needed to lift evacuation order**



A worker from the Japan Atomic Energy Agency measures radiation levels in a sandbox at the Fukushima University-affiliated kindergarten in Fukushima on May 8, 2011. (Mainichi)

In order to lift the evacuation order in areas around the crippled Fukushima No. 1 Nuclear Power Plant, controlling the radiation dosage at low levels and decontaminating soil are the foremost prerequisites.

However, even after the evacuation order is lifted, the affected areas will face a string of problems, including employment and community rebuilding.

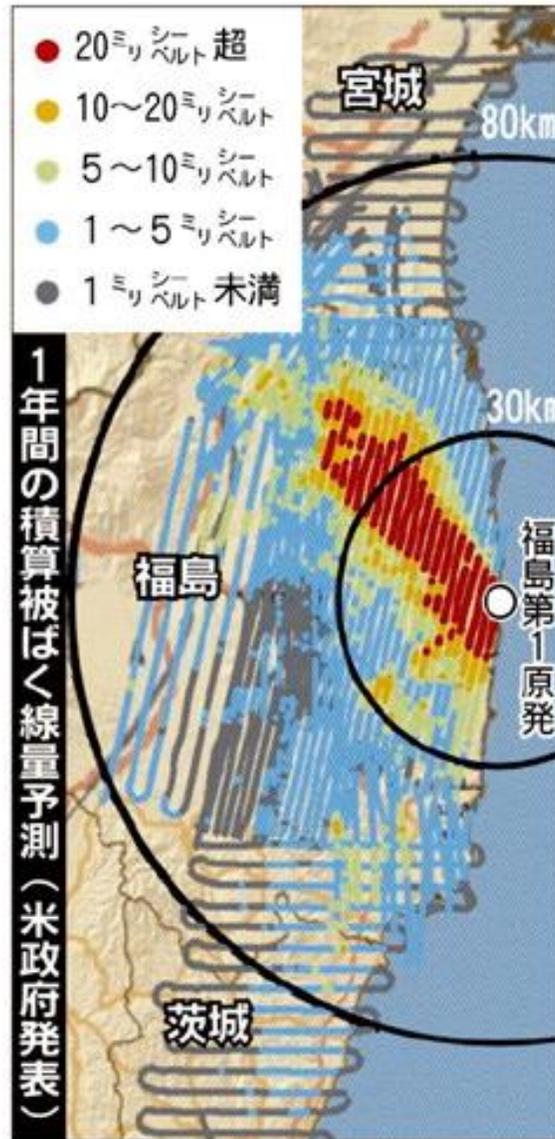
"People won't be able to settle down unless they have jobs. I want authorities to not only lift the evacuation order but to also take every possible measure to bring people back there," said a 50-year-old operator of a retail store in Minamisoma, Fukushima Prefecture.

The city of Minamisoma is part of the 20-kilometer-radius no-go zone as well as the emergency evacuation preparation zone. After the March 11 Great East Japan Earthquake and the ensuing nuclear crisis, the city's key industries of agriculture and fisheries were devastated, while business offices in the manufacturing sector were shut down or downsized.

Four other municipalities in the prefecture that are in the no-go zone and the emergency evacuation preparation zones are also worried about removal of radioactive materials and restoration of housing units that have remained unoccupied by their residents for a long period of time.

"In order to form a community, it will be desirable for residents to return to their hometowns together. I wonder, though, if we can bring people back once they have been scattered, including children who have transferred to other schools," said an official with the Kawauchi Municipal Government -- a village that falls within the 20- to 30-kilometer-radius stay indoors zone.

Another headache for the affected municipalities is disposal of debris and sludge. While the updated timetable for bringing the Fukushima nuclear power plant under control stipulates that collection, temporary storage and disposal of debris and sludge will begin in the Step 2 period, the plan is facing tough challenges as it is difficult to find municipalities that can ultimately accept such waste. Some municipalities are urging that ultimate disposal sites be determined as soon as possible.



The NNSA hazard map released by the U.S. federal government. The Fukushima No. 1 Nuclear Power Plant is marked by a white dot at right.

There is approximately 600,000 tons of debris in Minamisoma, with some 150,000 tons of it collected during the search for missing people and left dumped for more than two months at a planned construction site. The remaining debris is also left piled up in tsunami-ravaged areas.

"No areas will come forward to take such debris," said an official with the Minamisoma Municipal Government's disaster countermeasures headquarters.

Radioactive sludge that is generated at sewage plants is yet another headache. At a sewage plant in the Haramachi district of Minamisoma, the amount of radioactive sludge has topped 80 tons, threatening the facility's capacity. While the return of residents to the area would mean an increase in the amount of sludge, the municipal government has not been able to find a place to temporarily place contaminated sludge.

Despite the government-set standard for the amount of radiation in sludge that can be landfilled, there are cases in which radioactive sludge has nowhere to go due to local residents' opposition. Based on the standard that allows for landfill disposal of sludge whose radiation dosage is under 8,000 becquerels per kilogram, the Fukushima Prefectural Government decided to transfer 1,100-becquerel levels of sludge from a sewage plant in the prefectural town of Kunimi to a final disposal site in the prefecture town of Yanaizu. Although the sludge's radiation dosage was lower than the limit, the town and its residents refused to accept the sludge, saying, "We are concerned about possible health damage that could emerge several years later," leaving the transfer plan up in the air.

"Even if the central government has included disposal of debris and sludge in Step 2, local residents will not necessarily agree to accept contaminated sludge easily. It is a worrisome problem," said an official with the prefectural government's public sewage division.

(Mainichi Japan) July 20, 2011

## **Over 1,300 cattle suspected of radiation contamination shipped**

TOKYO (Kyodo) -- A total of 1,349 cattle suspected of being fed rice straw containing radioactive cesium have been shipped to 45 of Japan's 47 prefectures, a Kyodo News tally showed Wednesday.

On Wednesday, prefectural surveys revealed 699 cattle suspected of such contamination were shipped from farms in Iwate, Akita, Gunma, Niigata, Gifu and Shizuoka prefectures, adding to another herd of such cattle found to have been shipped from farms in Niigata, Fukushima, Yamagata and Saitama prefectures.

In Iwate, up to 57,000 becquerels of radioactive cesium per kilogram -- far above the government-set limit of 300 becquerels -- was detected in rice straw given to cattle at five farms in Ichinoseki and Fujisawa, according to the prefectural government. It was the first time that such cesium has been detected from rice straw produced in the prefecture.

Farms in Shizuoka, Akita, Gunma and Gifu had been feeding their cattle with rice straw produced in the city of Tome, Miyagi Prefecture, bringing the total number of prefectures that have received shipments of Miyagi-produced rice straw to eight.

Radioactive cesium was believed to have emitted from the crippled Fukushima Daiichi nuclear power plant following the March 11 earthquake and tsunami.

While over 1,000 cattle suspected of radioactive contamination were confirmed to have been shipped, less than 10 percent of beef were inspected. The Ministry of Health, Labor and Welfare decided

Wednesday to request municipalities across Japan to put priority on inspecting beef already in the market rather than monitoring vegetables and other products waiting to be shipped.

Farms in Fujinomiya, Shizuoka Prefecture, purchased 70 tons of rice straw produced in Tome. From the straw, 9,380 becquerels of cesium per kg was detected.

In Akita farms, 20,000 becquerels of cesium per kg was detected from straw purchased from a dealer in Tome. A farm in Ota, Gunma Prefecture, purchased about 68 tons of rice straw from a Tome dealer.

In Iwate, where a high level of cesium was detected in rice straws fed to cattle in five farms in Ichinoseki and Fujisawa, it was found that seven other farms in the two municipalities had been feeding cattle with rice straw gathered after the nuclear accident at the Fukushima power plant. But authorities were not able to inspect the rice straw because none was left. From the 12 farms, 81 cattle were shipped.

Miyagi Prefecture has said 64 farms in the prefecture fed their cattle with rice straw gathered after the nuclear accident and that at least 200 cattle had been shipped from 20 farms.

On Wednesday, Iwate Prefecture asked farms not to feed cattle with straw gathered from rice paddies after the nuclear accident and not to ship their cattle fed with the rice straw. Shizuoka Prefecture will also take steps to make sure all farmers are aware that they must not purchase straws suspected of contamination.

(Mainichi Japan) July 21, 2011

## **U.S. seeks explanation of Japan's energy policy over Kan's remarks**



In this June 30, 2011 photo released on July 5, 2011 by Tokyo Electric Power Co., sliding concrete slabs, seen above orange floats, are all set in the upper part of the sluice screen for the Unit 2 reactor at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture, in TEPCO's effort to decrease the leak of radiation contaminated water to the ocean. (AP Photo/Tokyo Electric Power Co.)

WASHINGTON (Kyodo) -- Japanese State Foreign Secretary Chiaki Takahashi said Wednesday a senior U.S. official called for an explanation about Japan's future energy policy, following Prime Minister Naoto Kan's recent remarks that the country should aim for a nuclear-free society.

After talks with Thomas Nides, deputy secretary of state for management and resources at the State Department, Takahashi told reporters that the U.S. official asked what Japan plans to do in its energy policy in the near term and long term.

Takahashi told Nides that there is no question for Japan to review its basic energy policy following the accident at the Fukushima Daiichi nuclear power plant, but that the country will not move to a society without dependence on nuclear energy right away.

Kan said last week Japan should aim for a society that does not depend on nuclear power in the wake of the nuclear crisis, without specifying a timeline or basic strategy for achieving the goal.

Prior to the meeting, Takahashi also held talks with Deputy U.S. Trade Representative Demetrios Marantis.



In this photo taken on March 31, 2011 by the Japan Maritime Self-Defense Force and released by Japan Defense Ministry on, April 1, JMSDF personnel all in protective suits are aboard a tugboat towing a U.S. military barge carrying pure water towards the quay of the tsunami-stricken Fukushima No. 1 nuclear complex in Okumamachi, Fukushima Prefecture. (AP Photo/Japan Defense Ministry)

The U.S. official urged Japan to join negotiations for a U.S.-led Trans-Pacific Partnership free trade accord at an early date, but Washington understands Japan has delayed its decision on whether to join the talks in the wake of the March 11 disaster.

(Mainichi Japan) July 21, 2011

## **Contaminated rice straw found in 10 prefectures**

The Japanese government says rice straw used for cattle feed contaminated with radioactive cesium has been found in 10 prefectures across the country. Beef produced from cattle fed the contaminated straw and shipped out from farms has already been distributed to almost all prefectures.

Inspectors on Wednesday detected 7 times the government-set maximum standard level of radioactive cesium in rice straw used by a farm in Shizuoka Prefecture. This pushes the number of prefectures

where cattle were fed with contaminated straw to 10.

Most of the rice straw in question was shipped from companies in Miyagi Prefecture, north of Fukushima, where the Fukushima Daiichi nuclear plant, responsible for the contamination, is located.

On Tuesday, the government suspended shipments of beef cattle from Fukushima Prefecture after high levels of radioactive cesium were detected in beef shipped from the prefecture. One beef sample contained radioactive cesium in amounts 9 times the government standard.

Thursday, July 21, 2011 07:31 +0900 (JST)

## High levels of radioactivity found extensively

Japan's science ministry says air above the ground about 150 kilometers from the Fukushima Daiichi nuclear plant is as radioactive as areas 50 kilometers from the source of radioactivity.

The ministry on Wednesday released a map showing radiation levels at locations one meter above the ground in Miyagi Prefecture, north of Fukushima, based on the results of an aerial survey from June 22nd through 30th.

Radioactivity levels are highlighted in different colors.

Some parts of Kurihara City, about 150 kilometers north of the plant are light blue, indicating that the air there was 0.2 to 0.5 microsieverts per hour.

That's similar to areas close to the crippled plant, such as Iwaki City in Fukushima Prefecture, about 50 kilometers from the radioactive source.

Radioactive cesium far above the government standard was detected in rice straw for cattle feed collected by a supplier in Kurihara City.

Thursday, July 21, 2011 07:31 +0900 (JST)

## Two of 18 active reactors to be shut down

Two of the 18 nuclear reactors now operating in Japan are due to be shut down shortly for regular inspections with no prospect of restarting.

Kansai Electric Power Company says it plans to begin turning off the power of **the No.4 reactor at its power plant in Takahama, Fukui Prefecture** on Thursday.

The utility also plans to shut down another reactor at **Ohi nuclear plant** in the same prefecture for regular checkups on Friday.

But the Fukui prefectural government has decided not to approve the resumption of nuclear reactors there until the central government draws up new safety standards for reactors after the nuclear disaster at the Fukushima Daiichi plant.

In Japan, 18 of the country's 54 nuclear reactors are currently in operation.

Thursday, July 21, 2011 07:31 +0900 (JST)

## Rain increases contaminated water at plant

Heavy rain brought by a tropical storm has increased the level of radioactive contaminated water at the basements of the crippled Fukushima Daiichi nuclear power plant.

Typhoon Ma-on moved east off the southern coast of Japan's main island of Honshu. 115 millimeters of precipitation was recorded in Namie Town, north of the plant, between Tuesday and Thursday.

Rain has been gathering in the buildings housing the reactors because the roofs were severely damaged by hydrogen explosions that occurred after the initial March 11th disaster.

Tokyo Electric Power Company or TEPCO, the plant's operator, says that at 7 AM local time on Thursday, **the level of contaminated water pooled at the basement of the building of the No. 1 reactor was 44 centimeters up from the previous day.**

Officials at the utility say that there is no immediate danger of the contaminated water spilling out.

But it is likely that the level of water will continue to rise for the time being. TEPCO says they are monitoring the situation.

Thursday, July 21, 2011 16:17 +0900 (JST)

## TEPCO: Cooling system operation at Fukushima plant fell to new low recently

The Tokyo Electric Power Co. (TEPCO) has revealed that from July 13 to 19 only 53.7 percent of a water-recycling and reactor cooling system at the Fukushima No. 1 Nuclear Power Plant was running, the lowest percentage since the system began full-scale operations at the end of June.

The system is being used at the No. 1 through 3 reactors to take leaked radioactive water, decontaminate it and send it back in to cool the reactors. Originally the system was predicted to process 50 cubic meters of water an hour, but from July 13 to 19 the system was only processing about 37 cubic meters per hour. TEPCO says the reason is that **water leaks from pipes caused parts of the system to stop.**

TEPCO aims to improve the operational percentage to 70 percent by the end of July and 90 percent in August, but it is not clear that it will be able to meet those goals.

TEPCO also announced that from March to April there were 64 workers engaged in repair work at the Fukushima plant who received internal radiation exposure of 50 to 100 millisieverts.

Meanwhile, press conferences by the joint government-TEPCO disaster task force, which from April 25 had in general been held every day, will from next week only be held once on Mondays and once on Thursdays. Yasuhiro Sonoda of the Cabinet Office explained the reason for the change by saying, "The reactors' conditions have stabilized and there is not a need to give explanations as frequently as there was in the past."

(Mainichi Japan) July 21, 2011

## **External power supply cut at 2 Fukushima reactors**

Tokyo Electric Power Company says part of the external power supply has been cut at the Fukushima Daiichi nuclear plant due to a problem in the transmission lines.

TEPCO said on Friday that a current breaker was tripped by a sudden surge in the external power lines, cutting off electricity to the No. 3 and 4 reactors.

The operator was forced to suspend a system treating radioactive water. Another system cooling the No.3 reactor's spent fuel storage pool was also shut down.

TEPCO says the pool's temperature remains stable at around 30 degrees Celsius.

After the power outage, a building serving as the headquarters for the plant's stabilization switched to an emergency generator.

TEPCO said work to inject water and nitrogen into the reactors has not been affected, as electricity is being supplied from other power sources.

It said radiation levels around the plant show no major change, and claimed there was little risk of a leak occurring.

TEPCO is working to restore external power, as it tries to find out what caused the problem.

Friday, July 22, 2011 11:42 +0900 (JST)

### **●TEPCO probes Fukushima blackout Earthquake Report JAIF**

Tokyo Electric Power Company is investigating the cause of a sudden power failure at the Fukushima Daiichi nuclear plant. The blackout halted the cooling of a spent fuel pool for 5 hours.

The trouble occurred at around 7:10 AM on Friday, when a circuit breaker

malfunctioned on the power feed to the No. 3 and 4 reactors.

The blackout halted equipment to cool the spent fuel pool for the No. 3 reactor.

Cooling was restored around 5 hours later by means of an alternative power source.

The utility says there has been no major change in the pool's temperature of around 30 degrees Celsius.

TEPCO says the incident did not cause any radiation leakage, as work to inject water and nitrogen into the reactors continued with the other power source.

The blackout also halted systems to treat decontaminated water flooding the underground levels of plant buildings, but the company says these were restored at around 3:30 PM.

The company says all facilities disabled by the incident have now been rebooted.

The utility says that although it has installed several external power sources, their automatic switchover functions were not available. The company says it will improve the systems.

A sudden surge in the external power supply is thought to be behind the failure.

TEPCO says it is looking into the problem.

Friday, July 22, 2011 20:23 +0900 (JST)

## **Prof. Nonaka speaks on cesium in rice straw**

A Japanese expert on radiation in soil says radioactive materials on rice straw and soil must be monitored even if they are located far from the troubled Fukushima Daiichi nuclear power plant.

Niigata University Professor Masanori Nonaka spoke about rice straw contaminated with radioactive cesium above the government limit. Contaminated rice straw has been shipped nationwide as cattle feed.

Nonaka said many farmers on the Pacific side of the Tohoku region leave rice straw on paddies to let it dry during winter. He said that was probably how the rice straw, like a sponge, absorbed cesium that had dissolved into rainwater, snow, and soil.

Nonaka said radiation levels in the air were checked after the nuclear accident, but not those in the farmland, produce, and rice straw. He said this is how the rice straw contamination occurred.

Nonaka said to ensure safety radiation in soil and rice straw must be checked, even if they are far away from the nuclear plant.

Friday, July 22, 2011 04:24 +0900 (JST)

## Fight over radiation dose limits highlights gov't chaos in early days of nuke crisis



In this March 12, 2011 image made from video from NTV Japan via APTN, smoke rises from Unit 1 of the Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture. (AP Photo/NTV Japan via APTN)

Early in the Fukushima nuclear crisis, as the Self-Defense Forces were flying helicopter water-bombing missions over the overheating reactors, the Prime Minister's Office informed the Defense Ministry that the government would raise the upper radiation exposure limit for nuclear crisis personnel to 500 millisieverts.

The hike in the exposure limit would ultimately be rejected, but **the fight over the proposal also highlights the chaos that reigned in government circles as Japan faced one of the most serious crises in the history of nuclear power.**

The new policy, delivered on March 17 and titled "Regarding Raising the Upper Radiation Dose Limit," came just three days after the government had raised the exposure limit from the usual 100 millisieverts to 250. The proposed doubling to 500 millisieverts would have brought the emergency upper limit in line with that recommended by the International Commission on Radiological Protection (ICRP).

Hydrogen explosions had ripped through two of the Fukushima No. 1 Nuclear Power Plant's reactor buildings just days before, and working in a radioactive environment was unavoidable if the disaster was to be brought under control.

The 250 millisievert limit was already as high as the Ministry of Health, Labor and Welfare thought it was safe to go. Then prime ministerial aide Goshi Hosono, however, told Akihisa Nagashima, a former parliamentary official for the Defense Ministry, that no real work could be done at that exposure limit,

adding, "We have to get all the government offices in line on this." Nagashima took Hosono's demands verbally to the ministries and agencies concerned.

On March 15, Fukushima plant operator Tokyo Electric Power Co. (TEPCO) pulled all but 50 workers from the crippled power station. An infuriated Prime Minister Naoto Kan contacted TEPCO executives, telling them to become "a suicide unit." Soon after, Kan told people around him that a complete withdrawal from the station would invite direct U.S. intervention to resolve the nuclear crisis.

The response at the Defense Ministry to the March 17 letter from the Prime Minister's Office was ambivalent, with some wondering if it was truly an official demand. With Self-Defense Forces personnel on the front lines of operations to get the Fukushima reactors under control, Defense Minister Toshimi Kitazawa called an emergency meeting on the 500 millisievert exposure limit with senior ministry officials and Self Defense Force chiefs.



In this March 15, 2011 photo released by Tokyo Electric Power Co., smoke rises from the badly damaged Unit 3 reactor, left, next to the Unit 4 reactor covered by an outer wall at the Fukushima No. 1 nuclear complex in Okuma, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

At more than 250 millisieverts of radiation exposure, a person's white blood cell count will dip temporarily. At 500 millisieverts, lymphocyte counts in the bloodstream drop significantly, weakening the immune system. With this in mind, the reaction at the Defense Ministry meeting to doubling the already raised exposure limit was emphatically negative.

"Cancer rates rise at a 500 dose. There's no way we're going through with such a stupid plan," one attendee apparently said, with another pointing out that "raising the limit to 500 just after setting it at 250 will make people wonder what's really safe. On-site personnel won't know what to believe anymore."

Meanwhile, after receiving the policy notification from the Prime Minister's Office, a senior official with the Ministry of Economy, Trade and Industry's Nuclear and Industrial Safety Agency (NISA) told staff to "be prepared to raise the upper exposure limit to 500 millisieverts at any moment." NISA also began coordinating with the Ministry of Education, Culture, Sports, Science and Technology to have the ministerial ordinance governing the radiation limit amended by a radiation commission under the science ministry's jurisdiction.

At just past 6 p.m. on March 17, Kan and Hosono met with Kitazawa, Minister of Health, Labor and Welfare Ritsuo Hosokawa and Minister of Economy, Trade and Industry Banri Kaieda to talk over the exposure limit.

"So, can we raise the limit to 500 millisieverts?" Kan asked the assembled men, to which Kitazawa said, "A hasty jump would not be a good idea."

Under ICRP recommendations, exposure of up to 500 millisieverts should only be risked to save lives in emergencies.

"If down the road a major explosion happens or is possible, then that situation needs to be communicated to the Japanese people," read a message sent to the Prime Minister's Office summarizing the Defense Ministry's position on the exposure limit. "If there is no such risk, then the ministry believes there is no need to raise the radiation dose limit."



This satellite image provided by DigitalGlobe shows the damaged Fukushima Dai-ichi nuclear facility in Japan on Monday, March 14, 2011. Authorities are struggling to prevent the catastrophic release of radiation in the area devastated by a tsunami. (AP Photo/DigitalGlobe)

The Prime Minister's Office denied there was any risk of further explosions at the plant. And thus, in the end, the 500 millisievert limit never became a reality for the workers struggling to tame the Fukushima reactors.

The struggle over the 500 millisievert dose, however, highlights the terrible confusion and disorder within the government during the unprecedented nuclear crisis. In fact, resolving this confusion came to displace the safety of workers on-site as the central concern of the government.

(Mainichi Japan) July 25, 2011

## **Fukushima to provide lifetime thyroid tests in wake of nuclear crisis**

One-year-old Himari, center, held by her mother Tomomi Sato, left, undergoes a radiation screening test at the welfare office in Oyama, Fukushima Prefecture, on May 24, 2011. (Mainichi)

The Fukushima Prefectural Government decided on July 24 to provide lifetime thyroid gland tests for **some 360,000 prefectural residents aged 18 and under** to help detect thyroid cancer triggered by radiation from the crisis-hit Fukushima No. 1 Nuclear Power Plant.

The free tests will be launched in October. Eligible residents will be tested once every two years until the age of 20, and once every five years thereafter. The prefectural government's move is said to be unprecedented.

After the Chernobyl nuclear accident in the former Soviet Union in 1986, residents around the plant who consumed milk and other products contaminated with radioactive materials were exposed to radiation internally, and four to five years after the accident, an increase in infant thyroid cancer cases was confirmed. Thyroid cancer can for the most part be treated if it is detected at an early stage, and the Fukushima Prefectural Government decided that continuous testing was necessary.

The tests are available to people born between April 2, 1992, and April 1 this year who were residents of Fukushima Prefecture at the onset of the nuclear crisis, or who evacuated out of the prefecture in the wake of the crisis. **For the time being residents will be tested at Fukushima Medical University, and later group testing will be carried out at public halls, schools and other locations with assistance from private medical institutions.** The prefectural government hopes to have the first round of testing completed for all eligible residents by March 2014.

The prefectural government has decided to question all 2 million residents of the prefecture on their movements in the wake of the nuclear crisis, and compare the information with measured radiation levels to estimate each person's exposure to radiation. It will start full-scale distribution of questionnaires in August, and will also investigate people's mental wellbeing focusing on residents of evacuated areas.

The central government is considering establishing a fund totaling about 100 billion yen to cover health checks on all prefectural residents, and the thyroid gland checks on people aged 18 or under are expected to be covered by this fund.

(Mainichi Japan) July 25, 2011

## **Contrary to power company figures, cost of nuclear power generation highest: research**



In this photo from a footage of a live camera released by Tokyo Electric Power Co. (TEPCO), black smoke billows from the crippled Fukushima No. 1 Nuclear Power Plant in Okumamachi, northeastern Japan, on March 22, 2011. (AP Photo)

Utility companies across the country continue to tout the low cost of nuclear energy on their websites.

Tohoku Electric Power Co. boasts nuclear power's economic efficiency, while Hokkaido Electric Power Co (HEPCO) the stability of its cost. Each site comes with bar graphs indicating the cost of generating power through various power sources, and the figures are exactly the same regardless of the utility. For every kilowatt-hour of power generated, hydroelectricity is listed as costing 11.9 yen, petroleum 10.7 yen, liquefied natural gas 6.2 yen, coal 5.7 yen, and nuclear 5.3 yen.

In a section of its website responding to questions sent in by elementary school children, Chubu Electric Power Co. informs us that nuclear power "is the cheapest." The media, including the Mainichi, have often cited the information provided to us by power companies.

However, Kenichi Oshima, a professor of environmental economics and policy at Ritsumeikan University, has done some calculations and has reached a completely different conclusion. Oshima says that the cost for a kilowatt-hour of electrical power between fiscal 1970 and fiscal 2007 was 10.68 yen for nuclear, 3.98 yen for hydroelectric, and 9.9 yen for thermal generation, with nuclear-generated power coming out as the most expensive. These calculations were even presented at a meeting of the government's Atomic Energy Commission last September. So how does one explain these two different conclusions?

First of all, there is a huge gap between estimates given by power companies and figures derived from actual records.

The figure "5.3 yen per kilowatt-hour of power" as the cost of nuclear power generation is an estimate submitted in 2003 by the Federation of Electric Power Companies of Japan (FEPC) to a subcommittee of the Committee for Natural Resources and Energy, an advisory body to the Minister of Economy, Trade and Industry. The estimate presupposed a power plant that began operations in the 2002 fiscal year and would run 40 years with a utilization rate of 80 percent. Construction costs were calculated based on an actual power plant that had recently begun operations, and foreign exchange rates and fuel prices needed to calculate the cost of importing fuel were derived from economic indices at the time. It's a government-endorsed figure that has continued to give nuclear-power generation the "low cost" seal of approval.

Oshima's calculations, meanwhile, have been based on actual performance figures found in utilities' corporate financial reports. These reports list various expenditures including labor and fuel costs, as well as depreciation expenses, by power source, which are plugged into a mathematical formula established by the Ministry of Economy, Trade and Industry (METI) and used by power companies to calculate electricity production costs. Dividing source-specific "expenditures" by "actual generated power," we come up with 8.64 yen, 9.8 yen and 3.88 yen per kilowatt-hour for nuclear, thermal, and hydroelectric power, respectively. Already at this point, the figures differ from the estimates.



The top of the No. 1 reactor at Tokyo Electric Power Co.'s stricken Fukushima No. 1 Nuclear Power Plant is pictured in this photograph taken in early May. (Photo courtesy of a power plant worker)

Furthermore, in the calculations, Oshima included funds from the national government -- in the form of subsidies to local municipalities and other financial assistance -- to expenses.

"The public foots the cost of fuel through power bills, but if you trace the financial assistance from the national government back to their source, they're taxes," Oshima says. "My calculations looked at how much of the burden of power generation is resting on the shoulders of the public."

A major pillar of the government's financial assistance comes in the form of subsidies as stipulated in Japan's three power source-related laws. According to Oshima's research, 70 percent of past subsidies given out based on the laws were funneled toward nuclear power projects.

Oshima says that such subsidies, in essence, are all "nuclear power subsidies." This is how he reached the conclusion that every kilowatt-hour of power generated by nuclear power costs 10.68 yen.

"The national government's method of calculating data is valid, but because it is based on the premise that nuclear power plants run at 80 percent capacity, which is higher than the actual rate (70 percent), the final cost comes out as being lower," says Oshima. "The reason the cost of hydroelectricity is so high (in the national government's calculations) may be because the calculations presuppose that hydroelectric plants will operate for 40 years. In fact, many hydroelectric facilities have been in use 60 years or longer, and because their depreciation has ended, costs are kept down. We cannot reach the conclusion that nuclear power generation is inexpensive, at least according to my calculations."

There's also a problem that's specific to nuclear energy. As Oshima points out, massive amounts of money are needed to dispose of spent nuclear fuel, of which there are two options. There is what's called direct disposal, which entails burying the used fuel underground. The other option is to reprocess and reuse the spent fuel in a process known as a nuclear fuel-cycle. Japan's current nuclear policy aspires to the latter by using a fast-breeder reactor to burn spent plutonium and uranium, but such a reactor has not yet reached commercial viability. "Pluthermal" power generation, or the burning of MOX fuel made from a combination of plutonium and uranium in existing reactors is being conducted for the time being.

In 2003, the FEPC submitted an estimate for the total cost of treating nuclear waste to the aforementioned subcommittee of the Committee for Natural Resources and Energy. The amount: 18.8 trillion yen. Of that total, 11 trillion yen was allotted for the actual reprocessing, 2.5 trillion yen to the disposal of highly radioactive waste produced during reprocessing, and 1.1 trillion yen to MOX fuel

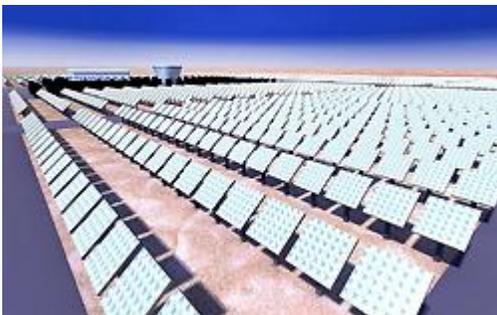
processing. The cost of reprocessing is already included in utility bills, but Oshima does not think this will suffice.

"Some expenses, such as that of reprocessing MOX fuel, have been left out," Oshima points out. "Moreover, the costs for the reprocessing plant that was built in the Aomori Prefecture village of Rokkasho are calculated on the assumption that it will run at 100-percent capacity, but looking at cases abroad, such a thing is impossible. Since just half of spent fuel will be reprocessed there, the total cost will actually be twice as much as the 11 trillion yen that has been estimated.

"Will the public be open to such a high-cost project? If we were to funnel funds earmarked for reprocessing and the nuclear budget, it would be very feasible to get power generation with renewable sources of energy off the ground."

Meanwhile, Takeo Kikkawa, a professor of business history at Hitotsubashi University, accepts the legitimacy of Oshima's preliminary calculations, but also points out the importance of assessing whether power is expensive or cheap from the standpoint of corporations and other heavy utility consumers.

"In fact, in Europe, commercial electricity is cheapest in France, a nuclear-power proponent, and the most expensive in Italy, which abandoned nuclear power. METI has estimated that if all the nuclear plants in Japan are stopped, fuel costs will rise by 3 trillion yen in the next fiscal year," says Kikkawa. "The cost of maintaining the nuclear power plants will remain the same, and there will be the additional fuel costs, which will amount to higher electricity bills. If that were to happen, we'd be hearing complaints that the manufacturing industry could no longer exist in Japan."



An artist's drawing of a solar power generation system that the University of Tokyo's endowed chair is planning to build in Saudi Arabia. (Courtesy of the University of Tokyo)

Power companies increased the number of nuclear power plants to make a stable supply of electricity possible. It has done so while harboring many contradictions, however, according to Kikkawa.

"In Japan, private corporations have operated nuclear power plants but they could not have done so without the involvement of the national government. Finding new sites on which to construct plants would have been difficult without the support of government subsidies, and financial assistance from the government is essential in nuclear waste disposal. When you think about the fact that the country's largest utility, Tokyo Electric Power Co., is at risk of going bankrupt due to its responsibility for the (ongoing nuclear) crisis, nuclear power is not something that can be handled by private corporations."

The longer the disaster plays out, the greater the cost of countermeasures and compensation payments will become, leading eventually to an increase in the burdens imposed on the public, whether it be in the form of higher electrical bills or something else.

Kikkawa says that there's already been a transformation in public opinion. "The public by now is leaning toward eliminating our dependence on nuclear power. The point of contention is shifting to the 'how' of abandoning nuclear power."

 [Click here for the original Japanese story](#)

(Mainichi Japan) July 23, 2011

## **Workers at Fukushima plant report harsh conditions**

Workers involved in the restoration of the areas hit by the March 11 earthquake and tsunami and the troubled Fukushima Daiichi nuclear plant say their working conditions have been harsh.

About 1,500 temporary workers of subcontractors hired by leading construction companies gathered in Tokyo on Sunday to discuss the situation.

A man who took part in the construction of emergency housing in Iwate Prefecture said he had been promised 20,000 yen, or 250 dollars, per day, but received only about one-third of the amount.

He said there were inadequate meals and workers had to sleep together 40 per room.

There were also reports about the conditions for those engaged in treatment of radioactive water and piping construction at the Fukushima plant.

**The workers were forced to work without any explanation about the risk of radiation or any measures against heat strokes.**

Another worker said he has received only half of the wages he had been promised for building temporary housing in Kesenuma, Miyagi Prefecture. He said he wants the government to do something about the unfair working conditions.

The organizers say these issues have not surfaced before because many workers find it inappropriate to complain when they think about the hardships of people in the disaster-hit areas.

Monday, July 25, 2011 09:51 +0900 (JST)

## **TEPCO tackles trouble with decontamination units**

The Tokyo Electric Power Company is trying to figure out why a system to decontaminate radioactive water at the troubled Fukushima Daiichi plant remains unstable.

The system funnels in radioactive water accumulated in the underground facility and reuses it as a reactor coolant after decontaminating radioactive substances.

TEPCO started the operation late last month.

The system sends 3.8 cubic meters of water per hour to each of the No.1 and No.2 reactors.

However, the operation has been unstable for the last 3 days. On Friday, the amount of water injected suddenly decreased to 3.4 cubic meters per hour at No.2 reactor, and then fell to 3.2 cubic meters on Saturday.

At No.1 reactor, water levels decreased to 3.3 cubic meters on Sunday morning.

The utility is examining the pumps each time the amount of water goes down in order to return the system to its previous volume.

On Sunday, the system was halted for 7 hours due to trouble with a device to remove salt from radioactive water. TEPCO restored operation with a back-up mechanism.

The utility says it will closely watch each system and try to track down the causes of the instability.

Monday, July 25, 2011 06:32 +0900 (JST)

## **Contaminated water on increase at Fukushima plant**

**Tokyo Electric Power Company is injecting fresh water from a nearby dam to make up for the shortage of water in its system for cooling the reactors at the damaged Fukushima Daiichi nuclear plant.**

The system decontaminates radioactive water that has accumulated in the plant and circulates it.

TEPCO halted the process of removing salt from contaminated water after an alarm went off around noon on Sunday due to a problem with the installation of the desalination equipment. It resumed the operation in the evening after installing another device.

**The new device is only able to treat half the amount of water.** The amount of contaminated water has been increasing since the problem occurred.

TEPCO began using the new circulatory water injection system late last month. Last week, the government and the utility announced the completion of the first stage of the plan to stabilize the cooling of the reactors.

NHK's reporter points out that as a result of Sunday's trouble, the amount of contaminated water is

increasing. He adds that the recycling of cooling water, a key element of bringing the accident under control, cannot be maintained.

TEPCO is investigating the cause of the problem. The utility says the decontamination system as a whole is not operating stably and it needs to improve its reliability.

Monday, July 25, 2011 14:12 +0900 (JST)

## **Gov. releases radiation forecast system data**

Japan's nuclear watchdog has released results of their analysis on how radioactive substances spread after the Fukushima Daiichi nuclear plant accident.

The Nuclear and Industrial Safety Agency released data analyzed by a computer forecasting system designed to track the movement of radioactive substances based on wind and weather.

The System for Prediction of Environmental Emergency Dose Information, or SPEEDI, calculated 6 days' worth of data, from March 12th through 17th.

The results show the amount of radioactive substances in the atmosphere, external exposures and accumulation on the ground.

A map from March 12th, a day after the disaster, shows radioactive substances first flowed towards the southeast and then gradually moved north.

The Agency says it calculated the data based on updated figures obtained from the nuclear reactors through June.

The 600 pages of information are available on the internet.

The Agency will provide all the data to Fukushima Prefecture. It wants to use the information when conducting health research for its residents to estimate their amount of radiation exposure.

Monday, July 25, 2011 06:32 +0900 (JST)

## **The Origin of the Anti-Nuclear Emblem**

### **'We Wanted a Logo that Was Cheerful and Polite'**

By SPIEGEL Staff - <http://www.spiegel.de/international/zeitgeist/0,1518,773903,00.html>

**Danish activist Anne Lund designed the "Nuclear Power? No Thanks" logo that has become the symbol of the anti-nuclear movement around the world. She spoke with SPIEGEL about how the "Smiling Sun" was born and why she never made any money from her design.**

It is the logo that has been seen at countless anti-nuclear demonstrations over the decades and is perhaps the best-known symbol of the anti-nuclear movement. It has been translated into dozens of languages and copied and co-opted for every opposition movement possible.

The logo, which features the slogan "Nuclear Power? No Thanks" around a cheerful sun, was originally designed by the Danish activist Anne Lund in 1975. Within just a few years, the "Smiling Sun," as the logo is known, had been adopted by anti-nuclear movements around the world. Millions of badges and stickers featuring the symbol have been sold. And it is still as popular as ever: It has been ubiquitous at anti-nuclear demonstrations in Germany in recent years.

Lund never made money from her design, having signed over the rights to the Danish anti-nuclear group Organization for Information on Nuclear Power (OOA). The logo is registered as a trademark in the European Union and the United States.

Lund spoke to SPIEGEL about how the symbol was born and the anti-nuclear movement today.

---

**SPIEGEL:** You designed the famous "Nuclear Power, No Thanks" logo that has been seen at countless anti-nuclear demonstrations over the decades. You yourself have been fighting against nuclear power for 35 years. Do you now feel vindicated, after the accident at [Fukushima](#) and the decision by the German government to [phase out nuclear power](#)?

**Lund:** Unfortunately, yes. But Germany now has an opportunity.

**SPIEGEL:** What is that exactly?

**Lund:** The Germans are under pressure to develop new forms of energy. In this area, they can take the lead in terms of technology. German industry is well positioned to do so. Sure, (the transition to renewable energy) would be easier if we had changed course 20 or 30 years ago. But back then, opponents of nuclear power were considered crackpots.

**SPIEGEL:** You were among the first activists.

**Lund :** We were a small group. We did everything ourselves, even when we had no idea what we were doing.

**SPIEGEL:** Such as designing logos?

**Lund :** At the time, a demonstration was planned, but we lacked a symbol. Unfortunately, we did not have a graphic designer or artist in our group, so I took care of it. I sat down at my kitchen table with old wax crayons which I found somewhere and a block of paper.

**SPIEGEL:** Why did you choose a sun as a symbol?

**Lund :** Because the sun is above party politics. We did not want a logo that looked scary, but one that was positive, cheerful and above all polite. That's why we chose the slogan "*nej tak*," which is Danish for "no thanks."

**SPIEGEL:** How many times has the logo been copied?

**Lund :** About 20 million stickers and badges alone were sold. The text has been translated into some 50 languages. A few days ago, I found the very first orders. They are so touching: 10 units here, 20 there, handwritten orders from some activist group or other. I remember writing back to tell them that it would take a few more weeks until we had printed new buttons and stickers.

**SPIEGEL:** Did you get rich from it?

**Lund :** Not a bit! I transferred all the rights for the logo to the Danish anti-nuclear movement.

**SPIEGEL:** Do you sometimes regret doing that?

**Lund :** No. It would have seemed wrong to earn money from it. I never wanted to be a graphic artist or designer.

**SPIEGEL:** Why not?

**Lund :** Because I have no talent.

---

## Nuclear waste disposal requires millennial planning

2011/07/22 <http://www.asahi.com/english/TKY201107210365.html>

Hirohito Ohno (The Asahi Shimbun)

The late U.S. semiotics researcher Thomas Sebeok (1920-2001) was a professor at Indiana University when he proposed the establishment of an "**atomic priesthood**" in a report he submitted to the U.S. Department of Energy in 1984.

The problem Sebeok was asked by the department to address was this: How do we warn future generations of the extreme danger of highly radioactive nuclear waste buried deep in underground storage sites? Should someone dig up the waste at a later date, unaware of the danger, the consequences would be catastrophic to society. This isn't your garden-variety industrial waste. It is expected to remain toxic for 10,000 years, or 300 generations. That is **a mind-boggling span of time**. Reverse the clock, and the human race was in the Stone Age 10,000 years ago.

Fast-forward to 10 millennia from now, and the **languages** we are using today will likely have been greatly transformed, if not rendered obsolete. There is no guarantee that even pictures will convey their intended meanings. **Signs and symbols** are fully understood only in their contemporary socio-cultural context. What they mean will become increasingly ambiguous with each generational shift.

The atomic priesthood Sebeok proposed would be a self-perpetuating community, which would employ a "folkloric relay system" to keep its message alive for millennia to come.

Japan's "atomic village" of bureaucrats and nuclear experts has been busy spreading its "safety myth," making people believe their argument that nuclear power generation is safe. The mission of the "atomic priesthood," on the other hand, is to perpetuate its "lore of danger." I think a religious organization like the one proposed by Sebeok might be fit for the long-term mission by placing a taboo on the waste burial site.

I once reported on a primary school that had to be relocated to escape the effects of radiation. No, the school wasn't in Fukushima Prefecture. It was in the Paris suburb of Nogent-sur-Marne in France.

A radium extraction plant was built in this commune in the early 20th century, apparently with the support of Pierre and Marie Curie, co-discoverers of radium.

The school in question was built in 1969. About 20 years later, it made news headlines when radiation was detected there. Faculty members, who spent long hours on the premises, were believed to have been exposed to an estimated 14.5 millisieverts of radiation per year. Work was done to remove residual radiation from the premises, but the removal proved to be only partial, and could never fully allay the concerns of parents.

This is not the only example of the "legacy" of France's pioneering radiology research becoming a major headache for the nation. Until the outbreak of World War II, France was mass-producing goods that contained radium, touting them as fruits of its advanced science. The goods ranged from medical equipment to cosmetics, toothpaste, coffee makers, timepieces and even baby clothes.

Today, many of these products are believed to be lying around in old homes, forgotten among common household junk. A French government official in charge of locating such items explained, "They emit only low-level radiation, but if you stay near them for a few hours, you will be irradiated with a dose that easily exceeds the safe annual level."

Yoshihira Doi, 70, an environmental activist in the city of Tottori, noted: "In promoting nuclear energy, little attention is paid to what happens afterwards."

Following the discovery of a uranium ore deposit in the Ningyo-toge pass along the border of Tottori and Okayama prefectures, uranium mining began in 1956. But the low grade of the uranium made the operation unprofitable, and the operators pulled out in the mid-1960s. In 1988, however, radiation was detected in the huge mounds of excavated earth abandoned around the old mine.

The mounds formed low hills, already overgrown with weeds and shrubs, and Doi and a group of local residents launched a petition for their removal. But it was not until 18 years later that the mounds were finally removed

after repeated negotiations and lawsuits with the former Power Reactor and Nuclear Fuel Development Corporation (present-day Japan Atomic Energy Agency) and the prefectures and municipalities concerned.

"Forget, ignore, lose or procrastinate" seems to be the way of radiation management in Japan as well as France. This is with cases that are only a few decades old, not 10,000 years.

Speaking from his experience as an activist, Doi scoffed, "If you think anyone can keep nuclear waste in safe storage, welcome to the world of sci-fi fantasy." Doi pointed out technical challenges as well as problems inherent in society. Over the centuries to come, there will be political upheavals, there may be wars, and almost all companies currently in existence will disappear.

"Then who's left to take responsibility? Even those mounds of dirt (from the uranium mine) took years to clear away," Doi said. "You can imagine just how herculean a task it will be to dispose of all the rubble in the Fukushima No. 1 nuclear power plant and scrap the crippled reactors."

Radiation works to its own time schedule, while we humans muddle through and repeat our mistakes on our time. I can see how increasingly difficult it will get to "synchronize" those two time frames.

In 2009, the Nuclear Regulatory Commission (NRC) of the United States indicated its decision to think not only 10,000 years ahead, but 1 million years ahead, with respect to the estimated radiation level from a permanent high-radiation nuclear waste disposal facility being planned in Nevada. Reverse the clock again, and our planet of 1 million years ago was inhabited by the Pithecanthropus Erectus ape men.

**If we can rely on anything to enable us to properly manage radioactive materials, perhaps it is not so much scientific or social progress as our evolution into a species that can build a stable and safe society.**

Hirohito Ohno is the Op-Ed Section editor of The Asahi Shimbun.

\* \* \*

## **"Flirting with Catastrophe: Atomic Power in a Destabilized Climate"**

[An op-ed by Beyond Nuclear's Kevin Kamps has been published by \*Counterpunch\*.](#) Prompted by historic floods in Nebraska threatening atomic reactors on the Missouri River, as well as historic wildfires in New Mexico threatening plutonium-contaminated wastes at the Los Alamos nuclear weapons lab, it describes how the location of atomic reactors on seacoasts, rivers, and the Great Lakes makes them vulnerable to worsening severe weather caused by the accelerating climate crisis. Beyond Nuclear has prepared two backgrounders on this issue: ["Far from 'solving global warming,' atomic energy is too risky to operate in a destabilized climate,"](#) and ["Climate chaos and nuclear](#)

[power.](#) Previously, Beyond Nuclear's Paul Gunter also wrote "[Natural Disasters and Safety Risks at Nuclear Power Stations.](#)" The vulnerable locations of the 104 operating U.S. atomic reactors are mapped in Beyond Nuclear's pamphlet "[Routine Radioactive Releases from Nuclear Power Plants in the United States: What are the Dangers?](#)"

[A recent op-ed in the New York Times by Heidi Cullen of Climate Central, "Sizzle Factor for a Restless Climate,"](#) reveals that extreme weather such as the current heat wave across most of the United States will become the norm if we don't solve the climate crisis. IEER's [Insurmountable Risks: The Dangers of Using Nuclear Power to Combat Global Climate Change](#), written five years ago by Dr. Brice Smith, debunked the Nuclear Energy Institute's false myth that nuclear power is any kind of solution to the climate crisis.

Adding a one-two punch at *Counterpunch*, Beyond Nuclear board member Karl Grossman also published an article entitled "[What Could Truly End the Space Program: A Nuclear Disaster Overhead](#)" in the same weekend edition.

July 22, 2011

## Greenpeace souligne les failles de l'EPR en cas de panne électrique

LEMONDE.FR avec AFP | 25.07.11 | 13h19 • Mis à jour le 25.07.11 | 13h52



**Le site de Flamanville, en France, où un réacteur nucléaire de troisième génération est en cours de construction.AFP/JEAN-PAUL BARBIER**

L'organisation écologiste Greenpeace a pointé des failles, lundi 25 juillet, dans la sûreté du futur réacteur nucléaire de troisième génération, l'EPR, en cas de coupure prolongée de l'alimentation

électrique. Une situation qui s'était notamment produite à la centrale de Fukushima, à la suite du séisme et du tsunami du 11 mars.

*"Les mesures de sécurité reposent sur l'hypothèse que soit l'électricité fournie par le réseau électrique soit les groupes électrogènes de secours primaires peuvent être rétablis dans un délai de vingt-quatre heures", souligne Greenpeace, qui rappelle qu'"à Fukushima, la panne totale d'électricité a duré onze jours". L'association écologiste s'appuie [sur un rapport](#) commandé à Helmut Hirsch, expert autrichien du nucléaire auprès des gouvernements allemand et autrichien, et membre du groupe d'experts de l'Agence de l'énergie nucléaire de l'OCDE.*

### **"AREVA SOUS-ESTIME LE RISQUE"**

Selon ce rapport, *"la principale leçon de Fukushima, c'est que les réacteurs sont vulnérables en cas de coupure de l'alimentation électrique des systèmes de secours fondamentaux". Or, selon cet expert, une situation similaire à celle connue au Japon sur un EPR ne permettrait notamment pas de "refroidir l'eau du réacteur en-dessous de 100 °C et de parvenir à un arrêt froid (arrêt stable et sûr) du réacteur".*

*"Areva sous-estime le risque de coupure d'électricité (...) au point d'avoir amoindri les mesures de précaution entourant l'EPR" par rapport aux centrales existantes, assure même Greenpeace. Selon l'organisation, "le nombre de groupes électrogènes de secours a été réduit" et ils doivent être "activés manuellement, ce qui augmente le risque d'erreur de la part d'un opérateur".*

### **"L'EPR SERA LE RÉACTEUR LE PLUS SÛR AU MONDE."**

Le 16 mars, cinq jours après le séisme et le tsunami qui avaient touché le Japon, Anne Lauvergeon, alors présidente du groupe nucléaire Areva, avait estimé que l'EPR aurait évité les fuites radioactives à Fukushima. *"S'il y avait des EPR à Fukushima, il n'y aurait pas de fuites possibles dans l'environnement, quelle que soit la situation", avait-elle déclaré à la presse après une audition à l'Assemblée par les parlementaires.*

Invité ce matin de la [matinale de France Inter](#), le ministre de l'industrie, Eric Besson, a réagi à ce rapport. Il a notamment remis en cause l'expertise du chercheur autrichien Helmut Hirsch, et le sérieux de l'association écologiste. Il a ainsi estimé que *"Greenpeace a dit tellement de bêtises sur ce sujet depuis tellement longtemps, je ne connais pas le rapport en question, simplement, je vois ce que disent les meilleurs experts internationaux, pas français, ils considèrent que, en l'état actuel des connaissances, l'EPR sera le réacteur le plus sûr au monde".*

La mise en service de l'EPR de Flamanville (Manche), le premier réacteur de troisième génération, n'est plus attendue que pour 2016, avec [deux ans de retard](#) sur la date initiale, a annoncé mercredi dernier EDF.

## **[Eisenhower quelled Japanese fears about nuclear weapons with "atoms for peace"](#)**



Eisenhower delivering "Atoms for Peace" speech at UNHow could it be that the only nation ever attacked with nuclear weapons would choose to embrace atomic energy just a decade later? [The Japan Times Online has reported](#), based upon declassified U.S. federal government documents from the Eisenhower administration, that the American promotion of nuclear power in Japan in the mid-1950s was aimed at quelling Japanese fears about, and protests against, U.S. nuclear weapons testing in the Pacific region. The Eisenhower State Department recognized the Japanese outrage about the exposure of Japanese fishermen aboard the Lucky Dragon No. 5, downwind of the Bikini Atoll hydrogen bomb test in 1954, as the most severe strain between the U.S. and Japan since the atomic bombings of Hiroshima and Nagasaki 9 years earlier. President Eisenhower feared Japan's loss from the U.S. camp to the U.S.S.R.'s influence, and his State Dept. secretly recommended "It is important to our relations with Japan that we seek to remove the strong Japanese notion that atomic and nuclear energy is primarily destructive. We should accordingly attempt at an early point to include Japan in bilateral and multilateral actions intended to develop peaceful uses of atomic energy."

Eisenhower had delivered his famous (or is infamous a more appropriate word, given what it has led to?) "Atoms for Peace" speech at the United Nations General Assembly on December 8, 1953 (see photo at left). Dr. Arjun Makhijani and Scott Saleska, in their 1999 book [The Nuclear Power Deception](#), documented that "Atoms for Peace" was a public relations ploy to calm American fears about the nuclear arms race, and justify the expansion of atomic enterprises in the name of societal benefit, when in fact the effort was more geared to U.S. nuclear weapons production, as well as to court foreign governments in the Cold War competition with the Soviets.

July 25, 2011 | [Print Article](#) | [Share Article](#) | [Email Article](#)

## **"Uncanny Terrain," a documentary about organic farmers facing Japan's nuclear crisis**

["Uncanny Terrain"](#) is a documentary in progress, about organic farmers facing Japan's nuclear catastrophe. A Chicago-based, Japanese American film making team will spend up to a year in the radioactively contaminated regions of northeast Japan downwind of the devastated Fukushima Daiichi nuclear power plant, which is still releasing radioactive steam onto the winds nearly five months after the radioactive catastrophe began. Fukushima and neighboring prefectures are famous for their small, family-run, independent organic farms. Husband and wife team Junko Kajino and Ed M. Koziarski

have already captured powerful video testimonies, and are [requesting monetary donations](#) to enable them to continue their work.

July 25, 2011

## **Govt to buy back cesium-contaminated beef**

The Japanese government says it will buy back beef containing unsafe levels of radioactive cesium that has already reached the distribution chain.

Agriculture minister Michihiko Kano announced the step on Tuesday, adding that the contaminated beef will be purchased through a private-sector body.

Kano said the measure is designed to allay consumer concerns over the feeding of cattle with rice straw containing cesium in excess of the government-set limit.

NHK has learned that nearly 2,900 head of cattle allegedly given such feed have been shipped to 46 of Japan's 47 prefectures, excluding Okinawa.

Excessive levels of cesium have been detected in beef in 6 of the prefectures, including Fukushima, where work continues to contain a nuclear plant accident.

Beef with radioactive cesium at levels within the safety limit will not be bought back. But, the government will subsidize the cost of storing it for the time being.

Agriculture minister Kano assured consumers that these measures will ensure that only safe beef reaches market.

The costs of purchasing and storing the beef will be eventually passed on to Tokyo Electric Power Company, the operator of the disabled nuclear plant.

The government will also help livestock farmers affected by restrictions and price declines by offering them 50,000 yen, or about 640 dollars, for each head of cattle that was supposed to be shipped.

Tuesday, July 26, 2011

## **New decontamination unit to arrive at Fukushima**

A new system to decontaminate radioactive water will arrive at the troubled Fukushima Daiichi nuclear power plant on Tuesday. The current system, the key to cooling the reactors, has been plagued with problems.

The new equipment, SARRY, consists of 14 cylindrical tanks containing minerals. It is designed to reduce radioactive substances in water, such as cesium, to less than one millionth.

The first shipment of tanks and parts left a port in Iwaki, Fukushima on Monday.

The existing device at the plant was hit with problems from Sunday to Monday. Its operating rate has been reduced to 53 percent, far below the goal of 90 percent.

The plant's operator Tokyo Electric Power Company plans to use the new system, along with the existing one.

The utility will bring the remaining components to the Fukushima plant in 2 more shipments. It then aims to begin operating the new system around early August.

Tuesday, July 26, 2011

## **Power companies' generation figures called into question amid push for reactor restarts**

As Japan strives to conserve power following the closure of nuclear reactors in the wake of the meltdowns at the Fukushima No. 1 Nuclear Power Plant, **suggestions have arisen that power companies are underestimating their generating capacity.**

Recently one opposition lawmaker questioned whether power companies, which want to restart their nuclear reactors, have been giving low estimates of the nation's power supply. **Prime Minister Naoto Kan, meanwhile, has shown increasing distrust toward the Ministry of Economy, Trade and Industry (METI), and ordered a review of the nation's power supplies.**

According to METI, the generating capacity of thermal power generation and hydroelectric power generation in fiscal 2009 was 192 million kilowatts. In comparison, peak demand during the high-use summer period ranged between 170 million and 180 million kilowatts. In light of these figures, Social Democratic Party leader Mizuho Fukushima has declared that electricity needs can be covered without nuclear power.

Thermal power generation, however, requires regular inspections, and with hydroelectric power, a drop in water supply in the summer means the facilities can't be used to their full potential, according to the Federation of Electric Power Companies of Japan.

Industry minister Banri Kaieda told the House of Councillors Budget Committee on July 25 that Japan can supply "about 157 million kilowatts" of electricity from non-nuclear sources.

At the end of July, about 70 percent of the 57.2 million kilowatts provided by Tokyo Electric Power Co. was produced through thermal generation, while hydroelectric generation accounted for 20 to 25 percent.

The company has pumped-storage facilities that can generate about 9.6 million kilowatts of electricity, but since the nuclear power plants that have supplied the electricity for pumps are down, only about 7 million kilowatts has been included in figures.

Kansai Electric Power Co. had facilities at the end of fiscal 2010 with a generating capacity of 34.88 million kilowatts, but the listed generating capacity for August stands at 29.43 million kilowatts. Only 14.18 million kilowatts of the 16.91 million kilowatt capacity of the firm's thermal plants has been included in figures. A total of 2.4 million kilowatts cannot be produced due to the suspension of facilities due to aging and other reasons, and company president Makoto Yagi says it would take two to three years to restart them.

The generating capacity of Kansai Electric's hydroelectric power facilities, meanwhile, is 8.2 million kilowatts, but based on past figures, the highest amount that can be expected from them is 6.24 million kilowatts. The company's Sakai solar power generation station that will be completed in October with a generating capacity of 10,000 kilowatts can already produce 6,290 kilowatts. However, as generating ability is swayed by the weather and other factors, the company has not included figures from the station in its total.

(Mainichi Japan) July 26, 2011

## **Document suggests government estimated 1,600 workers exposed to radiation**

The Ministry of Economy, Trade and Industry estimated that approximately 1,600 workers partaking in efforts to rein in the disaster at the Fukushima No. 1 Nuclear Power Plant will be exposed to over 50 millisieverts of radiation, according to a document that emerged July 26 after a citizens' group lodged a request for access to government information.

The internal ministry document was released to the public domain in June after the Japan Occupational Safety and Health Resource Center (JOSHRC) requested the public disclosure of government information. The document originating from the ministry said: "Those who in the days ahead will be exposed to over 50 millisieverts of radiation are expected to number around 1,600."

Based on this estimate, the document, created on April 25, expressed concerns that **"it will be difficult to secure the safety of other nuclear power plants unless those who have been exposed to more than 50 millisieverts of radiation continue to engage in radiation work."** The document also noted that workers should be instructed not to be exposed to over 100 millisieverts of radiation in a five-year period.

The law stipulates that the maximum level of radiation exposure that radiation workers are permitted per year in normal times is 50 millisieverts. According to the operator of the stricken power plant, Tokyo Electric Power Co. (TEPCO), as of July 13, six company employees had been exposed to over 250 millisieverts of radiation -- the amount permitted for workers in emergency situations. Meanwhile, a total of 416 workers from both TEPCO and subcontractors working at the plant have been exposed to more than 50 millisieverts.

A representative for the ministry's Nuclear and Industrial Safety Agency (NISA) says that the agency has yet to confirm revelations concerning the document, including whether or not the ministry actually ran calculations to come up with an estimate.

(Mainichi Japan) July 27, 2011

## Temple priest stores residents' radioactive dirt



Temple priest Koyu Abe stands by a pile of bags of radioactive soil at Joenji temple in Fukushima. (Mainichi)

FUKUSHIMA -- A temple priest here is storing radioactive dirt from local residents' properties on temple grounds, calling it his duty to help.

Koyu Abe, 47, has accepted around 160 bags of soil, which now sit piled atop a small hill on the grounds of the temple he manages, called Joenji. Due to the ongoing disaster at the Fukushima No.1 Nuclear Power Plant, soil in many areas has been contaminated with radioactive material, but the national and local governments' response has been delayed.

"The people here are threatened, and I cannot leave them without help," says Abe. "Sacrificing oneself and taking on burden is the duty of a priest."

"Up through the Edo Period (1603-1867), temples served roles similar to today's municipal governments," explains Abe.

Abe's dosimeter reads the soil he has taken on at around 8 microsieverts per hour, but he laughs away the danger, saying "the dirt that's brought in has lower radiation levels than the topsoil."

At the end of May, Abe formed a citizens' group that distributes seeds and seedlings of sunflowers, which are said to absorb radioactive material. He is planning to distribute 20 million seeds by April

next year and, after the flowers have grown and absorbed radioactive material, accept them at the temple.

Abe says that when he explained his plans to take on radioactive soil and flowers, local residents did not object. Around 100 volunteers composed of local residents and temple supporters, as well as a local business that Abe has old ties with, are helping with the work.

"Though I am only a single priest, because of relationships of trust with the community I am able to do this much. The fact that the government's response has been so slow shows that their relationship of trust with the people is broken," says Abe.

Abe says that even after the earthquake, people come to the temple from the early morning to share their troubles. "I just want to return everyone's happiness," says Abe.

## **Related links**

Joengi Temple

<http://www.oharu-zizo.jp/>

Fukushima Revival Project

<http://hananinagaiwo.jp/>

(Mainichi Japan) July 27, 2011

## **UN disarmament meeting focuses on nuclear safety**

The United Nations opened its 23rd Conference on Disarmament in Matsumoto city, central Japan, on Wednesday morning.

In a keynote speech at the start of the 3-day event, International Atomic Energy Agency chief Yukiya Amano called the accident at the Fukushima Daiichi one of the most serious and complicated crisis human beings have ever faced.

But he said nuclear power generation will continue to be an important option for many countries, and that the use of nuclear energy will increase in the decades to come.

Amano added that the IAEA will play a leading role to ensure nuclear safety.

Japan has hosted the annual disarmament conference since 1989 as the only country to have experienced atomic bomb attacks.

The focus of the event is on united actions toward a nuclear weapons-free world, including issues such as the US-Russian nuclear disarmament treaty and nuclear development in Iran and North Korea. This year, in the wake of the accident at the Fukushima Daiichi nuclear plant, participants are also discussing nuclear safety.

The conference is being attended by about 90 government officials and experts from 24 countries.

Wednesday, July 27, 2011

## **Nuclear plant workers developed cancer despite lower radiation exposure than legal limit**



The late nuclear power plant worker Nobuyuki Shimahashi's radiation exposure monitoring databook indicated "Y" or yes for jobs he could engage in before some of them were corrected to say "N" or no. (Mainichi)

Of 10 nuclear power plant workers who have developed cancer and received workers' compensation in the past, nine had been exposed to less than 100 millisieverts of radiation, it has been learned.

The revelation comes amid reports that a number of workers battling the crisis at the Fukushima No. 1 Nuclear Power Plant were found to have been exposed to more than the emergency limit of 250 millisieverts, which was raised from the previous limit of 100 millisieverts in March.

According to Health, Labor and Welfare Ministry statistics, of the 10 nuclear power plant workers, six had leukemia, two multiple myeloma and another two lymphatic malignancy. Only one had been exposed to 129.8 millisieverts but the remaining nine were less than 100 millisieverts, including one who had been exposed to about 5 millisieverts.

Nobuyuki Shimahashi, a worker at the Hamaoka Nuclear Power Plant, where operations were recently suspended by Chubu Electric Power Co., died of leukemia in 1991 at age 29. His 74-year-old mother Michiko remembers her son dropping from 80 kilograms to 50 kilograms and his gums bleeding.

Shimahashi was in charge of maintaining and checking measuring instruments inside the nuclear power plant as a subcontract employee. He had 50.63 millisieverts of radiation exposure over a period of eight years and 10 months.

His radiation exposure monitoring databook, which was returned to his family six months after his death, showed that more than 30 exposure figures and other listings had been corrected in red ink and stamped with personal seals.

Even after he was diagnosed with leukemia, the databook had a stamp indicating permission for him to engage in a job subject to possible radiation exposure and a false report on his participation in nuclear safety education while he was in reality in hospital.

"The workers at the Fukushima nuclear power plant may be aware that they are risking their lives while doing their jobs. However, the state and electric power companies should also think about their families. If I had heard it was 'dangerous,' I would not have sent Nobuyuki to the nuclear power plant," Michiko Shimahashi said. "The workers who have done nothing wrong should not die. The emergency upper limit should be cut immediately."

Workers' compensation for nuclear power plant workers rarely receives a mention.

Koshiro Ishimaru, 68, leader of a civic group in the Futaba district in Fukushima Prefecture, notes that six workers at the stricken Fukushima nuclear power plant applied for workers' compensation before the nuclear disaster and four received recognition. Only two of the four identified themselves.

"There are many people who are benefiting from the nuclear power plant and do not want other members of this small community to know about compensation," Ishimaru points out.

When it comes to being entitled to workers' compensation due to diseases other than cancer, the hurdle is much higher.

Ryusuke Umeda, a 76-year-old former welder in the city of Fukuoka, worked at the Shimane Nuclear Power Plant run by Chugoku Electric Power Co. in Matsue and the Tsuruga Nuclear Power Plant run by Japan Atomic Power Co. in Tsuruga, Fukui Prefecture, between February and June 1979.

He soon had symptoms such as nose bleeding and later chronic fatigue before having a heart attack in 2000. He suspected nuclear radiation, applied for workers' compensation in 2008 but was rejected.

His radiation exposure stood at 8.6 millisieverts. Umeda says, "Nuclear power plant workers have been used for the benefit of plant operators. If left unchecked, there will be many cases like mine."

The current guidelines for workers' compensation due to radiation exposure only certify leukemia among various types of cancer. In these cases compensation is granted only when an applicant is exposed to more than 5 millisieverts of radiation a year and develops leukemia more than one year after being exposed to nuclear radiation. For other types of cancer, the health ministry's study group decides if applicants are eligible for workers' compensation.

(Mainichi Japan) July 27, 2011

(Mainichi Japan) July 28, 2011

## **Chubu Electric unable to remove damaged nuclear fuel rod for 17 years**

SHIZUOKA (Kyodo) -- Chubu Electric Power Co. revealed Thursday it has been unable to remove a spent fuel rod that was damaged in an accident 17 years ago from its Hamaoka nuclear power plant in Shizuoka Prefecture.

While spent nuclear fuel is normally sent to the reprocessing plant in Rokkasho, Aomori Prefecture or elsewhere, the damaged rod remains inside the fuel pool of the plant's now decommissioned No. 1 reactor, in a special container, it said.

The company said it had asked domestic research organizations and foreign nuclear fuel firms to take it but to no avail, and is still pondering how to get the rod outside in the absence of clear government rules on how to dispose of damaged fuel that requires more delicate handling.

Chubu Electric denied the same day that it had urged employees and workers at the Hamaoka plant to express support for its so-called pluthermal nuclear power generation project in a government-sponsored promotion event in 2007 when it let them know the event would be held in advance.

After Kyushu Electric Power Co. recently became embroiled in a scandal in which it admitted to an attempt to fake public backing in a similar event, the Economy, Trade and Industry ministry has required electric power companies in Japan to see if they have had similar problems and submit results of internal probes by Friday.

The company serving central Japan asked its employees and workers from its contractors to attend a symposium hosted by the ministry in August 2007 for local people to get a better grasp of the pluthermal project planned for the plant, sources close to the matter said Thursday.

Pluthermal power generation uses plutonium-uranium mixed oxide fuel in an existing reactor and is an important pillar of Japan's nuclear program.

Of 524 people who attended the event, 357 expressed support for the project, the sources said.

The Nagoya-based utility, which postponed the project after the Fukushima nuclear crisis erupted in March and then shut down the Hamaoka plant later at the government's request, says it will inform the ministry as soon as it compiles results of an in-house investigation.

Kyushu Electric has admitted a total of 141 people, including 45 of its employees, sent comments to a government-sponsored television program, aired June 26, via e-mail and fax amid a secret campaign to boost support for the company's plan to reactivate its nuclear reactors.

## **Researchers invent new substance for decontaminating radioactive water**

Researchers have developed a new material highly effective in cleaning the radioactive substances strontium and radioiodine out of contaminated water, the National Institute for Materials Science (NIMS) announced on July 27.

The discovery comes as those trying to cleanse vast quantities of radioactive contaminated water at the crisis-stricken Fukushima No.1 Nuclear Power Plant seek to boost the decontamination rate. NIMS and the Japan Atomic Energy Agency will cooperate to put the new material to practical use as soon as possible.

The material is silica with countless holes in it just 2 to 20 nanometers in diameter, each hole coated on their inner walls with a special compound. Depending on the type of material used, it binds to either radioiodine or strontium, taking the radioactive substances out of the water.

According to NIMS, one gram of the silica material can absorb 20 milligrams of radioiodine or 13 milligrams of strontium, or about 65 billion becquerels worth of strontium 90, produced in nuclear reactors.

The materials currently being used for decontamination also tend to filter out chlorine -- similar to iodine -- magnesium and calcium -- similar to strontium. As sea water -- used to cool the Fukushima reactors -- has high concentrations of chlorine and magnesium, much of the cleansing material's capacity is taken up filtering these elements, pushing down the decontamination rate. The new silica-based material, however, does not have this problem, and in the case of radioiodine, can even be reused.

"If factory-made, you can create tons of this material a day, and even at the laboratory level it costs just 60-70 yen per gram to make," says project Chief Engineer Sherif El Safty. "It is extremely effective for decontamination."

(Mainichi Japan) July 28, 2011

## **Water treatment system running below capacity**

A water decontamination system at the Fukushima Daiichi nuclear power plant has been operating below its target capacity, resulting in delays to the firm's timetable of about 2 months.

Tokyo Electric Power Company started running the decontamination system in late June to remove radioactive substances from water pooled in reactor buildings' basements. Treated water is sent back

into the reactors as coolant.

TEPCO says the system operated at 63 percent capacity from June 17th until Tuesday, though it aimed to run it at 70 percent capacity.

The company was planning to decrease the amount of contaminated water to a safe level by early August. But, it now says the timetable is likely to be pushed back until late September.

The failure to reach the target is mainly attributed to the fact the system's working capacity is at about 30 percent below designed levels. The system has also stopped repeatedly due to various operational problems.

TEPCO says problems seen in the early stages of the operation have been solved, and that it will try to increase the system's treatment rate from now.

Thursday, July 28, 2011 11:48 +0900 (JST)

## Households in radioactive hotspots recommended for evacuation begin leaving



An electronic signboard set up in front of the city office in Date, Fukushima Prefecture, displays radiation levels on June 16. (Mainichi)

DATE, Fukushima -- Four households here were given the keys to public housing on July 28, becoming the first to receive government assistance over an evacuation recommendation issued in late June over radioactive "hotspots."

On June 30, 113 households in four districts of the city were recommended to evacuate due to the detection of the hotspots. Of the households, 10 had already evacuated, and 39 others, including the four that began leaving on July 28, are expected to finish evacuating by the end of August. Another 28 who have expressed the desire to evacuate but are hoping to move out of the prefecture or into private housing do not yet know where they'll go.

As the 113 households were given an evacuation recommendation as opposed to an evacuation order like that issued for the exclusion zone around the Fukushima No. 1 Nuclear Power Plant, the decision of whether or not to leave is left to residents. After the June 30 designations the city government surveyed residents' intentions, and the national and city governments have said they will "respect the opinions" of residents who choose not to evacuate and will not pressure them to leave.

As they handed over the keys to the four households, officials said that the city would attempt to decontaminate the areas while the families are gone. The city is also providing support such as free rent at the city-managed housing.

A 37-year-old woman who lives in one of the four evacuating households told the Mainichi, "We were thinking of evacuating on our own if the city didn't find a place for us to go soon, so I'm relieved they did. But it's small and on the third floor, and though my children will come with me, I'm worried about my husband's parents and grandmother, who are staying behind in our home."

There is also controversy over evacuation recommendations being issued to individual households. Yuichi Takahashi, 41, a community representative who submitted a request to the city and national governments that evacuation recommendations be issued by district, says, "I am angry that the city and national governments are ignoring our request and letting the evacuation recommendations become set in stone. Communities will be destroyed."

(Mainichi Japan) July 29, 2011

## **TEPCO to extract air from troubled reactors**

The operator of the Fukushima Daiichi nuclear power plant says it will extract air from troubled reactors at the plant to measure the amount of radioactive substances. The work is part of efforts to curb the amount of radioactivity released into the atmosphere.

**Up to around one billion becquerels of radioactive substances are believed to be released every hour from reactors No.1, 2 and 3.** It is not known how accurate this figure is because it was worked out by taking readings of the air on the plant's premises.

Tokyo Electric Power Company plans to extract air inside the containment vessels of the reactors through pipes. The extracted air will be analyzed by a device set up on the first floor of the reactor buildings.

The operation is intended to obtain accurate data on what kind of radioactive substances are being released and in what quantity.

The air extraction is expected to begin later on Friday for the No.1 reactor and in early August for the No.2 unit. No plans have been decided for the No.3 reactor due to high radiation levels in part of its building.

**TEPCO hopes the findings may also help the company grasp the extent of leakage of nuclear fuels into the containment vessels.**

Under the second phase of its plan to stabilize the plant, TEPCO aims to minimize the release of nuclear materials and bring the reactors to a stable state called a cold shutdown over the next 6 months.

Friday, July 29, 2011 09:43 +0900 (JST)

## **1,500 tons of radioactive sludge cannot be buried**

Nearly 50,000 tons of sludge at water treatment facilities has been found to contain radioactive cesium as the result of the accident at the Fukushima Daiichi nuclear power plant. **Over 1,500 tons is so contaminated that it cannot be buried for disposal.**

Water treatment facilities in eastern and northeastern Japan have been discovering sludge containing cesium.

The health ministry says there is 49,250 tons of such sludge in 14 prefectures in eastern and northeastern Japan.

A total of 1,557 tons in 5 prefectures, including Fukushima and Miyagi, was found to contain 8,000 or more becquerels per kilogram. This sludge is too radioactive to be buried for disposal.

The most contaminated sludge, with 89,697 becquerels per kilogram, was discovered at a water treatment facility in Koriyama City, Fukushima.

The ministry says 76 percent of the roughly 50,000 tons of radioactive sludge is being stored at water treatment plants and they have no ways to dispose of most of it.

**It says more than 54,000 tons of additional sludge has not been checked for radioactive materials.**

The ministry plans to study how to dispose of the radioactive sludge.

Friday, July 29, 2011 04:35 +0900 (JST)

## **Japan drops promotion of nuclear power from 5-year science plan**

The governmental Council for Science and Technology Policy (CSTP) on July 29 dropped plans to expand nuclear power generation from its newest five-year science program.

The program for fiscal 2011-2015, the fourth in a series, calls for new research and development as Japan plots its future energy and nuclear power policies.

The Cabinet was originally scheduled to approve the program in March but was forced to review it due to the March 11 Great East Japan Earthquake and tsunami, as well as the ongoing Fukushima nuclear crisis. The revised program is expected to be adopted by the Cabinet in late August.

The CSTP, chaired by Prime Minister Naoto Kan, has added a section on "the unprecedented crisis in Japan" to the original version to call for scientific examination of the twin natural disasters and particularly the nuclear incident, and carefully and honestly release its findings to the world.

The council also vowed to actively promote scientific and technological innovation for restoration and revival as disaster-stricken regions struggle to get themselves back on their feet.

The program also recommends beefing up the safety of ports, railways and other infrastructure and strengthening disaster-prevention mechanism for public facilities.

Citing fatigue due to prolonged stays at evacuation centers and posttraumatic stress disorder caused by experience of the megaquake and tsunami, the program vowed to step up research leading to health surveys and analysis, diagnosis and treatment.

Besides the March 11 disasters and the nuclear crisis, the CSTP says the five-year program addresses the environment and health, and emphasizes promotion of technological development to solve the country's problems. The council says it will set up a science and technology innovation strategy council to achieve this objective.

The council envisions earmarking more than 4 percent of gross domestic product for public and private sector investment in research and development over the five-year period, with the state allocating 1 percent or about 25 trillion yen.

Although the R&D investment target faced being prioritized below ongoing reconstruction efforts, it was kept in the revised program at the same amount as in the previous five-year program. Approximately 22 trillion yen was spent under the third five-year program.

(Mainichi Japan) July 29, 2011

## **Wastewater recycling partially halted at Fukushima**

A problematic water decontamination system at the Fukushima Daiichi nuclear power plant has forced its operator to stop pumping out radioactive water pooled in the basements of reactor buildings.

The Tokyo Electric Power Company, or TEPCO, said on Friday that **a waste disposal facility where radioactive water is kept before being decontaminated is almost full because of a delay in the decontamination process.**

As a result, TEPCO suspended the transfer of contaminated water to the facility from the plant's No. 2 and 3 reactor buildings.

The utility uses a wastewater system that decontaminates radioactive water and recycles it as coolant for reactors.

But since a June 17th test run of the system, it has been plagued with glitches and its operating rate has remained below the target of 70 percent.

TEPCO says, however, that the radioactive water in the basements is very unlikely to overflow since the system is working, and that the transfer can resume in 2 days.

TEPCO also reported that one of the system's pumps in a device for removing radioactive cesium has stopped working, but that the failure has not affected the system's operating rate.

Friday, July 29, 2011 16:03 +0900 (JST)

## **Chubu Electric: NISA tried to deceive public forum**

Chubu Electric Power Company says the government's nuclear agency asked it to make sure that questions in favor of nuclear power be asked at a government-sponsored symposium in 2007.

In a report submitted to the government on Friday, the utility said the Nuclear and Industrial Safety Agency requested that it gather participants and have local residents pose prearranged questions at the forum held in Shizuoka Prefecture, central Japan.

The utility said it refused NISA's request to arrange the questions, citing difficulties with ensuring compliance. But senior officials of the Hamaoka nuclear power plant sent e-mails to employees and visited affiliate companies in an effort to comply with the request.

An official of Chubu Electric Power Company said on Friday that his firm issued calls to the public to participate in the forum.

He said he doesn't think the act was an outright breach of the law. But he added that it could have led to the misunderstanding that his firm was trying to manipulate public opinion, and he offered apologies.

The revelation comes after Kyushu Electric Power Company came under fire for submitting fake e-mails in support of a restart of idled nuclear reactors in a government-sponsored meeting for local residents in June.

Following the scandal, the industry ministry ordered the 6 Electric Power Companies to conduct an internal investigation of its activities aimed at winning local support for nuclear power.

Friday, July 29, 2011

**NISA doesn't remember issuing any such request (conclusion of the video on NHK)**

## **Japan to seek to scale back on nuclear power in new energy strategy**



In this photo taken on Thursday, March 31, 2011 by Japan Maritime Self-Defense Force and released by Japan Defense Ministry Friday, April 1, Top parts of explosion-damaged reactors from left, Unit 4, Unit 3, Unit 2 and Unit 1 of the tsunami-stricken Fukushima Dai-ichi nuclear complex are seen with ravaged waterfront facilities in Okumamachi, Fukushima Prefecture, northeastern Japan. (AP Photo/Japan Defense Ministry)

TOKYO (Kyodo) -- The Japanese government decided Friday to draw up a scenario for reducing the country's reliance on nuclear power in its energy strategy to be worked out next year following the nuclear crisis at the Fukushima Daiichi power plant, but recognized the need to use atomic reactors to deal with imminent electricity shortage problems.

The government also unveiled a set of near-term measures to tackle the power crunch that has emerged as a result of the crisis, showing an estimate that the country's power supply capacity could be about 9.2 percent short of peak demand next summer if no reactors are in operation by that time.

Japan is reviewing its earlier policy to promote atomic energy as the nuclear crisis, triggered in the wake of the March 11 earthquake and tsunami, has raised serious doubts among the public about the safety of nuclear reactors.

The government plans to compile a basic policy of its energy strategy by the end of the year, and the strategy itself next year, based on an outline of its energy policy decided Friday. But the outline did not touch on whether Japan should seek to become a society that does not depend on nuclear energy, as stated by Prime Minister Naoto Kan as his "personal view."

"As for the reduction of the ratio of the country's reliance on nuclear power plants, we should decide how we should act by deepening public discussions," a government paper said.

It also said that "nuclear power plants that have been confirmed as safe should be used" in the meantime as power supply and demand are unstable.



In this March 20, 2011 aerial file photo taken by a small unmanned drone and released by Air Photo Service, the crippled Fukushima No. 1 Nuclear Power Plant is seen in Okumamachi, Fukushima prefecture. From top to bottom: Unit 1, Unit 2, Unit 3 and Unit 4. (AP Photo/Air Photo Service)

Kan told a press conference later Friday, "Based on today's decisions, we would further engage in discussions (on energy matters)... The government will push for the reduction of nuclear reliance systematically and in stages."

In addition to fears of power shortages, the government also said there is a risk that the country's electricity generation costs may rise by more than 3 trillion yen if all nuclear power were replaced by thermal power using oil or liquefied natural gas.

To keep the imminent power supply crunch and rise in electricity bills to a minimum, the government said it plans to promote the introduction of energy-efficient products such as light-emitting diodes and to intensively deploy in the next five years "smart meters" that help control electricity consumption.

The spread of smart meters would help achieve more swiftly a "smart grid" next-generation power delivery network, which is also expected to make much greater use of renewable energy sources such as solar and wind, the paper said.

The government also encouraged the separation of electricity generation and transmission to create a competitive environment in the country's electricity businesses.

Before the quake, nuclear power accounted for about 30 percent of the total electricity generated in the country, which has 54 commercial nuclear reactors. But none of the reactors undergoing checkups has been able to restart since the March nuclear crisis, and others now operating will eventually have to be suspended for such checks.

The government also made clear in the paper that it would take thorough safety measures in using atomic power, but prospects are uncertain whether such a stance would lead local governments hosting the atomic power plants to approve the restart of reactors.



An artist's drawing of a solar power generation system that the University of Tokyo's endowed chair is planning to build in Saudi Arabia. (Courtesy of the University of Tokyo)

Japan's basic energy plan endorsed in June 2010 sought to increase the ratio of the country's reliance on nuclear energy to 53 percent by 2030, but Kan said earlier that the government had no choice but to scrap that plan in the wake of the Fukushima crisis.

The envisioned new energy strategy will be considered through three time frames -- short term covering the next three years, the medium term to 2020, and the long term between 2020 and 2030 or between 2020 and 2050.

(Mainichi Japan) July 30, 2011

## Full operation of cooling device begins

The operator of the damaged Fukushima Daiichi nuclear plant has begun full operation of a device to cool a spent fuel storage pool.

The pool holds 1,535 fuel rods, the most for any of the plant's reactors. The wall supporting the pool was damaged in a blast on March 15th.

The Tokyo Electric Power Company reinforced the wall with steel pillars and concrete, and installed a cooling device with a heat exchanger to set up a circulatory cooling system.

TEPCO conducted a test-run of the cooling device at the **Number 4 reactor's spent fuel pool** on Sunday morning. It gradually increased the volume of water flowing into the device before shifting to full operation in the afternoon.

TEPCO says the water temperature of the pool remained above 86 degrees Celsius in the morning and it was around 82 to 84 degrees as of 5 PM.

The company plans to lower the water temperature to around 55 degrees within a month to cool the reactor in a stable manner.

TEPCO is already cooling the water in the spent fuel pools at the Number 2 and 3 reactors. It plans to do the same for the Number 1 reactor soon.

Sunday, July 31, 2011

**AOÛT 2011**

(Mainichi Japan) August 1, 2011

## **Fukushima residents join antinuclear group's summer campaign**

FUKUSHIMA (Kyodo) -- Fukushima residents joined the chorus calling for the elimination of nuclear power as one of Japan's leading antinuclear groups on Sunday kicked off its nationwide summer campaign in the city of Fukushima, located around 50 kilometers from the crisis-hit Fukushima Daiichi power plant.

It was the first time for the Japan Congress Against A- and H-Bombs to start its annual campaign in the city since its founding in 1965, ahead of the anniversaries of the U.S. atomic bombings of Hiroshima and Nagasaki, as it sought to press its case for the scrapping of nuclear power this year.

Koichi Kawano, a Nagasaki atomic-bomb survivor who heads the organizing group, told more than 800 participants at the opening event in a hotel, "We have opposed nuclear weapons and nuclear power plants under the slogan 'Human beings and atomic power cannot coexist.' But we have to admit our responsibility for causing the accident. We failed to make enough efforts to prevent it."

Koshiro Ishimaru from the town of Tomioka, which hosts some of Tokyo Electric Power Co.'s nuclear reactors, said, "There is nothing more irrational, unreasonable than nuclear power plants. It also creates unfairness among the generations."

Ishimaru, who has been active in opposing nuclear plants for over 40 years, also said he is determined to work so that the call for the elimination of nuclear plants reaches people outside Fukushima.

Anton Vdovichenko, a survivor of the 1986 Chernobyl disaster, was among the participants in the meeting calling for solidarity with people affected by the nuclear crisis in Fukushima. Matashichi Oishi, a former crew member of the Japanese trawler Fukuryu Maru No. 5, which was exposed to radiation from a U.S. hydrogen bomb test at Bikini Atoll in 1954, and Eiji Okumura, an atomic-bomb survivor from Nagasaki, also attended the event.

Prior to the ceremony, more than 1,500 people, including those affected by the crisis at the Fukushima plant triggered by the March 11 earthquake and tsunami, mounted an outdoor rally in the city and called for early containment of the accident.

Noriko Matsumoto, 49, mother of two girls from the city of Koriyama in the prefecture, said, "I wouldn't have come here if this disaster had not happened. I didn't even know there were 10 nuclear reactors in the prefecture and I believed that nuclear power was a clean energy source."

"Since the disaster, one of my daughters has had nosebleeds and says her stomach is upset, so I decided to make her stay at my sister's house in Tokyo. We were forced to evacuate on our own, without any compensation. TEPCO is not thinking about us."

Kenta Sato, from the village of Iitate, near the plant, said, "We were exposed to radiation without choice. And the only thing we know now about such radiation is that there is no certainty about its risks to human health."

Hiromasa Yoshida, 45, a teacher from the no-go zone in the town of Namie, said, "My students have suffered psychological shock. They ask me what we can do to improve the situation, but I have no answer even though I have been a teacher for many years."

The group will hold similar events in Hiroshima and Nagasaki in early August to coincide the 66th anniversaries of the U.S. atomic-bombings of the cities.

## **Niveau record de radiations mesuré à Fukushima**

LEMONDE.FR avec AFP | 01.08.11 | 18h43

Un niveau de radiations anormalement élevé a été mesuré, lundi 1<sup>er</sup> août, entre les bâtiments de deux réacteurs de la centrale nucléaire accidentée de Fukushima, a indiqué la compagnie Tokyo Electric Power (Tepco), exploitante du site mis à mal par le séisme et le tsunami du 11 mars.

Selon Tepco, le niveau de rayonnement atteint au moins 10 sieverts par heure à proximité de débris accumulés entre les réacteurs un et deux de cette centrale endommagée par le violent tremblement de terre et le tsunami qui ont dévasté le nord-est du Japon il a près de cinq mois.

Le précédent niveau le plus élevé de radiations dans l'enceinte de la centrale Fukushima Dai-Ichi avait été relevé le 3 juin : il était de trois à quatre sieverts par heure à l'intérieur du réacteur numéro un.

### **TEPCO INCAPABLE D'EXPLIQUER LA HAUSSE**

*"Nous sommes toujours en train de vérifier la cause de tels niveaux élevés de radioactivité"*, a expliqué une porte-parole de Tepco.

Le gouvernement et Tepco prévoient toujours de stabiliser la situation à Fukushima en conduisant les réacteurs vers un état dit d'"arrêt à froid" d'ici au mois de janvier. Diverses actions se poursuivent depuis l'accident pour faire progressivement baisser la température du combustible, notamment grâce à la mise en place d'un système de circulation d'eau de refroidissement.

Environ 80 000 personnes, résidant précédemment à moins de 20 kilomètres de la centrale ou dans des localités ayant été particulièrement contaminées, ont été forcées de quitter leur domicile en raison de risques pour la santé.

## **Time to dismantle dangerous nuclear reactors, scrap nuclear fuel cycle program**

The Great East Japan Earthquake and tsunami that occurred five months ago and ensuing nuclear crisis have reminded the public that natural disasters are unpredictable and that an accident at a nuclear power station could cause irreparable damage to extensive areas.

Risks of serious accidents at nuclear power plants cannot be overlooked in quake-prone Japan. We have proposed that an order of priority for shutting down nuclear plants be set based on their danger, and that the number of such power stations be gradually decreased.

To do so, it is necessary to closely assess the risks of each nuclear power plant.

The massive tsunami generated by the March 11 quake triggered a serious crisis at the Fukushima No. 1 Nuclear Power Plant run by Tokyo Electric Power Co. It is necessary to verify how far human factors -- such as the insufficiency of the plant's preparedness for a serious disaster and a delay in the plant operator's initial response to the disaster -- contributed to the nuclear crisis. Still, it must be kept in mind that all nuclear power plants in Japan are at risk of being badly damaged by earthquakes and tsunami.

Chubu Electric Power Co. has shut down its Hamaoka Nuclear Power Plant in Shizuoka Prefecture, as we had called for, at the strong urging of the central government. The utility and the government should further consider dismantling the plant in view of the inability to predict how much damage will be caused by an earthquake in the Tokai region, which is feared to devastate central Japan.

Numerous members of the public are worried about risks involving aging nuclear reactors. The service life of nuclear reactors is not covered by domestic law. Nuclear reactors must be evaluated after 30 years of operation to see if they have passed their service life, but they often continue to be used for another decade or two. The reasons behind such service life extensions are difficulties in finding locations to build new nuclear plants and power suppliers' attempts to lessen their financial burdens.

However, there are serious problems involving such aging nuclear power plants. Newly developed technology can hardly be utilized to solve safety problems involving the design of aging reactors and entire nuclear power plants. The age-related degradation involving buildings housing such complexes is feared to be overlooked.

Fukushima plant's No. 1 to 4 reactors, which had been in operation for 33 to 40 years, are Mark I reactors that U.S.-based General Electric developed in the 1960s. Risks involving Mark I reactors have been pointed out even in the United States.

The ongoing crisis at the Fukushima No. 1 plant may be attributable to its old design. Its key devices were situated in locations where they could be easily hit by tsunami and there were reportedly problems involving the venting of the reactors.

Of the 54 nuclear reactors across the country, 16 have been in operation for between 30 and 39 years and three have been in operation for 40 or more years. Aging reactors, particularly those that have been in use for at least 40 years, should be shut down and dismantled. Furthermore, whether to dismantle those that have been operated for more than 30 years and less than 40 years should be determined after examining whether their condition has deteriorated because of age.

Even keeping the risks of large earthquakes in mind, we have pointed out that it is unrealistic to immediately shut down all existing nuclear power plants.

Still, it is highly questionable to continue the construction of nuclear power plants that are already under way. The construction work should be suspended to assess the risks. The planned construction of new nuclear power plants should be frozen and whether to go ahead with the construction should depend on an overall nuclear power policy that the government will work out.

In conducting assessments of nuclear power plants, risks must not be deliberately underestimated in order to give the green light to their operations. Instead, the government and power suppliers must judge whether to approve operations at such power stations strictly based on the results of their risk assessments.

The ongoing Fukushima nuclear crisis has also uncovered risks involving spent nuclear fuel pools that have no protection barriers. Thorough safety measures must be taken to ensure the safety of such pools.

As the core of its nuclear power policy, Japan has promoted the nuclear fuel cycle program -- in which plutonium is extracted from spent nuclear fuel and used in fast-breeder nuclear reactors.

However, serious doubts have been raised over the feasibility and safety of nuclear fuel cycle systems since long before the Fukushima crisis. Prospects for operations at the nuclear fuel reprocessing plant in Rokkasho, Aomori Prefecture, and the "Monju" prototype fast-breeder nuclear reactor in Tsuruga, Fukui Prefecture -- the two key facilities in the program -- remain unclear because of repeated technical problems.

The reprocessing plant was originally scheduled to be completed in 1997, but its completion has already been postponed 18 times, and costs for its construction have increased nearly three-fold. The Monju reactor was shut down because of a blaze that occurred immediately after the start of its operations. It developed trouble again immediately after the resumption of its operations last year -- 14 1/2 years after the fire. The schedule to put fast-breeder nuclear reactors into commercial use has been delayed whenever a plan is announced. The feasibility of these reactors is highly doubtful.

Last month, the government announced its policy of decreasing Japan's reliance on nuclear power plants for domestic electric power. In view of this new policy, the government should quickly abandon its nuclear fuel cycle program. Funds set aside for the program should rather be used for efforts to bring the Fukushima No. 1 plant under control.

Nuclear fuel spent at nuclear power stations should be disposed of without being reused. Regardless of whether it is reprocessed, it is difficult to find a final disposal site. Still, if the number of nuclear plants decreases, the accumulation of spent fuel will also slow down.

Even if Japan abandons nuclear fuel cycle systems, the amount of plutonium reprocessed both domestically and overseas is estimated to surpass 40 metric tons. Measures to process such a massive volume of plutonium should be worked out at an early date from the viewpoint of nuclear non-proliferation.

Many experts have expressed grave concern that expertise will be lost if Japan decreases its dependence on nuclear power stations and abandons its nuclear fuel cycle program. It is necessary to

develop and secure a certain number of experts if Japan seeks to safely and efficiently dismantle nuclear reactors while continuing to operate a certain number of nuclear power plants for now.

For example, how about setting up a research base in Fukushima to develop technology for ensuring nuclear power safety, dismantling reactors, radiation management and decontaminating radioactive substances, and attracting experts from all over the world to the facility? Knowledge and technology developed there should be fully used on a global scale.

The importance of technology for the safe management of nuclear reactors and dismantling reactors will increase globally. It is the responsibility of Japan that caused the nuclear accident to make effective use of its experience from the crisis.

(Mainichi Japan) August 2, 2011

## **Safety agency slams TEPCO for lax ID checks on nuclear plant workers**

TOKYO (Kyodo) -- The government's Nuclear and Industrial Safety Agency reprimanded Tokyo Electric Power Co. on Monday for failing to conduct adequate identity checks on workers at the Fukushima Daiichi nuclear plant.

The agency found about the lax security as a result of an on-site investigation it conducted on July 7 after the utility was unable to contact more than 180 workers engaged in operations to bring the crippled nuclear plant under control.

The utility only checked photocopies of identification such as drivers' licenses in judging whether workers should be allowed to enter the premises of the plant, breaching the utility's in-house rules to prevent the theft of uranium and plutonium, the agency said in a statement.

The agency also found cases where TEPCO did not individually distribute entry passes to plant workers but handed them to their supervisors, it said.



In this April 18, 2011 photo released Wednesday, April 20, 2011 by Ehime University Medical Department Prof. Takeshi Tanigawa, workers, mostly employees of Tokyo Electric Power Co., engaged in operations at the tsunami-damaged Fukushima Dai-ichi Nuclear Power Plant, take rest inside a gymnasium that serves as their temporary dormitory at Fukushima Dai-ni Nuclear Power Plant in Naraha, 14 kilometers (9 miles) south of the

former plant in Fukushima Prefecture, Japan. (AP Photo/Ehime University Medical Department Prof. Takeshi Tanigawa)

A nuclear safety agency official said the agency, however, decided against revoking TEPCO's license to install and operate nuclear reactors as the inadequate identification checks "do not constitute systematic and deliberate wrongdoing" and were rather a result of situations created by the crisis at the plant.

TEPCO spokesman Junichi Matsumoto told reporters "So far there has been no case of suspicious persons entering the plant's premises."

In late June, TEPCO alerted the nuclear safety agency that it was unable to contact some Fukushima plant workers as it sought to determine workers' internal radiation exposure.

(Mainichi Japan) August 2, 2011

## **TEPCO to start work by year-end to block radiation water leak to sea**



In this June 12, 2011 photo released on July 5, 2011 by Tokyo Electric Power Co., masked workers in protective outfits prepare to drop one of sliding concrete slabs into a slit of the upper part of the sluice screen for Unit 2 reactor at the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan, in their effort to decrease the leak of radiation contaminated water to the ocean. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Monday it will start building by the year-end an 800-meter-long shield between the Nos. 1-4 nuclear reactors at its crippled Fukushima Daiichi power plant and the coastal line to prevent radiation-contaminated water from flowing into the sea.

The work to hammer the shield to a depth of 20 meters in the ground is expected to take some two years for completion, the utility said.

The company, known as TEPCO, plans to work out a basic design for the shield by the end of August.

The designing work was part of the "Step 2" or the second phase of work to bring the plant under control, slated for three to six months from mid-July. On July 19, however, TEPCO changed the schedule and decided to move the design work forward.

The company is also considering surrounding the four reactors with the shield in the end.

TEPCO also said radiation doses of as high as 10 sieverts per hour were detected outside the buildings for the Nos. 1 and 2 reactors.

The dosage, which was detected at the bottom of a principal exhaust pipe between the two reactors by three plant workers at about 2:30 p.m., may be larger than the measured amount as it exceeds the capacity of measuring equipment.

TEPCO will inspect causes of the high dosage, making the area off-limits.

(Mainichi Japan) August 2, 2011

## **U.S. pressing for deal with other countries to build nuclear fuel repository in Mongolia**

Momentum has been quickly building behind the scenes for an ambitious and controversial project led by the United States and Japan to build a nuclear fuel repository in Mongolia as Washington is trying to secure a memorandum of understanding (MOU) with other countries concerned by the end of this year.

After the Mainichi reported on the proposal in May, the United Arab Emirates (UAE), which wants to be able to buy nuclear fuel from Mongolia, joined the list of countries pursuing the project, and earlier this month the U.S. Department of Energy sounded out other countries concerned about signing a memorandum of understanding on the program by the end of this year. The project itself is to build a mechanism in which advanced countries force the maintenance of nuclear waste, which takes at least 100,000 years to break down to become harmless, onto developing countries.

On May 6, 2009, three men landed at Chinggis Khaan International Airport in the Mongolian capital of Ulan Bator. Two men from an American think-tank and a bureaucrat from the Japanese Economy, Trade and Industry Ministry held talks with then-Mongolian Foreign Minister Sukhbaataryn Batbold (currently the prime minister) and Defense Minister Luvsanvandan Bold, telling them, "Mongolia should become the Switzerland of the East." They then presented a proposal written in English on a spent nuclear fuel repository.

Mongolia, sandwiched between China in the south and Russia in the north, has long suffered from repeated interference by the two giants. Drawing on Switzerland, which declared itself a permanent neutral country and boosted its security by hosting United Nations organizations, the three men tried to persuade the Mongolian officials by saying, "If your country builds a storage facility for spent nuclear fuel and has it managed by an international organization, China and Russia will no longer be able to

meddle carelessly in your affairs. In doing so, your country will be able to contribute to the strengthening of security in Northeast Asia."

The proposal is to build a nuclear fuel production facility, nuclear reactors, a research lab and a storage facility for spent nuclear fuel in an area near uranium mines in the Gobi Desert, southern Mongolia, and let the International Atomic Energy Agency (IAEA) manage the facilities.

Their explanations to the Mongolian side focused on security for Mongolia. The Obama administration withdrew its plan late in 2009 to build a storage facility for spent nuclear fuel in an area near Yucca Mountain in Nevada due to strong resistance from local residents. Playing key roles in thrashing out the Mongolian plan were the U.S. Energy Department, which now found itself on a search for an alternative repository site abroad, and Toshiba Corp (including its subsidiary Westinghouse Electric Co.) -- the biggest nuclear reactor manufacturer in both the U.S. and Japan -- which predicts that securing a storage facility for spent nuclear fuel would boost its sales of nuclear power plants overseas.

According to the IAEA, an estimated 330,000 metric tons of spent nuclear fuel exist in the world. About 15,000 tons of such fuel is produced annually and 8,500 tons of such fuel is stored for disposal and 2,000 tons is reprocessed. Even if spent nuclear fuel is reprocessed, it will generate high levels of radioactive substances, and therefore it will need to be contained for the same length of time as that for spent nuclear fuel that is being disposed.

It is extremely difficult to build a nuclear waste repository in the United States and Japan due to fierce opposition from local residents. Therefore, Mongolia, which boasts the lowest population density among U.N. members and sits on solid ground, was singled out for the ambitious and contentious nuclear project.

(Mainichi Japan) August 1, 2011

## **Highly radioactive water flows into another place**

Highly radioactive water has been found in the basement of a building at the Fukushima Daiichi nuclear power plant near the storage facility for contaminated water.

Tokyo Electric Power Company said on Monday that it discovered about 700 tons of contaminated water on Saturday in the basement of an on-site building.

The utility said the water contained 19,000 becquerels of radioactive cesium 134 per cubic centimeter, and 22,000 becquerels of cesium 137 --- both very high levels.

Until June, the building was connected by a hose with another building where highly radioactive water is now being stored. The buildings are located next to each other and are part of the plant's waste disposal facility.

The utility is investigating how the leak happened. But it says it that there is no danger of the contaminated water leaking out of the building.

Monday, August 01, 2011 21:00 +0900 (JST)

## **Highest radioactivity level detected at nuke plant**

The operator of the Fukushima Daiichi nuclear power plant says it has detected 10,000 millisieverts of radioactivity per hour at the plant. The level is the highest detected there since the nuclear accident in March.

Workers of Tokyo Electric Power Company, or TEPCO, on Monday measured the extremely high level of radioactivity near pipes at the bottom of a duct between the No.1 and neighboring No.2 reactor buildings.

According to the science ministry's brochure, if a human received 10,000 millisieverts, they would likely die within a week or two.

TEPCO has restricted access to the site and the surrounding area.

The utility says the workers taking measurements on Monday were exposed to up to 4 millisieverts.

The utility says the high level of radioactivity was detected because the pipes were used to vent air containing radioactive substances from the crippled No.1 reactor on March 12th.

The utility had detected a maximum of 1,000 millisieverts per hour outdoors in debris, and also found a maximum of 4,000 millisieverts per hour indoors in one of the reactor buildings.

Tuesday, August 02, 2011 06:33 +0900 (JST)

## **TEPCO to check plant radiation levels carefully**

The operator of the crippled Fukushima nuclear complex is searching for radioactive hotspots after finding record high radiation near an exhaust pipe at the plant.

Tokyo Electric Power said on Monday that over 10,000 millisieverts per hour had been detected at the bottom of the exhaust pipe in between reactor buildings No.1 and No.2. That's the highest level detected since March when the quake and tsunami disabled the plant.

A photo released on Tuesday shows workers taking measurements with a detector attached to the tip of a 3-meter-long arm. The level of radiation where the workers stood reportedly reached 40 millisieverts per hour.

TEPCO says the exhaust pipe was used when radioactive air was vented from the No.1 reactor's containment vessel one day after the March 11th disaster.

The company subsequently revealed that the reactor had suffered a nuclear fuel meltdown. The utility believes highly radioactive substances that leaked from the container flowed into the pipe and accumulated inside.

The utility has declared the area off-limits, and is planning to seal it off with mats stuffed with lead. It will also carefully check whether there are other highly contaminated sites within the premises that may hamper cleanup work.

Tuesday, August 02, 2011 12:34 +0900 (JST)

## **No-entry decontamination to start next month**

Japan's minister in charge of the nuclear crisis says full-scale decontamination measures will begin next month for the 20-kilometer evacuation zone around the Fukushima Daiichi nuclear plant.

Goshi Hosono made the remark on a commercial TV channel on Monday.

Hosono said the government will begin decontamination on a large scale and continue monitoring radiation levels. He said the government is aiming for a complete cleanup of the evacuation zone.

The minister added that radioactive materials must be removed from the zone so that residents can return home by early next year. January will mark the end of the second stage of a plan to achieve a cold shutdown of the damaged nuclear reactors.

Tuesday, August 02, 2011 06:33 +0900 (JST)

## **2 TEPCO workers died in tsunami after following orders to check nuclear plant damage**



In this March 11, 2011 photo released Monday, April 11, 2011 by Tokyo Electric Power Co.,(TEPCO), the access road at the compound of the Fukushima Dai-ichi nuclear power plant is flooded as tsunami hit the facility

following a massive earthquake in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.,)

Two Tokyo Electric Power Co. (TEPCO) workers whose bodies were found at the Fukushima No. 1 Nuclear Power plant some three weeks after the March 11 Great East Japan Earthquake and tsunami were struck by the tsunami while inspecting an underground facility under orders, the Mainichi has learned.

The deceased pair, Kazuhiko Kokubo, 24, and Yoshiaki Terashima, 21, were ordered by their shift supervisor to check for leaks in the basement of the plant's No. 4 reactor turbine building when they were hit by the tsunami. At the time a major tsunami warning was in place. It is the first time that details on the background to their deaths have emerged.

In an accident report released in June, TEPCO said that the safety of workers had been confirmed after the quake, and that workers were aware of the earthquake and tsunami, but the latest finding suggests that not all workers knew about the impending tsunami.

At the time of the earthquake, the No. 4 reactor was under inspection, and the fuel rods had been removed. TEPCO officials and other sources said that the two workers were in the central control room at the time, inspecting the power operations of the No. 4 reactor and the opening and closing of valves. After the earthquake struck, an alarm went off, indicating that the water level in the cooling tank of the No. 4 reactor turbine building had dropped. The shift manager accordingly ordered the workers to go and check for leaks. Electricity to the building had been cut, so the pair headed to the underground location of the tank pipes with flashlights.

Terashima phoned his parents' home in Mutsu, Aomori Prefecture, at about 3 p.m., and it is believed that he went to inspect the pipes after this.

Japan's Meteorological Agency released a major tsunami warning for Fukushima Prefecture and other areas at 2:49 p.m. on March 11, three minutes after the magnitude 9.0 earthquake struck. The first wave of the tsunami, measuring about four meters in height, hit the Fukushima No. 1 Nuclear Power Plant at around 3:27 p.m. Eight minutes later, a second wave believed to be more than 10 meters high arrived, surging over a coastal levee and practically submerging all of the buildings at the plant.

On March 12, TEPCO announced that two workers were missing. The company later conducted a search in the basement of the turbine building, but high radiation levels in water hampered its efforts. Police found the bodies of the pair on March 30, after the water subsided, and an announcement on the discovery of their bodies was made on April 3.



In this March 11, 2011 file photo released by Tokyo Electric Power Co., waves of tsunami come toward tanks of heavy oil for the Unit 5 of the Fukushima Dai-ichi nuclear complex in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

In a news conference the same day TEPCO said it was "investigating" why the workers went into the turbine building, not mentioning that they had been ordered to conduct inspections.

In a report on the company's response to the accident, which was released June 18 under the title "Response at Fukushima No. 1 Nuclear Power Plant," TEPCO stated that the safety of workers was confirmed and that a paging system was used to inform workers about the earthquake and tsunami. However, it made no mention of the inspection orders issued to the two workers.

A TEPCO representative admitted that the shift manager had ordered the two workers to conduct inspections. The representative said the workers in the central control room were aware of the major tsunami warning but the company was unable to confirm whether the information had reached the two workers.

(Mainichi Japan) August 2, 2011

## **Nuclear energy can be replaced with renewable energy**

The elimination of nuclear power plants cannot be achieved over a short period of time. Therefore, we basically support the government's intention to consider the matter from short-, medium- and long-term perspectives. It is necessary to set a clear timeline if the government is to draw a realistic roadmap toward the goal.

In the short run, there is no choice but to switch to thermal power generation using natural gas. The government should promptly initiate its work to do so because it normally takes about a decade to complete a thermal power station, considering the time required to select and procure a site for the facility.

Circumstances surrounding natural gas have drastically changed. The amount of natural gas produced has sharply increased since the technology of extracting gas from shale was established in the United States. Shale gas fields are being developed in China and many other countries in the world. The

International Energy Agency estimates that the amount of gas consumed on a global scale will increase by 50 percent by 2030. The natural gas age has arrived.

Germany, which has decided to pursue a society without nuclear power, intends to make up for a shortage of electric power with that generated by thermal power stations. However, the price of natural gas will certainly rise because its demand is expected to sharply expand. Measures should be taken on a global scale to not only guarantee contracts to purchase gas but also to expand interest in gas field exploitation.

Of thermal power plants using fossil fuels, those powered by coal emit the largest amount of carbon dioxide, a type of greenhouse gas. However, coal can be stably procured from all over the world, and its price is relatively low. Electric power generated by such plants accounts for approximately 25 percent of electricity consumed in Japan. To ensure a stable supply of electricity, Japan will need to maintain its coal-powered thermal electric power plants. Germany relies on coal-powered electric power plants for 41 percent of electricity consumed domestically, far above the ratio in Japan.

In short, there is no choice but to make up for a shortage of electric power as a result of decreasing nuclear power plants with power generated by thermal power stations until the ratio of power generated by renewable energy sources rises significantly.

However, there are problems involving such efforts including a rise in the costs of generating electric power and an increase in greenhouse gas emissions.

According to an estimate made by the Institute of Energy Economics, Japan, if all domestic nuclear power plants are shut down, the cost of Japan's imports of fuel will increase by 3.473 trillion yen next fiscal year, increasing the monthly average electricity charge by 1,049 yen per household and by 36 percent for businesses.

Business leaders have expressed grave concern that if a shortage of electric power becomes chronic and electric power rate rises as a result, it will force businesses to shift their factories abroad, speeding up the hollowing out of Japan's industry. Some view the shortage of electric power as a unique opportunity to transform Japan's economy, which consumes a massive amount of electric power, into one that relies less on energy. However, adverse changes in the economy, such as a sharp rise in the unemployment rate, must be avoided by all means.

The hollowing out of domestic industry is very complex and it cannot be attributed solely to a rise in energy expenses. Behind the problem are also various factors such as the sharp appreciation of the yen, inadequate infrastructure for manufacturing, a shortage of human resources that have received advanced education, high corporate tax rates and a lack of leadership ability on the part of the government, which cannot decide whether Japan should participate in the Trans-Pacific Partnership Agreement. The government needs to clarify its stance toward supporting businesses and implement specific measures to that end.

If Japan's reliance on nuclear power plants declines, it will be difficult for the government to achieve its goal of reducing greenhouse gas emissions by 25 percent from 1990s levels. Therefore, it should review its goal.

After the Kyoto Protocol on greenhouse gas emission expires, a new system should be created under which Japan's exports of devices that help reduce greenhouse emissions to developing countries can be recognized as reductions in Japan's greenhouse gas emissions. It should not use taxpayers' money to buy surplus emission credits from other countries in a desperate bid to achieve its numerical target.

In the medium- and long term, Japan should develop and use more renewable energy. Germany's policy of seeking to eliminate nuclear power stations is coupled with its strategy of seeking to be a leader in the field of renewable energy. The level of Japan's environmental protection technology is equal to that of Germany's. Japan has the potential to become a leader in an environment-friendly energy revolution.

The Environment Ministry estimates by 2030, approximately 330 billion kilowatts per hour can be generated in Japan solely with renewable energy if its land is fully utilized. The figure is about 30 percent of electric power currently generated throughout Japan and equal to the amount of power currently generated by all nuclear power plants across the country. Theoretically, all atomic energy used for power generation in Japan can be changed to renewable energy. It is not easy to achieve this but the government should try by setting this as a target.

Among various electric power generation methods using renewable energy sources, Japan has placed priority on solar power generation. At one point, Japan was the No. 1 country in the world in terms of the amount of power generated by solar panels. Various experiments are being conducted, such as storing electric power generated by solar panels in batteries for electric vehicles. The problem involving solar power generation is its high costs. However, as the method becomes widespread, the costs will certainly decrease.

Wind power generation is the most widespread in the world because its costs are relatively low. Japan is ranked only 12th in the world in the volume of power generated by wind power generators. There are various challenges that must be overcome, such as their noise. However, there are many such generators in the Tohoku and other regions, and their potential is particularly high. Floating wind power generators are fitted for Japan, which is surrounded by little sea with shoals. Moreover, the government should promote the introduction of geothermal power generation, which could be stable sources of electric power, and small- and medium-scale hydraulic power generation for local consumption.

One of the disadvantages of natural energy sources is that their ability to generate electric power depends on the amount of sunshine and wind and is therefore unstable. This is the main reason why electric power companies have been reluctant to connect such power generators to their power grids. To overcome this problem, power suppliers should expand their power interchange capacity between themselves and install special batteries to stabilize electric power in their respective grids. In the long run, power suppliers' regional monopoly needs to be reviewed.

Above all, reductions in energy consumption are most important. The Institute of Energy Economics, Japan estimates that by replacing all incandescent bulbs in Japan with light-emitting diode (LED) bulbs, electric power equal to that generated by four nuclear reactors can be saved. This is why it is said that "saving energy is creating energy."

Future generations will feel the limited nature of energy more than us. Japan must reform itself into a country that can efficiently function with smaller amounts of energy. The system to supply energy needs to be restructured into one based on local production for local consumption. Renewable energy is

most suitable for such an energy-supply system. Prompt action is called for to ensure energy safety and security for future generations.

(Mainichi Japan) August 3, 2011

## **Nuclear agency asked 2 more utilities to send staff to symposiums**

TOKYO (Kyodo) -- A former senior official of Japan's nuclear safety agency acknowledged Wednesday that he asked two more power companies to mobilize their employees for government-sponsored symposiums on nuclear energy, in the latest revelations of alleged attempts to manipulate opinions at the events.

The official, who headed the public relations section at the Nuclear and Industrial Safety Agency, told Kyodo News that he made such requests to Kyushu Electric Power Co. ahead of an October 2005 symposium on the Genkai nuclear power plant in Saga Prefecture, and to Tohoku Electric Power Co. over the Onagawa plant in Miyagi Prefecture.

While the official could not specify when the Onagawa symposium was held, it is believed to be the one held in October 2006. The official also said he could not recall to whom and where he made the requests.

Meanwhile, Kyushu Electric dismissed the claim, saying it has found no record of such requests from the government after double checking with its staff and reviewing documents at the time.

A Tohoku Electric official said the company was looking into the matter and declined to comment.

Wednesday's revelations came after the official told Kyodo News a day earlier that he asked senior officials at Shikoku Electric Power Co. to make its employees attend a symposium in June 2006.

The nuclear safety agency said a third-party panel to be created shortly will look into the allegations.

(Mainichi Japan) August 3, 2011

## **Highest indoor radiation level detected at Fukushima Daiichi plant**



In this photo released by Tokyo Electric Power Co. (TEPCO), a worker walks on the second floor of the No. 1 reactor building at the Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan, early Monday, May 9, 2011.

TOKYO (Kyodo) -- Radiation dosages of 5 sieverts per hour were detected indoors on the second floor of the No. 1 reactor at the crisis-hit Fukushima Daiichi nuclear power plant on Tuesday, the highest figure yet indoors, plant operator Tokyo Electric Power Co. said.

The figure was detected in front of a pipe in an air-conditioning machine room, the utility said, adding the dosage may be larger than the measured amount as it exceeds the capacity of measuring equipment.

Radioactive substances are considered to be staying in the pipe after they entered there when pressure in the reactor's containment vessel was lowered on March 12, according to Tokyo Electric known as TEPCO.

The company has made the area off-limits.

TEPCO also said radiation doses of more than 10 sieverts, or 10,000 millisieverts, per hour were detected outdoors again Tuesday at the plant.

If exposed to such a high-level dosage of radiation in a short period of time, almost all people exposed would die, radiation experts said.

On Monday, Tokyo Electric said radiation doses of as high as 10 sieverts per hour were detected outside the buildings for the No. 1 and No. 2 reactors.

Gamma camera images which show radiation doses by color indicated red at the bottom of the main exhaust pipe between the two reactor buildings, which means radiation doses top 10 sieverts per hour, TEPCO said.

On Tuesday, more than 10 sieverts per hour were detected at an area near the scene, with those images also showing red at a height of 10 meters above ground on the back of the exhaust pipe.

TEPCO said radioactive substances might have adhered to the back of the exhaust pipe after they were emitted when the company vented at the No. 1 unit to lower pressures within the reactor pressure vessel and reactor container.

TEPCO said those places with high doses of radiation pose no major trouble for the company's work to contain the nuclear crisis and that **it has no plan to measure radiation doses in detail.**

On Monday, TEPCO said its plant workers confirmed the high-level doses of radioactivity Monday afternoon when they put the measuring device to the surface of the exhaust pipe. The level may have been higher than the measured amount of 10 sieverts per hour as it exceeds the capacity of measuring equipment.



This photograph shows a worker who measured radiation doses near the surface of an exhaust pipe between the No. 1 and 2 reactors at the Fukushima No. 1 Nuclear Power Plant on Aug. 1. (Photo courtesy of TEPCO)

Previously, the highest dose detected indoors was 4 sieverts per hour measured at the floor of the No. 1 reactor building.

Meanwhile, State Minister Goshi Hosono, who is in charge of the nuclear accident, called Tuesday for correctly analyzing the situation, saying at a news conference that a correct grasp is essential to settle long-term issues involving the Fukushima Daiichi plant that was crippled by the March 11 earthquake and tsunami.

(Mainichi Japan) August 3, 2011

## **Gov't to make radioactive material concentration map for farmlands**

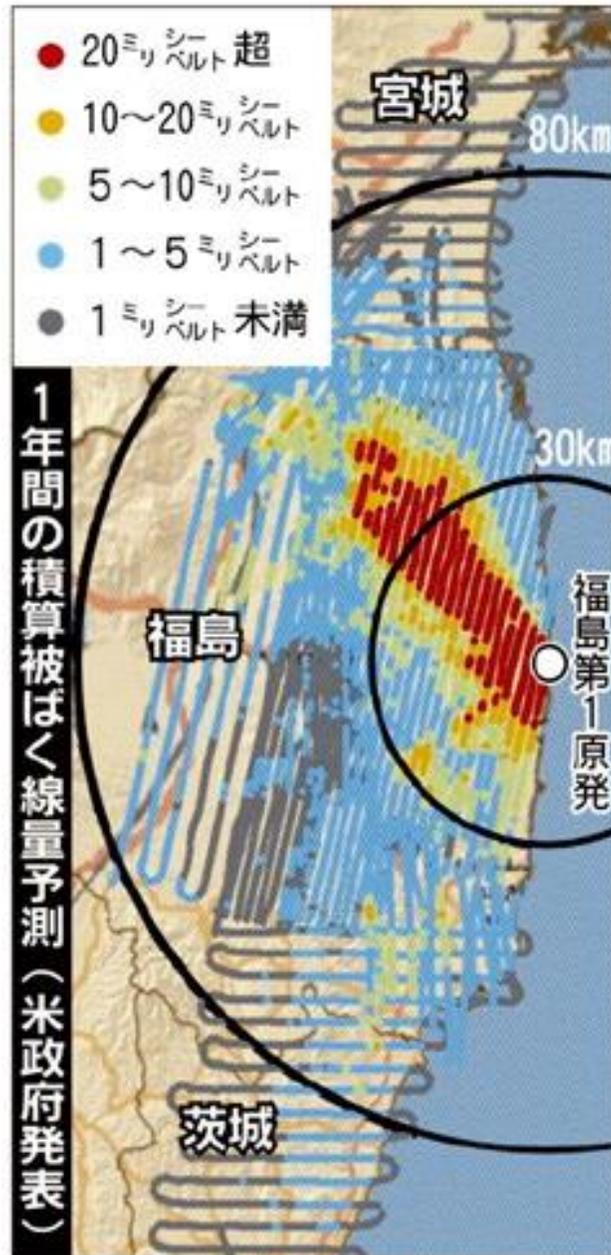
TOKYO (Kyodo)-- The government said Tuesday it plans to draw up a radioactive substance concentration map for farmlands and conduct a study on contaminated debris as part of measures to deal with radioactive material released from the crippled Fukushima Daiichi nuclear power plant.

The measures are to be implemented by the end of this year, with government ministries and agencies strengthening cooperation to deal with radiation contamination from the disaster-struck Fukushima No. 1 nuclear power plant.

But the government did not show how it will use findings from the study to decontaminate areas near the almost destroyed power plant.

According to measures compiled Tuesday, the Ministry of Agriculture, Forestry and Fisheries will analyze farm land at about 500 sites mainly in Fukushima Prefecture, where the wrecked nuclear plant is located, and draw up a radioactive material concentration map by the end of this month.

Also, the Environment Ministry is to check radioactive contaminated debris in the government-declared no-go zone near the plant.



The NNSA hazard map released by the U.S. federal government. The Fukushima No. 1 Nuclear Power Plant is marked by a white dot at right.

And the Ministry of Education, Culture, Sports, Science and Technology will install about 250 devices across Japan to monitor radioactive substances. Currently, there is just one of these devices installed in each of Japan's 47 prefectures.

By increasing the number of devices nationwide, the ministry aims to introduce a system by the end of this year to monitor levels of radioactive substances around the clock and disclose those levels to the public.

The ministry also plans to enhance studies of seawater off the coasts of Fukushima, Miyagi and Ibaraki prefectures in cooperation with the Fisheries Agency and the Japan Coast Guard.

(Mainichi Japan) August 3, 2011

## Sellafield Mox nuclear fuel plant to close

- [Fiona Harvey](#), environment correspondent
- [guardian.co.uk](http://www.guardian.co.uk), Wednesday 3 August 2011 12.29 BST - <http://www.guardian.co.uk/environment/2011/aug/03/sellafield-mox-plant-close>

The [Mox nuclear fuel plant at Sellafield](#) will be closed on Wednesday afternoon, with the loss of about 600 jobs.

The closure is a consequence of the [Fukushima incident in Japan](#), in March.

Workers at the plant were told on Wednesday morning that there was "considerable scope" for them to be re-employed in other parts of the Sellafield complex.

It will take several months for the plant to close fully.

The West Cumbrian mixed-oxide fuel plant has cost the taxpayer £1.4bn since it was commissioned in the early 1990s.

The plant, operated by the government-owned [Nuclear Decommissioning Authority](#), was set up to create mixed-oxide fuel for use in [nuclear power](#) plants, with its chief customers the Japanese nuclear industry, including the Fukushima complex.

The plant was built in 1996 and became operational in 2001.

NDA denied there were any repercussions for the troubled [Thorp reprocessing plant](#), although Thorp is also involved in generating Mox fuel, which is made from plutonium and uranium.

The announcement will officially be made public at 2.30pm on Wednesday afternoon.

## Discussions begin on how to scrap Fukushima plant

A government-appointed panel has begun discussing the timetable for decommissioning the reactors at the Fukushima Daiichi nuclear plant.

About 30 people, including members of the Atomic Energy Commission and officials from the plant's operator, Tokyo Electric Power Company, took part in the panel's initial meeting on Wednesday.

Yuichi Hayase, who joined US researchers in studying the accident at Three Mile Island in 1979, briefed the participants on how that plant was brought under control.

Hayase explained that it took 11 years to extract all the fuel rods, as workers were coping with the world's first nuclear meltdown. It was also necessary to develop remote-controlled robots and technology to process contaminated wastewater.

Panel members discussed middle- and long-term challenges in the decommissioning process, such as how to repair the reactor containment vessels and decontaminate the buildings by remote control to enable extraction of the fuel rods.

One expert cited the need for long-term training of specialized personnel, while another said international expertise is essential in drawing up the timetable.

Kyoto University Professor Hajimu Yamana, who heads the panel, said he expects longer preparations for extracting the fuel rods, because the reactor cores at Fukushima are more badly damaged than at Three Mile Island.

The panel plans to finalize the timetable by early next year, at the end of the second stage of the process to bring the plant under control.

Wednesday, August 03, 2011 19:07 +0900 (JST)

## **Britain to close nuclear fuel plant due to Japan disaster**



In this March 15, 2011 photo released by Tokyo Electric Power Co., smoke rises from the badly damaged Unit 3 reactor, left, next to the Unit 4 reactor covered by an outer wall at the Fukushima No. 1 nuclear complex in Okuma, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

LONDON (Kyodo) -- Britain's Nuclear Decommissioning Authority said Wednesday it is to close a nuclear fuel production facility following talks with Japanese customers.

The state-owned body said it will shut the Sellafield MOX Plant in northwest England in light of the ongoing crisis at the Fukushima Daiichi nuclear plant which was crippled by the devastating March tsunami in Japan.

The NDA, which operates the Sellafield plant, had a legal framework agreement with 10 Japanese utility firms to supply plutonium-uranium mixed oxide (MOX) fuel.

The MOX fuel was going to be made up using plutonium set aside from fuel which had already been reprocessed by Japanese utilities.

A statement from the NDA said, "The NDA Board has now assessed the changed commercial risk profile for SMP arising from potential delays following the earthquake in Japan and subsequent events."

It has concluded that "the only reasonable course of action is to close SMP at the earliest opportunity" to ensure that Britain's taxpayer does not carry a future financial burden from the plant.

An NDA spokesman said Chubu Electric Power Co.'s Hamaoka nuclear plant was to be the first user of Sellafield MOX fuel with the first shipment planned toward the end of the decade. Chubu Electric, however, shut down the plant in May at the request of the Japanese government following the Fukushima crisis.



This March 24, 2011 aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE shows damaged Unit 3 of the crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan. (AP Photo/AIR PHOTO SERVICE)

The spokesman said all parties agreed "with sadness" to take advantage of a break clause within the framework agreement.

He said the "small amount" of plutonium currently owned by the Japanese utilities will continue to be stored at Sellafield and discussions on its future will continue.

The Sellafield plant, which opened in 2001, carried out a few contracts for European utilities but the NDA was hoping that the Japanese contracts would ensure its long-term viability.

The British government is currently consulting on what to do with its stockpile of civilian plutonium and the preferred option is to reuse it by making new MOX fuel.

One source familiar with the issue, and speaking on condition of anonymity, told Kyodo News that this could lead to the creation of a new MOX plant. He added this could be used by the Japanese utilities if there was a change in the political climate toward nuclear power.

In 1999, a demonstration facility at Sellafield manufactured the first batch of MOX fuel for Japan and it was sent to a reactor in Takahama, Fukui Prefecture.

However, it later emerged that the quality assurance tests on the fuel had been fabricated and the consignment had to be shipped back to Britain. Compensation was paid to the client, Kansai Electric Power Co.

Since then, the Sellafield plant has been keen to win back the trust of Japanese utilities and win new MOX orders.

Following the Fukushima incident, the Japanese government has decided to review its nuclear policy with a view to reducing its dependency on this source of energy.

(Mainichi Japan) August 4, 2011

## **Gov't to require disposal of rice found cesium-tainted in 2-phase test**

TOKYO (Kyodo) -- The farm ministry said Wednesday that municipalities should test rice to be locally harvested this year in two stages for possible radioactive pollution from the crippled Fukushima Daiichi nuclear power plant and dispose of all rice found to be contaminated above the government-set safety limit.

A preliminary test should be carried out about a week before harvesting in municipalities where more than 1,000 becquerels of radioactive cesium per kilogram of soil are detected or where radiation doses in the air are higher than normal levels, according to the Ministry of Agriculture, Forestry and Fisheries.

Municipalities designated by prefectural governors should also conduct the preliminary test.

The ministry will require a full-scale test to be implemented per 15 hectares of rice acreage by municipalities where more than 200 becquerels per kilogram of rice are detected in the preliminary test.

A municipality where rice tainted with cesium exceeding 500 becquerels per kilogram is confirmed in the second test will be required to issue a shipment ban and dispose of all rice cropped there, the ministry said.

Meanwhile, the Shizuoka prefectural government said neither cesium nor iodine was detected in a sample test using unmilled rice supplied by three growers in the city of Kikugawa.

The government collected 6 kg of rice, due to be cropped in August, from the growers on July 25 and sent 2 kg to a local private testing institute Tuesday.

(Mainichi Japan) August 4, 2011

## **Radiation limit for children will be lowered**

The Japanese government says the yearly radiation limit for school children will be lowered as early as this month.

The government has set the limit for accumulated external radiation for children involved in outdoor activities at 20 millisieverts per year, in the wake of the Fukushima nuclear accident.

But many parents and teachers want the figure to be lowered. Some schools are restricting outdoor activities by their pupils even if radiation levels are below the government-set standard.

Education Minister Yoshiaki Takaki will visit an elementary school in Fukushima Prefecture on Thursday. He will inspect progress on work to replace the topsoil of its schoolyard and talk to school staff.

The ministry says it will make a final decision based on the outcome of the minister's tour and results of radiation monitoring in the areas near the troubled Fukushima plant. The limit will be most likely lowered in late August, when the ongoing summer recess is over.

Thursday, August 04, 2011 11:05 +0900 (JST)

**<http://fukushima.over-blog.fr/>**

**Japan's largest labor organization questions nuclear energy policy**



In this March 15, 2011 photo released by Tokyo Electric Power Co., smoke rises from the badly damaged Unit 3 reactor, left, next to the Unit 4 reactor covered by an outer wall at the Fukushima No. 1 nuclear complex in Okuma, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

HIROSHIMA (Kyodo) -- Japan's largest labor organization questioned the country's energy policy Thursday, including the promotion of nuclear power generation in the wake of the crisis at the Fukushima Daiichi plant.

"The basis of what Japan's energy policy should be, including nuclear power, is being questioned," Hiroyuki Nagumo, secretary general of **the Japanese Trade Union Confederation**, told an antinuclear gathering in Hiroshima.

"The Japanese people's trust in nuclear power generation has been lost," Nagumo told around 6,500 participants at the event organized jointly by the confederation, the Japan Congress Against A- and H-Bombs, and the National Council for Peace and Against Nuclear Weapons.

It was the first time that the confederation, known as Rengo, has mentioned the issue of nuclear energy since it began co-organizing in 2005 a series of annual peace events to commemorate the U.S. atomic bombings of Hiroshima and Nagasaki.

Hiroshima Mayor Kazumi Matsui and Hiroshima Gov. Hidehiko Yuzaki attended the gathering on Thursday.

But Nagumo did not elaborate further on the issue of nuclear energy, reflecting tensions within Rengo, which is the biggest supporter of the ruling Democratic Party of Japan and has labor unions representing workers at power utilities and nuclear reactor manufacturers under its wing.

"We have to start discussions concerning nuclear energy from the beginning to decide on what we should do in the future," Nagumo told a press conference earlier Thursday.

The confederation and the antinuclear groups have been united in opposing nuclear weapons and calling for better support measures for atomic-bomb survivors.

But the confederation and the council promoted nuclear power generation before the March 11 earthquake and tsunami crippled the Fukushima complex and led it to release a massive amount of radiation.

Rengo decided in May to freeze its policy of promoting the construction of new nuclear power plants. But the Japanese Electrical, Electronic & Information Union, a member of Rengo, called in July for restarting nuclear power reactors that have been shut down for regular checks.

Koichi Kawano, a Nagasaki atomic-bomb survivor and the head of the congress, said in his address to the event, "With many people questioning the safety of nuclear power plants, how can we go on without talking about the problem of nuclear plants?"

"A nuclear power plant accident and use of a nuclear weapon cause similar damage. Humans and atomic power cannot coexist," he said.

### 3 top Japanese nuclear officials axed amid nuclear crisis

TOKYO, Aug. 4, Kyodo

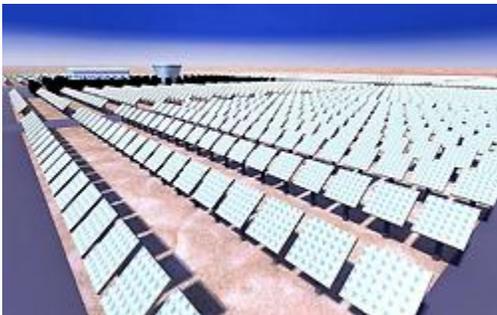
Japan's Economy, Trade and Industry Minister Banri Kaieda said Thursday he will sack vice minister Kazuo Matsunaga and two other top officials in charge of nuclear power to hold them responsible for the handling of the ongoing crisis at the Fukushima Daiichi nuclear power plant crippled by the March 11 earthquake and tsunami.

Kaieda said at a press conference that Nobuaki Terasaka, head of the Nuclear and Industrial Safety Agency, and Tetsuhiro Hosono, head of the Agency for Natural Resources and Energy, will also step down. Both agencies are under the Ministry of Economy, Trade and Industry.

Later in the day, the ministry announced that Kenyu Adachi, director general of the ministry's Economic and Industrial Policy Bureau, will succeed Matsunaga as vice minister on Aug. 12.

Adachi joined the Ministry of International Trade and Industry, the predecessor of METI, in 1977 and has been serving as head of the Economic and Industrial Policy Bureau, since July 2010.

Terasaka will be replaced by Hiroyuki Fukano, director general for commerce and distribution policy, on Aug. 12, while Ichiro Takahara, head of the Small and Medium Enterprise Agency, an organization under the ministry, will replace Hosono who will step down on Sept. 1 as head of the Agency for Natural Resources and Energy.



An artist's drawing of a solar power generation system that the University of Tokyo's endowed chair is planning to build in Saudi Arabia. (Courtesy of the University of Tokyo)

Kaieda told reporters in the afternoon that he has decided on the reshuffle of the personnel to drastically review nuclear regulations and promote new energy policy.

METI and the nuclear safety agency have drawn criticism for their handling of the nuclear crisis at the Fukushima plant, including delays in public announcements, power supply problems and alleged attempts to manipulate public opinion to show support for nuclear power.

The appointments will be officially announced following approval at a Cabinet meeting on Friday.

Adachi will be succeeded by Norihiko Ishiguro, head of the Commerce and Information Policy Bureau, as head of the Economic and Industrial Policy Bureau, while Takahara will be replaced by Masanori Suzuki, head of the Manufacturing Industries Bureau, as head of the Small and Medium Enterprise Agency.

Chief Cabinet Secretary Yukio Edano said at a press conference on Thursday that Kaieda reported the planned reshuffle of personnel to Prime Minister Naoto Kan on Tuesday but he did not refer to his resignation at that time.

(Mainichi Japan) August 5, 2011

## **Last year's rice being hoarded over radiation contamination worries**

TOKYO (Kyodo) -- Consumers are beginning to hoard last year's rice as their dietary staple over concerns that freshly harvested rice may be contaminated with radioactive materials released from the troubled Fukushima Daiichi nuclear power plant, retailers said Friday.

The Agriculture, Forestry and Fisheries Ministry is working to establish a system for ensuring the safety of rice ahead of the harvest season in autumn, with plans to inspect the crop in two stages.

The buying spree, however, indicates deep public distrust of the government's handling of food safety issues in the wake of the nuclear crisis following a scare over contaminated beef.

A rice seller in Tokyo's Nerima Ward said regular customers began asking it to keep rice on stock just around the time the ministry disclosed its rice inspection plans on Wednesday.

A supermarket in Koto Ward, also Tokyo, said rice is selling at twice the normal pace at the outlet, while various rice brands were mostly sold out at a nearby shopping center.

"It's like a rice panic," said a store clerk at a supermarket in Chuo Ward, noting that given the strong demand for old rice, wholesalers are hesitant about quickly releasing their stock.

According to Kitoku Shinryo Co., a major rice wholesaler based in Tokyo, rice from the previous year does not sell much around this time of year ahead of the arrival on the market of freshly harvested rice. Retailers therefore tend to refrain from stocking it at their outlets, it said.

Noting that rice, which is mostly marketed after polishing, is not the kind of produce likely to show levels of contamination above the allowable limit, a Kitoku Shinryo official said, "The panic will probably subside once fresh rice starts to go around."

Some retailers are concerned, however, about how consumers would react if radioactive materials are found in rice even at levels below the limit.

"I know an acquaintance who has hoarded rice from last year," said a 53-year-old woman who was shopping at a mall in Tokyo's Koto Ward. "I would be lying if I said I'm not worried, because it's a staple."

Consumers are apparently motivated in part by their mistrust of the government for the way it has handled the contamination of cattle with radioactive cesium and the distribution of affected beef.

A 47-year-old designer in Chuo Ward said he believes that consumers must do what they can to protect themselves. "Contaminated beef got into the distribution chain. It would be too late if we were told afterwards that there were (excessive levels of radioactive materials in rice) after all."

(Mainichi Japan) August 5, 2011

## Frazer-Nash helps EDF Energy to improve the UK's AGRs

5 August 2011

Engineering consultancy Frazer-Nash is providing support to **an experiment as part of an EDF Energy project to extend the life of the UK's advanced gas-cooled nuclear reactors (AGRs), which has long been a strategic priority for EDF.**

The study, being undertaken at the Materials Test Reactor in Petten, Holland, will see the engineering experts providing technical support and interpreting materials data for integration into EDF Energy's AGR safety case.

The experiment has been designed to accelerate the rate of material degradation, in order to simulate how the integrity of these materials within an AGR reactor will be affected over a longer period of time.

With the first phase of the project underway, Frazer-Nash is currently advising EDF Energy on what samples to put into the test reactor, as well as which types of environments to expose them to.

Read more: <http://www.theengineer.co.uk/sectors/energy-and-environment/frazer-nash-helps-edf-energy-to-improve-the-uks-agrs/1009587.article#ixzz1UFzXiAmm>

# Sellafield High Level Waste (HLW) shipment sails for earthquake region of Japan

[ 3 August 2011] <http://www.corecumbria.co.uk/default.htm>

Sellafield High Level Waste (HLW) shipment sails for earthquake region of Japan □ a direct threat not only to the people and environment of Japan, but also to en-route communities in the Caribbean and Pacific and their marine environment.

The shipment, which comes less than five months after the devastating earthquake and tsunami hit the Pacific coast of northern Japan, and while the Fukushima-daiichi nuclear meltdown and accident is on-going, left the port of Barrow-in-Furness at approximately 0200 hrs this morning. **The cargo of nuclear waste is bound for Aomori, north-eastern Japan via the Caribbean and the Panama Canal.**

The vitrified HLW, delivered by rail from Sellafield in three TN28VT transport flasks yesterday, was loaded onto the **Pacific Grebe**, a British-flagged ship operated by Pacific Nuclear Transport Limited (PNTL). **Within the transport flasks were 76 cannisters of vitrified HLW, totalling over 40 tonnes of highly radioactive waste** which has been assigned to the Kansai, Shikoku and Kyushu Electric Power Companies in Japan respectively.

Last month CARICOM, which represents the nations of the Caribbean, had demanded a halt to all shipments in a statement condemning □ as unacceptable and injurious, the practice by the United Kingdom, France and Japan of transporting hazardous waste through the Caribbean Sea, thus risking the very existence of the people of the Caribbean □. The Pacific Grebe, making her maiden voyage to Japan, is expected to arrive in the Caribbean in mid-August, the Panama Canal on 18th August, and its HLW cargo scheduled to arrive in the port of Mutsu-Ogawara around 25th September.

CORE □'s spokesman Martin Forwood said today: □ It is incomprehensible that whilst Japan, its people and environment continue to suffer daily from the still unfolding Fukushima catastrophe, Sellafield should see fit to add to the country □'s woes by sending nuclear waste. This unwanted shipment of the most radioactive material on the planet is also being made in flagrant disregard of the long-standing opposition to such shipments by the Caribbean nations and others en-route. These dangerous transports are wholly unnecessary and must be stopped □.

The high level waste results from the reprocessing of Japanese spent reactor fuel at the Sellafield site in NW England □ the process which also recovers plutonium. Under contracts signed in the 1970's and 1980's, Japanese nuclear power companies shipped the waste to the UK and France for reprocessing with some of the waste and all of the plutonium to be returned. **The HLW, in glass block form, is sufficiently radioactive to deliver a lethal radiation dose to a person standing within one metre of an unshielded block in less than one minute.**

Today □'s shipment is the second return of HLW to Japan, the first undertaken early last year when 14 tonnes in one transport flask were returned on the Pacific Sandpiper. Some 15 years

late, these waste returns to overseas reprocessing customers were originally scheduled to be made in the mid-1990s.

A shipment of plutonium MOX fuel was scheduled to leave France the first week of April 2011 for Japan, including Fukushima. Due to the earthquake, tsunami and nuclear accident it was cancelled after it was revealed by Greenpeace France.

## **Gov't eyes halving area of high annual radiation exposure in 2 yrs**

TOKYO (Kyodo) -- The government is considering setting a decontamination target of halving by March 2013 the area in which residents may be exposed to over 20 millisieverts of radiation a year as a result of the nuclear crisis at the Fukushima Daiichi power plant, informed sources said.

The goal for the two-year period after the nuclear crisis triggered at the plant by the March 11 earthquake and tsunami will be incorporated into a package of key decontamination goals that the government is expected to adopt and announce shortly, the sources said.

The government is drawing up the package to enable residents of Fukushima Prefecture who have evacuated due to radiation to return to their homes, the sources said.

The package, if adopted, would also set a "long-term" goal of reducing the annual radiation exposure of residents to 1 millisievert or less.

Prime Minister Naoto Kan told a news conference Saturday that the government "would like to implement thorough decontamination, while conducting firm monitoring" of the situation.

Decontamination entails the cleaning of buildings and road surfaces as well as the removal of mud and soil. There is a possibility that some of the water used in the decontamination process and mud removed from roadside ditches could contain large amounts of radioactive substances.

While the decontamination operations proceed, the country could be faced with a new problem of how to store and dispose of the contaminated water, mud and soil, they said.

Under the draft package, the government is considering classifying contaminated areas into three categories according to radiation level, they said.

Under the draft, the central government would be responsible for areas where radiation exposure is expected to top 20 millisieverts a year, while municipal governments would be responsible for areas where exposure would likely range between 1 to 20 millisieverts.

In areas where exposure of 1 millisievert or less is expected, residents themselves would be responsible for decontamination in line with safety guidelines devised by the government.

According to the road map drawn up by the government and Tokyo Electric Power Co. to bring the nuclear crisis under control, the plant's stabilization process is currently going through the "step two" stage, which is expected to last for 3 to 6 months from July.

Under the road map, TEPCO is seeking to reduce temperatures at the bottom of reactor pressure vessels to 100 C or less and to halt the release of radioactive substances from reactor containment vessels.

(Mainichi Japan) August 7, 2011

## **Underground electric cable damaged during survey at Fukushima plant**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said that an underground electric cable at the Fukushima No. 1 Nuclear Power Plant was erroneously damaged while workers were conducting a boring survey as part of efforts to prevent leakage of radiation-contaminated water into the sea.

The utility known as TEPCO discovered the development during an investigation into a power outage that occurred Thursday at an isolated building that serves as a base for bringing the disaster-triggered nuclear crisis at the plant under control, it said.

After the power failure occurred at the building at around 12:50 p.m. Thursday, backup power was activated a minute later to resume electricity supply and the normal power source was resumed about three and a half hours later, according to TEPCO.

In the survey, being taken before workers place shields in the ground to prevent contaminated water from flowing into the sea, workers were boring into the ground to check the flow of groundwater when a device touched and damaged the electric cable about 2.5 meters underground, it said.

TEPCO officials said they will check underground charts beforehand in continuing the survey.

(Mainichi Japan) August 7, 2011

## **Water treatment system at Fukushima plant stops for 7.5 hours, cause unknown**

Tokyo Electric Power Co. (TEPCO) said a radioactive water treatment system at the Fukushima No. 1 Nuclear Power Plant stopped operating for 7.5 hours shortly after 8 a.m. on Aug. 7, prompting the Nuclear and Industrial Safety Agency (NISA) to instruct the utility to come up with preventative measures.

While the water treatment system was out of operation, processed water was used to cool down reactors, TEPCO, the operator of the crippled nuclear power station in Fukushima, said on Aug. 7. According to the utility, the trouble occurred in a water decontamination device developed by France's Areva SA. It said one of the pumps used in two separate water treatment systems to inject chemicals aiding precipitation of radioactive cesium stopped operating. In a similar development, another pump also stopped operating due to a glitch on Aug. 4.

Internal investigations found that the pump stopped operating on Aug. 7 because sticky chemicals injected into it had put too much of a load on it. The pump's operations resumed at around 3:30 p.m. on Aug. 7, after the amount of chemicals in each injection was reduced while the frequency of injections was increased. TEPCO suspects that the other pump may have stopped operating for the same cause on Aug. 4.

Each of the two water treatment systems has one pump for operations under normal conditions and a backup pump for use in times of trouble. The backup pumps in the two systems failed to operate on Aug. 4 and 7, respectively. Engineers are checking the system for the cause of the trouble.

Following a string of problems with the pumps, NISA instructed TEPCO to investigate the causes of the mishaps. The agency urged the utility to work out and submit preventative plans as well as to report a list of troubles other than those with the pumps.

At the same time, TEPCO for the first time started operating newly installed equipment to evaporate and concentrate saltwater within two of its eight water-treatment systems. The equipment is used to reduce the volume of highly concentrated saltwater that comes from a desalination device within the water treatment system. The volume of highly concentrated saltwater coming from the desalination device is about 1.5 times as much as that of desalinated water. The volume of highly concentrated saltwater is said to be reduced to about 30 percent by using the newly installed equipment

(Mainichi Japan) August 8, 2011

## **Govt to put nuke watchdog under Environment Min.**

Japan's government has decided to establish a new nuclear watchdog under the Environment Ministry.

The decision was made at a meeting of Cabinet ministers on Friday as part of efforts to review the country's current nuclear administration following the Fukushima nuclear accident.

**The ministers decided that the Nuclear and Industrial Safety Agency should be separated from the industry ministry, which promotes nuclear energy.**

The ministers agreed to merge the agency with the Nuclear Safety Commission, currently under the Cabinet Office, and monitoring functions of the Education and Science Ministry.

The Environment Ministry has been handling disposal of radiation-contaminated debris around the damaged Fukushima Daiichi nuclear plant.

The new agency is expected to use the ministry's local offices to oversee nuclear reactors across the country and collaborate with local governments.

The government plans to submit related bills to the Diet early next year and launch the new agency in April.

Saturday, August 13, 2011 02:29 +0900 (JST)

August 8, 2011

## Japan Held Nuclear Data, Leaving Evacuees in Peril

By [\*NORIMITSU ONISHI\*](#) and [\*MARTIN FACKLER\*](#)

FUKUSHIMA, Japan — The day after a giant tsunami set off the continuing disaster at the Fukushima Daiichi nuclear plant, thousands of residents at the nearby town of Namie gathered to evacuate.

Given no guidance from Tokyo, town officials led the residents north, believing that winter winds would be blowing south and carrying away any radioactive emissions. For three nights, while hydrogen explosions at four of the reactors spewed radiation into the air, they stayed in a district called Tsushima where the children played outside and some parents used water from a mountain stream to prepare rice.

The winds, in fact, had been blowing directly toward Tsushima — and town officials would learn two months later that a government computer system designed to predict the spread of radioactive releases had been showing just that.

But the forecasts were left unpublicized by bureaucrats in Tokyo, operating in a culture that sought to avoid responsibility and, above all, criticism. Japan's political leaders at first did not know about the system and later played down the data, apparently fearful of having to significantly enlarge the evacuation zone — and acknowledge the accident's severity.

“From the 12th to the 15th we were in a location with one of the highest levels of radiation,” said Tamotsu Baba, the mayor of Namie, which is about five miles from the nuclear plant. He and thousands from Namie now live in temporary housing in another town, Nihonmatsu. “We are extremely worried about internal exposure to radiation.”

The withholding of information, he said, was akin to “murder.”

In interviews and public statements, some current and former government officials have admitted that Japanese authorities engaged in a pattern of withholding damaging information and denying facts of the nuclear disaster — in order, some of them said, to limit the size of costly and disruptive evacuations in land-scarce Japan and to avoid public questioning of the politically powerful nuclear industry. As the nuclear plant continues to release radiation, some of which has slipped into the nation's food supply, public anger is growing at what many here see as an official campaign to play down the scope of the accident and the potential health risks.

Seiki Soramoto, a lawmaker and former nuclear engineer to whom Prime Minister Naoto Kan turned for advice during the crisis, blamed the government for withholding forecasts from the computer system, known as the System for Prediction of Environmental Emergency Dose Information, or Speedi.

“In the end, it was the prime minister's office that hid the Speedi data,” he said. “Because they didn't have the knowledge to know what the data meant, and thus they did not know what to say to the public, they thought only of their own safety, and decided it was easier just not to announce it.”

In an interview, Goshi Hosono, the minister in charge of the nuclear crisis, dismissed accusations that political considerations had delayed the release of the early Speedi data. He said that they were not disclosed because they were incomplete and inaccurate, and that he was presented with the data for the first time only on March 23.

“And on that day, we made them public,” said Mr. Hosono, who was one of the prime minister’s closest advisers in the early days of the crisis before being named nuclear disaster minister. “As for before that, I myself am not sure. In the days before that, which were a matter of life and death for Japan as a nation, I wasn’t taking part in what was happening with Speedi.”

The computer forecasts were among many pieces of information the authorities initially withheld from the public.

Meltdowns at three of Fukushima Daiichi’s six reactors went officially unacknowledged for months. In one of the most damning admissions, nuclear regulators said in early June that inspectors had found tellurium 132, which experts call telltale evidence of reactor meltdowns, a day after the tsunami — but did not tell the public for nearly three months. For months after the disaster, the government flip-flopped on the level of radiation permissible on school grounds, causing continuing confusion and anguish about the safety of schoolchildren here in Fukushima.

### **Too Late**

The timing of many admissions — coming around late May and early June, when inspectors from the International Atomic Energy Agency visited Japan and before Japan was scheduled to deliver a report on the accident at an I.A.E.A. conference — suggested to critics that Japan’s nuclear establishment was coming clean only because it could no longer hide the scope of the accident. On July 4, the Atomic Energy Society of Japan, a group of nuclear scholars and industry executives, said, “It is extremely regrettable that this sort of important information was not released to the public until three months after the fact, and only then in materials for a conference overseas.”

The group added that the authorities had yet to disclose information like the water level and temperature inside reactor pressure vessels that would yield a fuller picture of the damage. Other experts have said the government and Tokyo Electric Power Company, known as Tepco, have yet to reveal plant data that could shed light on whether the reactors’ cooling systems were actually knocked out solely by the 45-foot-tall tsunami, as officials have maintained, or whether damage from the earthquake also played a role, a finding that could raise doubts about the safety of other nuclear plants in a nation as seismically active as Japan.

Government officials insist that they did not knowingly imperil the public.

“As a principle, the government has never acted in such a way as to sacrifice the public’s health or safety,” said Mr. Hosono, the nuclear disaster minister.

Here in the prefecture’s capital and elsewhere, workers are removing the surface soil from schoolyards contaminated with radioactive particles from the nuclear plant. Tens of thousands of children are being kept inside school buildings this hot summer, where some wear masks even though the windows are kept shut. Many will soon be wearing individual dosimeters to track their exposure to radiation.

At Elementary School No. 4 here, sixth graders were recently playing shogi and go, traditional board games, inside. Nao Miyabashi, 11, whose family fled here from Namie, said she was afraid of radiation. She tried not to get caught in the rain. She gargled and washed her hands as soon as she got home.

“I want to play outside,” she said.

About 45 percent of 1,080 children in three Fukushima communities surveyed in late March tested positive for thyroid exposure to radiation, according to a recent announcement by the government, which added that the levels were too low to warrant further examination. Many experts both in and outside Japan are questioning the government’s assessment, pointing out that in Chernobyl, most of those who went on to suffer from [thyroid cancer](#) were children living near that plant at the time of the accident.

Critics inside and outside the Kan administration argue that some of the exposure could have been prevented if officials had released the data sooner.

On the evening of March 15, Mr. Kan called Mr. Soramoto, who used to design nuclear plants for Toshiba, to ask for his help in managing the escalating crisis. Mr. Soramoto formed an impromptu advisory group, which included his former professor at the University of Tokyo, Toshiso Kosako, a top Japanese expert on radiation measurement.

Mr. Kosako, who studied the Soviet response to the Chernobyl crisis, said he was stunned at how little the leaders in the prime minister’s office knew about the resources available to them. He quickly advised the chief cabinet secretary, Yukio Edano, to use Speedi, which used measurements of radioactive releases, as well as weather and topographical data, to predict where radioactive materials could travel after being released into the atmosphere.

Speedi had been designed in the 1980s to make forecasts of radiation dispersal that, according to the prime minister’s office’s own nuclear disaster manuals, were supposed to be made available at least to local officials and rescue workers in order to guide evacuees away from radioactive plumes.

And indeed, Speedi had been churning out maps and other data hourly since the first hours after the catastrophic earthquake and tsunami. But the Education Ministry had not provided the data to the prime minister’s office because, it said, the information was incomplete. The tsunami had knocked out sensors at the plant: without measurements of how much radiation was actually being released by the plant, they said, it was impossible to measure how far the radioactive plume was stretching.

“Without knowing the strength of the releases, there was no way we could take responsibility if evacuations were ordered,” said Keiji Miyamoto of the Education Ministry’s nuclear safety division, which administers Speedi.

The government had initially resorted to drawing rings around the plant, evacuating everyone within a radius of first 1.9 miles, then 6.2 miles and then 12.4 miles, widening the rings as the scale of the disaster became clearer.

But even with incomplete data, Mr. Kosako said he urged the government to use Speedi by making educated guesses as to the levels of radiation release, which would have still yielded usable maps to

guide evacuation plans. In fact, the ministry had done precisely that, running simulations on Speedi's computers of radiation releases. Some of the maps clearly showed a plume of nuclear contamination extending to the northwest of the plant, beyond the areas that were initially evacuated.

However, Mr. Kosako said, the prime minister's office refused to release the results even after it was made aware of Speedi, because officials there did not want to take responsibility for costly evacuations if their estimates were later called into question.

A wider evacuation zone would have meant uprooting hundreds of thousands of people and finding places for them to live in an already crowded country. Particularly in the early days after the earthquake, roads were blocked and trains were not running. These considerations made the government desperate to limit evacuations beyond the 80,000 people already moved from areas around the plant, as well as to avoid compensation payments to still more evacuees, according to current and former officials interviewed.

Mr. Kosako said the top advisers to the prime minister repeatedly ignored his frantic requests to make the Speedi maps public, and he resigned in April over fears that children were being exposed to dangerous radiation levels.

Some advisers to the prime minister argue that the system was not that useful in predicting the radiation plume's direction. Shunsuke Kondo, who heads the Atomic Energy Commission, an advisory body in the Cabinet Office, said that the maps Speedi produced in the first days were inconsistent, and changed several times a day depending on wind direction.

"Why release something if it was not useful?" said Mr. Kondo, also a retired professor of nuclear engineering at the University of Tokyo. "Someone on the ground in Fukushima, looking at which way the wind was blowing, would have known just as much."

Mr. Kosako and others, however, say the Speedi maps would have been extremely useful in the hands of someone who knew how to sort through the system's reams of data. He said the Speedi readings were so complex, and some of the predictions of the spread of radiation contamination so alarming, that three separate government agencies — the Education Ministry and the two nuclear regulators, the Nuclear and Industrial Safety Agency and Nuclear Safety Commission — passed the data to one another like a hot potato, with none of them wanting to accept responsibility for its results.

In interviews, officials at the ministry and the agency each pointed fingers, saying that the other agency was responsible for Speedi. The head of the commission declined to be interviewed.

Mr. Baba, the mayor of Namie, said that if the Speedi data had been made available sooner, townspeople would have naturally chosen to flee to safer areas. "But we didn't have the information," he said. "That's frustrating."

Evacuees now staying in temporary prefabricated homes in Nihonmatsu said that, believing they were safe in Tsushima, they took few precautions. Yoko Nozawa, 70, said that because of the lack of toilets, they resorted to pits in the ground, where doses of radiation were most likely higher.

"We were in the worst place, but didn't know it," Ms. Nozawa said. "Children were playing outside."

A neighbor, Hiroyuki Oto, 31, said he was working at the plant for a Tepco subcontractor at the time of the earthquake and was now in temporary lodging with his wife and three young children, after also staying in Tsushima. “The effects might emerge only years from now,” he said of the exposure to radiation. “I’m worried about my kids.”

### **Seeds of Mistrust**

Mr. Hosono, the minister charged with dealing with the nuclear crisis, has said that certain information, including the Speedi data, had been withheld for fear of “creating a panic.” In an interview, Mr. Hosono — who now holds nearly daily news conferences with Tepco officials and nuclear regulators — said that the government had “changed its thinking” and was trying to release information as fast as possible.

Critics, as well as the increasingly skeptical public, seem unconvinced. They compare the response to the Minamata case in the 1950s, a national scandal in which bureaucrats and industry officials colluded to protect economic growth by hiding the fact that a chemical factory was releasing mercury into Minamata Bay in western Japan. The mercury led to neurological illnesses in thousands of people living in the region and was captured in wrenching photographs of stricken victims.

“If they wanted to protect people, they had to release information immediately,” said Reiko Seki, a sociologist at Rikkyo University in Tokyo and an expert on the cover-up of the Minamata case. “Despite the experience with Minamata, they didn’t release Speedi.”

In Koriyama, a city about 40 miles west of the nuclear plant, a group of parents said they had stopped believing in government reassurances and recently did something unthinkable in a conservative, rural area: they sued. Though their suit seeks to force Koriyama to relocate their children to a safer area, their real aim is to challenge the nation’s handling of evacuations and the public health crisis.

After the nuclear disaster, the government raised the legal exposure limit to radiation from one to 20 millisieverts a year for people, including children — effectively allowing them to continue living in communities from which they would have been barred under the old standard. The limit was later scaled back to one millisievert per year, but applied only to children while they were inside school buildings.

The plaintiffs’ lawyer, Toshio Yanagihara, said the authorities were withholding information to deflect attention from the nuclear accident’s health consequences, which will become clear only years later.

“Because the effects don’t emerge immediately, they can claim later on that [cigarettes](#) or coffee caused the [cancer](#),” he said.

The Japanese government is considering monitoring the long-term health of Fukushima residents and taking appropriate measures in the future, said Yasuhiro Sonoda, a lawmaker and parliamentary secretary of the Cabinet Office. The mayor of Koriyama, Masao Hara, said he did not believe that the government’s radiation standards were unsafe. He said it was “unrealistic” to evacuate the city’s 33,000 elementary and junior high school students.

But Koriyama went further than the government's mandates, removing the surface soil from its schools before national directives and imposing tougher inspection standards than those set by the country's education officials.

"The Japanese people, after all, have a high level of knowledge," the mayor said, "so I think information should be disclosed correctly and quickly so that the people can make judgments, especially the people here in Fukushima."

Norimitsu Onishi reported from Fukushima, and Martin Fackler from Tokyo. Ken Belson and Kantaro Suzuki contributed reporting from Tokyo.

## **Excessive radioactive cesium found in Fukushima fish: Greenpeace**

TOKYO (Kyodo) -- Fish caught at a port about 55 kilometers from the crippled Fukushima Daiichi nuclear power plant contained radioactive cesium at levels exceeding an allowable limit, the environmental group Greenpeace said Tuesday.

The samples taken at Onahama port in Iwaki, Fukushima Prefecture, in late July, included a species of rockfish that measured 1,053 becquerels per kilogram. The reading, the highest among the samples, is well in excess of the government-set limit of 500 becquerels per kilogram, according to a study conducted by the environmental group.

The other samples, which were all rock trout, measured between 625 and 749 becquerels per kilogram, again exceeding the provisional limit.

The second such study of marine products was conducted over three days from July 22 in Iwaki and the town of Shinchi with cooperation of fishermen and those related to the fisheries industry in Fukushima. A total of 21 samples taken in the study were analyzed at a research institute in France, according to the group.

"There is no allowable limit for internal exposure that can conclusively be said not to pose any problems," Greenpeace said in a petition submitted to Prime Minister Naoto Kan on Tuesday, noting the need to keep consumption of the food containing elevated levels of radioactive materials to a minimum.

The petition also calls for tougher marine-product monitoring and for requiring businesses to display the level of radioactive materials contained in food products on the label.

(Mainichi Japan) August 9, 2011

## Study says nuclear fuel at Fukushima reactor possibly melted twice



In this March 15, 2011 photo released by Tokyo Electric Power Co., smoke rises from the badly damaged Unit 3 reactor, left, next to the Unit 4 reactor covered by an outer wall at the Fukushima No. 1 nuclear complex in Okuma, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Fuel inside one of the reactors at the crippled nuclear complex in Fukushima Prefecture, which was believed to have been kept cool at the bottom of the pressure vessel after its core suffered a meltdown, has possibly breached the vessel after melting again at the bottom of the vessel, an expert's study showed Monday.

**The study by Fumiya Tanabe, an expert in nuclear safety, said most of the fuel at the No. 3 reactor may have fallen into the containment vessel underneath,** and if so, the current method used to cool the reactor would need reviewing, which could force the plant operator to revise its schedule to contain the five-month-old disaster.

The plant operator, Tokyo Electric Power Co. earlier said the Nos. 1 to 3 reactors' cores are assumed to have suffered meltdowns, although the melted fuel is believed to be kept cool and solidified at the bottom of each reactor pressure vessel after water was injected into the vessel as an emergency measure.

After analyzing data made public by the operator, known as TEPCO, Tanabe argues that it became difficult to inject coolant water into the reactor's pressure vessel after pressure rose inside it from the early hours of March 21.



This March 24, 2011 aerial photo taken by a small unmanned drone and released by AIR PHOTO SERVICE shows damaged Unit 3 of the crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan. (AP Photo/AIR PHOTO SERVICE)

He says the fuel at the bottom of the pressure vessel overheated and melted again during a four-day period from March 21 when only 11 to 32 percent of the water needed to cool the fuel was injected into the pressure vessel.

Elevated levels of radiation were actually detected for several days from March 21 in the Tohoku region, in which the Fukushima Daiichi power plant is located, and the nearby Kanto region, which includes Tokyo and its surrounding area.

"I presume that the fuel fell to the bottom of the containment vessel made of concrete and reacted violently with its cement, releasing large amounts of radioactive materials into the outside from the pressure vessel," said Tanabe.

TEPCO, meanwhile, casts doubt on Tanabe's assertion, saying most of the fuel probably remains inside the reactor's pressure vessel as temperature fluctuations were observed depending on the amount of water injected into it.



In this March 12, 2011 image made from video from NTV Japan via APTN, smoke rises from Unit 1 of the Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture. (AP Photo/NTV Japan via APTN)

The No. 3 reactor was using plutonium-uranium mixed oxide fuel for so-called "pluthermal" power generation.

(Mainichi Japan) August 9, 2011

## **TEPCO to begin building cover over Fukushima reactor Wed.**

TOKYO (Kyodo) -- The operator of the crippled Fukushima Daiichi nuclear power plant said Tuesday it will begin in earnest on Wednesday work to install **a giant covering over the plant's No. 1 reactor**, with plans to complete it by the end of next month.

**The covering, a tent-like structure made of steel frames and air-tight polyester sheets, is meant to prevent radioactive materials from spreading from the crippled reactor and stop rainwater** from entering the reactor building, said Tokyo Electric Power Co.

When completed, the covering will be between 42 and 47 meters long and about 54 meters high. About 60 components are being brought to the seaside plant via the Pacific.

On Wednesday, a steel structure about 6.9 meters high that weighs about 30 tons is expected to be pulled up by a crane and installed at the southeast corner of the No. 1 reactor building.

The building housing the No. 1 reactor and those housing the Nos. 3 and 4 reactors at the plant were badly damaged due to explosions after tsunami caused by a magnitude 9.0 earthquake struck the plant on March 11.

Once the installation is completed at the reactor, Tokyo Electric will consider installing similar coverings for the Nos. 3 and 4 reactors, the operator said.

(Mainichi Japan) August 10, 2011

## **Giant tent to go up over Japan nuclear reactor**



In this Wednesday, Aug. 10, 2011 photo released by Tokyo Electric Power Co., building materials are pulled up by a crane by the No. 1 reactor, seen behind the crane, to build a tent to cover the reactor at the crippled Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture. (AP Photo/TEPCO)

TOKYO (AP) -- The operator of Japan's damaged Fukushima Dai-ichi nuclear power plant is building a huge tent to cover one of the worst-hit reactors, officials said Friday.

Officials hope the cover will keep radioactive materials that have already leaked from spreading, prevent rainwater seepage and offer a barrier from possible leaks or blasts in the future.

The tent is being erected to provide a temporary replacement for the No. 1 reactor's outer housing shell, which was destroyed in an explosion caused by high pressure the day after Japan's deadly earthquake and tsunami on March 11.

Construction of the tent and its foundation began this week, Koji Watanabe, a spokesman for the power utility, said Friday.

The work couldn't begin until now because the location was too dangerous for workers to operate in.

The tent is made up of airtight polyester. It will stand 177 feet (54 meters) tall and stretch 154 feet (47 meters) in length. It is held up by a metal frame.

Tokyo Electric Power Co. officials have struggled to come up with ways to mitigate the dangers from the plant since the disaster struck five months ago, sending reactors into meltdowns, releasing radiative particles into the environment and causing the world's world nuclear crisis since Chernobyl in 1986.

Work at the plant has been hindered by the continuing threat of radiation to workers.

Earlier this month, TEPCO said an area where potentially lethal levels of radiation were detected near Unit 1 has been sealed.

It said radiation exceeded 10 sieverts -- 40 times the highest level allowed for an emergency workers to be exposed to -- at two locations near a duct connected to a ventilation stack. The area required no immediate work and was closed off.

If the tent over reactor No. 1 proves successful, similar coverings will be constructed over other reactors on the plant. The areas around the other reactors are also highly risky to work in.

The tent is expected to be completed by the end of September, Watanabe said.

(Mainichi Japan) August 12, 2011

## **Outgoing nuclear agency chief was aware of possible meltdown at Fukushima plant**

Nobuaki Terasaka, outgoing director general of the Nuclear and Industrial Safety Agency (NISA), said Aug. 10 that he was aware of the possibility of a meltdown at the Fukushima No. 1 Nuclear Power Plant due to the detection of cesium on March 12, a day after the Great East Japan Earthquake and tsunami crippled the plant.

"I thought the possibility (of a meltdown) cannot be ruled out," Terasaka said at a news conference. His comment drew close attention because a NISA spokesman in March was replaced shortly after he admitted such a possibility.

The government said in June that the No. 1 to 3 reactor cores experienced meltdowns shortly after the March 11 natural disasters.



In this image released Saturday, April 16, 2011, by Tokyo Electric Power Co., top of the container of the nuclear reactor, painted in yellow, of Unit 4 at the Fukushima Dai-ichi Nuclear Plant is observed from its side with a T-Hawk drone Friday, April 15, 2011 in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Asked about NISA's handling of the nuclear crisis, he said, "I am really sorry as a representative of a regulatory agency to know that many people have evacuated and are inconvenienced. There has been criticism about the results, but I have done my best."

As for NISA's response to the loss of all of the Fukushima plant's power sources and the evacuation of residents near and around the stricken plant, Terasaka said only that an investigation committee is looking into those issues.

Regarding the delay in releasing radiation forecast data, known as the System for Prediction of Environmental Emergency Dose Information (SPEEDI), the NISA chief said he knew just before the

official announcement. He also said he was aware of the criticism that he rarely held news conferences after the outbreak of the nuclear crisis.



This Saturday May 7, 2011 image from video footage released on Sunday May 8, 2011 by Tokyo Electric Power Co., shows spent fuel storage pool of the Unit 4 reactor building at the crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Terasaka will be relieved of his duties on Aug. 12 over the handling of the nuclear crisis as well as over e-mail campaigns to solicit opinions in favor of nuclear power plants and projects ahead of state-sponsored symposiums.

Kazuo Matsunaga, administrative vice minister of the Ministry of Economy, Trade and Industry (METI) and Tetsuhiro Hosono, director general of the Agency for Natural Resources and Energy, will be sacked along with Terasaka in connection with the nuclear crisis. Both NISA and the Agency for Natural Resources and Energy are under METI's wings.

(Mainichi Japan) August 11, 2011

## **Sasebo mayor urges gov't to dispose of nuke waste at U.S. Navy base**

TOKYO (Kyodo) -- The mayor of Sasebo, which hosts a U.S. Navy base, urged the central government Friday to swiftly dispose of low-level radioactive waste found to have been stored at the military facility, which was gathered during the U.S. forces' relief operations after the March 11 earthquake-tsunami disaster in northeastern Japan.

Sasebo Mayor Norio Tomonaga told reporters after meeting with Parliamentary Vice Foreign Minister Ikuo Yamahana that he protested at the central government's failure to notify the city on the storage of the nuclear waste at the Navy base.

The low-level radioactive waste includes cleaning cloths and other items used by the navy when decontaminating aircraft deployed to the quake and tsunami devastated areas in northeastern Japan during the Operation Tomodachi relief activities, according to the city in southwestern Japan.

The radioactive substances are believed to have spewed from the crippled Fukushima Daiichi nuclear plant.

"If those materials are being properly handled, the government should first disclose information, and reassure local citizens. It is never good to provide information later," the mayor said.

Yamahana apologized for the lack of the government contact on the matter and pledged to appropriately handle the waste, Tomonaga said.

The nuclear waste poses no harm to human bodies since its radiation amount is 3.2 microsieverts, he added.

(Mainichi Japan) August 12, 2011

## **Govt to put nuke watchdog under Environment Min.**

Japan's government has decided to establish a new nuclear watchdog under the Environment Ministry.

The decision was made at a meeting of Cabinet ministers on Friday as part of efforts to review the country's current nuclear administration following the Fukushima nuclear accident.

**The ministers decided that the Nuclear and Industrial Safety Agency should be separated from the industry ministry, which promotes nuclear energy.**

The ministers agreed to merge the agency with the Nuclear Safety Commission, currently under the Cabinet Office, and monitoring functions of the Education and Science Ministry.

The Environment Ministry has been handling disposal of radiation-contaminated debris around the damaged Fukushima Daiichi nuclear plant.

The new agency is expected to use the ministry's local offices to oversee nuclear reactors across the country and collaborate with local governments.

The government plans to submit related bills to the Diet early next year and launch the new agency in April.

Saturday, August 13, 2011 02:29 +0900 (JST)

## **Radiation contamination leaves Fukushima schools unable to drain pool water**

Many schools in Fukushima Prefecture are at a loss over what do to with their swimming pools, which can't be used or drained **because the water is tainted with radioactive materials** from the Fukushima No. 1 Nuclear Power Plant, it has emerged.

The Ministry of Education, Culture, Sports, Science and Technology has said schools should obtain consent from farmers when draining pool water into agricultural waterways, but the Fukushima Prefectural Board of Education has not formed any guidelines on the concentration of radiation in water that is drained -- leaving locals to sort out the issue themselves.

**According to the education board, about 600 of the 735 pools at public kindergartens, elementary schools, junior high schools and high schools in Fukushima can't be drained.** Most of these pools are located in eastern parts of the prefecture near the damaged nuclear plant or in central Fukushima Prefecture. **One-third of the pools are designed to drain their water into sewage systems, while the rest have to drain the water directly into agricultural waterways or rivers.**

The Education Ministry's School Health Education Division says there are no legal guidelines for draining pool water. The ministry instructed the prefectural education board to obtain consent from farming and other related organizations when draining pool water into rivers and agricultural waterways, and the board passed the information on to schools in May, but farmers have been reluctant to allow schools to drain pool water into waterways. There are also many cases in which schools have the option of draining water into sewage lines, but they have not done so out of consideration for local residents.

**At Fukushima Daiichi Elementary School in the city of Fukushima, the bottom of the school pool is darkened with dust contaminated with radioactive materials, and algae has turned the water green.**

"We're concerned about health, too, so we want to drain the pools quickly, but we don't know the extent of contamination of the water and the sludge, and we can't cause trouble for people around the school," the school's principal commented.

**In the cities of Date and Minamisoma, decontamination work using zeolite and other agents that can absorb radioactive materials has been carried out, but the cost of such work is said to reach several million yen per pool.**

Since May, the prefectural board of education has asked the Education Ministry to present standards and methods for draining pool water, but ministry officials have merely responded that they will consult with related government ministries and agencies, and have provided no response.

A representative of the ministry's School Health Education Division commented, "Creating standards is difficult, and there is no option but to have schools and other related parties come to an agreement."

When asked about the radiation, a representative of the Ministry of Economy, Trade and Industry's Nuclear and Industrial Safety Agency said, "We are not considering any particular response for pools alone." Meanwhile, a representative of the Ministry of Land, Infrastructure and Transport, which is in charge of sewage, said, "There is no problem with draining water into sewage lines, but when it comes to making arrangements with locals, that's out of our jurisdiction."

Muneyuki Shindo, a former Chiba University professor, said **guidelines on decontamination should be provided.**

"If jurisdiction over different parts of the work is divided, then officials should measure the concentration in accordance with clear instructions from the Cabinet, and present methods of

decontamination," he said. "This is a typical scenario highlighting the government's lack of ability to make decisions and get things done."

(Mainichi Japan) August 13, 2011

## **Kyoto scraps plan to use firewood from disaster area for bonfire over radiation concerns**



This photo shows pieces of firewood in which radioactive cesium is detected on Aug. 11, 2011, after being delivered to the Kyoto Municipal Government from Rikuzentakata, Iwate Prefecture. (Mainichi)

KYOTO -- The Kyoto Municipal Government said on Aug. 12 that it would scrap its plan to use firewood from pine trees knocked down by the March 11 tsunami for the city's iconic bonfire festival after it detected radioactive cesium in pieces of the firewood sent from a disaster-stricken city in northeastern Japan.

One of five local groups tasked with preserving the "Gozan no Okuribi" in which five giant bonfires are lit on mountains surrounding the city of Kyoto had originally planned to use the firewood from Rikuzentakata, Iwate Prefecture, for the ancient festival on Aug. 16, the culmination of the Bon festival. But the group decided to abandon the plans after receiving a barrage of concerns over radiation contamination. The Kyoto Municipal Government was then bombarded with criticism that the cancellation of the plans could fan harmful rumors about radiation threats. Therefore, Kyoto Mayor Daisaku Kadokawa asked the preservation groups to get other batches of about 500 pieces of firewood from Rikuzentakata and use them for the festival. The groups had accepted the request.

According to the Kyoto Municipal Government, **about 1,130 becquerels of cesium per kilogram was detected in the outer layers of the new firewood from pine trees knocked down by the tsunami.** No cesium was detected in the trunks of the firewood. **There are no legal limits on burning radioactive substances outdoors.** When the Kyoto Municipal Government asked experts, they replied, "Because there are no standards set by the government, we cannot say it is safe."

The 500 pieces of firewood were brought to Kyoto on a truck from Rikuzentakata on Aug. 11 before being sent to Shimazu Techno Research, an inspection firm in the city. The city received a report from

the inspection company on the afternoon of Aug. 12. Fragmented outer layers of all the 500 pieces of firewood, weighing about 1 kilogram, went through inspections.

City mayor Kadokawa told a news conference, "I want to offer my heart-felt apology to the Rikuzentakata city and everyone affected by the Great East Japan Earthquake." He added, "We will cancel the event because the assumption that radioactive substances have not been detected cannot hold water. We did not base our decision on whether the firewood from the disaster-stricken area is safe or not." He also said the city government did not discuss whether to burn only the trunks of the firewood for the festival.

**The firewood is being kept in a storage facility run by a private company in Kyoto. But no decision has been made on what to do with the firewood.** Mayor Kadokawa said, "We want to deal with the issue without returning the wood."

Futoshi Toba, the mayor of Rikuzentakata, said on Aug. 12, "The good intentions of the people concerned ended up coming to something like this, causing trouble to our citizens." On the way the Kyoto Municipal Government handled the case, Toba said, "Harmful rumors are spreading and causing trouble to other disaster-stricken areas and the people of Kyoto. I wished (the Kyoto Municipal Government) had handled it more carefully." Kyoto Mayor Kadokawa expressed his intention to visit Rikuzentakata, but the Rikuzentakata Municipal Government told him, "Thank you for your concern, but this is quite enough for us."

On the levels of radiation detected in the firewood, experts say they are far from dangerous levels. Otsura Niwa, a main commission member of the International Commission on Radiological Protection (ICRP), said, "Even if you ate 1 kilogram of the outer layers of the firewood and absorbed them in your body, it (the effect of radiation) is of no significance." He added, "The decision to seek unnecessary pure firewood tramples upon the sentiments of the people of the disaster-stricken area."

Ikuo Anzai, professor emeritus in radiation protection at Ritsumeikan University, said, "'Gozan no Okuribi' has characteristics of rituals. That may be the reason why radiation was taken as something unclean. This is not a scientific issue but **a cultural issue**. It should be solved culturally. Memorial ceremonies should be held for the victims (of the disasters)."



## Govt to compile decontamination plan

The Japanese government says it will prepare by the end of August a basic plan for decontaminating areas near the stricken Fukushima Daiichi nuclear plant.

Prime Minister Naoto Kan on Monday asked the nuclear crisis minister, Goshi Hosono, to begin compiling the steps that must be taken.

**The government is planning to lift the designation soon of the zone extending from 20 to 30 kilometers away from the nuclear plant** where residents have been told they must evacuate in the event of another emergency.

The measure would allow the return of some people who have left voluntarily, although worries about radiation persist among the affected communities.

The government plans to ease such concerns by adding more manpower to a taskforce in charge of decontamination.

The basic plan could also call for closer analyses of contaminated crops and plants to find out whether the radiation came from the air or soil.

Tuesday, August 16, 2011 09:46 +0900 (JST)

## **TEPCO tests Japan-made decontamination unit**

Tokyo Electric Power Company is conducting a trial run of a Japan-built water decontamination unit at its troubled Fukushima Daiichi nuclear power plant.

TEPCO started testing the performance of the new equipment shortly past noon on Tuesday.

The domestic-made unit uses 14 cylindrical tanks, each 3.5 meters high and 1.4 meters across, that contain minerals to absorb radioactive materials.

The utility plans to continue the trial until Wednesday night, before starting full-fledged operations.

**Since late June, TEPCO has been decontaminating highly radioactive wastewater from the reactors and then injecting the cleaned water back into the reactors to cool them.**

**But the decontamination system --- the key part of the water circulation process --- has been plagued with trouble and its foreign-made components have repeatedly stopped operating. TEPCO says it has been running at 66 percent of capacity, failing to meet the initial target of 90 percent.**

The power company hopes the new, Japan-built decontamination unit will help achieve stable circulation for cooling.

Tuesday, August 16, 2011 16:50 +0900 (JST)

## **TEPCO to use desalinating devices in pools**

Tokyo Electric Power Company is planning to use devices to remove salt from spent nuclear fuel pools at the Fukushima Daiichi nuclear power plant.

The operator fears that **saltwater used to cool reactors 2 - 4 after the March 11 disaster could corrode stainless steel pipes and pool walls.**

The new devices will arrive on 5 trucks and use special membranes and electricity to desalinate water.

TEPCO plans to first use the machinery by the end of this week **at the number 4 reactor, which contains**

**the most spent fuel.** The concentration of salt is expected to be reduced by 96 percent in 2 months.

**It will then follow up in reactors 2 and 3.**

Water temperatures at all 4 reactor pools have been relatively stable since the installation of a circulating cooling system was completed on August 10th.

Reactor facilities to purify wastewater have all been equipped with desalinating filters.

Another device that uses the mineral, zeolite, to remove radioactive substances from circulating water has been installed in the cooling system of the number 2 to 4 reactors.

Through such measures, TEPCO hopes to stably operate the plant over the long-term until all the spent fuel is removed.

Tuesday, August 16, 2011 12:23 +0900 (JST)

## **Radioactive sludge piling up**

Radioactive sludge from sewage facilities across Japan has been piling up in storage facilities, despite the government's plan to bury it.

NHK asked local governments in 17 prefectures in northeastern to central Japan how they are coping with sludge that's been contaminated by radioactive material from the Fukushima Daiichi nuclear plant.

**Contaminated sludge from sewage facilities now totals more than 54,400 tons.** 75 percent of it contains less than 8,000 becquerels per kilogram of radioactive cesium, the government-set limit for disposal by burial.

Despite this, some 27,700 tons of sludge --- 51 percent of the total --- remains in storage at water treatment plants.

Local governments say **some burial projects have been rejected by residents near proposed sites.**

In addition, 7 storage facilities in 4 prefectures have had to set up "no entry zones" where radiation levels have gotten too high.

Tuesday, August 16, 2011 22:51 +0900 (JST)

## **Probe finds TEPCO failed to predict hydrogen explosion at Fukushima nuclear plant**



The damaged No. 1 reactor building, center left, at the Fukushima No. 1 Nuclear Power Plant is pictured on March 12. (Mainichi)

The operator of the tsunami-hit Fukushima No. 1 Nuclear Power Plant failed to predict the hydrogen explosion that occurred on March 12 following the disaster, sources involved in the investigation into the crisis said.

"Nobody was able to predict the explosion," an employee at Tokyo Electric Power Co. (TEPCO) was quoted as telling members of the government's fact-finding panel on the Fukushima nuclear crisis.

"We made a serious mistake as we failed to grasp important information on the power station," plant manager Masao Yoshida was quoted as telling the panel.

The investigation has also revealed that TEPCO did not prepare an instruction manual on procedures for venting to protect reactors' containment vessels when external power sources are lost.

As part of its investigation into the crisis, the fact-finding panel has questioned Yoshida and other TEPCO employees as well as officials with government regulators. It will closely examine the answers as well as data on the accident in order to get to the bottom of the crisis.

The hydrogen explosion occurred at the plant's No. 1 reactor at 3:36 p.m. on March 12, the day after the Great East Japan Earthquake and tsunami hit the plant. The blast blew off the upper part of the building housing the reactor.

Experts suspect that the hydrogen was generated after zirconium contained in fuel rods was heated and reacted with water.

TEPCO officials told the fact-finding panel that workers had never imagined that hydrogen would fill the reactor building and eventually explode because they were preoccupied with checking the conditions of the reactor and its containment vessel.

Because the plant had no instruction manual on venting, workers were forced to consider a procedure for venting by closely examining the blueprint of the reactor.

Since all the external power sources had been lost, workers at the plant procured batteries and other equipment to secure power sources. However, due to insufficient communications between workers on

the types of devices that were needed, various machines were brought into the plant, forcing workers to take time to select usable devices from among them.

Moreover, some of the devices were mistakenly delivered to the Fukushima No. 2 Nuclear Power Plant -- situated about 10 kilometers south of the crippled No. 1 plant -- and the J-Village soccer training ground, about 20 kilometers south of the No. 1 plant, where plant workers were staying, forcing workers to visit these facilities to pick up the devices.

"The TEPCO headquarters didn't extend sufficient support to us," one of the employees was quoted as lamenting during the questioning.

Furthermore, the panel has discovered that Yoshida and other top officials with the plant failed to notice the isolation condenser (IC), necessary to cool down the core of the No. 1 reactor in case of emergency, had stopped working, and considered countermeasures on the assumption that the IC was functioning properly.

 [Click here for the original Japanese story](#)

(Mainichi Japan) August 17, 2011

## **Workers rush to decontaminate schools in Fukushima Pref. city before start of term**



Workers spray and scrub the floors of Kashiwa Elementary School in Minamisoma, Fukushima Prefecture, on Aug. 16. (Mainichi)

MINAMISOMA, Fukushima -- Workers are rushing to finish decontaminating a elementary school here just north of the nuclear crisis exclusion zone in time for the beginning of the new term on Aug. 25.

"The schedule is pretty harsh, but we'd like to finish on time somehow," one worker at Kashiwa Elementary School told the Mainichi. Similar operations have been going on at municipal schools, kindergartens and nursery schools since Aug. 1, while the children are on summer break.

The workers are hosing down and scrubbing the walls and floors at the school and using heavy machinery to remove the top soil on the playground and flower beds to rid the building and grounds of radioactive substances. The top soil is being deposited in a 30-meter-long, 2-meter-deep pit for later burial.

Much of Minamisoma lies within a 30-kilometer radius of the crisis-stricken Fukushima No. 1 Nuclear Power Plant covered by exclusion and evacuation standby zones. Decontamination was ordered for all the city's schools outside that area, and similar operations are scheduled for the schools in the evacuation standby zone, between 20 and 30 kilometers from the plant, as early as the end of August.

 [Click here for the original Japanese story](#)

(Mainichi Japan) August 17, 2011

## **Excessive levels of radioactive cesium found 100 km from plant**

FUKUSHIMA (Kyodo) -- Excessive levels of radioactive cesium were found in sludge in a ditch at a district court branch in Fukushima Prefecture, about 100 kilometers west of the crippled Fukushima No. 1 nuclear power plant, the court said Tuesday.

The isotope in the sludge, sampled from a ditch at the Fukushima District Court's Aizuwakamatsu branch, measured about 186,000 becquerels per kilogram, the court said, adding it plans to remove the sludge after consulting with local governments.

Under government standards, sludge can be used in a landfill as long as the radioactive cesium contained in it measures 8,000 becquerels per kilogram or lower.

The court has barred entry within 1 meter of the area where the sludge was sampled and another where radiation levels were higher than other locations on the premises, but that has not disrupted court business, it said.

The nuclear power plant, operated by Tokyo Electric Power Co., spewed massive amounts of radioactive materials into the air and ocean after a series of explosions that followed the March earthquake and tsunami.

(Mainichi Japan) August 17, 2011

## **Cooling stoppage unknown to plant chief**

Government investigators have found that the chief of the Fukushima Daiichi nuclear power plant did not know that a backup cooling system for one of the plant's reactors was manually shut down on March 11th, the day of the quake and tsunami.

The investigators learned that Masao Yoshida was unaware that a worker stopped the system to prevent it from being damaged. The worker told the investigators that the system appeared to be operating at boiling temperature but was not producing steam.

Yoshida reportedly said it was a major error that he and other leaders did not immediately know such important safety information.

The plant's operator, TEPCO, says a fuel meltdown took place at the reactor 5 hours after the quake, generating large amounts of hydrogen that caused an explosion on the following day.

University of Tokyo Professor Koji Okamoto said the reactor lost all cooling functions due to the stoppage, and that the reactor's core should have been cooled by all possible means.

Okamoto said the failure of communication may have worsened the situation by delaying orders for water injections and government evacuations of nearby residents.

Wednesday, August 17, 2011 22:20 +0900 (JST)

## **Radioactivity down to one-fifth of July levels**

The Japanese government and Tokyo Electric Power Company say the amount of radioactive material being emitted from the Fukushima Daiichi nuclear plant has dropped to one-fifth that of a month ago.

The government and TEPCO said on Wednesday that maximum radiation levels around the plant during the past 2 weeks were 200 million becquerels per hour.

**This is one-fifth the levels detected in July, and one-10 millionth the levels in mid-March, shortly after the troubles began at the plant.**

The state minister in charge of the nuclear crisis, Goshi Hosono, said the maximum reading of **200 million becquerels is just an estimate because the exact emission levels cannot be accurately measured.**

He pledged to seek methods for making precise measurements and for containing radioactivity inside the plant.

The government and TEPCO said there is no major change in their timetable for bringing the plant under control, and that their goal continues to be to achieve cold shutdown of the reactors while processing contaminated wastewater and reducing radioactive emissions.

The government said it will draw up a plan for decontaminating the current evacuation zone by the end of August, and it will launch a model decontamination project early next month.

Experts say that before the government allows residents to return to the evacuation zone, it will be necessary to prevent new leakage of radioactive material, as well as decontaminate material already leaked and dispose of mud and sludge generated by the decontamination process.

Wednesday, August 17, 2011 22:23 +0900 (JST)

## Head of Tokyo University Radioisotope Center calls for speedy decontamination

"Seventy-thousand people are wandering about after evacuating from their homes. What on earth is the Diet doing?!" Tatsuhiko Kodama, 58, head of the University of Tokyo Radioisotope Center, stood before the Committee on Health, Labor and Welfare of the House of Representatives at the end of July and angrily berated the government for its slack radiation policies in a speech that has attracted a strong response. Dr. Kodama is a specialist in cancer treatment, but is also known as an "action-oriented researcher" who is engaged in decontamination operations in Fukushima Prefecture's Minamisoma. In an interview with the Mainichi, Dr. Kodama talked about what he thinks the government should be doing.

Question: You have pointed out that existing methods are inadequate to deal with the present situation. Can you explain?

Answer: By our estimates, the radioactive material released from Fukushima No. 1 Nuclear Power Plant, in uranium equivalents, amounts to 20 times the radiation released by the atomic bombing of Hiroshima. What's more, the radiation will decrease at a much slower rate than after the A-bomb. When the amount of radiation is small, it's enough to consider on-the-spot radiation. But when the total volume is huge, we have to think about how the particles will disperse. This happens in a non-linear manner, which is very difficult to calculate scientifically, because concentration is apt to occur in unpredictable locations. This will keep happening, such as when feed-hay for cattle was contaminated by cesium, and when contamination was found in tea and leaf mulch.

Q: How should we deal with the contamination of food?

A: With state-of-the-art technology, we can use imaging detectors to assess food contamination in large batches. Japan leads the world in this kind of technology. Manufacturers say they can make these machines in three months. But the government has been doing nothing. Rice and seafood will soon be a problem. To maintain food safety, we urgently need to develop state-of-the-art measurement devices, get them out to every municipality and set up assembly-line-type operations to detect contamination.

Q: Families with children are worried about radiation around their homes and schools. What should they do?

A: I suggest that "on-the-spot detection squads" and "call centers" be set up in every municipality of the disaster area. When a call comes in, 20 or 30 minutes could be spent going around with the caller and checking out homes or wherever it is kids are spending their time. Locations with high-level radiation should be decontaminated at once. In Minamisoma, many families have evacuated their children and have broken their families up to do so, but some areas near the coast have relatively low radiation and are safe for children. We should be aware of these facts, and on-the-spot teams should be there to help with emergency decontamination.

Q: Different experts have different opinions about low-dose internal radiation exposure, and this is adding to the confusion. Why is this so?

A: Cancer is caused by multiple gene mutations over a period of several decades. After Chernobyl, it took 20 years to statistically confirm the increased incidence of thyroid cancer in children. We won't know until much later, so rather than deciding now if it's safe or not, the important thing is to devote ourselves to "measurement and decontamination."

Q: You said in your Diet speech that operations should be divided into two types: localized emergency decontamination and the permanent decontamination of whole regions. Can you elaborate?

A: To make the environment safe for children, we are conducting emergency decontamination of places like kindergartens. But the water we use to wash out gutters will remain in the environment, and there's a limit to how far we can bring down radiation levels with emergency measures. Permanent decontamination will provide a fundamental solution to these problems, but it will be an immense project that calls for the creation of a "decontamination research center" of some kind to assess the problem as well as the cost. Japan will really have to throw itself into the project and bring its finest decontamination technology to Fukushima. Decontamination methods should be discussed with local residents. And we must not let it become a public works project linked to vested interests. Japan's financial situation doesn't allow us the luxury of spending trillions of yen and then saying: "Sorry, we couldn't decontaminate it any further."

Q: The government is moving much too slowly, considering that this is a real emergency. What do you think?

A: After decontaminating, we can't just leave the contaminated earth lying around, so we're packing it into drums and bringing it back to Tokyo, which is actually illegal. This is because existing laws don't provide for situations of this kind. How can we protect our children when our hands are tied by old laws? I asked politicians to enact new laws, so that we can clean up some of the radiation they've unleashed. I mean, what have they been doing all these four months? Food contamination tests, on-the-spot decontamination squads and call centers, emergency decontamination, permanent decontamination -- these are the four things I'm asking for.

\*\*\*

Dr. Kodama completed Medical School at the University of Tokyo and became an internist doing both clinical and research work. Since 1996, he has been a professor of Systems Biology and Medicine at the University of Tokyo's Research Center for Advanced Science and Technology, and in 2011 took on the additional job of head of the university's Radioisotope Research Center.

Because Dr. Kodama is working to develop cancer treatment methods using isotopes, he is well informed about the problems of internal radiation exposure. After the nuclear power plant incident, he has been visiting the city of Minamisoma in Fukushima Prefecture every weekend to conduct radiation measurements and decontamination at locations like kindergartens.

On July 27, Dr. Kodama gave testimony before the Committee for Health, Labor and Welfare of the Lower House of the Diet. He strongly criticized the negligence of the government in not channeling its energies into radiation tests for food when fears about food contamination are so widespread, and in not working to enact new laws to better protect children. "Unless the government commits itself to reducing radioactive materials, the Japanese people will not trust what it says about safety." Dr.

Kodama also proposed some specific measures. The hearing has been posted on numerous video-sharing websites and is attracting a large audience. (By Yuri Aono, Editorial Writer)

(Mainichi Japan) August 17, 2011

## **Questions remain over risks despite resumption of operations at Hokkaido nuke plant**

Questions remain about the adequacy of the risk assessment of the No. 3 reactor at Hokkaido Electric Power Co.'s Tomari Nuclear Power Plant, whose commercial operations resumed after the Hokkaido Gov. Harumi Takahashi gave the green light on Aug. 17.

In a rare move, the reactor had been in a so-called "adjustment operation" -- part of the last stage of regular inspections -- for more than five months.

The government requires power suppliers to conduct a primary assessment of the stress tests on reactors as a precondition for reactivating nuclear reactors undergoing regular inspections.

Nuclear reactors in full operation are subject to a secondary assessment. Tomari's No. 3 reactor was actually generating electric power at full capacity even though it was undergoing regular inspections. Therefore, the utility as well as government regulators made a difficult judgment when they decided to shift to commercial operations.

However, the essential question is not whether the reactor should be subject to a primary or secondary assessment. Keeping in mind a lesson learned from the ongoing crisis at the tsunami-hit Fukushima No. 1 Nuclear Power Plant, the operator of the Tomari plant as well as government regulators should have conducted their best risk assessment and provided a sufficient explanation to the local community and the general public. They then should have decided whether to resume commercial operations at the reactor.

Nevertheless, confusion over procedures for resuming commercial operations at the Tomari plant's No. 3 reactor has shown that the central and local governments and the utility have decided to resume commercial operations based not on the results of their best risk assessment.

Rather, it has given the public the impression that the national and local governments' response was politically motivated, pushing aside discussions on the safety of the reactor. Such a response can neither ensure the security of local residents nor gain confidence from the public.

Safety measures that utilities have implemented at their respective nuclear power stations following the Fukushima accident are merely stopgap measures. It is also the case with Hokkaido Electric Power's deployment of vehicles equipped with power generators, emergency pumps and heavy machine tools in case of a natural disaster to remove rubble at the Tomari plant, as well as its establishment of procedures for releasing hydrogen from its reactor buildings.

Since concerns about risks involving the Tomari power plant's No. 3 reactor are far from being dispelled, Hokkaido Electric Power must not be relieved simply because commercial operations have been resumed at the reactor. Rather, the utility should regard the green light for its commercial operations as a "provisional license," and proactively go ahead with its safety assessment of the reactor and promptly release the results of such an assessment.

The national government attempted to settle the dispute over whether to resume operations at the reactor by subjecting the reactor to double checks by the Nuclear and Industrial Safety Agency (NISA) and the Nuclear Safety Commission of Japan (NSC). However, the NSC would not make its own judgment on the reactor's safety on the grounds that it neither is legally authorized to express opinions on such a matter nor has it been asked by the central government's headquarters to do so.

Such discord between the government's headquarters, NISA and NSC, which has been ongoing for years, only damages the public's confidence in the safety of nuclear power stations.

Following the Fukushima accident, the public's confidence in the government's nuclear power safety regulators and its safety standards has been lost. Each of these relevant entities must do their best to ensure the safety of nuclear power plants until the government sets up a new regulatory body and works out new safety standards.

This is the first time since the Fukushima nuclear accident that commercial operations at a nuclear power plant, which had been suspended for scheduled inspections, have been resumed. However, it is wrong to believe that it will give momentum to attempts to resume operations at other nuclear reactors suspended for inspections. A decision on whether to reactivate nuclear reactors or whether to continue operations should be made depending on the risk assessment of each nuclear reactor. Power companies are urged to strictly assess risks at their nuclear plants.

## **Nuclear safety agency advised Niigata gov't not to hold joint quake, nuke disaster drill**

The Nuclear and Industrial Safety Agency (NISA) discouraged the Niigata Prefectural Government from holding a disaster drill envisaging the simultaneous occurrence of an earthquake and nuclear disaster, it has been learned.

A study by a government panel investigating the causes of the nuclear accident at the Fukushima No. 1 Nuclear Power Plant found that **NISA had advised the Niigata Prefectural Government not to hold the twin-disaster drill in 2010, saying it could cause fear and invite misunderstanding among residents.**

As a result, the Niigata Prefectural Government dropped the initial plan and instead conducted a drill envisaging a snow and nuclear disaster.

The revelation indicates that NISA forced on the prefectural government the myth that nuclear power plants were safe, and the government panel is poised to investigate if NISA's stance could have added to damage in the Fukushima accident.

According to internal documents obtained by the Mainichi Shimbun, the panel's damage limitation measures verification team started interviewing concerned parties on July 14 over the Fukushima

nuclear crisis. As of Aug. 9, the panel had questioned some 60 officials from NISA, the Cabinet Secretariat and the Nuclear Safety Commission of Japan. The panel is further to question a total of around 200 officials.

In the wake of an accident at Tokyo Electric Power Co. (TEPCO)'s Kashiwazaki-Kariwa Nuclear Power Plant in Niigata Prefecture in 2007, which was triggered by the Niigata-ken Chuetsu-oki Earthquake, the Niigata Prefectural Government started considering in May 2010 a disaster drill assuming the simultaneous occurrence of a quake and nuclear disaster.

NISA, however, told the prefectural government, "Conducting a multiple disaster drill presupposing an earthquake measuring lower 5 on the Japanese seismic scale of 7 and a nuclear disaster could cause fear and invite misunderstanding among residents."

In response, the prefectural government conducted a drill for a simultaneous snow and nuclear disaster in November 2010.

Furthermore, NISA underestimated the risk of a major natural disaster and a nuclear disaster occurring simultaneously or almost simultaneously in a report submitted to a subcommittee of the Advisory Committee for Natural Resources and Energy, a panel to the economy, trade and industry minister, in April 2009.

In the draft report filed by NISA on points to consider in preparing manuals for nuclear disaster prevention, the agency stated that "sufficient measures have been taken (at nuclear power plants) to ensure safety even in case of the most severe earthquake possible." The report also asserted that "the probability of a nuclear disaster actually occurring as a result of a major natural disaster is extremely low."

The revelation about the Niigata drill case surfaced while the fact-finding panel was investigating emergency drills that had taken place in Fukushima Prefecture before the nuclear accident. The panel is continuing to probe the case to see if NISA's disregard of a possible quake-nuclear disaster could have led to questionable advice to the Niigata Prefectural Government.

(Mainichi Japan) August 18, 2011

## **Fukushima plant leaking less radioactive material: TEPCO**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday the amount of radioactive substances leaking from the crippled reactors at the Fukushima Daiichi nuclear power plant has declined over the past month, but stopped short of declaring that one of the conditions to achieve a cold shutdown has been cleared.

The data was included in the latest version of a road map to contain the nuclear crisis. It left unchanged the time frame to stabilize the reactors by January and highlighted a need to train and deploy experts on radiation dose management.

According to the plant operator TEPCO, the amount of radioactive substances leaking from the Nos. 1, 2 and 3 reactors dropped to a maximum 200 million becquerels per hour, from 1 billion becquerels per hour a month earlier.

The figure means that a person could be exposed to up to 0.4 millisievert when standing around the plant for one year, below the government-set reference limit of 1 millisievert per year.

The public exposure dose, in addition to the temperature of the reactors, is a key factor for judging whether the crisis-hit plant has achieved a state of cold shutdown. **But TEPCO and government nuclear safety agency officials said the accuracy of the estimates of exposure dose is "rough."**

At a joint press conference with TEPCO, nuclear disaster minister Goshi Hosono said improving the functioning of water decontamination facilities at the plant is a "major challenge" toward achieving a cold shutdown.

Restoration efforts moved onto the "step 2" phase of the road map in July, after TEPCO and the government declared the "step 1" goals of stably cooling the damaged reactors and reducing the radiation dose around the site had been achieved.

**Completing the step 2 phase was estimated to take a further three to six months.**

A senior government official who attended the press conference did not narrow down the time range, leaving uncertain when residents of areas around the plant can put their lives back in order.

Hit by a magnitude-9.0 earthquake and massive tsunami on March 11, the Fukushima nuclear plant lost nearly all its power sources, and consequently the ability to cool the reactors and spent fuel pools at the Nos. 1 to 4 units. The buildup of heat and gas inside subsequently led to a series of explosions which badly damaged three of the reactors.

TEPCO has created a new system that removes radioactive substances from polluted water accumulating inside the plant and recycles the decontaminated water to cool the crippled reactors. But the water processing system has been plagued with problems and its operating rate has averaged just 69 percent since the system began operating in June, according to TEPCO.

As radioactive polluted water is created by injecting water into the damaged reactors, it is important to reduce the amount of water accumulating within the plant so that it does not overflow, Hosono said.

Hosono also said the government plans to start from September experimental projects on cleaning the radiation-contaminated areas outside the plant before implementing full-scale decontamination such as within a 20-kilometer radius of the plant designated as a no-entry zone.

During the press conference, TEPCO showed a video that delivered a message from Masao Yoshida, head of the Fukushima power plant, who apologized for causing great inconvenience amid the world's worst nuclear crisis since the 1986 Chernobyl disaster.

It was the first time that TEPCO made Yoshida's voice public since the nuclear crisis. In the video, available on TEPCO's website, he expressed gratitude for "warm" messages of support received from in and outside the country.

Yoshida drew media attention over his decision to continue injecting seawater into one of the troubled reactors in the early days of the crisis as an emergency step, despite an order to suspend the injection, at one point suspected to be coming from Prime Minister Naoto Kan.

The company issued a warning to him for falsely reporting the facts, although his decision was widely seen to be appropriate.

(Mainichi Japan) August 18, 2011

## **Iran, Russia to seek resumption of nuclear talks**

The foreign ministers of Iran and Russia have agreed to seek a resumption of talks with major Western countries based on a Russian proposal to reach a breakthrough in the standoff over Iran's nuclear program.

Iran's Ali Akbar Salehi met Russia's Sergei Lavrov in Moscow on Wednesday.

They discussed a Russian proposal for a phased easing of sanctions in exchange for Iran addressing international concerns over its nuclear program.

At a news conference after the meeting, Salehi said Iran is positive about the proposal and has agreed to begin talks on the country's nuclear program with UN Security Council permanent members and Germany.

Lavrov said he hopes the proposal will help things move forward and that negotiations will resume soon.

But the Iranian foreign minister added his country will not accept any kind of pressure, apparently in reference to Western nations.

Russia appears ready to continue mediating between Iran and the global powers. But Iran insists that its nuclear program is for peaceful purposes and rejects halting its uranium enrichment activity.

Thursday, August 18, 2011 09:08 +0900 (JST)

## **Agency didn't think to tell neighboring countries radioactive water was released into sea**

Nobody in the Nuclear and Industrial Safety Agency (NISA) thought of notifying the governments of neighboring countries before water containing low levels of radiation at the tsunami-hit nuclear power plant was released into the sea, it has been learned.

The Foreign Ministry also learned of the measure only after being alerted by an official assigned to the Tokyo Electric Power Co. (TEPCO) accident task force, who happened to see a TEPCO document.

The revelations illustrate NISA's lack of a sense of crisis and problems involving the communication system between nuclear power plant operators and government regulators on crucial information.

The government's panel investigating the crisis at the Fukushima No. 1 Nuclear Power Plant found out about the lack of communication after questioning officials with NISA, the Nuclear Safety Commission of Japan (NSC) and others involved.

According to sources familiar with the investigation, TEPCO noticed in late March this year that water contaminated with high levels of radiation had accumulated in the basements of buildings that house turbines for the No. 1 to 3 reactors at the crippled power plant.

On April 1, a task force comprised of officials with TEPCO and other entities considered a plan to release water containing low levels of radiation from the plant's intensive waste disposal facility into the sea to make room for water contaminated with high levels of radiation at the turbine buildings.

The task force initially abandoned the plan after some of its members voiced stiff opposition to it.

However, after low-level radioactive water was transferred to the No. 4 reactor's turbine building, workers noticed on the morning of April 4 that the water level in the No. 3 turbine building had also risen. Workers stopped sending water to the No. 4 turbine building after suspecting that the two turbine buildings were connected underground.

The finding prompted TEPCO, NISA and the NSC secretariat to prepare to release the low-level radioactive water into the sea.

After gaining approval from Prime Minister Naoto Kan and advice from NSC, NISA notified TEPCO later in the day that it was unavoidable to release radioactive water into the sea.

The chief Cabinet secretary announced the decision at a news conference at 4 p.m. on that day. TEPCO began releasing contaminated water shortly after 7 p.m.

However, none of the officials with NISA, who were involved in the procedure for releasing radioactive water into the sea, thought to notify the governments of neighboring countries in advance, even though the agency is supposed to notify the governments of foreign countries of any nuclear accident in Japan, the sources said.

An official with NISA's international affairs division, who happened to see the chief Cabinet secretary's news conference on TV, notified the International Atomic Energy Agency by e-mail only one hour before the water was released.

The Foreign Ministry also learned that TEPCO was releasing radioactive water into the sea after being alerted by a junior official assigned to TEPCO's accident task force, who happened to see a draft of the utility's public relations document on the measure.

The contaminated water was released between April 4 and 10, sparking criticism from neighboring countries as well as local governments near the plant that they had not been notified in advance.

 [Click here for the original Japanese story](#)

(Mainichi Japan) August 18, 2011

## Map shows spot with high level of radiation near Fukushima plant

TOKYO (Kyodo) -- The science ministry published a map on Friday on cumulative radiation estimates five months after the Fukushima Daiichi nuclear power plant was crippled in March, showing a nearby town with a high level of radiation.

In giving specific estimates for 50 locations in the no-entry zone for the first time, the ministry said cumulative radiation of 278 millisieverts was estimated for a location in the town of **Okuma, 3 kilometers southwest of the troubled plant.**

The annual radiation exposure limit for ordinary people is 1 millisievert. The government has urged people living in areas around the plant where annual exposure is likely to exceed 20 millisieverts to evacuate.

The estimates for the five-month period were varied, with several millisieverts of cumulative radiation for some locations even within the no-entry zone.

The data would therefore be used as a guide when considering the lifting of the entry ban in the future, according to the Ministry of Education, Culture, Sports, Science and Technology, which oversees the readings.

The government is also considering allowing evacuees from areas within a 3-km radius of the plant to return home temporarily.

Cumulative radiation over the one-year period from the start of the disaster is projected to reach between several millisieverts and over 500 millisieverts at the 50 locations within the no-entry zone.

Outside the exclusion zone, cumulative radiation in the town of Namie, 22 km northwest of the plant, was estimated at 115 millisieverts over the five-month period, the highest among locations outside the zone and equivalent to 229 millisieverts over a 12-month period.

The cumulative radiation map is based on readings taken at 4,283 locations, with a focus on Fukushima Prefecture.

(Mainichi Japan) August 20, 2011

## Cattle shipment ban lifted in Miyagi

The Japanese government has decided to allow Miyagi Prefecture to resume shipments of all cattle that clear radiation tests.

Chief Cabinet Secretary Yukio Edano told reporters on Friday that only properly managed cattle whose meat is safe to eat will be allowed to reach markets.

Edano said Miyagi Prefecture has put in place a system to prevent shipments of cattle whose levels of

radioactive cesium exceed the government's safety limit.

The restrictions were imposed after excess levels of cesium were detected in beef from cows fed on highly contaminated rice straw in the wake of the Fukushima Daiichi nuclear plant accident.

Before shipments are resumed, Miyagi will test all cattle that ate the contaminated feed. Blanket testing will also be conducted at farms whose straw feed has yet to be inspected. Other farms are required to test only the first animals they intend to ship out.

A ban on shipments is still in place in 3 other prefectures. Among them, Fukushima was due to see the measure lifted on Friday. But the government put off the move after unsafe levels of radioactive cesium were found in beef from a Fukushima cow not fed contaminated straw.

In the 2 other prefectures of Iwate and Tochigi, the government says shipments could resume once local authorities introduce safety controls similar to those adopted in Miyagi.

Friday, August 19, 2011 23:55 +0900 (JST)

## **Radioactive cesium detected in boar meat in Miyagi Pref.**

SENDAI (Kyodo) -- Radioactive cesium at a level over four times the government-set safety limit has been detected in the meat of a wild boar captured in Kakuda city, Miyagi Prefecture, the prefectural government said Friday.

It is the first time that radioactive contamination exceeding the safety limit was found in a wild animal or bird in the northeastern Japanese prefecture, local officials said, adding **they will ask people in the prefecture not to eat meat of wild animals and birds for the time being.**

The meat of the boar, which local hunters caught in the mountains in Kakuda on Aug. 7 in response to a request by the city government to exterminate it, measured 2,200 becquerels of cesium per kilogram. The central government's provisional safety limit is 500 becquerels per kg.

Miyagi Prefecture borders Fukushima Prefecture, where the badly damaged Fukushima Daiichi nuclear power plant is located.

(Mainichi Japan) August 20, 2011

## **New office to address radioactive contamination**

Japan's minister in charge of nuclear crisis has said that the government will establish a task force next week to address radioactive contamination in areas around the Fukushima Daiichi nuclear power plant.

Goshi Hosono made the comment at a meeting with Fukushima Governor Yuhei Sato on Saturday.

Hosono added that the central government will set up a team in Fukushima to facilitate radioactive

decontamination work.

Hosono said the government will allocate budgets to deal with the ongoing nuclear disaster as it bears heavy responsibility for the accident at the Fukushima plant.

Hosono said removal of radioactive substances is becoming the most important issue.

Saturday, August 20, 2011 14:46 +0900 (JST)

## **More contaminated cows from Fukushima**

Beef from 5 more cows from a Fukushima farm has been found to be contaminated with radioactive cesium in excess of the government-set safety limit.

The revelation by Fukushima Prefecture on Saturday followed reports one day earlier that beef from 4 cows from the same farm had been found to contain radioactive cesium twice the safety standard.

This prompted the central government on Friday to put off lifting a shipment ban on Fukushima beef.

Fukushima authorities say the 9 cows were among a total of over 200 head of cattle shipped from the farm and slaughtered at a facility in Yokohama city between the March 11th nuclear accident and April. The meat of the 9 had been stored by a food producer.

The farm reportedly denied giving the cows rice straw suspected of being contaminated with radioactive cesium.

It stated it fed them imported hay that had been stored at another farm.

The local authorities are investigating to find out how the beef came to be contaminated.

Sunday, August 21, 2011 08:58 +0900 (JST)

## **Fukushima officials worry new discovery of radioactive beef will harm reputation more**

FUKUSHIMA -- Officials here are disappointed that a new discovery of radioactive beef shipped from a Fukushima Prefecture farmer was discovered and caused the central government to delay lifting the ban on the prefecture's cattle shipments.

"Fukushima products have taken another blow to their reputation," said an official.

The central government had planned to lift bans on cattle shipments from Fukushima along with Miyagi Prefecture, but the ban lift for Fukushima was put off after levels of radioactive cesium exceeding safety standards were detected in beef shipped from an area near the Fukushima No. 1 Nuclear Power Plant.

The contaminated beef was from four cattle shipped from the Fukushima Prefecture town of Namie. The part of the town from where the cattle were shipped falls under a zone designated on April 22 to evacuate. All cattle shipped or evacuated from the zone since then have been screened for radioactive materials, but the cattle in question were shipped before the area was designated to evacuate.

The contaminated cattle were slaughtered on April 7 and 19, and their meat was being kept in refrigerated storage in Kawasaki by a Tokyo-based meat dealer.

According to the Kawasaki Municipal Government and the Ministry of Health, Labor and Welfare, the meat dealer did its own screening of the beef earlier this month and detected up to 1,000 becquerels of radioactive cesium per kilogram -- twice a provisional safety limit set by the central government. The Health Ministry also screened the beef on Aug. 19 and detected up to 997 becquerels.

The farmer who shipped the cattle had raised some 4,000 cattle in livestock barns in the Fukushima Prefecture village of Katsurao and city of Tamura, which both neighbor the town of Namie. The farmer evacuated outside Fukushima Prefecture after the accident at the power plant and since then is no longer farming.

The farmer reportedly explained that he or she did not give the cattle rice straw contaminated with radiation, which is thought to have caused other cases of irradiated cattle. To find the cause of the cattle's irradiation, the central and prefectural governments are investigating the conditions of the barns, water and feed given to the cattle.

Because refrigerated beef is sometimes stored for up to around two years, authorities intend to step up efforts to find any other contaminated beef that may be being held in storage.

In anticipation of the ban lifting, the Fukushima Prefectural Government has prepared a system to test all its cattle for radioactive material. "No more contaminated beef will hit the market," said a prefectural agricultural official.

"Even if shipments are resumed, farmers will not be able to make ends meet unless the price of beef returns to pre-nuclear disaster levels. We want the central government and Tokyo Electric Power Co. (which operates the stricken nuclear plant) to do all they can to dispel harmful rumors," said an official with JA Zen-noh Fukushima's stock breeding department.

(Mainichi Japan) August 20, 2011

## **Estimated yearly radiation dosage hits 508 mSv in town near nuke plant**

High radiation levels of up to 508.1 millisieverts per year are estimated for areas within a 20-kilometer radius of the crisis-hit Fukushima No. 1 Nuclear Power plant in figures released by the government on Aug. 19.

The figures, released by the Ministry of Education, Culture, Sports, Science and Technology, are the first publicly released estimate of the yearly accumulated radiation dosage in 50 locations across eight municipalities in the 20-kilometer radius zone.

The highest figure was for the Koirino district of Okuma, Fukushima Prefecture, where the estimated yearly dosage was 508.1 millisieverts -- over 500 times the acceptable yearly level of 1 millisievert per year for artificial radiation dosage. The district is three kilometers west-southwest of the plant.

The figures are based on measurements taken at the 50 locations and a person being indoors for 16 hours and outdoors for eight hours every day. Estimations for March 12 through to Aug. 11 were based on those days' actual measurements. For Aug. 12 through to the end of the one year period, the average doses estimated from Aug. 9 and 11, the most recent data, were assumed to continue.

At 35 points, the level exceeded 20 millisieverts per year. The yearly radiation dosage at seven spots in the town of Okuma was estimated at over 100 millisieverts.

The Koirino district of Okuma was also highest for the most up-to-date estimate of hourly dosage, with 75 microsieveverts per hour. That figure is below the 200 microsievevert-per-hour figure used by the government as a basis for deciding whether residents can make short visits to their homes.

Other areas to receive high yearly estimates included the Kawabusa district of the town of Namie -- 20 kilometers northwest of the nuclear plant -- with 223.7 millisieverts per year, and the Nagatsuka district of Futaba -- five kilometers north-northwest of the plant -- with 172.4 millisieverts per year. However, in the Kitakiyohashi district of Namie, eight kilometers north of the plant, the level was 4.1 millisieverts per year, showing that radiation levels can vary greatly even within the same town.

Yoshihisa Matsumoto, an associate professor of radiobiology at the Tokyo Institute of Technology, said work to decontaminate the area will likely prove difficult.

"At the areas with high levels, the radiation exposure exceeds the amount that astronauts are exposed to during long stays on the International Space Station (about 1 millisievert per day), so decontamination is necessary for people to live there, but with radioactive materials spread all over in a wide area, the work will probably be very difficult. With regard to people making short visits to their homes, I don't think they will be adversely affected if they are only there for a few hours," he said.

(Mainichi Japan) August 20, 2011

## **Radiation fears hit Fukushima on multiple fronts**

FUKUSHIMA -- This summer, some parks in this prefecture are devoid of children, parents having sent them on programs far away so they can play outside without worrying about radiation from the Fukushima No. 1 Nuclear Power Plant.

On Aug. 8, a group of 14 elementary and junior-high students were boarding a bus in the city of Date, one city where areas with high levels of radiation have been measured. The students had been invited by a prefectural support group to a two-week program in Aichi Prefecture in the southwest, where they would enjoy swimming and other sporting events. Many other support groups have organized similar programs.

Hiroaki Nagasho, 36, who sent his young daughter to participate in the Aichi trip, said, "I wanted to let her play outside as much as she wanted and release built-up stress."

A 41-year-old woman who had two daughters participating said, "I'm worried about what to do after they come back. It's not easy to move them to another school."

As of July 15, 7,672 elementary and junior high school students had been transferred to schools out of the prefecture. During the summer break, which is continuing now, an additional 1,081 were set for transfers. Furthermore, around 2,000 children at private kindergartens have been moved out of the prefecture.

As of July 28, the total number of people that had evacuated from the prefecture was at 48,903.

**Tourism has also been hit hard.** Normally, through educational field trips, Fukushima Prefecture is visited by about 8,000 groups a year for a total of around 700,000 visitors (counting repeat visitors as separate people.)

However, the Fukushima Prefecture Tourism & Local Products Association expects a 95 percent drop in those visitors this fiscal year. They say that even reservations for two to three years in the future are starting to be canceled.

**Another area where the prefecture is hurting is in sales of its peach crop.** Fukushima Prefecture is second only to Yamanashi Prefecture in its production of peaches, and now is peak harvesting season, but distrust of Fukushima products is dealing a heavy blow to sales. According to a Fukushima city tourism and agriculture organization, the peaches are being left off of department stores catalogs for the summer gift-giving period, and sales of peach gifts have fallen greatly.

Visitors are also sparse at shops and fruit orchards along "Fruit Line," a road in Fukushima city developed for tourism. Shinichi Katahira, chair of the tourism and agriculture organization, thinks the visitors during this year's Obon holiday were about one-tenth of what they were last year.

One orchard owner, Atsushi Konno, 59, said, "Peach trees don't wait. They just keep producing," as he continued picking fruits.

(Mainichi Japan) August 21, 2011

## **Radioactive decontamination unit to be set up in Fukushima**

FUKUSHIMA (Kyodo) -- Nuclear disaster minister Goshi Hosono said Saturday that the government will **set up a task force to promote radioactive decontamination in areas surrounding the crippled Fukushima Daiichi nuclear power plant** probably next week.

The central government will also establish a decontamination promotion unit in Fukushima Prefecture to initially commence the process in the city of Date, Hosono said during a meeting with Fukushima Gov. Yuhei Sato at the prefectural government office.

In response, Sato told Hosono that the central government should take the initiative in the decontamination work.

After the meeting, Hosono visited areas in the towns of Futaba and Okuma located within 3 kilometers of the Fukushima plant and told reporters that the government will allow evacuees from the areas to visit their homes temporarily on Aug. 26 and Sept. 1 as scheduled.

The government has organized temporary home visits for many evacuees from the 20-km exclusion zone around the nuclear plant, which has been crippled since the March 11 earthquake and tsunami, to pick up personal belongings. But it has not yet permitted such visits for evacuees from areas located within a 3-km radius of the plant because of high radiation levels.

(Mainichi Japan) August 21, 2011

## **74 percent favor gradual reduction of nuclear power plants: Mainichi poll**

Seventy-four percent of respondents to a poll by the Mainichi Shimbun expressed support for a gradual cutback on nuclear power plants in Japan, while only 11 percent demanded an immediate halt to nuclear energy.

The Mainichi poll also found that 56 percent are opposed to a proposed rise in the consumption tax and other taxes to help finance social security costs and reconstruction efforts in the aftermath of the March 11 Great East Japan Earthquake and tsunami while 41 percent were in favor.

The approval rating for Prime Minister Naoto Kan's Cabinet dropped 4 percentage points from the previous poll in July to 15 percent, the lowest since the launch of the government under the Democratic Party of Japan (DPJ) in September 2009. The Kan Cabinet's disapproval rating came to 63 percent, up from 56 percent in July.

Japan's energy policy and the pros and cons of a rise in the consumption tax from the current 5 percent are expected to be dominant topics in the upcoming DPJ presidential election to pick Kan's successor. The Mainichi poll's results are likely to have an impact on the election.

Kan has proposed an end to the nation's dependence on nuclear energy following the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant, but it is not clear what direction his policy to promote renewable energy will take due to the prime minister's imminent departure.

Reflecting electricity shortages across Japan and anxiety about social and economic activities due to the ongoing Fukushima crisis, 74 percent were in favor of a gradual phase out of nuclear power plants while only 13 thought there was no such need.

When asked about food contamination by radioactive substances, 71 percent said they have harbored concerns, including 27 percent who are deeply worried, while 23 percent said they are not so anxious. Only 4 percent replied they have no apprehensions at all.

As for the DPJ's agreement with the largest opposition Liberal Democratic Party (LDP) and the New Komeito party on a review of its manifesto for the 2009 House of Representatives election, including child allowances, 69 percent supported the plan but 27 percent were against the move. The support rate for the review accord among DPJ supporters reached 68 percent.



One of two new solar arrays in the Ogishima district of Kawasaki is seen in this aerial photo on Aug. 5. (Mainichi)

Under a divided Diet where the opposition camp controls the House of Councillors, 70 percent of respondents to the Mainichi poll expressed their support for "a partial coalition" by the ruling DPJ, the LDP and other parties depending on specific issues involved. Only 17 percent said they support "a grand coalition" by the nation's largest parties.

Public support for the ruling DPJ stood at 13 percent, unchanged from the previous poll while that for the LDP rose 6 points to 22 percent, a level seen at the end of the last LDP-led government in 2009. The poll found that 49 percent did not have any particular party to support, down 5 points from July.

(Mainichi Japan) August 22, 2011

## **Some areas near Fukushima plant to remain no-go zones: gov't sources**



Workers spread lining sheets in a huge trench dug to bury radiation-contaminated topsoil collected from the ground of Yasawa Elementary School and Kindergarten in Minami-Soma, about 20 kilometers away from the

tsunami-crippled Fukushima Dai-ichi nuclear facility, in Fukushima Prefecture, northeastern Japan, Thursday, Aug. 18, 2011. (AP Photo/Hiro Komae)

TOKYO (Kyodo) -- The government has decided to keep certain areas showing high levels of radiation around the radiation-leaking Fukushima Daiichi nuclear power plant as no-go zones even after the damaged complex is brought to a cold shutdown, government sources said Sunday.

Areas within 20 kilometers of the plant that will not see the lifting of the no-go zone designation will be determined after results of radiation monitoring tests are examined in the future, the sources said, adding it is unavoidable some areas will remain no-go zones for a long time.

The government will consider purchasing those long-term restricted areas and owning them, the sources said.

Prime Minister Naoto Kan intends to visit areas affected by the nuclear crisis triggered by the massive March 11 earthquake and tsunami possibly next Saturday to explain how the government will support those still living as evacuees and unable to return to their homes, the sources said.

The government has set next January as a target deadline for completing the "step 2" phase of achieving a cold shutdown of the damaged reactors at the plant. The government also plans to start considering lifting the no-go zone on condition that the release of radioactive material will be strictly controlled.

According to the science ministry's estimation of annual accumulated radiation exposure, released Friday, over 100 millisieverts of radiation exposure were expected for 15 out of 50 surveyed points in the no-go zone, exceeding the International Commission on Radiological Protection's guideline of 20-100 millisieverts even at the time of an emergency.

Given the high levels of exposure, the government is now considering it will have to exclude some areas when lifting the no-go zone.

(Mainichi Japan) August 22, 2011

## **L'uranium enrichi au laser, nouvelle peur nucléaire**

AFP | 21.08.11 | 19h28 • Mis à jour le 21.08.11 | 21h51

Le groupe industriel américain General Electric (GE) prévoit de relancer à grande échelle aux Etats-Unis un procédé d'enrichissement de l'uranium au laser, ce qui suscite des craintes relatives à la prolifération nucléaire, rapporte dimanche 21 août, le *New York Times*.

Le quotidien américain publie une longue enquête selon laquelle "*General Electric teste avec succès depuis deux ans un procédé d'enrichissement de l'uranium au laser*" dans une installation située près de Wilmington, en Caroline du Nord (Est des Etats-Unis). Cité par le quotidien, Christopher Monetta, le président de **Global Laser Enrichment, la filiale de GE et du groupe japonais Hitachi qui exploite cette**

**installation**, a indiqué: *"Nous sommes actuellement en train de parfaire les plans"* d'un projet d'extension.

Selon l'article, le groupe *"a demandé aux autorités fédérales l'autorisation de construire une usine d'un coût d'un milliard de dollars afin de produire du combustible nucléaire en grande quantité"* et s'est vu promettre une réponse *"d'ici à l'année prochaine"*. Le journal écrit que, selon M. Monetta, *"l'usine prévue enrichirait chaque année suffisamment d'uranium pour alimenter jusqu'à 60 grands réacteurs"*.

Selon le New York Times, le projet de GE et Hitachi suscite les craintes d'associations soucieuses de la non-prolifération. Elles redoutent que le procédé puisse tomber entre les mains d'Etats comme l'Iran ou de groupes terroristes et puisse être utilisé facilement à petite échelle pour fabriquer une bombe nucléaire, ou simplement *"la révélation au public qu'un demi-siècle d'échec de l'enrichissement au laser semble en train de s'achever"*.

**L'enrichissement de l'uranium a pour but d'augmenter la teneur du minerai brut en isotope 235. Lorsqu'il est enrichi à environ 4 % en uranium 235, le matériau radioactif peut être utilisé comme combustible dans une centrale nucléaire. A 90 %, il peut servir à fabriquer une bombe atomique.**

La technique de l'enrichissement de l'uranium au laser est connue depuis les années 1960 mais la recherche sur le sujet a été plus ou moins abandonnée, car la méthode apparaissait difficile à rentabiliser, jusqu'à ce que des chercheurs australiens mettent au point un procédé satisfaisant au milieu des années 1990, écrit le journal. Selon l'article, GE a racheté en 2006 leur brevet baptisé Silex, acronyme anglais pour *"séparation des isotopes par excitation au laser"*.

L'Iran, dont les activités d'enrichissement de l'uranium inquiètent les Occidentaux, utilise pour cela des centrifugeuses, ce qui demande de grosses installations industrielles, difficiles à camoufler.

En ordonnant en février 2010 la production d'uranium enrichi à 20%, le président iranien Mahmoud Ahmadinejad avait affirmé que son pays était désormais capable d'enrichir de l'uranium en utilisant le laser.

avec AFP

## **Fukushima gov't seeks lifting of ban on cattle shipments**

FUKUSHIMA (Kyodo) -- The Fukushima prefectural government on Monday called on the central government to lift its ban on cattle shipments from the prefecture, saying the cause of newly discovered cattle's radioactive contamination has been determined.

The government of Fukushima Prefecture, where the crippled Fukushima Daiichi nuclear power plant is located, has reported that 12 cattle from the town of Namie, Fukushima Prefecture were found to be contaminated with radioactive cesium exceeding the government-set limit **because they were fed cesium-tainted hay**.

The central government decided Friday not to lift its ban on cattle shipments from Fukushima Prefecture at this time as contaminated beef from there has been newly detected. It did give the green

light to shipments from Miyagi Prefecture, after initially planning to lift the ban on Fukushima and Miyagi simultaneously.

The farm that shipped the cattle in question said contaminated rice straw had not been fed to those cows as they were fed imported hay. That prompted the central government to quickly adopt the position the cause of the contamination must be determined before the ban on cattle shipments from Fukushima can be lifted.

According to the Fukushima government's investigation, the 12 cattle in question from Namie **were raised in a cattle shed without side walls, thus allowing outdoor air to enter easily.**

The livestock farmer in Namie fed imported hay left in an aisle of the cattle house after the eruption of the nuclear crisis at the Fukushima power complex, triggered by the March earthquake and tsunami.

(Mainichi Japan) August 23, 2011

## **Gov't should take responsibility for decontaminating soil tainted with radiation**

The Japanese government appears prepared to go ahead with the decontamination of soil tainted with radioactive substances leaking from the tsunami-hit Fukushima No. 1 Nuclear Power Plant after the ruling and opposition parties agreed to enact legislation to make up for a legal flaw.

The ruling Democratic Party of Japan (DPJ) and two key opposition parties -- the Liberal Democratic Party (LDP) and New Komeito -- have agreed on the details of a special measures bill on land decontamination and disposal of rubble contaminated with radioactive substances. The bill likely will be submitted to the Diet as a lawmaker-initiated bill and become law during the ongoing session.

The Waste Disposal and Public Cleaning Law does not cover the disposal of rubble contaminated with radioactive substances. If enacted, the new law would be the first to cover how to deal with radiation contamination outside the premises of nuclear power plants.

Under the bill, the environment minister would designate areas with high levels of radiation as "special areas." The national government would decontaminate the designated areas based on a plan it would work out after listening to the opinions of the local governments concerned. The minister would also designate areas where radioactive rubble must be disposed of, and the national government would collect such waste, and transport, store and dispose it at its own responsibility. The bill would require Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima power plant, to bear the costs of decontamination and disposal of rubble contaminated with radioactive substances as part of its compensation for the nuclear accident.

Even though the bill would clarify the central government's responsibility for radiation contamination countermeasures, many hurdles must be cleared before such measures are implemented. In particular, it is difficult to predict when the environment of the areas where residents have been evacuated can be improved to a level where they can come back and live safely **because such a large-scale decontamination operation is unprecedented anywhere in the world.**

Therefore, the national government is required to fully release information on how far it intends to reduce radiation levels in affected areas based on its monitoring and provide a thorough explanation.

The Education, Culture, Sports, Science and Technology Ministry has for the first time released its estimation of annual cumulative radiation levels at 50 locations in no-entry areas within 20 kilometers from the Fukushima No. 1 Nuclear Power Plant. **At 35 of the locations, the amount surpassed 20 millisieverts -- a level that requires residents to evacuate -- suggesting that extensive decontamination operations will be needed over a long period.**

**The government should also fully release information suggesting that evacuated residents cannot easily return home.**

Moreover, depending on radiation levels, it might not be realistic for residents to come home soon even if their neighborhoods were decontaminated in accordance with the bill.

Prime Minister Naoto Kan is expected to travel to Fukushima Prefecture later this week to explain to the local governments concerned as well as residents that even if decontaminated, some areas will likely remain unfit for living for many years.

If so, the prime minister must show concrete data and explain how long evacuated residents must wait until they are allowed to return home in order to win their understanding. Furthermore, Kan should also explain specific measures to extend assistance to residents of such areas, including where they will live for the time being.

**Difficult challenges to removing rubble will likely emerge in the future, such as how to secure a site for the disposal of ash generated after rubble contaminated with radioactive substances is incinerated. Questions also remain as to whether the final disposal site should be created in Fukushima Prefecture or other areas.** The national government must take all possible measures to ensure safety in disposing of contaminated rubble and **gain the understanding of local residents.**

(Mainichi Japan) August 23, 2011

## **Potent radiation leak halts water decontamination operations at Fukushima plant**



Workers at the Fukushima No. 1 Nuclear Power Plant stand around the radioactive water decontamination system "Sally" in this photo provided by TEPCO.

Operations to decontaminate highly radioactive water at the crisis-stricken Fukushima No. 1 Nuclear Power Plant came to a 13-hour halt when **a section of pipe emitting 3 sieverts of radiation per hour in one decontamination system was discovered**, plant operator Tokyo Electric Power Co. (TEPCO) has announced.

According to TEPCO, the high radiation emissions from the pipe section were discovered at just after 7 a.m. on Aug. 22 while workers were doing the first ever change-out of a decontamination system part for absorbing radioactive cesium. Work on the part change was stopped immediately. After washing radioactive mud away from the area, radiation levels dropped, and decontamination operations resumed at about 8:15 p.m., though the delay pushed replacement of the cesium absorption component back to Aug. 23. TEPCO officials apparently still do not know what caused the radiation leak.

The water decontamination system, called "Sally," was built by electronics and heavy machinery giant Toshiba Corp. There are high expectations for Sally's performance after two other decontamination systems at the site -- one made in the United States and the other in France -- continued to have problems and delays.

**This is the third time for high radiation emissions to be discovered at the plant in August.** On Aug. 1, emissions of 10 sieverts per hour were detected coming from the substructure of exhaust pipes in the No. 1 and 2 reactor housings, while on Aug. 2 emissions of more than 5 sieverts per hour were found in the air conditioning room in the No. 1 reactor building.

(Mainichi Japan) August 23, 2011

## **Expert urges higher radiation exposure limit to be set for Fukushima**

TOKYO (Kyodo) -- A Japanese nuclear expert called Tuesday for the planned annual radiation exposure limit for residents in areas close to the Fukushima Daiichi nuclear plant to be set at up to 5 millisieverts, instead of 1 millisievert as planned by the government.

**The 5 millisievert limit would be more realistic for lifting evacuation advisories for residents** as the government's planned annual limit of 1 millisievert or less may not be met in some areas, said Shunichi Tanaka, a former acting chairman of the Japan Atomic Energy Commission.

The government plans to include the annual limit of 1 millisievert when it drafts a basic radioactive decontamination policy on Friday.

**"Past experience of decontamination has shown it would be very difficult to reduce annual radiation exposure to 1 millisievert,"** Tanaka told a regular meeting of the commission.

Tanaka has engaged in decontamination work in such areas as Iitate close to the nuclear plant, which released radioactive substances following explosions at reactor buildings after the March 11 earthquake and tsunami.

Last week, the government estimated annual radiation exposure of more than 100 millisieverts at 15 of 50 points located within a 20-kilometer radius of the plant. The highest estimate exceeded 500 millisieverts.

Tanaka also expressed doubt about the advisability of a Food Safety Commission recommendation that combined external and internal radiation exposure be limited to 100 millisieverts over a lifetime, saying it would be difficult for people to live in many areas of Fukushima Prefecture.

Tanaka noted that controlled storage sites may have to be designated in Fukushima Prefecture as **decontamination is expected to generate tens of millions of tons of radioactive waste including soil.**

(Mainichi Japan) August 24, 2011

#### **BEYOND NUCLEAR PRESS RELEASE**

**FOR IMMEDIATE RELEASE: August 23, 2011**

**CONTACT: Paul Gunter, Beyond Nuclear, 301.270.2209 ext 3**

**Linda Gunter, Beyond Nuclear, 301.455.5655**

#### **Mother Nature sends warning as earthquake strikes where reactors sit**

Takoma Park, August 23 – A 5.9 magnitude that was felt up and down the US east coast was centered in Mineral, Virginia, home to the two-reactor North Anna nuclear power plant operated by Dominion Energy. North Anna sits just 90 miles south of Washington, DC. The plant automatically shut down following a loss of offsite power, but electricity is still needed to cool the reactor core and fuel pools. "Once again, Mother Nature is warning us that nuclear power is the most brittle of electrical power systems," said Paul Gunter, director of Reactor Oversight for Beyond Nuclear. "In times of national crisis or natural disaster, nuclear power becomes more of a liability than an asset," he said. All but one of the four on-site emergency diesel generators at North Anna started up as needed for reactor cooling and safety systems. However, cooling systems for the two spent fuel pools loaded with nuclear waste do not automatically get switched over to emergency power systems. Several other reactor sites along the eastern seaboard reported "unusual events" to the U.S. Nuclear Regulatory Commission but no others were forced to shut down. "The Obama administration – which still presses for more nuclear plants – and the nuclear industry and its lapdog regulator refuse to learn the lessons of Fukushima even when they are brought right home by this powerful quake," said Linda Gunter, International Specialist at Beyond Nuclear. "Even the Japanese prime minister has acknowledged that Japan must move forward without using nuclear energy. Here at home it seems only public outrage can move our leaders. We got lucky again, this time, but at some point that luck will run out. We should not wait to pay that price but start a nuclear phase-out today."

The earthquake risks at North Anna were known as far back as 1970, a 1975 Washington Post article reveals. Then owner, Virginia Electric and Power Company, was fined an unprecedented \$60,000 for building the plant on a known fault line which consultants retained by Vepco claimed did not exist.

On-going updates about the post-quake status of US nuclear plants can be found on the Beyond Nuclear website, on Facebook and on Twitter.

*Beyond Nuclear aims to educate and activate the public about the connections between nuclear power and nuclear weapons and the need to abandon both to safeguard our future. Beyond Nuclear advocates*

*for an energy future that is sustainable, benign and democratic. Beyond Nuclear: 6930 Carroll Avenue, Suite 400, Takoma Park, MD 20912. [www.BeyondNuclear.org](http://www.BeyondNuclear.org). Tel: 301.270.2209. Email: [info@beyondnuclear.org](mailto:info@beyondnuclear.org).*

## **Firms tied to mayor of Hokkaido town profited from local nuclear research center**



Apartment blocks in Horonobe, Hokkaido, owned by a company connected to the town's mayor and rented to a JAEA nuclear research facility. (Mainichi)

HORONOBE, Hokkaido -- **Two companies connected to the mayor here have been making some 40 million yen per year from a local nuclear research facility, it has been learned, sparking speculation that the facility holds undue influence over the leader of this northern town.**

The Japan Atomic Energy Agency (JAEA)'s Horonobe Underground Research Center began renting two apartment complexes for its workers in fiscal 2001 from the firm Horonobe Shoji, where Mayor Akira Miyamoto's son serves as president and the mayor himself is a board member. The research center has furthermore contracted local security firm **Hokusei**, run by three of the mayor's family and where Miyamoto also served on the board of directors until just after he was elected mayor in 2002, to do security at the facility.

Miyamoto has stated that the contracts are not legally improper and that the business relationship with the research center is not a problem. According to the mayor and the nuclear facility, Horonobe Shoji has been paid about 9.6 million yen in rent for the two apartment blocks per year since the first contract in 2001, when the mayor was a town council member. Information obtained through public finance disclosure regulations reveals that Miyamoto continues to receive income from Horonobe Shoji, but exact amounts were not provided.

Meanwhile, the relationship between the research center and the second firm, Hokusei, began in 2003 with the rental of another apartment building for center staff at 4.8 million yen per year, as well as the first security contract. From fiscal 2003 to 2005 Hokusei was paid 5 million yen annually for security services at the nuclear facility. This has jumped to an annual income of 22 to 30 million yen after the introduction of competitive bidding in fiscal 2006, which Hokusei has won every year.

Regarding the apartments, Miyamoto has insisted there has been no wrongdoing, stating, "The local commerce and industry association received an inquiry from the underground research center saying it was short of housing for its workers. Several people and I worked together to take out loans and build housing. I have not been a part of the administration of either Horonobe Shoji or Hokusei since I became mayor."

The JAEA research center, meanwhile, insists that the limited tender contracts with the two firms were signed "because there was so little available to choose from," adding, "These contracts began before Mr. Miyamoto became mayor, so there is no problem."

Since construction of the research center began in 2003, Horonobe has received more than 100 million yen in subsidies for power-producing municipalities. According to town government calculations, the nuclear facility has poured some 500 million yen into the community in wages and work orders, of which the two firms connected to the mayor account for about 10 percent. In these years, Miyamoto conducted a public relations campaign to attract further research facilities to the town.

(Mainichi Japan) August 24, 2011

## Hokkaido town agonizes over permanent radioactive waste disposal, 'nuclear money'



High-level radioactive waste is the "nuclear garbage" left over in the form of spent fuel. Japan has still not determined a permanent disposal site for this waste, but back in the 1980s, Horonobe, a small town in Hokkaido, became the only municipality in Japan to offer to host a research center for the storage of radioactive waste. This June, the town once again wrangled over the problem of "nuclear plant money."

Construction plans for a storage center in Horonobe were abandoned due to opposition from local residents and surrounding communities, and the town, the prefecture of Hokkaido and business operators eventually signed an accord that banned the introduction of radioactive materials. Today, Horonobe is the location of the "Horonobe Underground Research Center," where the Japan Atomic Energy Agency conducts research on disposal techniques.

At a municipal assembly session on June 16, Akira Miyamoto, mayor of Horonobe, unleashed controversy by saying that the matter of "documentary investigation" regarding the construction of a permanent disposal site that is being solicited by the Agency for Natural Resources and Energy of the Ministry of Economy, Trade and Industry is "an issue coming up for consideration."

In exchange for hosting the Underground Research Center, Horonobe receives more than 100 million yen annually, a subsidy stipulated by the so-called "Three Power Laws." Consenting to "documentary investigation" will entitle the town to an additional subsidy of 1 billion yen per annum, expandable to a maximum of 2 billion yen. This is a tempting offer for a town with a budget that barely exceeds 4 billion yen. The mayor retracted his statement after criticism from local residents, but said: "An associated facility that makes efficient use of the Underground Research Center might still be considered."

The above-mentioned accord forbids the selling or lend-leasing of the Underground Research Center to operators of permanent waste disposal businesses. Nevertheless, the Nuclear Waste Management Organization of Japan (NUMO), which conducts such operations, mentioned in a business report last year that "joint research at the Underground Research Center is being considered." (The remark was deleted after protests from civic groups.) The Agency for Natural Resources and Energy has also stated that the accord does not exempt Hokkaido from the possibility of documentary investigations.

The Underground Research Center held a meeting in July to explain the situation to local residents, who threw out questions like: "Can you assure us of the safety of a disposal site that has to last for 100,000 years, when they can't even contain the incident at Fukushima?" Yet both the national government and operators still show signs of wanting to proceed with permanent disposal operations.

Rokkasho, a village in Aomori Prefecture, is the location of a nuclear fuel reprocessing plant and also of a temporary storage facility for nuclear waste. Aomori Prefecture has exchanged a pledge with the government stipulating that "Aomori Prefecture will not be used as a permanent disposal site" and the village says it will insist that the promise be kept. However, with a large-scale nuclear facility already in place, feelings in Rokkasho are somewhat different from those in Horonobe.

One village assembly member said: "Lots of people are resigned to the idea, since they can't seem to find anywhere else to put it."

The temporary facility presently stores 1,457 vitrified rods of high-level nuclear waste. The storage building itself is of concrete, and a former high-ranking official of the municipal government comments: "If a disaster or a terrorist incident happens here, the damage will be incomparably worse than in Fukushima. Even for temporary storage, an underground facility is needed. If it's the best thing for our country, we're resigned to our village being the final disposal site."

Rokkasho went through a period of contention that split the village in two, but it decided to throw in its lot with national policy and accept the fuel reprocessing plant. Subsidies and property taxes have made

the municipality so rich that it could afford to spend 2.3 billion yen in providing each of its 4,500 households with videophones. An official of Rokkasho's Commerce and Industry Association is angry about Prime Minister Naoto Kan's call to "shift away from nuclear power."

"Petrochemical complexes and the nuclear-powered ship Mutsu -- the government keeps holding up these wonderful rose-colored projects, and then letting them come to nothing. We've been led around by the nose. Now they're saying: No more nuclear recycling. In that case, maybe we'll just have to insist that they remove all the waste they've left here."

(Mainichi Japan) August 24, 2011

## **Plant workers' radiation exposure from water-treatment piping within limit**

Workers' exposure to radiation coming from piping in a water decontamination system at the Fukushima No. 1 Nuclear Power Plant was within the site's safety limits, the Tokyo Electric Power Co. (TEPCO) has announced.

According to TEPCO, the highest exposure a worker had was 3.47 millisieverts. The site's safety limit for workers' exposures is five millisieverts.

The radiation leak was found from piping in "Sally," a newly installed water decontamination system made by Toshiba. On the morning of Aug. 22, a high level of about three sieverts per hour was found while 23 workers were taking turns to replace a part of the system designed to absorb radioactive cesium.

"The clump (of cesium thought to have stuck to the piping where the high radiation levels were found) is thought to have been a few grams' worth, and we do not know why it stuck to the piping," said Junichi Matsumoto, deputy chief of TEPCO's nuclear power division.

TEPCO also revealed that a very small water leak had been found in equipment circulating and cooling the water for the No. 4 reactor unit's spent-fuel pool. The leak was discovered coming from a stainless steel pipe in the unit's waste-processing building, dripping about once every 30 seconds.

The concentration of radioactive material in the No. 4 reactor unit's spent-fuel pool is relatively low, at about 10 becquerels per liter. **A container was placed to catch the leak** and the circulation equipment is still running.

(Mainichi Japan) August 24, 2011

# Virginia nuclear power plant on alert

Tuesday's magnitude-5.8 earthquake in the US state of Virginia has cut electricity to a nuclear power plant, prompting it to be placed on alert status.

The **two-reactor North Anna Power Station**, located about 24 kilometers from the quake's epicenter, shut down automatically after the power loss.

The alert status is the second-lowest of four emergency classifications set by the US Nuclear Regulatory Commission.

The watchdog said the shutdown is safe and poses no risk, as **power is being provided by three of four emergency diesel generators and the plant's cooling system is operating properly.**

The commission continues to monitor the situation as **one of the generators stopped working due to a coolant leak.**

The US East Coast rarely has earthquakes. Tuesday's quake was the first with a magnitude of more than 5.0 in Virginia since 1897.

## Expert urges higher radiation exposure limit to be set for Fukushima

TOKYO (Kyodo) -- A Japanese nuclear expert called Tuesday for the planned annual radiation exposure limit for residents in areas close to the Fukushima Daiichi nuclear plant to be set at up to 5 millisieverts, instead of 1 millisievert as planned by the government.

**The 5 millisievert limit would be more realistic for lifting evacuation advisories for residents** as the government's planned annual limit of 1 millisievert or less may not be met in some areas, said Shunichi Tanaka, a former acting chairman of the Japan Atomic Energy Commission.

The government plans to include the annual limit of 1 millisievert when it drafts a basic radioactive decontamination policy on Friday.

**"Past experience of decontamination has shown it would be very difficult to reduce annual radiation exposure to 1 millisievert,"** Tanaka told a regular meeting of the commission.

Tanaka has engaged in decontamination work in such areas as Iitate close to the nuclear plant, which released radioactive substances following explosions at reactor buildings after the March 11 earthquake and tsunami.

Last week, the government estimated annual radiation exposure of more than 100 millisieverts at 15 of 50 points located within a 20-kilometer radius of the plant. The highest estimate exceeded 500 millisieverts.

Tanaka also expressed doubt about the advisability of a Food Safety Commission recommendation that combined external and internal radiation exposure be limited to 100 millisieverts over a lifetime, saying it would be difficult for people to live in many areas of Fukushima Prefecture.

Tanaka noted that controlled storage sites may have to be designated in Fukushima Prefecture as **decontamination is expected to generate tens of millions of tons of radioactive waste including soil.**

(Mainichi Japan) August 24, 2011

## **Firms tied to mayor of Hokkaido town profited from local nuclear research center**



Apartment blocks in Horonobe, Hokkaido, owned by a company connected to the town's mayor and rented to a JAEA nuclear research facility. (Mainichi)

**HORONOBE, Hokkaido -- Two companies connected to the mayor here have been making some 40 million yen per year from a local nuclear research facility, it has been learned, sparking speculation that the facility holds undue influence over the leader of this northern town.**

The Japan Atomic Energy Agency (JAEA)'s Horonobe Underground Research Center began renting two apartment complexes for its workers in fiscal 2001 from the firm Horonobe Shoji, where Mayor Akira Miyamoto's son serves as president and the mayor himself is a board member. The research center has furthermore contracted local security firm **Hokusei**, run by three of the mayor's family and where Miyamoto also served on the board of directors until just after he was elected mayor in 2002, to do security at the facility.

Miyamoto has stated that the contracts are not legally improper and that the business relationship with the research center is not a problem. According to the mayor and the nuclear facility, Horonobe Shoji has been paid about 9.6 million yen in rent for the two apartment blocks per year since the first contract in 2001, when the mayor was a town council member. Information obtained through public finance disclosure regulations reveals that Miyamoto continues to receive income from Horonobe Shoji, but exact amounts were not provided.

Meanwhile, the relationship between the research center and the second firm, Hokusei, began in 2003 with the rental of another apartment building for center staff at 4.8 million yen per year, as well as the first security contract. From fiscal 2003 to 2005 Hokusei was paid 5 million yen annually for security

services at the nuclear facility. This has jumped to an annual income of 22 to 30 million yen after the introduction of competitive bidding in fiscal 2006, which Hokusei has won every year.

Regarding the apartments, Miyamoto has insisted there has been no wrongdoing, stating, "The local commerce and industry association received an inquiry from the underground research center saying it was short of housing for its workers. Several people and I worked together to take out loans and build housing. I have not been a part of the administration of either Horonobe Shoji or Hokusei since I became mayor."

The JAEA research center, meanwhile, insists that the limited tender contracts with the two firms were signed "because there was so little available to choose from," adding, "These contracts began before Mr. Miyamoto became mayor, so there is no problem."

Since construction of the research center began in 2003, Horonobe has received more than 100 million yen in subsidies for power-producing municipalities. According to town government calculations, the nuclear facility has poured some 500 million yen into the community in wages and work orders, of which the two firms connected to the mayor account for about 10 percent. In these years, Miyamoto conducted a public relations campaign to attract further research facilities to the town.

(Mainichi Japan) August 24, 2011

## Hokkaido town agonizes over permanent radioactive waste disposal, 'nuclear money'



High-level radioactive waste is the "nuclear garbage" left over in the form of spent fuel. Japan has still not determined a permanent disposal site for this waste, but back in the 1980s, Horonobe, a small town in Hokkaido, became the only municipality in Japan to offer to host a research center for the storage of radioactive waste. This June, the town once again wrangled over the problem of "nuclear plant money."

Construction plans for a storage center in Horonobe were abandoned due to opposition from local residents and surrounding communities, and the town, the prefecture of Hokkaido and business operators eventually signed an accord that banned the introduction of radioactive materials. Today,

Horonobe is the location of the "Horonobe Underground Research Center," where the Japan Atomic Energy Agency conducts research on disposal techniques.

At a municipal assembly session on June 16, Akira Miyamoto, mayor of Horonobe, unleashed controversy by saying that the matter of "documentary investigation" regarding the construction of a permanent disposal site that is being solicited by the Agency for Natural Resources and Energy of the Ministry of Economy, Trade and Industry is "an issue coming up for consideration."

In exchange for hosting the Underground Research Center, Horonobe receives more than 100 million yen annually, a subsidy stipulated by the so-called "Three Power Laws." Consenting to "documentary investigation" will entitle the town to an additional subsidy of 1 billion yen per annum, expandable to a maximum of 2 billion yen. This is a tempting offer for a town with a budget that barely exceeds 4 billion yen. The mayor retracted his statement after criticism from local residents, but said: "An associated facility that makes efficient use of the Underground Research Center might still be considered."

The above-mentioned accord forbids the selling or lend-leasing of the Underground Research Center to operators of permanent waste disposal businesses. Nevertheless, the Nuclear Waste Management Organization of Japan (NUMO), which conducts such operations, mentioned in a business report last year that "joint research at the Underground Research Center is being considered." (The remark was deleted after protests from civic groups.) The Agency for Natural Resources and Energy has also stated that the accord does not exempt Hokkaido from the possibility of documentary investigations.

The Underground Research Center held a meeting in July to explain the situation to local residents, who threw out questions like: "Can you assure us of the safety of a disposal site that has to last for 100,000 years, when they can't even contain the incident at Fukushima?" Yet both the national government and operators still show signs of wanting to proceed with permanent disposal operations.

Rokkasho, a village in Aomori Prefecture, is the location of a nuclear fuel reprocessing plant and also of a temporary storage facility for nuclear waste. Aomori Prefecture has exchanged a pledge with the government stipulating that "Aomori Prefecture will not be used as a permanent disposal site" and the village says it will insist that the promise be kept. However, with a large-scale nuclear facility already in place, feelings in Rokkasho are somewhat different from those in Horonobe.

One village assembly member said: "Lots of people are resigned to the idea, since they can't seem to find anywhere else to put it."

The temporary facility presently stores 1,457 vitrified rods of high-level nuclear waste. The storage building itself is of concrete, and a former high-ranking official of the municipal government comments: "If a disaster or a terrorist incident happens here, the damage will be incomparably worse than in Fukushima. Even for temporary storage, an underground facility is needed. If it's the best thing for our country, we're resigned to our village being the final disposal site."

Rokkasho went through a period of contention that split the village in two, but it decided to throw in its lot with national policy and accept the fuel reprocessing plant. Subsidies and property taxes have made the municipality so rich that it could afford to spend 2.3 billion yen in providing each of its 4,500 households with videophones. An official of Rokkasho's Commerce and Industry Association is angry about Prime Minister Naoto Kan's call to "shift away from nuclear power."

"Petrochemical complexes and the nuclear-powered ship Mutsu -- the government keeps holding up these wonderful rose-colored projects, and then letting them come to nothing. We've been led around by the nose. Now they're saying: No more nuclear recycling. In that case, maybe we'll just have to insist that they remove all the waste they've left here."

(Mainichi Japan) August 24, 2011

## **Plant workers' radiation exposure from water-treatment piping within limit**

Workers' exposure to radiation coming from piping in a water decontamination system at the Fukushima No. 1 Nuclear Power Plant was within the site's safety limits, the Tokyo Electric Power Co. (TEPCO) has announced.

According to TEPCO, the highest exposure a worker had was 3.47 millisieverts. The site's safety limit for workers' exposures is five millisieverts.

The radiation leak was found from piping in "Sally," a newly installed water decontamination system made by Toshiba. On the morning of Aug. 22, a high level of about three sieverts per hour was found while 23 workers were taking turns to replace a part of the system designed to absorb radioactive cesium.

"The clump (of cesium thought to have stuck to the piping where the high radiation levels were found) is thought to have been a few grams' worth, and we do not know why it stuck to the piping," said Junichi Matsumoto, deputy chief of TEPCO's nuclear power division.

TEPCO also revealed that a very small water leak had been found in equipment circulating and cooling the water for the No. 4 reactor unit's spent-fuel pool. The leak was discovered coming from a stainless steel pipe in the unit's waste-processing building, dripping about once every 30 seconds.

The concentration of radioactive material in the No. 4 reactor unit's spent-fuel pool is relatively low, at about 10 becquerels per liter. **A container was placed to catch the leak** and the circulation equipment is still running.

(Mainichi Japan) August 24, 2011

## **Panel cuts estimated release of radiogens from Fukushima plant**



In this Monday, Aug. 1, 2011 photo released by Tokyo Electric Power Co. on Tuesday, Aug. 2, a worker in protective gear measures radiation levels near a duct connected to a ventilation stack between the Unit 1 and Unit 2 reactors at the crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- The amount of radioactive substances emitted into the atmosphere from the crippled Fukushima Daiichi nuclear power plant is now estimated at 570,000 terabecquerels, down from an earlier estimate of 630,000 terabecquerels, the chairman of the Nuclear Safety Commission said Wednesday.

Given a large margin of error in an estimate of this kind, however, the figure "may change greatly" as more data on the nuclear accident become available, Haruki Madarame said.

The Nuclear Industrial and Safety Agency separately estimates the total amount of radioactive substances released into the air from the plant at 770,000 terabecquerels.

In the Chernobyl nuclear accident of 1986, an estimated 5.2 million terabecquerels of radioactive substances were discharged into the atmosphere.

The earlier estimate was revised based on new data on the release of radioactive substances in the four days from March 12, when the first of a series of explosions occurred following the earthquake and tsunami that hit the plant on March 11.

According to the recalculated estimate by the Japan Atomic Energy Agency, 130,000 terabecquerels of iodine 131 and 11,000 terabecquerels of cesium 137 were emitted into the air from the nuclear plant in Fukushima Prefecture from March 11 through April 5, Madarame said.

Wednesday, August 24, 2011 16:41 +0900 (JST)

## **Panel cuts estimated release of radiogens from Fukushima plant**



In this Monday, Aug. 1, 2011 photo released by Tokyo Electric Power Co. on Tuesday, Aug. 2, a worker in protective gear measures radiation levels near a duct connected to a ventilation stack between the Unit 1 and Unit 2 reactors at the crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- The amount of radioactive substances emitted into the atmosphere from the crippled Fukushima Daiichi nuclear power plant is now estimated at 570,000 terabecquerels, down from an earlier estimate of 630,000 terabecquerels, the chairman of the Nuclear Safety Commission said Wednesday.

Given a large margin of error in an estimate of this kind, however, the figure "may change greatly" as more data on the nuclear accident become available, Haruki Madarame said.

The Nuclear Industrial and Safety Agency separately estimates the total amount of radioactive substances released into the air from the plant at 770,000 terabecquerels.

In the Chernobyl nuclear accident of 1986, an estimated 5.2 million terabecquerels of radioactive substances were discharged into the atmosphere.

The earlier estimate was revised based on new data on the release of radioactive substances in the four days from March 12, when the first of a series of explosions occurred following the earthquake and tsunami that hit the plant on March 11.

According to the recalculated estimate by the Japan Atomic Energy Agency, 130,000 terabecquerels of iodine 131 and 11,000 terabecquerels of cesium 137 were emitted into the air from the nuclear plant in Fukushima Prefecture from March 11 through April 5, Madarame said.

(Mainichi Japan) August 25, 2011

## **Gov't to lift cattle shipment ban for Fukushima, Iwate, Tochigi**

TOKYO (Kyodo) -- The Japanese government will lift on Thursday its ban on cattle shipments from Fukushima, Iwate and Tochigi prefectures, a senior government official said.

The ban was imposed following the discovery of radioactive cesium-contaminated beef in the wake of the nuclear crisis at the Fukushima Daiichi plant triggered by the March earthquake and tsunami.

Nobutaka Tsutsui, senior farm vice minister, told reporters that Prime Minister Naoto Kan approved the lifting of the ban.

A similar ban in Miyagi Prefecture was lifted Friday.

Fukushima had been expected to see the ban lifted last Friday along with Miyagi, but the government decided against it as contaminated beef from there had been newly detected.

According to government sources, the ban is set to be lifted as measures to protect the livestock from radioactive contamination have been compiled.

(Mainichi Japan) August 25, 2011

## **Towns hosting Fukushima plant consider making nearby area a nuclear waste site**



In this June 4 file photo, a Toyota Prius sits abandoned on an earthquake-damaged road in Okuma, Fukushima Prefecture. The government has estimated radiation in the town's Koirino district for a yearly period ending in March 2012 at 508.1 millisieverts, around 500 times the safety limit for regular citizens regarding non-naturally occurring radiation. (Mainichi)

A selfless idea has begun to surface on the lips of people who lived near the Fukushima No. 1 Nuclear Power Plant.

"After the reactors are decommissioned, the national government would buy up the surrounding few kilometers of land and uses it as a final storage spot for high-level radioactive waste. We're ready to consider such an option," says Ken Otsuka, 61. He is a former town council member of Futaba, the town that holds the Number 5 and 6 reactors of the Fukushima No.1 plant.

A person standing next to such high-level radioactive waste would take a lethal dose in less than 20 seconds. It is said that this kind of waste needs to be stored away from humans for over 100,000 years

before it becomes safe. However, no such storage spot exists in Japan yet, nor has a location for creating one been chosen.



Otsuka continues: "If we are going to move away from nuclear energy, then we have to deal with the problem of high-level nuclear waste. It's hard, but I feel that having received the benefits of nuclear energy, we hold certain responsibilities."

Part of the reason for Otsuka's thinking is a feeling that revival of the town is hopeless. In July, he made a temporary return to his home and went to some fruit orchards he managed around seven to eight kilometers from the plant. The branches were laden with peaches and blueberries, none of which could be harvested.

"I've lost the will to continue farming there....," he says.

The situation is similar for the town of Okuma, which holds the No. 1 through 4 reactors. Seventy-year-old farmer Eiichi Tsukamoto, who is from the town, revealed, "At a meeting of town area representatives, there was discussion on if we can't return to our homes, then the only option is to have the government buy up the land and use it for storing high-level nuclear waste."

Although Okuma Mayor Toshitsuna Watanabe, 64, says, "Residents will not accept the town being turned into a nuclear waste site. I want the national government to take responsibility and find another location," he struggles to envision what the town's future will be.

Senior officials of the town say, "We want to allow elderly residents (for whom long-term radiation effects are less of an issue) to return within two or three years. But young residents won't be able to return for around 10 years." Without the power of young people, though, the town's recovery will be shrouded in doubt.

Mayor Watanabe does have a vision for the town: becoming a base for national research on low-level radiation exposure and decontamination technology. "I want to turn this awful experience into something positive," he says.

Regardless, both towns now face a reality very different from the prosperity they hoped for when they invited the Fukushima plant.

 [Click here for the original Japanese story](#)

(Mainichi Japan) August 25, 2011

## **Accident highlights close ties between local communities and nuke plants**

The accidents at the Fukushima No. 1 and No. 2 nuclear power plants have underscored how deeply local communities are linked to the plants and their operator Tokyo Electric Power Co. (TEPCO).

Eiichi Tsukamoto, a 70-year-old man from the Fukushima Prefecture town of Okuma, had been a subcontract nuclear plant worker until five years ago.

"I was really happy that I didn't have to work away from home any longer," he said.

After graduating from high school in 1959, he worked away from home every winter. When he was a construction worker for the metropolitan expressways being built at a fast pace ahead of the Tokyo Olympics in 1964, he shared a room with 20 people and received 800 yen a day.

Five years later, he took part in the construction of the nuclear power plants, and his life completely changed. His daily wage surged to 1,000 yen to 1,500 yen, and he could even work on farms on weekends. At one point, his annual income reached 16 million yen, including agricultural income.

"I don't have any grudge against TEPCO. My whole family wants to be of help to TEPCO," he said.

His two sons are subcontract workers for a plant maker and are involved in work to bring the disaster-crippled Fukushima No. 1 Nuclear Power Plant under control.

In Okuma and the neighboring towns of Futaba and Tomioka -- which are hosts of the Fukushima No.1 and No. 2 nuclear power plants -- TEPCO workers have also served as town assembly members while belonging to TEPCO's labor union.

One of them, Koji Igari, 59, a member of the Tomioka Town Assembly, works at the Fukushima No. 2 plant. His daily chores, however, are filled with work as a town assembly member.

"Because of the unique feature of nuclear power, I also work as a liaison between the administration (and TEPCO)," Igari said. He receives salaries both as an assembly member and as a TEPCO employee.

Following the revelation in 2002 that TEPCO had covered up trouble at its nuclear power plants, a liaison council was set up in 2003 involving TEPCO, the Economy, Trade and Industry Ministry's Nuclear and Industrial Safety Agency (NISA) and four municipalities hosting the Fukushima No. 1 and No. 2 nuclear power plants.

Each municipality selected five council members from its residents, and they held meetings regularly in an "attempt to ensure transparency," according to a TEPCO official. A newsletter was distributed to each household after every meeting.

Masazumi Ando, a 56-year-old council member from Tomioka, however, noticed that a tough question he had posed during a meeting was not carried in the newsletter several years ago. When he asked TEPCO about the matter, the utility admitted that the newsletter was edited by the firm.

"I got upset and told them, 'Isn't it a setup?' Since then, the town office has edited the newsletter," he said.

He says he felt there were too many council members with ties to TEPCO and authorities.

"Every time before a meeting started, members would have friendly chats, with one saying to the head of a nuclear plant, 'Thank you for treating me the other day,'" he said.

The council has not held a meeting since the nuclear accident in March.

[!\[\]\(f72549a246df5b0c7b4517a34b8fee1b\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) August 25, 2011

## **'Hot spot' areas found in Fukushima city worry 'goya' growers**

FUKUSHIMA -- A number of areas with comparatively high radiation levels, called "hot spots," have been found in the city of Fukushima in the wake of the accident at the Fukushima No. 1 Nuclear Power Plant, even though the prefectural capital is some 60 kilometers away from the plant.

One such area, the Onami district in the eastern part of the city of Fukushima, produces bitter gourds (goya) as a local specialty. Producers, however, are concerned about this year's shipment of goya.

The Onami district is next to Ryozenmachi in the Fukushima Prefectural city of Date, which was partially designated as a specially recommended evacuation location. In a prefectural survey in late July, high levels of radiation at 2.5 microsieverts or more per hour were detected at 37 out of 370 houses in Onami. At one of them, the radiation levels even measured 3 microsieverts per hour -- close to the 3.2 microsievert level set as a standard for special evacuation recommendations.

A local woman initiated goya growing in Onami in 1999. After her retirement from an insurance company, Hisako Kurihara, 76, was looking for some activities to attract women belonging to the local agricultural cooperative apart from Hula dance and other recreational activities.

One day, she saw goya at the agricultural cooperative and learned that growing goya does not require pesticide spraying because the plant is resistant to disease and pests. Kurihara proposed that members of the female department of the agricultural cooperative grow goya. They eventually started growing goya in their respective fields.

Since a distributor they buy goya seedlings from was affected by the nuclear accident, goya planting was delayed by two months this year. Furthermore, since some women gave up on growing goya out of concerns for harmful rumors, this year's shipment volume has plunged to a half that of a year earlier. Even though the amount of radioactive materials detected in their goya was less than about 1/30 of the government-set provisional safety limit, no supermarkets have accepted their products.

After her husband died in January this year, goya has been a source of emotional support for Kurihara whenever she distributed her products to her acquaintances.

"Goya is one of the only few vegetables that women at our age can grow without hard physical labor. If we evacuate here and leave our fields unattended, we would no longer be able to grow goya," another female grower said.

After the "hot spots" issue surfaced in May, the central government designated some households in Date as specially recommended evacuation spots on June 30. Since then, the number of such locations has been on the increase, with a number of areas in the cities of Soma and Fukushima now under consideration for designation.

"While the designation for emergency evacuation preparation zones is to be lifted, the number of special recommendation evacuation spots has been on the rise. We can't draw a road map for recovery," lamented a senior Fukushima Prefectural Government official.

So far, households where accumulated radiation exposure doses were estimated to reach 20 millisieverts a year and those with babies, infants and pregnant women near such households have been designated as specially recommended evacuation spots. Since designated households will be compensated by Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima No. 1 Nuclear Power Plant, many households -- mainly those with children -- call for their homes to be designated. There are, meanwhile, residents who don't welcome such a move, saying the designation would adversely affect the image or the liveliness of their towns.

The fact that local municipalities and private organizations have been conducting more meticulous radiation surveys have also contributed to the rise in the number of hot spots. Highly radioactive spots were newly found in the Fukushima Prefecture city of Nihonmatsu and other areas in August. More than 5 1/2 months after the nuclear accident, fear of radiation has been steadily growing among Fukushima Prefecture residents.

(Mainichi Japan) August 25, 2011

## **Japan to seek to reduce children's radiation dose by 60% in 2 yrs**

TOKYO (Kyodo) -- Japan will seek to halve the amount of radiation in residential areas around the crisis-hit Fukushima Daiichi nuclear power plant and cut children's daily radiation dose by 60 percent over the next two years, a document on radiation decontamination policy showed Wednesday.

The policy is to be endorsed Friday by a government task force dealing with the nuclear crisis triggered by the devastating March 11 earthquake and ensuing tsunami.

The document also showed that the state will take responsibility for securing places to dispose of contaminated soil, while acknowledging the need to temporarily keep it in local areas for some time.

To realize the goals set in the emergency policy, the government will lead decontamination activities to scale down areas where radiation exposure is expected to top 20 millisieverts a year, such as the 20-kilometer radius of the plant designated as a no-entry zone, it said.

If there is a request, local governments can clean up the contamination based on the premise that safety is assured, receiving support from the state, according to the text.

Efforts to contain the nuclear crisis are showing some progress, with a new system to cool the crippled nuclear reactors activated at the Fukushima plant in northeastern Japan.

The government and plant operator Tokyo Electric Power Co. have set next January as a target deadline for completing what it calls the "step 2" phase of achieving a cold shutdown of the plant.

(Mainichi Japan) August 25, 2011

## **Gov't radiation decontamination team begins operations at Fukushima hotspots**



A member of a government decontamination team checks radiation levels at a playground in Date, Fukushima Prefecture, on Aug. 24. (Mainichi)

A team formed by the government to start decontaminating areas of Fukushima Prefecture where radioactive materials have been scattered by the disaster at the Fukushima No. 1 Nuclear Power Plant began operations on Aug. 24.

The team is comprised of officials of the Environment Ministry, the Cabinet Office and the Japan Atomic Energy Agency (JAEA). It will conduct on-site tests in places with comparatively high radiation emissions, devise efficient methods for bringing the emissions down, and provide local governments with technical advice.

"The nuclear crisis has calmed down somewhat," state minister for the nuclear disaster Goshi Hosono said at the team's opening ceremony in the city of Fukushima. "But we haven't yet moved to deal with

the radioactive contamination problem. The future of Fukushima Prefecture hangs on decontamination efforts."

After the ceremony, Hosono headed to a radiation hotspot recommended for evacuation in the city of Date to inspect radiation testing that had begun the previous day.

"It won't likely take a long time before the government begins full-scale decontamination operations," Hosono told reporters. "I'd like to expand the operations at once after establishing effective methods."

A 61-year-old resident of the hotspot, meanwhile, said, "I'd really like to keep living in my house, so I hope they make quick progress with the decontamination."

 [Click here for the original Japanese story](#)

(Mainichi Japan) August 25, 2011

(Mainichi Japan) August 25, 2011

## **Gov't to lift cattle shipment ban for Fukushima, Iwate, Tochigi**

TOKYO (Kyodo) -- The Japanese government will lift on Thursday its ban on cattle shipments from Fukushima, Iwate and Tochigi prefectures, a senior government official said.

The ban was imposed following the discovery of radioactive cesium-contaminated beef in the wake of the nuclear crisis at the Fukushima Daiichi plant triggered by the March earthquake and tsunami.

Nobutaka Tsutsui, senior farm vice minister, told reporters that Prime Minister Naoto Kan approved the lifting of the ban.

A similar ban in Miyagi Prefecture was lifted Friday.

Fukushima had been expected to see the ban lifted last Friday along with Miyagi, but the government decided against it as contaminated beef from there had been newly detected.

According to government sources, the ban is set to be lifted as measures to protect the livestock from radioactive contamination have been compiled.

(Mainichi Japan) August 25, 2011

## **Virginia nuclear power plant on alert**

Tuesday's magnitude-5.8 earthquake in the US state of Virginia has cut electricity to a nuclear power plant, prompting it to be placed on alert status.

The **two-reactor North Anna Power Station**, located about 24 kilometers from the quake's epicenter, shut down automatically after the power loss.

The alert status is the second-lowest of four emergency classifications set by the US Nuclear Regulatory Commission.

The watchdog said the shutdown is safe and poses no risk, as **power is being provided by three of four emergency diesel generators and the plant's cooling system is operating properly**.

The commission continues to monitor the situation as **one of the generators stopped working due to a coolant leak**.

The US East Coast rarely has earthquakes. Tuesday's quake was the first with a magnitude of more than 5.0 in Virginia since 1897.

Wednesday, August 24, 2011 16:41 +0900 (JST)

## **Towns hosting Fukushima plant consider making nearby area a nuclear waste site**



In this June 4 file photo, a Toyota Prius sits abandoned on an earthquake-damaged road in Okuma, Fukushima Prefecture. The government has estimated radiation in the town's Koirino district for a yearly period ending in March 2012 at 508.1 millisieverts, around 500 times the safety limit for regular citizens regarding non-naturally occurring radiation. (Mainichi)

A selfless idea has begun to surface on the lips of people who lived near the Fukushima No. 1 Nuclear Power Plant.

"After the reactors are decommissioned, the national government would buy up the surrounding few kilometers of land and uses it as a final storage spot for high-level radioactive waste. We're ready to consider such an option," says Ken Otsuka, 61. He is a former town council member of Futaba, the town that holds the Number 5 and 6 reactors of the Fukushima No.1 plant.

A person standing next to such high-level radioactive waste would take a lethal dose in less than 20 seconds. It is said that this kind of waste needs to be stored away from humans for over 100,000 years

before it becomes safe. However, no such storage spot exists in Japan yet, nor has a location for creating one been chosen.



Otsuka continues: "If we are going to move away from nuclear energy, then we have to deal with the problem of high-level nuclear waste. It's hard, but I feel that having received the benefits of nuclear energy, we hold certain responsibilities."

Part of the reason for Otsuka's thinking is a feeling that revival of the town is hopeless. In July, he made a temporary return to his home and went to some fruit orchards he managed around seven to eight kilometers from the plant. The branches were laden with peaches and blueberries, none of which could be harvested.

"I've lost the will to continue farming there....," he says.

The situation is similar for the town of Okuma, which holds the No. 1 through 4 reactors. Seventy-year-old farmer Eiichi Tsukamoto, who is from the town, revealed, "At a meeting of town area representatives, there was discussion on if we can't return to our homes, then the only option is to have the government buy up the land and use it for storing high-level nuclear waste."

Although Okuma Mayor Toshitsuna Watanabe, 64, says, "Residents will not accept the town being turned into a nuclear waste site. I want the national government to take responsibility and find another location," he struggles to envision what the town's future will be.

Senior officials of the town say, "We want to allow elderly residents (for whom long-term radiation effects are less of an issue) to return within two or three years. But young residents won't be able to return for around 10 years." Without the power of young people, though, the town's recovery will be shrouded in doubt.

Mayor Watanabe does have a vision for the town: becoming a base for national research on low-level radiation exposure and decontamination technology. "I want to turn this awful experience into something positive," he says.

Regardless, both towns now face a reality very different from the prosperity they hoped for when they invited the Fukushima plant.

 [Click here for the original Japanese story](#)

(Mainichi Japan) August 25, 2011

## **Accident highlights close ties between local communities and nuke plants**

The accidents at the Fukushima No. 1 and No. 2 nuclear power plants have underscored how deeply local communities are linked to the plants and their operator Tokyo Electric Power Co. (TEPCO).

Eiichi Tsukamoto, a 70-year-old man from the Fukushima Prefecture town of Okuma, had been a subcontract nuclear plant worker until five years ago.

"I was really happy that I didn't have to work away from home any longer," he said.

After graduating from high school in 1959, he worked away from home every winter. When he was a construction worker for the metropolitan expressways being built at a fast pace ahead of the Tokyo Olympics in 1964, he shared a room with 20 people and received 800 yen a day.

Five years later, he took part in the construction of the nuclear power plants, and his life completely changed. His daily wage surged to 1,000 yen to 1,500 yen, and he could even work on farms on weekends. At one point, his annual income reached 16 million yen, including agricultural income.

"I don't have any grudge against TEPCO. My whole family wants to be of help to TEPCO," he said.

His two sons are subcontract workers for a plant maker and are involved in work to bring the disaster-crippled Fukushima No. 1 Nuclear Power Plant under control.

In Okuma and the neighboring towns of Futaba and Tomioka -- which are hosts of the Fukushima No.1 and No. 2 nuclear power plants -- TEPCO workers have also served as town assembly members while belonging to TEPCO's labor union.

One of them, Koji Igari, 59, a member of the Tomioka Town Assembly, works at the Fukushima No. 2 plant. His daily chores, however, are filled with work as a town assembly member.

"Because of the unique feature of nuclear power, I also work as a liaison between the administration (and TEPCO)," Igari said. He receives salaries both as an assembly member and as a TEPCO employee.

Following the revelation in 2002 that TEPCO had covered up trouble at its nuclear power plants, a liaison council was set up in 2003 involving TEPCO, the Economy, Trade and Industry Ministry's Nuclear and Industrial Safety Agency (NISA) and four municipalities hosting the Fukushima No. 1 and No. 2 nuclear power plants.

Each municipality selected five council members from its residents, and they held meetings regularly in an "attempt to ensure transparency," according to a TEPCO official. A newsletter was distributed to each household after every meeting.

Masazumi Ando, a 56-year-old council member from Tomioka, however, noticed that a tough question he had posed during a meeting was not carried in the newsletter several years ago. When he asked TEPCO about the matter, the utility admitted that the newsletter was edited by the firm.

"I got upset and told them, 'Isn't it a setup?' Since then, the town office has edited the newsletter," he said.

He says he felt there were too many council members with ties to TEPCO and authorities.

"Every time before a meeting started, members would have friendly chats, with one saying to the head of a nuclear plant, 'Thank you for treating me the other day,'" he said.

The council has not held a meeting since the nuclear accident in March.

[!\[\]\(39965e4d8840aea49bd85bbf5b729395\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) August 25, 2011

## **'Hot spot' areas found in Fukushima city worry 'goya' growers**

FUKUSHIMA -- A number of areas with comparatively high radiation levels, called "hot spots," have been found in the city of Fukushima in the wake of the accident at the Fukushima No. 1 Nuclear Power Plant, even though the prefectural capital is some 60 kilometers away from the plant.

One such area, the Onami district in the eastern part of the city of Fukushima, produces bitter gourds (goya) as a local specialty. Producers, however, are concerned about this year's shipment of goya.

The Onami district is next to Ryozenmachi in the Fukushima Prefectural city of Date, which was partially designated as a specially recommended evacuation location. In a prefectural survey in late July, high levels of radiation at 2.5 microsieverts or more per hour were detected at 37 out of 370 houses in Onami. At one of them, the radiation levels even measured 3 microsieverts per hour -- close to the 3.2 microsievert level set as a standard for special evacuation recommendations.

A local woman initiated goya growing in Onami in 1999. After her retirement from an insurance company, Hisako Kurihara, 76, was looking for some activities to attract women belonging to the local agricultural cooperative apart from Hula dance and other recreational activities.

One day, she saw goya at the agricultural cooperative and learned that growing goya does not require pesticide spraying because the plant is resistant to disease and pests. Kurihara proposed that members of the female department of the agricultural cooperative grow goya. They eventually started growing goya in their respective fields.

Since a distributor they buy goya seedlings from was affected by the nuclear accident, goya planting was delayed by two months this year. Furthermore, since some women gave up on growing goya out of concerns for harmful rumors, this year's shipment volume has plunged to a half that of a year earlier. Even though the amount of radioactive materials detected in their goya was less than about 1/30 of the government-set provisional safety limit, no supermarkets have accepted their products.

After her husband died in January this year, goya has been a source of emotional support for Kurihara whenever she distributed her products to her acquaintances.

"Goya is one of the only few vegetables that women at our age can grow without hard physical labor. If we evacuate here and leave our fields unattended, we would no longer be able to grow goya," another female grower said.

After the "hot spots" issue surfaced in May, the central government designated some households in Date as specially recommended evacuation spots on June 30. Since then, the number of such locations has been on the increase, with a number of areas in the cities of Soma and Fukushima now under consideration for designation.

"While the designation for emergency evacuation preparation zones is to be lifted, the number of special recommendation evacuation spots has been on the rise. We can't draw a road map for recovery," lamented a senior Fukushima Prefectural Government official.

So far, households where accumulated radiation exposure doses were estimated to reach 20 millisieverts a year and those with babies, infants and pregnant women near such households have been designated as specially recommended evacuation spots. Since designated households will be compensated by Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima No. 1 Nuclear Power Plant, many households -- mainly those with children -- call for their homes to be designated. There are, meanwhile, residents who don't welcome such a move, saying the designation would adversely affect the image or the liveliness of their towns.

The fact that local municipalities and private organizations have been conducting more meticulous radiation surveys have also contributed to the rise in the number of hot spots. Highly radioactive spots were newly found in the Fukushima Prefecture city of Nihonmatsu and other areas in August. More than 5 1/2 months after the nuclear accident, fear of radiation has been steadily growing among Fukushima Prefecture residents.

(Mainichi Japan) August 25, 2011

## **Japan to seek to reduce children's radiation dose by 60% in 2 yrs**

TOKYO (Kyodo) -- Japan will seek to halve the amount of radiation in residential areas around the crisis-hit Fukushima Daiichi nuclear power plant and cut children's daily radiation dose by 60 percent over the next two years, a document on radiation decontamination policy showed Wednesday.

The policy is to be endorsed Friday by a government task force dealing with the nuclear crisis triggered by the devastating March 11 earthquake and ensuing tsunami.

The document also showed that the state will take responsibility for securing places to dispose of contaminated soil, while acknowledging the need to temporarily keep it in local areas for some time.

To realize the goals set in the emergency policy, the government will lead decontamination activities to scale down areas where radiation exposure is expected to top 20 millisieverts a year, such as the 20-kilometer radius of the plant designated as a no-entry zone, it said.

If there is a request, local governments can clean up the contamination based on the premise that safety is assured, receiving support from the state, according to the text.

Efforts to contain the nuclear crisis are showing some progress, with a new system to cool the crippled nuclear reactors activated at the Fukushima plant in northeastern Japan.

The government and plant operator Tokyo Electric Power Co. have set next January as a target deadline for completing what it calls the "step 2" phase of achieving a cold shutdown of the plant.

(Mainichi Japan) August 25, 2011

## **Residents make first temporary visits to homes within 3 km of Fukushima plant**



Residents dressed in clothing to protect them from radiation prepare to board a bus on Aug. 26 ahead of temporary visits to their homes within three kilometers of the crisis-hit Fukushima No. 1 Nuclear Power Plant. (Mainichi)

Residents from areas within a three-kilometer radius of the crisis-hit Fukushima No. 1 Nuclear Power Plant began returning to their homes for brief visits on Aug. 26, for the first time since the onset of the nuclear disaster.

A total of 117 people from 64 households in the Fukushima Prefecture town of Futaba made visits to their homes on Aug 26. In the town of Okuma, only residents of the rest home Sunlight Okuma, their families and home staff were eligible to return, and 35 people applied to do so.

Participants gathered at a gymnasium in Hirono, Fukushima Prefecture, on Aug. 26, and traveled to the restricted area by bus.

"I'm happy that we can temporarily return to our homes, but if this is going to be a place we can never come back to, I want the government to clearly tell us that," said 38-year-old Michiyo Suzuki, whose home is in Futaba.

Government officials say there are about 1,300 people from 400 households whose homes are located within three kilometers of the plant. A government survey on Aug. 24 found that the highest level of radiation was in Okuma, measuring 84.7 microsieverts per hour.

In the Hosoya district of Futaba, to which some residents temporarily returned, the radiation level measured 5 to 6 microsieverts per hour, while at the rest home in Okuma the level was 25 microsieverts per hour. Some residents of Okuma whose homes are within three kilometers of the plant will be allowed to make temporarily visits on Sept. 1.

(Mainichi Japan) August 26, 2011

## **Hokkaido Electric pressed staff to support 'pluthermal' nuke plan at symposium: JCP**

SAPPORO -- The local branch of the Japanese Communist Party (JCP) is accusing Hokkaido Electric Power Co. of pressing employees to stage remarks during a 2008 symposium expressing support for a so-called "pluthermal" program at its nuclear power plant.

The revelations come as Kyushu Electric Power Co. has come under fire for asking workers and subsidiaries to make comments during a TV program expressing support for the planned resumption of operations at two reactors at its Genkai Nuclear Power Plant.

"The move was vicious and despicable, and betrayed the trust of Hokkaido residents," the JCP Hokkaido chapter said.

Hokkaido Electric's public relations division said it will conduct an in-house probe into the allegations.

Akira Terayama, director for crisis management at the Hokkaido Prefectural Government, also said the prefectural government is investigating the accusation.

The liaison division of Hokkaido Electric's Tomari Nuclear Power Plant sent an e-mail to 21 of the firm's divisions, urging employees to express support for the program at the plant's No. 3 reactor in the village of Tomari during a symposium that the prefectural government held in October 2008, the chapter said.

"In order to ensure that the program progresses smoothly, we hope that as many of you as possible will attend the symposium and express opinions in favor of the pluthermal program," the e-mail partly reads.

A total of 469 people attended the symposium, held in the neighboring town of Iwanai. An expert delivered a keynote speech on the program and a panel discussion was held during the event.

During a following question-and-answer session, nine of the participants asked questions, but most of them voiced opposition to or raised concerns about the program, while only a few expressed support, according to Tsutomu Ota, a JCP member of the Iwanai Municipal Assembly.

However, over half of the 237 people who responded to the organizer's survey following the symposium said the event largely cleared up their doubts about the program.

In the poll, 51 percent responded they felt that questions about the program were sufficiently discussed during the symposium, and 55 percent replied it helped deepen their understanding of the pluthermal program.

"The survey results were quite different from the atmosphere at the symposium, so I felt it was strange," assemblyman Ota said.

In March 2009, Gov. Harumi Takahashi announced that she had approved the program.

In response to an Economy, Trade and Industry Ministry probe conducted following the Kyushu Electric scandal, Hokkaido Electric claimed that there had been no problems involving another symposium that the national government held two months before the prefectural government's symposium.

Pluthermal refers to the use of plutonium-uranium mixed oxide fuel in light water nuclear reactors.

(Mainichi Japan) August 26, 2011

## **Gov't nuclear watchdog criticizes TEPCO for delayed release of tsunami estimate**

A government nuclear watchdog has criticized the Tokyo Electric Power Co. (TEPCO) for not releasing an estimate it put together years ago that a tsunami over 10 meters high could hit the Fukushima No. 1 Nuclear Power Plant.

The estimate was put together in 2008 but not reported until March 7 this year -- only four days before the Great East Japan Earthquake.

"Even if it was only an estimate, TEPCO should have released the data earlier and explained it before experts because it far exceeded the previous estimate (that a tsunami of up to 5.7 meters could hit the No. 1 through No. 4 reactors)," said Yoshinori Moriyama, an official of the watchdog, the Nuclear and Industrial Safety Agency (NISA), during a press conference on Aug. 25.

TEPCO, however, refuted the criticism.

"We think that rather than relying on TEPCO to make its own estimations and evaluate the safety of the nuclear power plant, it was more rational to have the Japan Society of Civil Engineers (JSCE, which

decides tsunami-prevention measures for nuclear plants) make an evaluation, and TEPCO's report (to NISA) should come after that," said Junichi Matsumoto, deputy chief of TEPCO's nuclear power division.

Furthermore, while NISA maintains that its official in charge of earthquake-proof safety screening told TEPCO on March 7 after receiving the report that it needed to "take measures to safeguard the plant's equipment," TEPCO's Matsumoto denied this, saying, "That is not true."

TEPCO also revealed on Aug. 25 that the 2008 tsunami estimate was known about by its management. It says that in October 2008 it requested to the JSCE that it revise its guidelines for evaluating nuclear plants' tsunami-readiness, and that request was reported to Sakae Muto, then vice chief of TEPCO's nuclear power division. Muto later became TEPCO vice president and currently serves as an advisor to the utility.

(Mainichi Japan) August 26, 2011

## **NSC planning to set evacuation zones around nuclear power plants in advance**

A working group in the Nuclear Safety Commission of Japan (NSC) is planning to set evacuation zones around nuclear power plants in case of a serious accident, NSC sources said.

**Residents will be asked to evacuate from areas near nuclear power stations designated as preparatory action zones (PAZs) immediately if a serious accident occurs at a plant.**

The panel is expected to set the specific areas of such zones by October, but it will basically follow **International Atomic Energy Agency guidelines, which stipulate that areas from three to five kilometers from nuclear plants should be designated as PAZs.**

PAZs will likely be incorporated in regional disaster prevention plans that local governments that host nuclear power stations will work out.

Currently, local governments designate areas within a radius of eight to 10 kilometers from atomic power stations as emergency planning zones -- where they will require residents to stay indoors and take other safety measures if a serious nuclear accident occurs. If a serious accident actually takes place, the local government concerned will be required to set evacuation zones while taking into account the anticipated spread of radioactive substances, such as those by the System for Prediction of Environmental Emergency Dose Information (SPEEDI).

However, local governments will require residents in PAZ areas to promptly evacuate from their neighborhoods if a serious nuclear accident occurs.

(Mainichi Japan) August 27, 2011

## **Local leaders steamed at government's 'buck-passing' radiation decontamination plan**

Local leaders in areas contaminated by the disaster at the Fukushima No. 1 Nuclear Power Plant are **angry and disappointed at the central government's decontamination plan, which dumps much of the responsibility for the clean-up on municipalities.**

The central government's decontamination plan, finalized on Aug. 26, leaves clean-up of any sites emitting 20 millisieverts of radiation annually or less to municipal governments, while also calling on those same governments to create temporary storage areas for contaminated materials. Most of the sites with that level of radiation are in the emergency evacuation standby zone 20-30 kilometers from the stricken nuclear plant.

"It's very strange that the government would leave decontamination up to municipalities while at the same time seeking to bring down radiation emissions to 1 millisievert annually or less," said Motohoshi Yamada, mayor of Hirono, Fukushima Prefecture. Yamada apparently lambasted a visiting central government official on Aug. 25 over the plan. Hirono lies within the evacuation standby zone, though some 90 percent of the town's population has already fled.

"Our town's recovery will be delayed if we wait for the government's plan," Yamada continued, referring to the long list of tasks the municipality must undertake if it must tackle decontamination on its own, including finding a tainted material storage site and gaining support for it from local residents.

"There is just a mountain of issues to get through," the Hirono Municipal Government's disaster response headquarters commented.

Meanwhile, Mayor Katsunobu Sakurai of the city of Minamisoma -- a large part of which lies in the evacuation standby zone -- told the Mainichi, "I'd like to call on the government repeatedly to take its share of the responsibility for decontamination, including funding."

Minamisoma in fact already has an independent decontamination plan, which one senior city official said was put in place because "the central government and (plant operator) Tokyo Electric Power Co., which are supposed to take such action, aren't moving at all. I have no idea what they're thinking."

## **Hot-spot cleanups hampered by public resistance to local disposal sites**

FUKUSHIMA -- Municipalities looking to clean up radiation "hot spots" caused by the disaster at the Fukushima No. 1 Nuclear Power plant are facing stiff local resident opposition as they search for temporary disposal sites for tainted materials.

Some 3,800 residents of Fukushima city's Watari district, site of a radioactive hot spot, carried out a major decontamination operation in late July, scraping out ditches and removing tainted topsoil. The city designated a site in the mountains as a temporary disposal area and trucked in the some 6,000 bags of contaminated material produced in the Watari operation. The disposal, however, was met with fierce opposition from locals around the mountain site.

"If the stuff had come from a local decontamination operation, then I'd just have to live with it. But I just can't agree with bringing it in from someplace else," said one 50-year-old housewife who lives only a few hundred meters from the disposal area. Aware of the local opposition, the city government has now begun looking for an alternate site.

Meanwhile, a Fukushima section of the Ministry of Land, Infrastructure, Transport and Tourism also hit a wall of public resistance when it tried to lay grass cut from the banks of a river in the city of Nihonmatsu on the river's bed. Previously, the grass had been used as animal fodder and compost. Since the grass has been contaminated by the nuclear disaster, however, the land ministry's Fukushima Office of Rivers and National Highways decided to lay the cuttings along the riverbed, at least temporarily. The public backlash against the plan began after a local resident saw the operation in progress.

"I've become very sensitive to the radiation issue so this is giving me a lot of stress," said one 44-year-old local resident. "Of course I don't want those cuttings to be left near my family."

(Mainichi Japan) August 27, 2011

## **No quick way to remove radioactive substances from soil: experts**

Experts say there is no technology or machinery available that can quickly remove radioactive substances from soil. Steady and repeated efforts are required to gradually reduce radioactive substances by removing the surface from soil, mowing down grass, or scraping the matter off with water.

Under the government's basic scheme, radioactive substances can be removed from roads, roofs and playground equipment by rinsing with water in areas with radiation measuring less than 20 millisieverts per year.

But radioactive substances would spread if they seeped into soil or rivers. In the case of the Chernobyl nuclear accident in 1986, when radioactive substances on buildings were washed away, the levels of radiation where water reached rose several fold.

It is also difficult to secure places for radioactive waste disposal. According to an experiment conducted by the Date Municipal Government in Fukushima Prefecture, 35 metric tons of contaminated soil was produced when only soil around three houses was removed. The half-life of cesium-137 is 30 years, and therefore it needs to be stored and maintained for a long time.

Meanwhile, the government is responsible for removing radioactive substances in areas with radiation measuring 20 millisieverts or more. The cumulative level of radiation in Koirino in the Fukushima Prefecture town of Okuma is estimated to be 508.1 millisieverts per year. "It is difficult even to secure workers," said an official of the Japan Atomic Energy Agency, which has been helping with decontamination efforts. Even if the government-imposed target of reducing radiation levels by half in two years is achieved, it is far cry from 20 millisieverts -- the estimated level of radiation that is safe for local residents to return home.

(Mainichi Japan) August 27, 2011

## **Kan: Central storage plant planned in Fukushima**

Prime Minister Naoto Kan has informed the governor of Fukushima Prefecture of a plan to build a **central storage plant to temporarily manage nuclear waste**, including contaminated soil.

At a meeting in Fukushima City on Saturday, Governor Yuhei Sato responded that he was troubled to hear about such a plan so suddenly.

He asked the government to take responsible action, as the plan would be extremely serious for the prefecture and relevant municipalities that have suffered greatly from the nuclear accident.

After the meeting, Kan told reporters that the government has no intention of making the plant a final facility.

He said he needed to make the request in order to pave the way to begin carrying out decontamination.

Sunday, August 28, 2011 02:15 +0900 (JST)

## **Experts split on how to decommission Fukushima nuclear plant**

What is actually going to take place at the Fukushima No. 1 Nuclear Power Plant, where word is that the four reactors that were crippled in the Great East Japan Earthquake and tsunami will eventually be decommissioned?

The Ministry of Economy, Trade and Industry's Nuclear and Industrial Safety Agency (NISA) defines "decommissioning" as the process of removing spent fuel from reactors and dismantling all facilities. Ultimately, the site of a decommissioned reactor is meant to be reverted into a vacant lot.

In 1996, the then Japan Atomic Energy Research Institute (JAERI) -- now the Japan Atomic Energy Agency (JAEA) -- finished decommissioning its Japan Power Demonstration Reactor. The decommissioning process of the Tokai Nuclear Power Plant in the Ibaraki Prefecture village of Tokai began in 1998 and is set to end in fiscal 2020, while the No. 1 and No. 2 nuclear reactors at the Hamaoka Nuclear Power Plant in the Shizuoka Prefecture city of Omaezaki are slated for decommissioning by fiscal 2036. Around the world, only around 15 nuclear reactors have thus far been dismantled.

The standard decommissioning process entails six major steps: **1. Remove spent fuel rods, 2. Remove radioactive materials that have become affixed to reactor pipes and containers, 3. Wait for radiation levels to go down with time, 4. Dismantle reactors and other internal vessels and pipes, 5. Dismantle the reactor buildings, and 6. Make the site into a vacant lot.**

"Cleaning," "waiting," and "dismantling" are the three key actions in this process. Needless to say, this all needs to be done **while simultaneously containing radioactive materials**.

In the case of the Tokai Nuclear Power Plant, the first commercial plant to undergo decommissioning, spent fuel was removed over a span of three years beginning in 1998, and was transported to Britain for reprocessing. Dismantling of the facilities began in 2001, with current efforts being made toward the dismantling of heat exchangers; workers have not yet begun to take the reactor itself apart. The entire process is expected to be an 88.5-billion-yen project involving 563,000 people.

Hitachi Ltd., which manufactures nuclear reactors, says that it "generally takes **about 30 years**" to decommission a reactor. The Hamaoka Nuclear Power Plant's No. 1 and No. 2 reactors operated by Chubu Electric Power Co. are also expected to take about 30 years before they are decommissioned.

**In the case of the Fukushima No. 1 Nuclear Power Plant, meanwhile, the biggest challenge lies in how to remove the fuel**, says Tadashi Inoue, a research advisor at the Central Research Institute of Electric Power Industry (CRIEPI), a foundation that conducts research on energy and environmental issues in relation to the electrical power industry. Inoue has long been engaged in research concerning nuclear fuel and reprocessing, and as a member of a special committee in the Cabinet Office's Japan Atomic Energy Commission (JAEC), is deliberating mid- to long-term technological milestones for the stricken Fukushima plant.

"But," Inoue continues, **"we must deal with rubble contaminated with radioactive materials that were scattered in the hydrogen blasts and treat the radiation-tainted water being used to cool nuclear fuel before we can go on to fuel removal."**

Currently, the Fukushima plant's operator, Tokyo Electric Power Co. (TEPCO), is desperately trying to treat the contaminated water. Huge challenges remain with regards to the contaminated rubble, as radiation levels of over 10 sieverts per hour were found near outdoor pipes on the plant grounds just the other day. Exposure to such high levels would mean death for most people.

**Each step in the process toward decommissioning is complicated and requires great numbers of people. It's a race against time because the maximum amount of radiation that workers can be exposed to is 250 millisieverts.**

Prefacing the following as "a personal opinion," Inoue says: "Building a car that can protect the people inside as much as possible from radioactive materials, and attaching an industrial robotic arm to the car that can be manipulated by those people could be one way to go about it."

**Two types of fuel removal** must take place. One is to take out the spent fuel in the containment pools, and the other is to remove the melted fuel from the reactor cores. Because the radiation levels of the water in the spent fuel pools have not shown any significant changes from before the crisis, it is believed that the spent fuel has not suffered much damage. However, removing it will require repairing and reinstalling cranes to hoist the fuel rods out.

The breached reactor core is a bigger problem. It is believed that raising water levels inside the reactor has been difficult because of a hole in the bottom of the vessel. It will be necessary to plug the hole, and continue filling the vessel with water while extracting the melted fuel. How to fill the vessel with water is still being debated. If the reactor can be filled with water, steps taken after the 1979 Three Mile

Island nuclear accident can serve as a guide because in that case, in which approximately 50 percent of the core had melted, workers were able to fill the reactor with water and remove the fuel within.

Inoue predicts that removal of spent fuel from the containment pools will begin about five years after the crisis, and about 10 years in the case of melted fuel from the reactor core. Work on the four reactors at the Fukushima plant will probably take several years.

"Unless we look at the actual reactors and take and analyze fuel samples, we can't know for sure," Inoue adds. Plus, even if workers succeed in removing the fuel, reprocessing it is an even more difficult task. **A review of processing methods and storage sites, moreover, has yet to take place.**

**The Federation of Electric Power Companies of Japan (FEPC) calculated in 2007 that decommissioning one nuclear reactor costs approximately 66 billion yen. Inoue suggests, however, that the cost of decommissioning reactors after a disaster of this magnitude may be much higher.**

Meanwhile, at least one expert says he doesn't believe that workers will be able to remove the melted fuel from the crippled plant.

"If there's 10 sieverts per hour of radiation outside, then the levels must be much higher closer to the reactor core," says Tadahiro Katsuta, an associate professor at Meiji University and an expert in reactor engineering and reactor policy who was once a member of an anti-nuclear non-profit organization called Citizens' Nuclear Information Center (CNIC). "The fuel has melted, and we haven't been able to cool it consistently. If work is begun five or 10 years from now when radiation levels have not yet sufficiently gone down, workers' health could be at serious risk."

Katsuta predicts that **it will probably take at least 10 years just to determine whether it is possible to remove the fuel. He adds that it could very well take 50 years before the task of dismantling the reactor and other facilities is completed.**

What Katsuta has in mind is a Chernobyl-style concrete sarcophagus, which would entail cloaking the melted tomb with massive amounts of concrete. "How could we simultaneously dismantle four reactors that have been contaminated to the extent that they have by radioactive materials?" asks Katsuta. "Japan has little experience in decommissioning reactors, and this case is quite different from standard decommissioning processes. It's not realistic to think we can revert the site back to a vacant lot. I think we should be considering options such as entombing the site with concrete or setting up a protective dome over the damaged reactor buildings.

**As for decommissioning costs, Katsuta predicts the figure will not be as high as the construction cost of the reactors (300 billion to 400 billion yen per reactor) themselves, but close to it, due to the massive amounts of highly contaminated radioactive waste.**

Regardless, what we face is a great unknown to all of mankind.

(Mainichi Japan) August 28, 2011

## **Above-limit cesium found at incinerators in 7 prefectures**



Rice that was harvested early in Aizubange, Fukushima Prefecture, is checked for radiation in a germanium semiconductor detector in the prefectural city of Koriyama on Aug. 25. (Mainichi)

TOKYO (Kyodo) -- Incinerator dust and ash with too much radioactive cesium to allow it to be buried has been found at 42 facilities in Tokyo, Chiba, Iwate and three other prefectures as well as Fukushima, the Environment Ministry said Saturday.

The result of a survey of 469 facilities in 16 prefectures in northeastern and eastern Japan since late June was reported as a panel of experts at the ministry considers how to allow dust and ash containing over 8,000 becquerels of cesium per kilogram to be buried.

The government has already decided to allow dust and ash containing 8,000 becquerels or less of cesium to be buried in waste disposal sites only if residential houses are not built there in the future.

A worker exposed to such a level every day would still not exceed the annual limit of 1 millisievert for ordinary people.

But local governments are required to temporarily store such dust and ash at disposal sites until the panel reaches a conclusion.

The amounts detected were up to 95,300 becquerels in Fukushima, 70,800 becquerels in Chiba and 30,000 becquerels in Iwate.

Since 9,740 becquerels of cesium per kilogram was found in dust at an incineration plant in Tokyo's Edogawa Ward in June, other prefectures also covered in the ministry survey such as Gunma and Ibaraki have released similar findings.

(Mainichi Japan) August 28, 2011

## **Fukushima No. 4 unit explosion caused by hydrogen leak from No. 3**

TOKYO (Kyodo) -- Tokyo Electric Power Co. has found evidence that the March 15 explosion at its Fukushima Daiichi nuclear power plant's No. 4 reactor unit was caused by hydrogen that had flown from the adjacent No. 3 unit, officials said recently.

When it measured on Thursday the radiation levels of filters of exhaust pipes from the No. 4 and the No. 3 unit before a common exhaust stack, the utility found evidence indicating radioactive steam and hydrogen had flown into the No. 4 reactor building, in an opposite flow from usual, the utility officials said.

The radiation was 6.7 millisieverts per hour near the junction but fell to 0.5 millisievert and 0.1 millisievert at the approach to the building, they said.

The plant operator known as TEPCO initially believed the explosion at the No. 4 unit was caused by hydrogen gas produced by the exposure of fuel stored under water in a pool in that building. But TEPCO officials said the new evidence points to the possibility, first suspected in May, that hydrogen gas had flown from the No. 3 unit as the fuel was not particularly damaged.

(Mainichi Japan) August 29, 2011

## **High radiation levels on land near Fukushima plant**

The education and science ministry has identified land near the damaged Fukushima Daiichi nuclear plant where radiation levels are higher than IAEA-designated emergency levels.

The ministry released a map on Monday showing the contaminated land. It conducted a survey for radioactive cesium at some 2,200 locations mainly in Fukushima Prefecture in June and July.

The map shows 29.46 million bequerels of cesium on one-square-meter land in a location in Okuma Town, several hundreds meters from the nuclear plant.

The figure exceeds **the IAEA standard of 10 million bequerels per square meter under which people are required to temporarily evacuate.**

Two other monitoring spots northwest of the nuclear plant were also found contaminated with radioactive cesium exceeding the IAEA level.

**In the 1986 Chernobyl disaster, people in areas contaminated with 555,000 bequerels of cesium per one square meter were required to temporarily relocate.**

**The latest survey has identified contaminated land outside the government's no-entry zones in Fukushima Prefecture that is similar to Chernobyl.**

Monday, August 29, 2011 21:43 +0900 (JST)

## **Rice shipments begin in Fukushima**

Rice farmers in Fukushima Prefecture have begun shipping early-harvested rice after it cleared tests for possible radioactive contamination. Rice is Japan's staple food.

The first batch of newly harvested rice was loaded onto trucks at a farm in Koriyama City on Monday.

Earlier this month, Fukushima checked radiation levels of early-harvested varieties of rice at paddies of all rice growers in the prefecture. Test results confirmed the safety of all the checked rice, although a small amount of radioactive cesium was detected in rice grown at one location.

A farmer who shipped his rice on Monday said he feels relieved as he is able to offer safe rice to consumers.

But he said **the early-harvested variety accounts for only 5 percent of his crop**, so he is still worried if he can ship other varieties, including the mainstay Koshihikari brand.

The freshly harvested rice will be available in local super markets from Tuesday.

Monday, August 29, 2011 13:06 +0900 (JST)

## Map of radiation levels on farmland released

Japan's agriculture ministry has unveiled a map of radiation levels in agricultural areas. It shows **levels of radioactive cesium are higher than the government-regulated standard in some areas**.

The ministry drew up the map based on analysis of soil samples taken at 580 locations in 6 prefectures including Fukushima where the tsunami-damaged nuclear power plant is located.

The map released on Monday shows radioactive cesium exceeding the regulated level of 5,000 bequerels per kilogram in 9 locations. Vegetables and fruit are grown in the farmland.

The government has banned rice planting on farmland contaminated with radioactive cesium higher than 5,000 bequerels per kilogram, following the accident at the Fukushima Daiichi nuclear plant.

The map shows contamination of 8,571 bequerels on a field in Date City and 6,882 bequerels in Iwaki City, both in Fukushima Prefecture.

**In areas where rice planting has been prohibited, including Namie Town and Iitate Village in Fukushima, the map shows radioactive cesium of over 20,000 bequerels per kilogram.**

The agriculture ministry plans to increase monitoring around the highly contaminated farmland.

Monday, August 29, 2011 20:26 +0900 (JST)

## No cesium detected in seawater near No.3 reactor

The operator of the Fukushima Daiichi nuclear power plant says **no radioactive cesium was detected in seawater around the No.3 reactor on Saturday. This was the first time the substance was not detected since the monitoring began.**

Cesium levels around the No.2 reactor were down slightly from those detected on the previous day.

Tokyo Electric Power Company, or TEPCO, monitors the concentration of radioactive substances in

seawater near the water intakes of the plant and offshore.

Seawater collected near the water intake of the No.2 reactor on Saturday recorded 0.077 becquerels of cesium-134 per cubic centimeter, which is 1.3 times higher than the government-set safety limit.

It also contained 0.075 becquerels of cesium-137, or 0.83 times the limit. Both figures were slightly down from the levels found on the previous day.

In April, the level of cesium-137 in seawater near the water intake of the No.2 reactor was found to be 1.1 million times the safety limit. Since then, the density has declined, and recently is leveling out.

Seawater sampled near the water intake of the No.3 reactor did not contain any cesium-134 or cesium-137.

No radioactive materials were found in seawater taken from 7 locations along the coast and offshore.

Monday, August 29, 2011 05:40 +0900 (JST)

## **Fukushima Fallout: Worse than Hiroshima or Chernobyl?**

by Gordon Edwards, August 29, 2011 - [http://www.ccnr.org/Fukushima\\_vs\\_Chernobyl.html](http://www.ccnr.org/Fukushima_vs_Chernobyl.html)

Background:

No one has ever before experienced the extensive radioactive contamination of air, water, soil, and food that now faces the Japanese people after the Fukushima disaster.

It is important to realize that each nuclear reactor contains more than a thousand times as much radioactive material as the radioactive fallout from a Hiroshima-type atomic bomb.

The dropping of the atomic bombs on the cities of Hiroshima and Nagasaki in 1945 caused enormous destruction, brought about by the blast and by the fireball. It also caused massive radiation exposures, mainly neutron and gamma radiation, most of it delivered at the very instant of the explosion.

But the fallout in the area of the bombed cities was relatively little, because in both cases the bombs were deliberately detonated high in the air so that the concussive shock wave would do the most damage on the ground. Thus no crater was created by the blast, and most of the fallout was carried high into the atmosphere by the heat of the fireball and the burning of the cities. It became global fallout more than local fallout.

Similarly, at Chernobyl, there was an explosion followed by a very hot graphite fire that raged for days, lofting much of the radioactive fallout high into the air, and sending it across vast distances. A lot of it was deposited in Belarus and other European countries; it contaminated the sheep in Northern England and Wales for two decades. Some of it made its way across the ocean to contaminate the lichen in Northern Canada, which resulted in measurable increases of radioactive cesium in the bodies of the Inuit people who fed on the caribou that fed on the lichen.

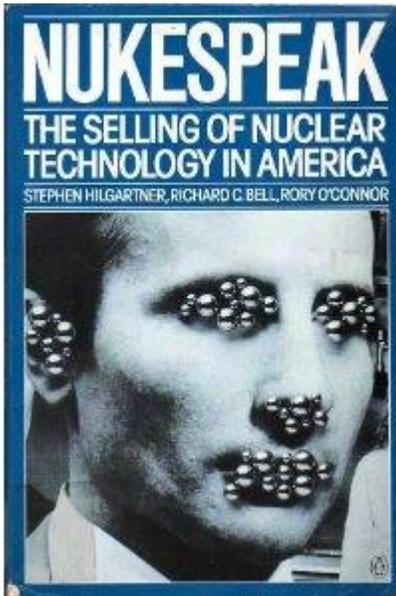
But at Fukushima, not one but three nuclear reactors melted down -- Units 1, 2, and 3 -- as well as a spent fuel pool in Unit 4 that caught fire and spewed radioactive debris directly into the atmosphere. Because there was no fireball, no burning cities, and no burning graphite, the radioactive fallout stayed closer to the ground and contaminated everything that it came in contact with.

The local contamination at ground level is more extensive and more insidious than anything that has previously been experienced. Radioactive iodine has already done its worst, though the results will not be seen for decades in terms of thyroid cancers and developmental abnormalities caused by thyroid damage to embryos, infants and children. But the radioactive cesium and strontium and plutonium and americium and dozens of other radioactive species will be in the soil and the food and the bodies of Japanese living near the affected areas and even those further away for decades, even centuries to come.

No one truly knows the full long-term effects of chronic exposure of such a huge population to these radioactive poisons, for the degree of local radioactive contamination resulting from Fukushima is indeed unprecedented.

## "Radio-phobia" rears its ugly head yet again, vis a vis Fukushima

August 30, 2011  
admin



Blaming "radio-phobia" rather than radiological injuries is yet another trick in the nuclear establishment's PR tool box. Nuclear power boosters have long tried to convince victims of radioactive catastrophes that "it's all in your head." Both at Three Mile Island and Chernobyl, the nuclear power industry -- and its friends in government regulatory agencies, the PR industry, and even academia -- tried to convince the public that any ill effects were not due to physical impacts of radioactive fallout, but rather to stress and worry caused by "anti-nuclear fear mongering." [A short piece in \*NewScientist\*](#) gives this Orwellian "psy-ops" ploy "airtime" yet again, this time in the context of the Fukushima nuclear catastrophe.

## Nuclear plant worker dies of acute leukemia



In this Monday, Aug. 1, 2011 photo released by Tokyo Electric Power Co. on Tuesday, Aug. 2, a worker in protective gear measures radiation levels near a duct connected to a ventilation stack between the Unit 1 and Unit 2 reactors at the crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- A worker in his 40s who had been engaged in recovery work at the crisis-hit Fukushima Daiichi nuclear power plant has died of acute leukemia, plant operator Tokyo Electric Power Co. said Tuesday.

**Tokyo Electric said the worker's death is not linked with his work at the plant**, citing results of medical examination by doctors.

The man had been exposed to 0.5 millisievert of radiation at the plant and showed no internal exposure to radiation, said the power company, known as TEPCO.

The dosage is much smaller than **5 millisieverts or higher per year -- the benchmark for recognizing a death as work-related** -- TEPCO said, citing the Ministry of Health, Labor and Welfare's criteria on work-related deaths. The ministry's criteria also put the incubation period to develop symptoms of acute leukemia at one year.

TEPCO said the man had been involved with duties on radiation control at the plant for a week starting in early August. He later complained of poor health and underwent medical checkups before his death.

TEPCO said it received the report on the worker's death on Aug. 16 from one of its contractors whose subcontractor hired the worker.

The utility said it had no information on the man's work career before being engaged in the recovery work at the nuclear power plant which was crippled by the March 11 earthquake-tsunami disaster.

(Mainichi Japan) August 30, 2011

## **Gov't to lower Fukushima nuclear workers' radiation exposure limit**

TOKYO (Kyodo) -- The government plans to lower a radiation exposure limit from 250 millisieverts to a usual level of 100 millisieverts possibly this fall for workers dealing with the Fukushima Daiichi nuclear plant crisis, a Cabinet minister said Tuesday.

"The limit must be lowered," Health, Labor and Welfare Minister Ritsuo Hosokawa told a press conference. "We may have to make a decision as soon as this fall."

The ministry raised the allowable radiation exposure limit to 250 millisieverts as an emergency measure soon after the March 11 earthquake and tsunami led to a series of catastrophic explosions and release of a massive amount of radiation.

The ministry intends to implement the exposure limit reduction after examining actual radiation exposure as crisis management efforts by plant operator Tokyo Electric Power Co. have entered the "step 2" phase of achieving a cold shutdown of the damaged reactors at the plant.

(Mainichi Japan) August 30, 2011

## **Radiation limit to be lowered for Fukushima staff**

Japan's health ministry will restore the cumulative radiation exposure limit for emergency workers at the Fukushima Daiichi nuclear plant to the original 100 millisieverts this autumn. **The current limit is 250 millisieverts.**

The ministry raised the exposure limit soon after the nuclear accident in March to secure enough time for workers at the plant to bring the situation under control.

At a news conference on Tuesday, Health Minister Ritsuo Hosokawa said he wants to **return the legal limit to the previous level by autumn.**

**The ministry says 103 workers who started at the plant just after the accident have been exposed to cumulative radiation of more than 100 millisieverts.**

But it says all staff who began work from April on have been exposed to less than 100 millisieverts.

Based on the reduced exposure, the ministry has concluded that there is no longer a need to maintain the higher provisional radiation limit.

Tuesday, August 30, 2011 13:52 +0900 (JST)

## **34 points near Fukushima plant exceed radiation standard used for Chernobyl, map shows**

A **government map of soil radiation levels mainly within a 100-kilometer radius** of the disaster-hit Fukushima No. 1 Nuclear Power Plant shows **34 locations with levels of cesium-137 exceeding 1.48 million becquerels per square meter, the level that was used for determining bans on living near the Chernobyl plant.**

The map was released on Aug. 29 by the Ministry of Education, Culture, Sports, Science and Technology (MEXT). Cesium-137 has a half-life of around 30 years. The greatest concentration was found in the town of Okuma, which holds part of the plant, at 15.45 million becquerels per square meter. **The six municipalities with levels over the Chernobyl level are Okuma, Minamisoma, Tomioka, Futaba, Namie, and Iitate.**

The distribution of cesium in the soil across the 100-kilometer radius zone was very close to that calculated from air samples taken in the same areas.

"The directly measured data from this survey will be useful for decontamination work," says Takashi Nakamura, a professor emeritus of Tohoku University who was involved with the map's creation.

Three corporations and 94 organizations including universities and MEXT cooperated to collect data in June and July from around 2,200 zones, each zone two kilometers by two kilometers. For each zone, soil and grass from five freely chosen locations was collected, mixed and measured.

Also on Aug. 29, the Ministry of Agriculture, Forestry and Fisheries (MAFF) released a map showing radioactive cesium (cesium-137 and cesium-134) concentrations in agricultural land in Fukushima, Miyagi, Tochigi, Gunma, Ibaraki and Chiba prefectures. Measurements were taken at 360 locations in Fukushima and 220 locations across the other five prefectures. In 13 Fukushima municipalities including Iitate, Soma and Minamisoma, there were measurements exceeding 5,000 becquerels per kilogram of soil, which is the limit over which rice planting is forbidden.

MAFF intends to expand the survey to 3,000 locations in the future.

(Mainichi Japan) August 30, 2011

## **Gov't officials' role in manipulating nuclear symposiums confirmed**

TOKYO (Kyodo) -- Central government officials were involved in attempts to manipulate how public opinion on nuclear power is presented at government-sponsored symposiums, a third-party panel investigating the matter said Tuesday.

According to an interim report submitted by the panel to the industry ministry the same day, officials of the government's nuclear safety agency asked utility firms to encourage people related to the utilities to attend nuclear power symposiums several years ago and to voice opinions supportive of nuclear plants.

The three "pluthermal" nuclear project symposiums were held by Kyushu Electric Power Co. in October 2005 on its Genkai power plant, Shikoku Electric Power Co. in June 2006 on its Ikata plant and Chubu Electric Power Co. in August 2007 on its Hamaoka plant.

Pluthermal power generation uses plutonium-uranium mixed oxide fuel, which contains plutonium extracted from spent fuel, in existing reactors and is an important pillar of Japan's nuclear program.

"It's very regrettable that the government's involvement in the pluthermal symposiums linked to the Genkai, Ikata and Hamaoka nuclear power plants was confirmed," Economy, Trade and Industry Minister Banri Kaieda said in a statement.

Panel head Takashi Oizumi, a lawyer who once headed the Osaka High Public Prosecutors Office, said at a press conference that government officials' involvement is also suspected in five more cases related to similar events held by Kyushu Electric and Tohoku Electric Power Co., and that the panel will investigate the matter further.

The panel consisting of four legal experts aims to compile its final report by the end of September.

Nuclear and Industrial Safety Agency chief Hiroyuki Fukano offered an apology for the agency officials' involvement at a press conference, saying, "I apologize to the citizens and those concerned."

"Essentially, (the agency) should have a culture in which officials act rightly and fairly, but it was not the case," he said.

The report said a Shikoku Electric official in charge of the symposium in question produced a memo saying that a nuclear safety agency official told the utility employee that the key to the symposium's success was securing enough attendees and suppressing the views of people opposed to nuclear power projects.

The panel was set up earlier this month by the industry ministry, which has the agency under its wing, to investigate allegations that the agency asked utilities to dress up public symposiums on atomic energy to make local communities appear supportive of nuclear power plants.

The allegations emerged following the revelation of a scandal in which senior officials of Kyushu Electric Power Co. tried to manipulate public opinion on its Genkai nuclear plant in its favor in the wake of the Fukushima nuclear plant accident.

State-sponsored symposiums on nuclear power have been held across the country to enable local leaders to consider the operations of nuclear power plants in their jurisdictions.

(Mainichi Japan) August 31, 2011

## **80% of Japan's reactors out of service**

Another nuclear reactor in Japan will soon be shut down for regular inspections, leaving nearly 80 percent of the country's reactors out of service.

Kyushu Electric Power Company says it will begin work on Wednesday to halt operations at the No.2 reactor at the Sendai nuclear power plant. The reactor will be shut down by Thursday morning.

The utility wants to restart the reactor in 4 months, after exchanging fuel rods and making detailed checkups on turbines.

But it is unclear when the company can restart the reactor, as well as another one at the plant which remains out of service although regular checkups have been completed.

After the Fukushima accident, underhanded practices of power companies and the government have come to light.

Kyushu Electric and other utilities reportedly tried to influence government-sponsored town meetings in favor of nuclear energy, and mobilized people behind the scenes to win local approval for nuclear power generation.

Such practices have spurred public distrust in utilities and government oversight of the nuclear industry.

After the Sendai No.2 reactor is shut down, 42 nuclear reactors among 54 in Japan will be out of service.

Wednesday, August 31, 2011 11:17 +0900 (JST)

## **TEPCO finds possibly active faults near Fukushima**

Tokyo Electric Power Company suspects there are 5 active faults near the Fukushima Daiichi nuclear power plant that could affect the crippled plant if they cause a tremor.

TEPCO made the discovery after the Japanese government requested utilities and nuclear agencies to reexamine faults around nuclear plants.

The directive followed a strong earthquake on April 11th from a fault thought to be inactive, 50 kilometers from the Fukushima plant.

TEPCO said on Tuesday that geological deformations were observed for the first time at 5 faults, suggesting they are active.

The utility will continue drilling to investigate the conditions, though the firm believes any tremors would be within the quake-resistance standard.

Besides TEPCO, two nuclear agencies reported 9 faults near their nuclear facilities in Ibaraki Prefecture that could be active.

Wednesday, August 31, 2011 06:16 +0900 (JST)

## **14 locations near nuclear plants could become active faults, agency warns**

Some 14 locations near nuclear facilities in Japan have been found to have the possibility of turning into active faults in the future, the Nuclear and Industrial Safety Agency (NISA) has announced.

NISA said on Aug. 30 that it has confirmed a total of 14 faults and other locations whose possibility of turning into active faults in the future cannot be ruled out near the Fukushima No. 1 and No. 2 nuclear power plants and Japan Atomic Power Co.'s Tokai No. 2 Power Station in Ibaraki Prefecture.

NISA had instructed plant operators to re-evaluate those locations after aftershocks following the March 11 Great East Japan Earthquake triggered the Yunotake fault in Iwaki, Fukushima Prefecture, to slip even though it had been believed to be inactive.

As a result of the re-evaluation, it emerged that five locations near the Fukushima nuclear plant, including the Yunotake fault, have a possibility of moving in the future due to crustal twists and increased seismic activity in the wake of the March 11 quake. A total of nine locations near the Tokai No. 2 Power Station and the Japan Atomic Energy Agency's Tokai nuclear fuel reprocessing plant were also reevaluated.

Even if any of these faults and other locations ever slipped, the intensity of tremors would be within the scope of the assumption, and the existing plants have no problem in terms of their quake resistance, according to NISA.

NISA will put together the re-evaluation results shortly and submit them to the Nuclear Safety Commission of Japan.

 [Click here for the original Japanese story](#)

(Mainichi Japan) August 31, 2011

## **Paddy decontamination method tested**

Japanese researchers have begun testing a method for removing radioactive substances from paddies in an evacuation zone near the Fukushima Daiichi nuclear power plant.

The National Agriculture and Food Research organization is conducting the test in Iitate Village, more than 30 kilometers northwest of the troubled plant, at the request of the government.

On Tuesday, the researchers used a power shovel at a paddy to break up about 3 centimeters of surface soil that had been hardened with a solidifier. The soil was then collected using a vacuum hose.

The researchers are to check the remaining soil for radiation to determine the effectiveness of the method.

Before the test, the level of radioactivity at the paddy was 12,000 becquerels per kilogram of soil, or more than double the limit at which planting is prohibited.

The head of the researchers said they will analyze data from the test to determine whether the method can be used to help resume farming in the area.

Tuesday, August 30, 2011 18:22 +0900 (JST)

## **Hakodate mayor seeks continued freeze on Aomori nuclear power plant**

Hakodate Mayor Toshiki Kudo visited a nuclear power plant under construction in Oma, Aomori Prefecture, on Aug. 30 and sought an indefinite freeze on the project, just 23 kilometers away from the heart of the southwestern Hokkaido city.

"It is so close to Hakodate, and there is nothing to shield (nuclear radiation) if an accident happens," Kudo said of the Oma Nuclear Power Plant with a planned output capacity of 1.38 million kilowatts.

J-Power, the nation's leading electricity wholesaler, is building the nuclear power plant, which will use plutonium-uranium mixed oxide, or MOX, fuel.

The company had expected the plant to go on stream in November 2014. But the March 11 earthquake and tsunami and the resulting Fukushima nuclear crisis forced J-Power to suspend the project, which had been 37 percent complete.

Accompanied by Ko Notoya, speaker of the Hakodate City Assembly, Mayor Kudo was briefed by J-Power officials on a three-meter-tall levee and emergency generators. He later stood on an elevated spot and checked the location of buildings to house a nuclear reactor and turbines.

The mayor later told reporters, "They explained safety measures, but I was not convinced. It is also problematic that a site to eventually process nuclear waste has not been decided."

Before his inspection tour, Kudo held talks with Oma Mayor Mitsuharu Kanazawa and Hideo Ishido, speaker of the Oma Town Assembly, at the town hall and delivered a written statement requesting an indefinite freeze on the nuclear power plant project that the Hakodate assembly adopted in July.

Ishido said after the talks, "We understand Hakodate's concerns but most of the 2,000 workers left after construction halted. Our town assembly wants J-Power to resume construction (of the nuclear power plant)."

(Mainichi Japan) August 31, 2011

# **Fukushima nuke plant workers irradiated on job ignored alarm: TEPCO**

Two workers exposed to high doses of beta radiation at the crisis-stricken Fukushima No. 1 Nuclear Power Plant on Aug. 28 were ignoring their dosimeter readings, plant operator Tokyo Electric Power Co. (TEPCO) announced on Aug. 30.

The two men were both blasted with beta radiation while they and one other worker were replacing filters on a water decontamination system at the plant -- a task that requires pulling components out of the water. TEPCO stated that they ignored the radiation count on their dosimeters and continued to do the filter replacement despite absorbing radiation doses of 23.4 and 17.1 millisieverts respectively, exceeding the 15-millisievert limit for the operation.

According to TEPCO, the men's radiation alarms sounded when their doses exceeded the 15-millisievert maximum, but they decided to complete the task with the help of the third worker as they had very little left to do. The utility also said the men's radiation control manager was not present at the time. Testing revealed the third worker absorbed a 1.1-millisievert dose.

Beta rays are a type of radiation that can penetrate the skin and enter the body, and total exposure is legally limited to 1,000 millisieverts.

(Mainichi Japan) August 31, 2011

## **2 workers showered with highly radioactive water**

Tokyo Electric Power Company says 2 male workers at its troubled Fukushima Daiichi nuclear power plant were showered with highly radioactive water **by mistake**.

The accident occurred on Wednesday morning.

The two subcontracting workers were suddenly splashed with water leaking from a container whose valve was not shut. The container was **part of the contaminated water processing system**.

TEPCO says one of the 2 workers was found to be exposed to 0.16 millisieverts of radiation, which is higher than the safety limit, and was decontaminated.

The other, who was wearing a raincoat, was exposed to 0.14 millisieverts of radiation, a slightly smaller dose than the other man.

The utility says that the 2 workers did not complain of symptoms such as burns and they had no internal radiation exposure.

TEPCO is investigating how the accident occurred.

Last Sunday, 2 TEPCO workers at the plant were exposed to radiation by mistake while they were

replacing parts of the contaminated water processing system, which is key to bringing the crippled reactors under control.

Wednesday, August 31, 2011 22:23 +0900 (JST)

## **TEPCO presents plan to extract melted rods**

Tokyo Electric Power Company, or TEPCO, has announced a plan to extract melted nuclear fuel rods at the crippled Fukushima Daiichi nuclear power plant.

TEPCO presented the 9-stage plan on Wednesday to an expert panel of the Atomic Energy Commission, which is discussing a process to decommission the plant's reactors.

The first 3 stages of TEPCO's plan are devoted to removing radioactive materials from the reactors' buildings to repair containment vessels and stop water leaks.

The utility plans to then put water in the vessels and take pictures to determine the amount of nuclear fuel that has leaked from the reactors.

In the final stage, the company plans to fill the vessels with water and use robots to extract the rods.

Extraction of fuel rods that have leaked outside of reactors has never been performed at any nuclear plant.

TEPCO faces the tough challenges of coping with high levels of radiation and developing highly efficient robots.

Wednesday, August 31, 2011 20:38 +0900 (JST)

**SEPTEMBRE 2011**

(Mainichi Japan) September 1, 2011

## **TEPCO eyes removing melted fuel after filling reactors with water**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that it plans to take out the melted nuclear fuel from inside the crippled reactors at the Fukushima Daiichi power plant after repairing the reactor containers and filling them up with water.

But the plant operator did not go further into details, only saying that the plan, unveiled during a meeting of a government panel on nuclear energy policy, is just "an image at the current moment."

The process is expected to start with the removal of radioactive substances inside the plant's buildings housing the reactors, which would be followed by repair work on the primary containment vessels.

Workers are then expected to fill each primary containment vessel with water to a level above the fuel and open the lid of the inner pressure vessel holding the fuel.

**Flooding the primary containment vessel with water** is a method Tokyo Electric tried to employ in the past as part of efforts to stably cool the fuel, although it gave up doing so because one container appeared to have been leaking massive amounts of water injected into the reactor.

The utility known as TEPCO said it believes that **flooding the container is necessary before removing the fuel because water would help block the radiation so that workers will be able to pinpoint the position of the melted fuel.**

The process would take place without stopping the water currently being injected into the crippled reactor cores under a water circulation system created after the nuclear crisis, TEPCO said.

But the company also noted that it may have to seek alternatives because an "advanced technological development" is likely to be required to carry out the planned procedures.

On March 11, a magnitude 9.0 earthquake and tsunami waves led the six-reactor nuclear complex to lose nearly all of its power sources and caused the cooling functions of the reactors and spent nuclear fuel pools at the Nos. 1 to 4 units to fail.

The Nos. 1 to 3 reactor cores are assumed to have suffered meltdowns in the early days of the crisis, possibly damaging the bottom of each reactor pressure vessel and partially accumulating in the outer primary container.

## **Groundwater around Fukushima nuke plant to be protected by underground steel barrier**

Construction of an underground barrier at the stricken Fukushima No. 1 nuclear plant to prevent leaking radioactive materials from reaching ground water **will begin this year and be completed in about two years**, plans released on Aug. 31 revealed.

The plans, announced by plant operator Tokyo Electric Power Co. (TEPCO), include use of a workboat and a temporary pier by the plant to speed up construction. According to the utility, the barrier will be built of between 600 and 700 22-meter-long steel sheet piles driven into the ground and stretch some 800 meters. The approximate 10-meter space between the steel barrier and the existing dike will also be filled with concrete.

Simulations conducted using benign substances that mimic the properties of radioactive materials showed the barrier at the coastal plant would stop the dangerous materials from reaching the ocean. **The barrier is expected to last for 30 years.** [et après ???]

The barriers are specifically intended to prevent contaminated water in buildings housing reactors 1 to 4 and their turbine buildings from seeping into the local ground water. **TEPCO will continue to monitor ground water conditions both during and after the barrier's construction.**

(Mainichi Japan) September 1, 2011

## **Rough road ahead for work to decommission Fukushima nuclear reactors**

Tokyo Electric Power Co. (TEPCO) unveiled a plan to decommission crippled nuclear reactors at the Fukushima No. 1 Nuclear Power Plant in line with the way the 1979 Three Mile Island accident was handled, but the Fukushima case would pose difficult challenges for the crucial mission.

**Following the example of the case of the Three Mile Island crisis,** TEPCO, the operator of the Fukushima nuclear plant, plans to fill containment vessels with water and remove melted nuclear fuel. But in the case of the Fukushima nuclear power plant, the containment vessels were damaged, and therefore the utility had abandoned its plan to fill them with water. The decommissioning task involves tough challenges including work to identify damaged parts, stop water leaks and remove crumbled fuel under the highly radioactive environment.

At an experts' meeting of the government's Nuclear Safety Commission held after receiving the report from the utility, Hajime Asama, a University of Tokyo professor, said, "It will require various remote-control equipment to do such things as decontaminating, as well as inspecting and repairing inside of the nuclear reactors. Japan has advanced robot technology, but there are many uncharted areas, and therefore it is difficult to develop technology unless we bring together the wisdom of the people." Kazuhiro Matsumura, vice president of Japan Nuclear Fuel Ltd. said, **"We must take into account the fact that it takes far more time than usual to do the work under the highly-radioactive environment."**

The experts' taskforce is to work out and release a roadmap for reactor decommissioning by mid-January next year. Koji Okamoto, professor of nuclear engineering at the University of Tokyo, said, **"In order to decommission the reactors, we must identify the places of water leaks in the containment vessels and seal them and fill them with water and shield radiation. To that end, we must prepare maps of contamination of nuclear reactors and remove radioactive substances."** TEPCO did not disclose a timeframe for removing nuclear fuel, but Okamoto said, **"It will probably take at least 10 years."** [just to remove the fuel]

(Mainichi Japan) September 1, 2011

## Radioactive ash to be solidified with cement under gov't plan

Ash left after the incineration of radioactive earthquake and tsunami debris should be **solidified with cement and stored at a waterproof disposal site**, according to a government notification sent to municipalities on Aug. 31.

The Environment Ministry notification applies to **ash with radiation levels of between 8,000 and 100,000 becquerels** -- a byproduct of incinerating disaster debris contaminated during the ongoing Fukushima nuclear crisis -- and stored by municipal governments at temporary disposal sites.

The ministry move comes as temporary disposal facilities in municipalities with no permanent means to deal with the material have begun to fill up, and appears aimed at encouraging final disposal measures. While the disposal process may take time, the ministry attempted to reassure local governments by telling them "the costs will ultimately be borne by (plant operator) Tokyo Electric Power Co. The ministry hopes to deal with this issue without adding any further load to local governments."

Under the proposed disposal method, **sites in soil layers that absorb cesium easily would be lined with 50-centimeter-thick waterproof sheeting to prevent the toxic ash from contaminating fresh water sources. The radioactive ash solidified with cement would then be poured in.**

To further guard against radioactive materials in the ash from getting into the water table, the notice also called on municipalities to dispose of the ash solidified with cement in isolated soil layers like clay where possible, encase the ash in concrete containers or build roofs over the disposal sites.

The ministry notice furthermore opened up the **possibility of dealing with the toxic ash at isolated toxic heavy metal disposal sites**. After the sites were filled, they would be buried, and long-term soil and atmosphere monitoring implemented.

(Mainichi Japan) September 1, 2011

## Researchers develop cheap, easy method for cesium-tainted soil cleanup

Scientists at a national research institute have announced the development of technology to extract nearly all radioactive cesium from contaminated soil.

The technology, revealed on Aug. 31 by the National Institute of Advanced Industrial Science and Technology (AIST), involves **mixing the contaminated soil with a low-acidity solution**. The solution draws out the cesium, which is then taken up by a granulated pigment lining the solution container.

Radioactive substance-contaminated soil has become a major issue in the ongoing Fukushima nuclear crisis, and the AIST researchers believe their new technique could reduce total radioactive waste to 1/150th of the volume it would be without the separation procedure.

The research group believed that if non-radioactive cesium could be separated from soil collected in Iitate, Fukushima Prefecture -- part of the evacuation zone around the stricken plant -- then the same technique ought to work for the radioactive version of the element.

The group began by mixing soil containing non-radioactive cesium with a low-concentration nitric acid solution. They put the mix in a pressure vessel and heated it at 200 degrees Celsius for 45 minutes, after which the soil was 100 percent cesium-free. The same process conducted at 100 degrees Celsius reduced Cesium levels by 60 percent. The researchers said the nitric acid solution can be reused.

In the second phase of the experiment, the researchers sought to **clean the cesium out of the nitric acid solution by introducing a Prussian blue pigment that only binds to cesium ions. They lined the sides of a cylindrical container with the pigment -- each granule measuring 10 nanometers in diameter -- and passed the solution through it twice. Afterwards, the solution was entirely free of cesium.**

"We can do this process without damaging the soil, and absorb all the cesium with the pigment," said Toru Kawamoto, head of AIST's green technology research group. "It's also cheap. We'd like to cooperate with the private sector to conduct substantive experiments."

(Mainichi Japan) September 1, 2011

## More radiation exposure at Fukushima plant

Japan's nuclear safety agency has instructed Tokyo Electric Power Company, the operator of the Fukushima Daiichi nuclear power station, to improve safety measures for workers at the crippled plant.

The Nuclear and Industrial Safety Agency said **another worker at the power plant was exposed to radiation while working on a treatment system for contaminated water on Wednesday.**

The government agency said the male subcontractor was sprayed with radioactive water. It noted the water was cleaned off him after the man finished taking a radiation test.

It added the total amount of radiation which the man was exposed to during the shift was below the limit, and that it did not affect his health.

Earlier the same day, 2 other workers were showered with radioactive water while working on a contaminated water processing system.

**On Sunday, 2 workers from the power company were exposed to beta rays, which are another type of radiation. The incident revealed that the utility had not set exposure limits for beta rays.**

The agency instructed TEPCO to improve safety measures, saying the company failed to make use of past experiences with radiation exposure. It also said the utility company was late in reporting the latest incident.

Friday, September 02, 2011 01:24 +0900 (JST)

## Radiation readings in evacuation zones released

The government has released the results of detailed radiation measurements in evacuation zones around the crippled Fukushima Daiichi nuclear power plant.

The government measured radiation levels at 2,696 locations inside the 20-kilometer no-entry zone and adjacent evacuation zones in July and August. The measurements, mainly at schools and parks, are being displayed on maps on a government website.

Radiation was the highest at a location in Okuma Town, Fukushima Prefecture, about one kilometer from the plant. The level there was 139 microsieverts per hour, which translates into more than 700 millisieverts per year.

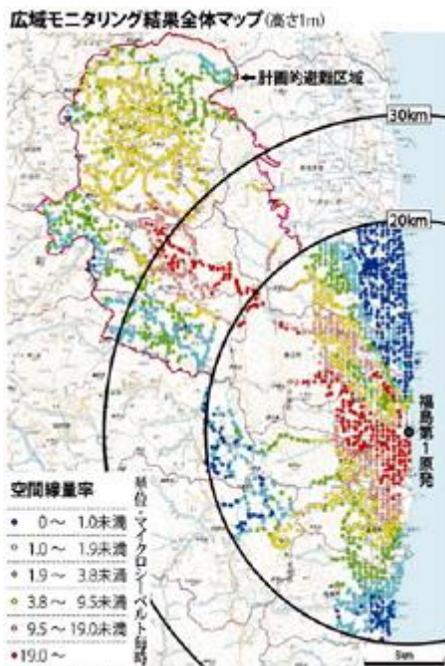
Areas with radiation exceeding 19 microsieverts per hour extended as far as 32 kilometers northwest of the plant. This figure translates into more than 100 millisieverts per year.

Along coastal areas about 3 kilometers north of the plant, radiation levels were less than one microsievert per hour.

The government will use the data to create plans for removing radioactive substances.

Friday, September 02, 2011 06:38 +0900 (JST)

## Gov't releases most detailed maps yet of radiation around Fukushima plant



A government map displaying radiation levels in the area around the Fukushima No. 1 Nuclear Power Plant. An English version can be found on the page linked below.

The Japanese government has released new maps of radiation around the Fukushima No. 1 Nuclear Power Plant, the most detailed yet.

The maps show radiation levels in the 20-kilometer no-entry zone around the plant, as well as areas outside that zone that were ordered evacuated. Radiation levels are given for one centimeter and one meter aboveground for 2,696 locations, generally one location for every 500 by 500 meters.

Some very high radiation levels were recorded, the highest of which was 139 microsieverts per hour at one meter above the ground in the town of Okuma, just south of the plant. The highest level at one centimeter above the ground was 368 microsieverts per hour in Futaba, just north of the plant.

According to the maps, radiation levels of 19 microsieverts per hour or higher were detected between the plant and four to five kilometers to the south, west and northwest of the plant.

Meanwhile, in the town of Namie, the central part of the evacuated area outside the 20-km no-entry zone, high levels including 41.3 microsieverts per hour were recorded at one meter above the ground and 105 microsieverts at one centimeter above the ground.

## Related links

Gov't radiation info in English  
<http://radioactivity.next.go.jp/en/>

(Mainichi Japan) September 2, 2011

## Disaster drills held at Hamaoka nuke power plant

Workers at a suspended nuclear power plant in central Japan have held a practice drill for a possible huge earthquake and tsunami.

The emergency drill was held at Chubu Electric Power Company's Hamaoka plant on Thursday, the 88th anniversary of the Great Kanto Earthquake.

The plant on the Pacific Ocean has been suspended by the government, following the crippling of the Fukushima Daiichi nuclear power plant by the March 11th quake and tsunami.

1,000 workers took part in the drill, which assumed that the plant had lost all external power after being struck by a tsunami triggered by a quake of 6-plus on the Japanese scale of 0 to 7.

They simulated restoring power to a reactor building by connecting a 150-meter-long cable to a back-up generator installed outside.

A senior official with the utility said the drill helped confirm the effectiveness of a back-up plan to shut

down reactors at low temperatures without exposing fuels in a major earthquake.

Kanji Nishida added that the utility is considering joint drills with the local administration and residents, to provide them peace of mind.

Thursday, September 01, 2011 18:49 +0900 (JST)

## Max 368 Microsieverts of Radiation Detected in No-Go Zone

<http://jen.jiji.com/jc/eng?g=eco&k=2011090100941>

Tokyo, Sept. 1 (Jiji Press)--The maximum radiation level stood at nearly 370 microsieverts per hour in the 20-kilometer no-go zone around the crippled Fukushima No. 1 nuclear power plant, a radiation map based on a government survey showed Thursday.

But **there was no clear correlation between the radiation level and the distance from the plant**, according to the results of the survey conducted at 2,696 locations in July and August by a government team to support nuclear crisis-affected people.

The radiation map, which covers the no-go zone and scheduled evacuation areas outside the zone, shows **the highest dose of 368 microsieverts per hour on a road in Futaba, a town located within the 20-kilometer zone.**

In the scheduled evacuation areas, where residents were asked to leave, up to 105 microsieverts of radiation was monitored, on a road in Namie.

But in areas 2 to 3 kilometers north of the plant, radiation levels rather drop below one microsievert, the team said, adding nuclear fallout spread to the northwest of the plant.

(2011/09/01-23:24)

### Quake risk to U.S. reactors greater than thought

Dina Cappiello, Jeff Donn, Associated Press

Friday, September 2, 2011

**Washington** -- <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2011/09/01/MNLM1KV7P8.DTL>

The risk that an earthquake would cause a severe accident at a U.S. nuclear plant is greater than previously thought, **24 times as high in one case**, according to an Associated Press analysis of preliminary government data. **The nation's nuclear regulator believes a quarter of America's reactors may need modifications to make them safer.**

The threat came into sharp focus last week, when shaking from the largest earthquake to hit Virginia in 117 years appeared to exceed what the North Anna nuclear power plant northwest of Richmond was built to sustain.

The two North Anna reactors are among 27 in the eastern and central United States that a preliminary Nuclear Regulatory Commission review has said may need upgrades because those plants are more likely to get hit with an earthquake larger than the one their design was based on.

Just how many nuclear power plants are more vulnerable won't be determined until all operators recalculate their seismic risk based on new assessments by geologists, something the agency plans to request later this year. The NRC on Thursday issued a draft of that request for public comment.

The NRC and the industry say reactors are safe as they are, for now. **But e-mails in an 11,000-page records request by AP show that NRC experts were worried privately this year that plants needed stronger safeguards.**

**Federal scientists update seismic assessments every five to six years to revise building codes for some structures. But no similar system is in place for all but two of the nation's 104 reactors.** The exception is Diablo Canyon in California, which has been required to review the risk of an earthquake since 1985.

## **Radioactive rice rumors rampant among Kansai region consumers**

More than 40 percent of married women in the Kansai region are reluctant to buy newly-harvested rice grown near the troubled Fukushima No. 1 nuclear plant, according to a recent survey.

The survey -- conducted in late August by University of Tsukuba assistant professor Kiyokazu Ujiie -- indicated that **contamination fears held sway even in cases where no radiation had been detected in the rice.**

"In light of the attitudes of consumers, in order to reduce the economic impact on producers, measures should be taken swiftly," said one expert of the survey results.

A total of 2,089 married women aged 20 to 69 in the Osaka and Tokyo areas were asked how much they would be willing to pay for a 5 kilogram of rice harvested near the Fukushima nuclear plant on the one hand, versus a 5 kilogram of rice from a different region on the other. The first option was divided into five categories: 1) radiation not detected; 2) less than one-hundredth of the government-imposed limit of 500 becquerels per kilogram detected; 3) less than one-tenth of the government-imposed limit; 4) one-half of the limit; and 5) less than the limit.

Some 44.7 percent of respondents in the Kansai region and 34.9 percent in the Kanto region said they would not buy rice harvested near the Fukushima plant at any price, even if radioactive contamination had not been detected. The survey also showed 52.9 percent of respondents in the Kanto region, and 60.4 percent of those in the Kansai region, were reluctant to buy rice containing radiation less than one-tenth of the government-imposed limit.

In the Kanto region, meanwhile, 28.9 percent of the respondents said they would buy Fukushima rice for the same price or more than rice from a different region if no radiation was detected. Even if levels of radiation close to the government-imposed limit of 500 becquerels were detected in the grain, 31.3 percent of Kanto region respondents said they would buy it if it was cheaper than that grown in a different area.

"Regardless of whether the government-imposed limit is a safe level, obviously isn't reassuring consumers. Damage caused by harmful rumors are severe particularly in the Kansai region, which is far away from the disaster-stricken areas," said Ujiie. Noting that the lower the radiation detected in the rice, the more respondents would buy the rice, he said, "If results of proper inspections are clearly shown, the rice could be sold for higher prices. **Economic damage can be reduced by giving consumers details of the degree of contamination.**" [\[provided you can trust the info on radiation\]](#)

(Mainichi Japan) September 3, 2011

## **PM's office failed to use data predicting Fukushima power loss, meltdowns**

In the hours after the March 11 earthquake and tsunami, the Prime Minister's Office failed to take advantage of up-to-date analysis of the Fukushima No. 1 nuclear plant that projected both power failures and subsequent core meltdowns, according to the Nuclear and Industrial Safety Agency (NISA).

NISA released the results of analysis on the Fukushima nuclear reactors using the Emergency Report Support System (ERSS) on Sept. 2 -- about six months after the analysis was conducted right after the magnitude-9 earthquake struck. The analysis predicted the loss of power and subsequent nuclear meltdowns at the No. 1, 2 and 3 reactors at the plant before they occurred.

NISA sent the analysis on the No. 2 and 3 reactors to the Prime Minister's Office, but the office did not use the information either to help plot containment measures or to initiate a swift evacuation of local communities. The agency did not send the results of the No. 1 reactor analysis.

According to NISA, the Japan Nuclear Energy Safety Organization (JNES), which developed the ERSS, activated the system just after the quake. Based on the assumption of a complete loss of power at the plant, JNES predicted how the water levels, pressure and temperatures would change at the No. 1, 2 and 3 reactors.

The JNES sent the data on the No. 2 reactor to NISA around 9:30 p.m. on March 11. Based on the data, NISA officials projected a chain of events remarkably true to those that were to unfold at the plant, such as, "At 22:50, reactor cores will be exposed; At 24:50, fuel meltdown." NISA handed the predictions to the Prime Minister's Office at around 10:45 p.m. on March 11 and again shortly after midnight. NISA sent the data on the No. 3 reactor to the Prime Minister's Office about 20 minutes after receiving it from JNES around 6:30 a.m. on March 13.

However, the government did not use the data in its disaster response measures. Yoshinori Moriyama, NISA deputy director-general for nuclear accident measures, told a news conference on Sept. 2, "The data were not used because they were not based on facts."

Based on assumed amounts of radioactive substances inferred from the predictions for the No. 1 reactor, NISA also projected the diffusion of nuclear substances using a system known as SPEEDI, or the System for Prediction of Environmental Emergency Dose Information. The agency did not, however, release the predictions immediately, and were in the end not used at all. NISA had previously said that SPEEDI was not functioning after the quake because of a complete loss of power.

(Mainichi Japan) September 3, 2011

## **UN: North Korea nuke equipment from black market**

VIENNA (AP) -- A report from the U.N. nuclear agency has strengthened suspicions that -- like Iran -- North Korea turned to black market suppliers to set up a uranium enrichment plant revealed only last year.

The International Atomic Energy Agency report says the layout of equipment and other details observed by a visiting U.S. group were "broadly consistent" with designs sold by a "clandestine supply network."

The confidential report made available to The Associated Press on Friday seems to allude to the black market suppliers led by Pakistani scientist Abdul Qadeer Khan. That group provided Iran with the backbone of what was a clandestine nuclear program before it was revealed eight years ago.

Khan was the main supplier of centrifuges used to enrich uranium before his operation was disrupted in 2003. Enrichment can create both reactor fuel of the fissile core of nuclear weapons.

The agency report said the plant was set up after IAEA inspectors were ordered to leave in April 2009, when five-nation talks with the North broke down and Pyongyang restarted its nuclear program.

Unless the purchases were recent and from previously unknown suppliers, that would indicate that the centrifuges were bought before the Khan network was dismantled and were in storage until two years ago.

The North tested nuclear devices in 2006 and 2009 based on plutonium, another fissile source. It denied U.S. assessments that it had a secret uranium enrichment program until Nov. 12, when it allowed a small group led by American scientist Siegfried Hecker to inspect the facility.

Hecker subsequently informed the U.S. government of what he saw, including a sophisticated enrichment facility that he said included hundreds of newly installed centrifuges.

The IAEA, which said it interviewed Hecker, said Friday the enrichment plant contained about 2,000 centrifuges and the North Koreans told the visitors that the machines operating and configured to produce low-enriched uranium, used for reactor fuel.

Beyond the centrifuges, the agency said it has information suggesting that **other technology and know-how needed for enrichment were purchased by the North from the same black market network.**

The IAEA report was prepared for a board meeting starting Sept. 12 that will discuss Iran, North Korea, Syria and other potential proliferation concerns.

Both Iran and North Korea are under U.N. Security Council sanctions -- the North for its nuclear and missile tests, and Iran primarily for refusing to stop enrichment despite concerns that it could turn the program toward making weapons.

(Mainichi Japan) September 3, 2011

## **Another Japanese reactor stops for regular checks**

One of the reactors at a nuclear power plant in western Japan has been shut down for regular inspections. About 80 percent of the country's nuclear reactors are now out of operation.

Shikoku Electric Power Company halted the No. 1 reactor at the Ikata nuclear plant in Ehime Prefecture early on Sunday for inspections expected to last 3 months.

The operation of the No. 3 reactor of the plant is also down, although regular checks have been completed. The utility must conduct a stress test which the government requires for all suspended reactors before they can be restarted.

The Ehime prefectural government says it will decide whether to approve the resumption of operations after the results of the safety test come out.

The utility says that if the No. 3 reactor does not resume operations, power supplies will be very tight in winter when electricity demand is high.

It is considering restarting a thermal plant which has long been out of use.

43 of the country's 54 reactors are now shut down. It is not known when any of them can resume operations.

Sunday, September 04, 2011 09:02 +0900 (JST)

## **Cesium beyond limit found in Chiba, Saitama tea**

The Japanese health ministry says radioactive cesium exceeding the government's safety limit has been detected in tea leaves in Chiba and Saitama prefectures, near Tokyo.

This is the ministry's first discovery of radioactive substances beyond the legal limit since it began unannounced tests of food products last month.

The tests were started in order to verify local government data using different numbers and kinds of

food samples.

The ministry says the leaves of one type of tea from Chiba Prefecture contained 2,720 becquerels of radioactive cesium per kilogram, more than 5 times the safety limit.

Meanwhile, a maximum level of 1,530 becquerels per kilogram was detected in 3 kinds of tea leaves from Saitama Prefecture.

The prefectural governments of Chiba and Saitama say they will investigate where the teas were grown and how much has made its way to market.

They say they will order tea producers to recall their product, if necessary.

Saturday, September 03, 2011 22:23 +0900 (JST)

## **Nuclear minister eyes standards for reactors' lifespan**

TOKYO (Kyodo) -- Goshi Hosono, a minister tasked with handling the country's nuclear crisis, said Sunday that the government needs to set definitions and standards for how long existing nuclear power reactors should be allowed to operate before they are decommissioned.

Hosono, who doubles as environment minister, told a group media interview that a new nuclear safety agency to be created to enforce greater supervision over the country's nuclear power plants will be closely involved in decommissioning.

"We can't extend (the reactors' lifespan) by looking sideways at electric power companies' business but must create a situation where we can make decisions scientifically," Hosono said.

While nuclear reactors are designed to run for between 30 and 40 years, there is no legal rule concerning their lifespan. Electric power companies have taken the view that reactors can be operated for as long as 60 years if properly managed.

On Friday, Yoshihiko Noda said at his first news conference as prime minister that the country will shut down reactors at the end of their lifespan one by one, though without specifying what their lifespan would be.

In the interview, Hosono said it is "not necessarily scientific" to set a numerical cutoff line for nuclear power reactors, noting that they are of different types and that natural disaster scenarios differ depending on where they are located.

But "40 years may possibly be a line," he said, adding that one criterion would be the degree to which a reactor could withstand a worst-case earthquake or tsunami.

(Mainichi Japan) September 5, 2011

## **Fukushima Pref. shows how it tests rice for radioactive matter**

FUKUSHIMA (Kyodo) -- The Fukushima prefectural government laid open Monday how it tests local rice for radioactive substances, showing to the media the cropping of sample plants for preliminary tests on brown rice at a paddy field in the town of Tanagura.

The tests of preharvest rice in 48 of the prefecture's 59 municipalities are designed to identify areas that require intensive examinations in postharvest tests, it said. The remaining 11 municipalities are without crops due to their locations inside the no-go zone around the crisis-hit Fukushima Daiichi nuclear power plant and other affected areas.

The initial tests cover unprocessed rice from about five plants each from five spots per paddy field. Municipalities with rice contaminated with more than 200 bequerels of radioactive cesium per kilogram will have more samples tested than others after harvesting, it said.

The prefecture has so far found no rice with cesium readings above the **provisional limit of 500 bequerels per kilogram of brown rice** in tests of early rice at about 200 locations, and has hence allowed shipments.

(Mainichi Japan) September 5, 2011

## **Nuclear troubleshooter Hosono cites need for temporary storage facility at Fukushima**

New Environment Minister Goshi Hosono, who was retained as nuclear disaster minister under a new Cabinet launched Sept. 2, said in a recent interview that major problems facing the Environment Ministry include decontamination efforts, radioactive waste and the creation of a nuclear power safety agency.

"On the other hand, there are wide-ranging issues such as environmental pollution, steps to address global warming and biodiversity," he said on Sept. 4. "These issues are important for the international community and I want to tackle them in cooperation" with top deputies.

"What I want to do the most is to decontaminate" radiation-tainted areas around the crippled Fukushima No. 1 Nuclear Power Plant, Hosono stressed. Such contaminated soil and debris have to be temporarily kept in cities, towns and villages involved, according to Hosono.

"But in reality, temporarily keeping the soil and debris there is very difficult, so we have no choice but to ask Fukushima Prefecture to set up a temporary storage facility within the prefecture to safely store the waste," he said.

Hosono said the government of Prime Minister Yoshihiko Noda will not unilaterally make a decision on the issue but will reach a decision on what kind of facility and when and where such a temporary facility will be built in consultation with local governments concerned.

He also stressed the need to develop technology to reduce radioactive waste and to move it out of Fukushima Prefecture. There is a large amount of heavily contaminated rubble at the nuclear power plant and some of the rubble probably needs to be dealt with on site, he added.

The minister acknowledged that some evacuees cannot return home for extended periods of time due to the presence of high-level radioactive materials in their communities.



Workers spread lining sheets in a huge trench dug to bury radiation-contaminated topsoil collected from the ground of Yasawa Elementary School and Kindergarten in Minami-Soma, about 20 kilometers away from the tsunami-crippled Fukushima Dai-ichi nuclear facility, in Fukushima Prefecture, northeastern Japan, Thursday, Aug. 18, 2011.(AP Photo/Hiro Komae)

**"It is an extremely urgent task to decide how to manage houses and schools in cities, towns and villages,"** he said, adding that the government wants to consult with these local governments individually and respond to their needs to the best of its ability.

Hosono, who has been dealing with the Fukushima nuclear crisis triggered by the March 11 Great East Japan Earthquake and tsunami, said the new government will spend some time to discuss decommissioning the stricken plant.

"Setting an age limit on the life of a nuclear power plant is not necessary a scientific practice," he said, adding it is desirable to draw a line somewhere in the course of stress tests or by other means. He said the government should not prolong the operational span of nuclear power plants simply by weighing the financial conditions of respective electric companies.

Hosono said Japan hopes to keep its pledge to reduce greenhouse gas emissions by 25 percent from 1990 levels by 2020. But specific measures to achieve the target have to be reconsidered, he said, adding building nine new nuclear reactors as part of the Japanese anti-global warming campaign is no longer realistic.

[!\[\]\(54e04ecb6b55cff618e852da557b7ae5\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) September 5, 2011

<http://www.scoop.it/t/tsunami-japon/p/415879489/video-les-dechets-radioactifs-des-stations-d-epuration-du-japon-aljazeera-eng>

<http://www.scoop.it/t/tsunami-japon/p/58216772/video-fukushima-vu-par-bernard-laponche-physicien-nucleaire-universcience-tv>

<http://www.blind-film.net/>

## **Making Tohoku region final repository site for all nuclear waste simply not fair**

When candidates running for the post of Democratic Party of Japan (DPJ) president were giving a joint press conference on Aug. 27 in Tokyo, then Prime Minister Naoto Kan was in Fukushima bowing apologetically to Fukushima Gov. Yuhei Sato.

"I have no choice but to ask that Fukushima Prefecture host an interim storage facility for nuclear waste and contaminated soil," Kan said.

"What are you talking about? This has come out of nowhere," Sato responded.

Toshio Seya, the head of the Fukushima Chamber of Commerce and adviser to Toho Bank, witnessed the melodramatic negotiations. Later, at a round-table meeting with reporters, Seya said, "Tokyo is the beneficiary of the nuclear power plant. Why not build (a radioactive waste storage facility) in Tokyo's Odaiba district?" (The comment was published in the Asahi Shimbun's Aug. 31 morning edition.)

Although shadowed by the drama of changing prime ministers, the above anecdote points to a serious problem that both anti-nuclear and pro-nuclear camps must face: where to store nuclear waste, at least for the time being.

Massive amounts of spent nuclear fuel are accumulating at nuclear power plants across Japan. On average, 64 percent of waste storage capacities at power plants are currently utilized. At old nuclear power stations, like those in Fukushima and Niigata prefectures, the figure is close to 90 percent, based on a survey conducted by Citizens' Nuclear Information Center (CNIC) for 2009.



This July 26, 2011 photo released by Tokyo Electric Power Co. and taken by the Quince, a radio-controlled robot developed by the Chiba Institute of Technology, shows the inside view around the stairs, bottom, at Unit 3 of the crippled Fukushima Dai-ichi nuclear power plant, in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Company)

Nuclear waste was supposed to have been reprocessed to be used again as fuel, if things had gone according to the government's 2005 Framework for Nuclear Energy Policy. But neither the prospects for recycling facilities nor fast-breeder nuclear reactors are good. And Japan has no final repositories. This is where the interim storage facilities come in, to buy time -- several decades -- until new technology is established to handle the problem on a more permanent basis.

Kan made the trip to Fukushima that day because he foresaw that leaving the task to the new prime minister would further delay the treatment and disposal of radiation-tainted soil and rubble. In appealing to the Fukushima governor for his cooperation in hosting a waste facility, Kan promised that it would only be used to store waste from within the prefecture, and also that it would not become a final repository for such waste.

There are two possible ways in which the new prime minister can go forward. The first option is to build up as many *faits accomplis* as possible, and eventually force the disaster-stricken Tohoku region to take on all nuclear waste. The alternative is to divide the responsibility of storing spent fuel among all prefectures.

A 23-page document titled "The Problem of the Nuclear Fuel Cycle's Back End" argues that the recycling of spent fuel is impossible and that the burden of storing nuclear waste must be shared by each prefecture. It also suggests giving prefectures the capacity to buy or sell storage amounts with each other. The document reads like a sequel to another document that was released years earlier.

That document is "The 19 trillion yen Invoice," a 25-page document critiquing the nuclear fuel cycle that caused a stir among government ministries in the spring of 2004. It had been written by a fringe group of Ministry of Economy, Trade and Industry (METI) bureaucrats who charged that the funds earmarked for the pointless bank-end stages of the fuel cycle totaled 19 trillion yen.

The construction of temporary storage sites for radiation-contaminated waste in the disaster-stricken region is unavoidable. The spent fuel in Fukushima cannot be transported elsewhere. However, taking advantage of such circumstances to make the Tohoku region a final repository of nuclear waste created around the country is simply unfair.

There was a time when the economy was booming and the government could afford to spend extra. Back then, compensation payments were routinely given out to resolve conflicts and contradictions. A bit of that practice still lingers, but the government no longer has the means to dole out massive amounts of cash anymore.

Looking back on the negotiations and discussions between the central and Fukushima Prefectural governments, one anecdote from 2009 stands out. A member of the Fukushima Prefectural Assembly asked how spent nuclear fuel would be treated, and when. A representative from the Agency for Natural Resources and Energy (ANRE) responded, "That is something that is up to each operator (power company)."

This is apparently the sentiment of METI's mainstream bureaucrats. Meanwhile, the new prime minister has not made any mention of the fuel cycle's back end. Will he be able to rectify the mainstream's irresponsibility, rigidity and decadence, and thereby alter the direction in which we are headed? Or will he retreat into the security of the status quo out of fear of turmoil? (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) September 5, 2011

## **Fukushima No. 3 reactor bottom's temperature falls below 100 C**



This March 24, 2011 aerial photo, taken by a small unmanned drone and released by Air Photo Service, shows the damaged Unit 3 of the crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan. (AP Photo/ Air Photo Service)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Monday that the temperature of the crippled No. 3 nuclear reactor at the Fukushima Daiichi atomic power plant has fallen below 100 C, signaling progress toward the plant's cold shutdown.

It is the first time that the temperature measured at the bottom of the No. 3 reactor pressure vessel dropped below 100 C since the nuclear crisis began at the complex in March due to a devastating earthquake and tsunami. The No. 1 reactor is already below 90 C.

The plant operator known as TEPCO said using an additional cooling method of showering water to the reactor core is likely to have helped lower the temperature of the No. 3 reactor pressure vessel.

**TEPCO is considering applying the same method to the No. 2 reactor.**

The utility has said the Nos. 1 to 3 reactors' cores are assumed to have suffered meltdowns and the melted fuel is believed to be solidified at the bottom of the pressure vessels.

**Cooling the pressure vessels of the plant's damaged Nos. 1 to 3 reactors is part of the key conditions to realize the plant's cold shutdown**, which the government and TEPCO hopes to achieve by January at the latest.

The cold shutdown is also defined by the government and TEPCO as a state in which the release of radioactive materials from reactors is under control and radiation exposure dose is significantly held down.

(Mainichi Japan) September 6, 2011

## **TEPCO to build wall off Fukushima Daiichi plant**

The operator of the damaged Fukushima Daiichi nuclear power plant plans to build an iron wall on the ocean side of the plant to prevent radioactive water from leaking into the sea.

Tokyo Electric Power Company says more than 110,000 tons of highly radioactive water remains in the basements of reactor buildings at the plant. There is growing concern that the water may eventually pass via underground water into the ocean.

The utility will use thousands of iron pipes to create an 800-meter-long wall surrounding the water intakes of 4 reactor facilities.

Each pipe, 22-meters long and one meter wide, will be installed deep below the sea bed to stop the flow of groundwater.

The firm says it will also prepare for a rise in underground water levels around the plant after the wall is built. It says it will closely monitor the level of groundwater and consider pumping it away to prevent overflow.

Construction will begin as early as the end of this year and be completed in about 2 years.

Prevention of sea-water contamination is one of pillars in the company's roadmap to contain the nuclear accident.

Tuesday, September 06, 2011 07:11 +0900 (JST)

## **No. of Japan's nuclear plants to be zero in future: Hachiro**

TOKYO (Kyodo) -- Industry minister Yoshio Hachiro said Tuesday that the number of Japan's nuclear power plants would be "zero" in the future, based on Prime Minister Yoshihiko Noda's policy of not building new nuclear power plants and decommissioning aged ones.

"Considering the premier's remarks at press conferences, it would be zero," Hachiro told reporters in answer to the question whether the number of nuclear plants would reduce to none in the future.

Hachiro added that it would be "difficult" to proceed with plans to build new nuclear plants whose construction has yet to begin, such as Chugoku Electric Power Co.'s Kaminoseki plant in Yamaguchi Prefecture. "Public opinion is generally united in reducing (nuclear plants), instead of increasing them," he said.

As for nuclear power plants whose construction has begun, such as Chugoku Electric's Shimane plant's No. 3 reactor in Shimane Prefecture and Electric Power Development Co.'s Oma nuclear power plant in Aomori Prefecture, Hachiro said he intends to make a decision based on discussions at the ministry's advisory committee on energy and natural resources.

Japan currently plans to set up 12 reactors nationwide, excluding the Fukushima Daiichi nuclear power plant's No. 7 and 8 reactors, whose construction plan was canceled by the plant operator Tokyo Electric Power Co. in the wake of the nuclear crisis at the complex. But construction has not progressed much for most of the projects.

As for the resumption of reactors idled for regular checkups, Hachiro said that Noda has approved a plan to seek safety assessments from the International Atomic Energy Agency as part of the so-called nuclear "stress tests" introduced by the Japanese government given the Fukushima crisis.

Hachiro has said he aims to resume operations of the halted reactors nationwide soon once their safety is thoroughly checked and local municipalities hosting the plants approve their resumption.

Meanwhile, Hachiro admitted that Japan has received an offer from French nuclear power company Areva SA to take charge of spent nuclear fuel at the troubled Fukushima Daiichi plant, but he did not reveal Japan's response to the offer.

(Mainichi Japan) September 6, 2011

## **13 idled reactors enter 1st stage of safety evaluation process**

TOKYO (Kyodo) -- A total of 13 of the around 30 reactors in Japan idled for regular checks have entered the first stage of the safety evaluation process, a step set as a precondition for restarting them following the Fukushima nuclear crisis, Kyodo News learned Tuesday.

Kansai Electric Power Co. and Shikoku Electric Power Co., which serves some areas in western Japan and Shikoku Island, plan to submit evaluation reports on their six idled reactors to the government's Nuclear and Industrial Safety Agency by the end of this month.

The other four utility companies hoping to restart the remaining seven reactors are also accelerating efforts to do so, aiming to resume operation of their reactors as early as year-end.

The safety evaluation process was set by the government in July as a precondition for the restarting of reactors following the nuclear crisis at the Fukushima Daiichi power plant triggered by the March 11 earthquake and tsunami.

Japan's new Prime Minister Yoshihiko Noda has shown a positive stance toward restarting idled reactors to ensure a stable supply of electricity.

It remains uncertain whether local governments will give their approval for the resumption of reactors, which is also required to restart them.

The 13 reactors are the Nos. 1 and 2 reactors at Hokkaido Electric Power Co.'s Tomari plant, the No. 1 unit at Tohoku Electric Power Co.'s Higashidori plant, the No. 2 unit at Hokuriku Electric Power Co.'s Shiga plant, Kansai Electric's Nos. 1 and 3 units at its Mihama plant and Nos. 1 and 3 units at its Oi plant as well as the No. 1 unit at its Takahama plant, the No. 3 unit at Shikoku Electric's Ikata plant, and Kyushu Electric Power Co.'s Nos. 2 and 3 units at its Genkai plant and the No. 1 unit at its Sendai plant.

The utility companies have been checking the safety of the reactors, including their ability to withstand earthquakes and tsunami, since late July.

After the government's nuclear safety agency and the Nuclear Safety Commission of Japan screen their reports, Noda, industry minister Yoshio Hachiro, nuclear disaster minister Goshi Hosono and chief Cabinet secretary Osamu Fujimura will decide on whether to allow the reactors to be restarted.

If approved by both the central and local governments, Japan will see its first reactor restart since the Fukushima nuclear crisis, excluding the No. 3 reactor at the Tomari plant, which shifted from an "adjustment operation" in the final phase of checks to commercial operation in mid-August.

Before the Fukushima nuclear crisis, more than 30 reactors were operating in Japan. But given the effects of the March disaster and the need to regularly suspend reactors for checks, only 11 of Japan's 54 commercial reactors are currently in operation.

If the resumption of their operation is not allowed, all of Japan's 54 reactors will be out of operation by May.

(Mainichi Japan) September 7, 2011

---

Rezo-nukes

September 7, 2011

ACRO has again analyzed the urine of Japanese children and the results are unambiguous: all children in Fukushima were or are contaminated, while we have not found any contamination in the urine of children in Tokyo and surroundings.

Fukushima children who were evacuated by their parents saw their contamination of the urine drop. More than four months after the massive discharges of radioactivity into the environment, others are still contaminated, although their parents do their best to reduce this contamination. It is likely that this is due to food.

The results are detailed with comments on our website: <http://acro.eu.org>

**While the tests performed by the Japanese authorities gives about one child from Fukushima out two that is contaminated, we get 100%. This reflects the fact that the official measurements are not accurate enough and did not detect all contaminations.**

**It is important to conduct an accurate, systematic and regular monitoring of internal contamination of children from Fukushima. Families must have access to the measurement of radioactivity to help them reduce this contamination.**

## Fukushima : le Japon durablement contaminé

ACRO  
138, rue de l'Eglise  
14200 Hérouville St Clair  
<http://acro.eu.org>

Article écrit pour la revue du [Réseau Sortir du Nucléaire](#)

---

Dans une vidéo mise en ligne le 17 août sur son site (à [télécharger ici](#)), le directeur de la centrale de Fukushima Dai-ichi prie la population de l'excuser pour les « *désagréments et l'anxiété causés par l'accident* ». TEPCO n'aurait ainsi causé que des désagréments et de l'anxiété ? Et d'ajouter sans vergogne qu'ils font tout pour que les personnes déplacées puissent revenir au plus vite chez elles.

## **Des rejets massifs de radioéléments**

Même arrêtée, une centrale nucléaire est menaçante : la forte chaleur dégagée par la radioactivité du combustible doit être évacuée dans le cœur du réacteur puis pendant des années en piscine. Sans électricité et eau, pas de refroidissement et la pression monte. Il faut donc dépressuriser les réacteurs pour éviter qu'ils n'explodent. C'est ce qui s'est passé dans les réacteurs 1 à 3 de la centrale de Fukushima frappée par un puissant séisme et un tsunami, entraînant des rejets radioactifs massifs. Comme le combustible a fondu, il n'est plus protégé par sa gaine, et les éléments très radioactifs sont en contact direct avec l'eau et l'air. Les explosions hydrogène qui ont eu lieu dans trois des six réacteurs de la centrale et au niveau de la piscine d'un quatrième ont aussi provoqué de forts dégagements de gaz radioactifs.

Tout un cocktail de radioéléments a été rejeté. La quantité estimée a posteriori a changé au cours du temps et dépend de l'organisme qui a fait les calculs. Une chose est sûre, c'est que l'on n'est pas loin des quantités rejetées par Tchernobyl. Les niveaux de contamination relevés jusqu'à des dizaines de kilomètres de la centrale sont aussi similaires à ceux relevés dans les territoires contaminés de Biélorussie. Avec cependant quelques petites différences : contrairement à Tchernobyl, où un incendie a entraîné une forte contamination de la Scandinavie par exemple, les vents dominants ont emporté la majorité de la radioactivité émise par la centrale de Fukushima vers l'Océan Pacifique. Les relevés effectués autour de la centrale ont aussi montré que très peu de plutonium est sorti, alors qu'en Biélorussie, la contamination en plutonium, très toxique, doit être prise en compte dans la délimitation des zones à évacuer. La contamination en strontium est aussi relativement plus faible qu'autour de Tchernobyl.

## **L'évacuation pour protéger les populations**

Les habitants ont été rapidement évacués, parfois dans des conditions chaotiques, dans un rayon de 20 km autour de la centrale et confinés jusqu'à 30 km pour éviter l'exposition au panache radioactif. Le confinement a duré des semaines avant que les habitants soient invités à partir. Comme la centrale est encore menaçante et que l'on ne peut pas exclure de nouveaux rejets une distance de sécurité de 30 km est maintenue. En effet, la centrale est fragilisée et les séismes continuent. À cela s'ajoute la contamination de vastes territoires qui fait qu'une grande partie de ces gens ne pourront pas rentrer chez eux. Ce sont près de 80 000 personnes jusqu'à une quarantaine de kilomètres de la centrale qui ont finalement été évacuées. Et ce n'est sûrement pas suffisant.

Évacuer est une décision terrible, car on perd tout, maison, emploi... C'est aussi le démantèlement des communautés et du lien social très fort au Japon. Les agriculteurs sont les plus pénalisés car ils n'ont presque aucun espoir de retrouver des terres. Nombreux ont refusé de partir et sont restés avec leurs bêtes. Quand les autorités ont bouclé la zone des 20 km autour de la centrale, fin avril, 45 irréductibles ont refusé de partir.

Pourtant, les conséquences de la radioactivité sont pires que l'évacuation et personne n'a réclamé une zone d'évacuation plus étroite. En revanche, les appels à l'élargissement de la zone sont nombreux. Les autorités japonaises ont fixé à 20 millisieverts par an la limite de risque acceptable pour la population, comme pour les travailleurs du nucléaire. C'est 20 fois plus qu'en temps normal et c'est inacceptable (un

argumentaire d'ONG japonaises de 16 pages sur le sujet peut être [téléchargé ici](#)). Car, contrairement aux travailleurs du nucléaire qui sont sélectionnés et suivis médicalement, il y a des personnes fragiles et vulnérables parmi la population qui doivent être mieux protégées. C'est le cas des enfants particulièrement sensibles aux radiations. Où mettre la limite ? Jusqu'où évacuer ? Ce n'est pas une décision facile. Interrogée par l'ACRO, l'[IRSN](#) a déclaré qu'elle recommanderait de mettre la limite à 10 millisieverts par an en cas de situation similaire en France. Et d'ajouter que cela impliquerait d'évacuer 70 000 personnes supplémentaires au Japon. De fait, les familles qui peuvent se le permettre sont parties, ou se sont séparées, la mère et les enfants, ou les enfants seuls envoyés plus loin. Sans aide gouvernementale, d'autres n'ont pas le choix et doivent rester.

La délimitation des zones d'évacuation est seulement définie à partir de l'irradiation externe due aux retombées sur le sol. Mais, les personnes ne partent pas de zéro puisqu'elles ont été exposées aux retombées radioactives : le logiciel SPEEDI développé après Tchernobyl pour calculer l'impact des panaches radioactifs en cas d'accident n'a servi à rien, ou presque. Les prévisions n'étaient pas publiées et pas utilisées par les autorités. Des personnes ont été évacuées dans un abri situé sous les vents dominants où les enfants ont joué dehors. Et la contamination interne risque de continuer via l'alimentation, l'inhalation de poussières...

### **De la radioactivité détectée à travers tout le pays**

L'ACRO a détecté du césium 134 et 137 dans toutes les urines des enfants de la ville de Fukushima qu'elle a contrôlés. Les prélèvements ont été faits par des associations locales avec lesquelles nous sommes en contact. Les niveaux étaient faibles, mais montrent que la contamination interne existe et doit être prise en compte. Les données officielles ([traduites en anglais ici](#)) font état de cas avec de plus fortes contaminations. En revanche, la limite de détection des autorités est trop élevée pour pouvoir se faire une idée du nombre de personnes contaminées. Il est important que le suivi officiel soit plus rigoureux.

Des retombées radioactives ont été retrouvées très loin en quantité significative. Du thé radioactif au-delà des normes a été détecté jusqu'à Shizuoka, à environ 300 km de la centrale. De la paille de riz, qui sert à alimenter le bétail, a aussi été retrouvée jusqu'à Iwaté, plus au Nord. L'eau a concentré cette pollution dans les cours d'eau et les stations d'épuration dont les boues sont radioactives. Le pays ne sait pas comment faire face à tous ces déchets radioactifs nouveaux.

Certaines de ces boues ont été incinérées, entraînant une contamination locale importante. L'ACRO a mesuré une contamination en césium dans un sol de l'arrondissement de Kôtô-ku de Tôkyô qui nécessite une surveillance radiologique. De la paille de riz contaminée a été vendue jusqu'à Mié, à 600 km de la centrale, rendant la viande de bœuf radioactive. Le fumier a servi à faire du compost à Shimané à l'autre bout du pays.

### **La chaîne alimentaire est contaminée**

La chaîne alimentaire est donc touchée et la crise provoquée par la découverte de viande de bœuf radioactive au-delà des normes sur les étals a montré que les contrôles officiels n'étaient pas suffisants. Le

pays importe près de 60% de sa nourriture, mais est autosuffisant en riz. L'agriculture dans les zones évacuées est suspendue. Au-delà, elle est fortement perturbée, de nombreux aliments ne pouvant pas être mis sur le marché (pour le césium radioactif (césium 134 + césium 137), les autorités japonaises ont fixé à 500 Bq/kg la limite au-delà de laquelle un aliment ne peut pas être vendu). Heureusement, la plupart des aliments vendus en supermarché sont peu ou pas contaminés. Les aliments qui ne passent pas par les circuits commerciaux échappent aux contrôles.

Les végétaux peuvent être contaminés de deux façons. D'abord par les feuilles directement exposées aux retombées. Le transfert est élevé, mais cela ne dure que le temps d'une récolte. Si l'accident de Tchernobyl avait eu lieu en juin, une grande partie de la production de blé en France n'aurait pas pu être consommée. L'autre mode de contamination est via les racines. Le taux de transfert est généralement faible, mais dans les zones très contaminées, cela rend la production d'aliments impossible pendant des décennies à cause du césium 137 qui a une demi-vie de 30 ans. Le thé de Shizuoka devrait pouvoir être consommé sans problème dans l'avenir.

La culture du riz est plus problématique : une étude de l'université de Tokyo, en collaboration avec la province de Fukushima, a montré que le césium s'enfoncerait plus vite dans le sol que ce qui était généralement admis, rendant une décontamination des terrains quasiment impossible. De plus, les fortes pluies de juin et les typhons ont lessivé les sols et concentré la radioactivité dans les rivières. Celle-ci risque ensuite de diffuser lentement dans les rizières où elle va rester piégée. Une surveillance accrue s'impose pendant de longues années.

### **Le milieu marin est aussi très touché**

À toute cette contamination terrestre, s'ajoute une forte pollution radioactive en mer. Outre les rejets aériens qui ont aussi contaminé l'océan sur une grande surface, TEPCO a dû faire face à une forte fuite d'eau très radioactive qui a contaminé durablement la côte. Au même moment, la compagnie a rejeté volontairement de l'eau moyennement radioactive, ce qui a provoqué une confusion et un tollé.

Les sous-sols inondés des réacteurs débordaient dans la mer et il fallait pouvoir pomper cette eau fortement contaminée. TEPCO a donc vidé des cuves pour faire de la place. Pour l'iode, ces rejets volontaires étaient dix fois plus faibles qu'une année de rejets de l'usine Areva de La Hague. En revanche, TEPCO a annoncé que la fuite d'eau du réacteur n°2 a entraîné un rejet estimé à 520 m<sup>3</sup> d'eau très radioactive, soit 4 700 térabecquerels (1 térabecquerel représente un million de millions de becquerels) ou 20 000 fois l'autorisation de rejet annuel. Ce seul rejet mériterait d'être classé au niveau 5 ou 6 de l'échelle internationale INES.

La centrale de Fukushima étant proche du point de rencontre de deux courants marins, cette pollution devait être rapidement emportée au large et les autorités se voulaient rassurantes. Mais il n'en est rien. Des mois plus tard, les analyses faites par l'ACRO pour Greenpeace sur des poissons et algues prélevés à des dizaines de kilomètres de la centrale montrent une contamination persistante. Certains de ces échantillons dépassent la limite fixée en urgence par les autorités japonaises pour les produits de la mer. Les fonds marins sont aussi contaminés.

Si les algues et les poissons sont contaminés, l'eau de mer doit l'être aussi. Mais les analyses effectuées par les autorités japonaises ne sont pas assez précises : en dessous de la limite de détection de quelques becquerels par litre, il est annoncé "non détectable". Or il est nécessaire d'avoir des limites plus basses, car la vie marine a tendance à concentrer cette pollution. La pollution en iode peut être 1 000 fois plus forte dans une algue que dans l'eau. La [société d'océanographie du Japon](#) a aussi réclamé des mesures plus précises sur l'eau de mer. Les données sur le strontium sont trop rares.

### **Un impératif : multiplier les mesures indépendantes**

Les rejets continuent. Actuellement, suite à la fusion des trois cœurs de réacteurs qui ont percé les cuves, TEPCO refroidit le magma en injectant de l'eau par le haut et qui ressort via les fuites dans les sous-sols après avoir été fortement contaminée. Il y en a 120 000 m<sup>3</sup> dans des structures qui n'ont pas été prévues pour stocker l'eau. TEPCO tente, tant bien que mal, de décontaminer cette eau avant de la réinjecter dans les réacteurs et ose parler de « circuit fermé ». Une partie s'évapore car les réacteurs sont encore très chauds, une autre s'infiltré partout.

Fin avril, TEPCO estimait à 1 térabecquerel par heure (1 million de millions de becquerels par heure) les rejets de la centrale. Ils seraient en baisse. Les rejets étaient estimés à 6,4 fois plus début avril. Fin juillet, TEPCO estime à environ 1 milliard de becquerels par heure les rejets aériens actuels des 3 réacteurs accidentés. Ce chiffre est estimé à partir des mesures faites à l'extérieur à partir de balises. TEPCO est en train de construire comme une tente par-dessus le réacteur n°1 pour contenir les effluents gazeux. Les autres suivront. Elle prévoit aussi d'installer une barrière souterraine pour retenir les fuites vers la mer.

Face à une telle situation, malheureusement durable, l'accès à la mesure de la radioactivité est primordial. On ne compte plus les initiatives en ce sens. Des universitaires sont en train de finaliser une [cartographie dans un rayon de 80 km](#) autour de la centrale. Un [groupe Facebook](#) a fait analyser de nombreux échantillons de sol de Tokyo... On trouve sur Internet de nombreux relevés de débit de dose ambiant fait par les autorités ou des amateurs. L'ACRO est en contact avec plusieurs projets de vrais laboratoires pouvant distinguer la pollution radioactive de la radioactivité naturelle. Dans certains cas, nous avons juste fourni du conseil technique. Dans d'autres nous avons installé le laboratoire, testé et qualifié les détecteurs, formé les utilisateurs. Afin de favoriser l'entraide technique et la coopération nous avons aussi initié un réseau. Et pour que ces projets soient pérennes, nous avons lancé une souscription pour ouvrir un laboratoire aussi sophistiqué que le nôtre sur place qui prendrait le relais du soutien technique que nous fournissons actuellement. Cela en collaboration étroite avec les associations avec lesquelles nous sommes en contact depuis de très nombreuses années.

Un projet aussi ambitieux prend du temps à se mettre en place. En attendant, l'association a analysé gracieusement de nombreux échantillons dans son laboratoire en France. Pour nous permettre de continuer, l'ACRO a besoin de votre soutien financier.

## TEPCO submits heavily redacted copy of Fukushima nuke accident manual



Copies of a heavily redacted nuclear accident manual submitted to a Diet committee by Tokyo Electric Power Co. are pictured on Sept. 7. (Mainichi)

A Diet science committee says it has received a heavily censored copy of a nuclear accident operating manual for the crippled Fukushima No. 1 nuclear plant from Tokyo Electric Power Co. (TEPCO).

The House of Representatives Special Committee on Promotion of Science and Technology and Innovation had requested TEPCO submit two operating manuals -- one each for accidents and severe accidents -- through the Economy, Trade and Industry Ministry (METI), but said Sept. 7 that it had received only the former document, which had itself been significantly redacted. The panel, chaired by Hiroshi Kawauchi of the ruling Democratic Party of Japan, said it needed the manuals and other pertinent documents on Aug. 26 to help probe the cause of the ongoing nuclear disaster, and has requested TEPCO to resubmit the manuals by Sept. 9.

The 6-page manual for nuclear accidents TEPCO did submit was divided into four sections, including "main item" and "shift supervisor (deputy shift supervisor)." The document was, however, nearly unreadable because most of it had been blacked out. Even those sections left visible had holes, such as one sentence that read: "When reactor pressure rises, stabilizes the pressure at (redacted) Mpa by using an emergency condenser and other techniques, and report."

According to the METI's Nuclear and Industrial Safety Agency (NISA), TEPCO submitted them to NISA on Sept. 2 after seeking a guarantee of nondisclosure the day before. NISA rejected the utility's request, but then simply delivered the TEPCO documents to the committee.

Sources said TEPCO defended the censored documents, saying they contain intellectual property and may cause problems concerning the protection of nuclear materials.

Committee Chairman Kawauchi said the blacked out documents "are extremely regrettable. If TEPCO refuses to resubmit the manuals in question, we will consider summoning TEPCO executives as unsworn witnesses."

(Mainichi Japan) September 8, 2011

<http://news.yahoo.com/paris-court-drops-case-chernobyl-fallout-075633122.html>

## **Paris court drops case on Chernobyl fallout**

PARIS (AP) — A Paris court has dropped a long-running investigation into whether the 1986 Chernobyl nuclear accident caused health problems in France.

The lawyer for the complainants, Bernard Fau, said the Paris appeals court ruled Wednesday to close the case.

The then-chief of France's radiation safety agency, Pierre Pellerin, had faced preliminary charges in the case for "aggravated deception."

Researchers and cancer victims accuse the government of intentionally downplaying the risks of the radioactive cloud that the accident in then-Soviet Ukraine spewed over much of Europe, in part to protect France's powerful nuclear industry.

But the prosecutor said earlier this year that the probe had turned up no hard proof that Pellerin misled the public on purpose.

## **Rising radioactive cesium levels detected in Fukushima child's urine**

Increased radioactive cesium levels were detected in a urine sample taken from a child who continued to live in Fukushima Prefecture after the meltdowns at the Fukushima No. 1 nuclear plant, a citizens group has announced.

On Sept. 7, Fukushima Rokyū Genpatsu o Kangaeru Kai (An association for a study of the aging nuclear power plants in Fukushima) released the results of urine tests on 10 people aged between 6 and 16 who lived in the city of Fukushima at the beginning of the nuclear disaster in March. At the time of the first round of testing on May 20-22, all 10 children were living in Fukushima Prefecture, while at the time of the second round conducted July 22 through 26, nine had evacuated to other parts of Japan.

Results showed cesium levels in the nine children who had left the prefecture had dropped by roughly 20 to 70 percent in the some two months between the tests. Radioactive cesium 137 levels in the one

child who had remained in the city of Fukushima, however, had spiked by 11.5 percent as of the July tests.

"We assume the child was exposed to additional radiation through food and drink," a representative of the citizens group said.

The group, comprised of citizens and professors, has been conducting follow-up testing on Fukushima children's urine to study their internal exposure. The group commissioned ACRO -- a French civilian organization studying radioactive materials -- in May to analyze urine samples collected from the 10 children.

(Mainichi Japan) September 8, 2011

## **Above-the-limit cesium found in Iwate beef, 1st since shipments OK'd**

MORIOKA (Kyodo) -- Radioactive cesium exceeding the legal limit has been detected in beef cattle in Iwate Prefecture for the first time since the ban on shipments in the region was lifted last month, local officials said Thursday.

The amount of cesium found topped the government-set allowable limit of 500 becquerels per kilogram in two of eight beef cattle following shipment, the officials said.

Cesium was first detected in the eight cattle in a simple test Tuesday, the officials said, adding that two of the eight were destroyed after further tests confirmed they had excessive levels of the element.

The cattle shipment ban was imposed following the discovery of beef contaminated with radioactive cesium from cattle raised in northeastern Japan, in the wake of the nuclear crisis at the Fukushima Daiichi power plant triggered by the March 11 earthquake and tsunami.

(Mainichi Japan) September 8, 2011

## **Sea radiation leaks reach 15,000 terabecquerels off Fukushima plant**

TOKYO (Kyodo) -- Researchers estimate that amount of radioactive substances that leaked into the sea from the crippled Fukushima Daiichi nuclear power plant between March 21 and April 30 totaled 15,000 terabecquerels, an entity which led the research work said Thursday.

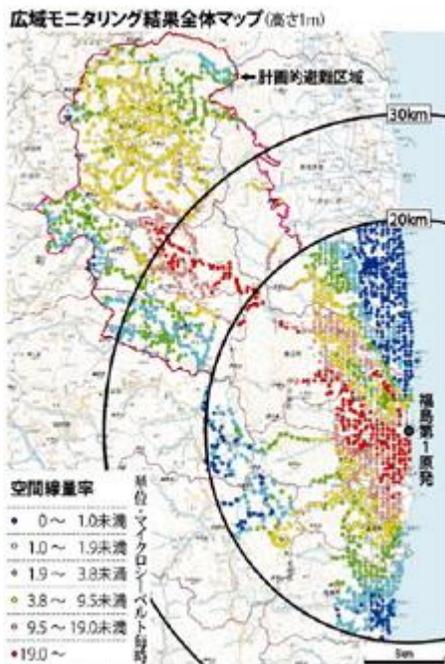
The estimate compares with 4,700 terabecquerels of radioactive iodine and cesium that the plant operator, Tokyo Electric Power Co., estimated had leaked into the sea between April 1 and 6 from a water inlet at the No. 2 reactor at the four-reactor plant following the March 11 earthquake and tsunami.

The big gap indicates radioactive substances could have leaked through other channels as well as the No. 2 reactor inlet, said Takuya Kobayashi, a senior researcher at the Japan Atomic Energy Agency which led the estimate work.

The researchers' estimate will be reported at a meeting of the Atomic Energy Society of Japan starting Sept. 19 in Kitakyushu, Fukuoka Prefecture.

(Mainichi Japan) September 8, 2011

## Nuclear experts: Radiation-contaminated areas in Fukushima disaster only one-tenth of Chernobyl's



A government map displaying radiation levels in the area around the Fukushima No. 1 Nuclear Power Plant. An English version can be found on the page linked below.

The Atomic Energy Society of Japan (AESJ) suggests in a recent survey that the total area of radioactive contamination following the nuclear meltdowns in Fukushima in March equaled no more than one-tenth of that in the Chernobyl accident in 1986.

The survey shows that approximately 800 square kilometers is contaminated with levels of radioactive cesium exceeding 600,000 becquerels per square meter, whereas in Chernobyl the total area exceeding 555,000 becquerels per square meter topped 10,000 square kilometers. Based on these results, the

Society's nuclear experts estimated that radiation contamination area in the Fukushima disaster equals no more than one-tenth that in the Chernobyl disaster.

Meanwhile, a soil radiation map of over 2,200 locations within a 100-kilometer radius of the Fukushima No.1 Nuclear Power Plant, released by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) on Aug. 29, shows 34 locations with levels of cesium exceeding 1.48 million becquerels per square meter, the level used as the basis for issuing compulsory evacuation orders in areas near the Chernobyl plant.



A member of a government decontamination team checks radiation levels at a playground in Date, Fukushima Prefecture, on Aug. 24. (Mainichi)

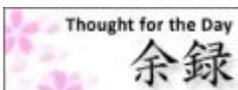
According to experts at the Ibaraki Prefecture-based National Institute for Agro-Environmental Sciences -- in charge of monitoring rice fields in 15 locations across the country -- previously the most severe soil radiation in the history of Japan was measured in 1967 at 138 becquerels per kilogram, following a series of nuclear experiments in the 1960s.

A map showing levels of radioactive cesium (cesium-137 and cesium-134) in all surveyed zones is regularly updated on MEXT's website, while online map search sites such as [www.geocoding.jp](http://www.geocoding.jp) allow users to pinpoint particular monitoring locations.

[!\[\]\(8d8f4991e1c6d0cf179daea65986ef4c\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) September 8, 2011

## Gov't must learn lessons from nuclear crisis response to avoid repeating mistakes



A radiation expert says what has infuriated him most since crisis broke out at the Fukushima No. 1 Nuclear Power Plant is that the government initially withheld data from the System for Prediction of Environmental Emergency Dose Information (SPEEDI), which predicted how radioactive substances would spread. His anger is understandable.

Clouds of radioactive substances drifted northwest as well as toward the Kanto area around Tokyo between March 15 and 16, and between March 20 and 22. There are many people who fled to areas that the clouds were drifting towards, and those who allowed their children to play outdoors without knowing how radioactive substances were spreading. It is difficult to imagine how people saying, "If I had only known about the projections ..." are feeling now.

As if to add insult to injury, it has turned out that projections made on March 11 of nuclear reactor core meltdowns were ignored by the Prime Minister's Office. It is surprising that the government has disclosed this fact at this stage, but its claim that it "never thought of utilizing the data because it is not based on confirmed facts" is also astounding. Exactly because facts cannot be immediately confirmed, the government should have protected residents of affected areas by making predictions. SPEEDI, as well as a system to predict meltdowns, exists for that very purpose.

The government is now paying the price for ignoring the projections of the widespread diffusion of radioactive substances. Numerous beef cows were contaminated with radiation through tainted feed, and so-called hot spots -- sites where radiation levels are far higher than the surrounding area -- have been discovered one after another. The government's acknowledgement, six months after the nuclear crisis began, that residents of highly contaminated areas cannot return home for decades also appears to be an "after-effect" of ignoring the diffusion predictions.

University of Tokyo professor Tatsuhiko Kodama has urged that an expert committee comprised of "fresh" members be set up to protect children and expecting mothers from radiation, and promote the decontamination of affected areas in an appropriate manner. Kodama places emphasis on "fresh" members because he fears that experts who have been involved in the past mistakes will only make excuses. His opinion is convincing, considering the government's response to the nuclear crisis.

Unfortunately, all the Diet members were directly or indirectly involved in the mistakes. Therefore, all politicians should confront the mistakes made in the days and weeks after the meltdowns. The new administration of Prime Minister Yoshihiko Noda must pay close attention to the crisis to see if any mistake is being made, and eliminate the causes of any potential mistake. ("Yoroku," a front-page column in the Mainichi Shimbun)

(Mainichi Japan) September 8, 2011

## **Fukushima Radioactive Release Into Pacific Ocean Estimated Triple**

September 8, 2011

<http://visionsgreen.com/blog/2011/09/08/fukushima-radioactive-release-into-pacific-ocean-estimated-triple/>

A group of Japanese researchers say that a total of 15,000 terabecquerels of radioactive substances is estimated to have been released from the crippled Fukushima Daiichi nuclear power plant into the sea.

Researchers at the Japan Atomic Energy Agency, Kyoto University and other institutes made the calculation of radioactivity released from late March through April.

The combined amount of iodine-131 and cesium-137 is more than triple the figure of 4,720 terabecquerels earlier estimated by Tokyo Electric Power Company, the plant operator. The utility only calculated the radioactivity from substances released from the plant into the sea in April and May.

The researchers say the estimated amount of radioactivity includes a large amount that was first released into the air but entered the sea after coming down in the rain.

They say they need to determine the total amount of radioactivity released from the crippled Fukushima Daiichi plant in order to accurately assess the impact of the disaster on the sea.

Thursday, September 08, 2011 19:33 +0900 (JST)

## **Radiation expert says outcome of nuke crisis hard to predict, warns of further dangers**

As a radiation metrology and nuclear safety expert at Kyoto University's Research Reactor Institute, Hiroaki Koide has been critical of how the government and Tokyo Electric Power Co. (TEPCO) have handled the nuclear disaster at the Fukushima No. 1 nuclear plant. Below, he shares what he thinks may happen in the coming weeks, months and years.

The nuclear disaster is ongoing. Immediately after the crisis first began to unfold, I thought that we'd see a definitive outcome within a week. However, with radioactive materials yet to be contained, we've remained in the unsettling state of not knowing how things are going to turn out.

Without accurate information about what's happening inside the reactors, there's a need to consider various scenarios. At present, I believe that there is a possibility that massive amounts of radioactive materials will be released into the environment again.

At the No. 1 reactor, there's a chance that melted fuel has burned through the bottom of the pressure vessel, the containment vessel and the floor of the reactor building, and has sunk into the ground. From there, radioactive materials may be seeping into the ocean and groundwater.

The use of water to cool down the reactors immediately after the crisis first began resulted in 110,000 cubic meters of radiation-tainted water. Some of that water is probably leaking through the cracks in the concrete reactor buildings produced by the March 11 quake. Contaminated water was found flowing through cracks near an intake canal, but I think that's just the tip of the iceberg. I believe that contaminated water is still leaking underground, where we can't see it. Because of this, I believe immediate action must be taken to build underground water barriers that would close off the nuclear power plant to the outside world and prevent radioactive materials from spreading. The important thing is to stop any further diffusion of radioactive materials.

The government and plant operator TEPCO are trumpeting the operation of the circulation cooling system, as if it marks a successful resolution to the disaster. However, radiation continues to leak from the reactors. The longer the circulation cooling system keeps running, the more radioactive waste it will accumulate. It isn't really leading us in the direction we need to go.

It's doubtful that there's even a need to keep pouring water into the No.1 reactor, where nuclear fuel is suspected to have burned through the pressure vessel. Meanwhile, it is necessary to keep cooling the No. 2 and 3 reactors, which are believed to still contain some fuel, but the cooling system itself is unstable. If the fuel were to become overheated again and melt, coming into contact with water and trigger a steam explosion, more radioactive materials will be released.

TEPCO says it is aiming to bring the No. 1, 2 and 3 reactors to cold shutdown by January 2012. Cold shutdown, however, entails bringing the temperature of sound nuclear fuel in pressure vessels below 100 degrees Celsius. It would be one thing to aim for this in April, when the government had yet to confirm that a meltdown had indeed taken place. But what is the point of "aiming for cold shutdown" now, when we know that fuel is no longer sound?

In the days ahead, the storage of enormous quantities of radiation-contaminated waste, including tainted mud resulting from the decontamination process, will become a major problem. Because the responsibility for spreading nuclear materials into the environment lies with TEPCO, it makes sense to bring all the radioactive waste to TEPCO headquarters in Tokyo.

Since that's not possible, the waste should be taken to the grounds of the nuclear power plant. If the plant is not large enough to accommodate all the waste, then a location close to the plant will also have to be designated as a nuclear graveyard. However, no one should take advantage of the chaos and force Fukushima to host interim radioactive waste repositories for spent fuel from other nuclear power plants.

Recovering the melted nuclear fuel is another huge challenge. I can't even imagine how that could be done. When the Three Mile Island accident took place in 1972, the melted nuclear fuel had stayed within the pressure vessel, making defueling possible. With Fukushima, however, there is a possibility that nuclear fuel has fallen into the ground, in which case it will take 10 or 20 years to recover it. We are now head to head with a situation that mankind has never faced before.

(Mainichi Japan) September 9, 2011

## Over 100,000 Fukushima Prefecture residents can't return to hometowns



In this photo taken July 26, 2011, playground equipment stands in front of Karino Elementary School which was used as an evacuation shelter in the town of Namie, Fukushima Prefecture, northeastern Japan. Japan's system to forecast radiation threats was working from the moment the nuclear crisis began. As officials planned a venting operation certain to release radioactivity into the air, the system predicted the elementary school would be directly in the path of the plume emerging from the tsunami-hit Fukushima Dai-Ichi nuclear plant. But the prediction helped no one. Nobody acted on it. The school, just over 10 kilometers from the plant, was not immediately cleared out. Quite the opposite. It was turned into a temporary evacuation center. (AP Photo)

More than 100,000 Fukushima Prefecture residents are still not able to return to their municipalities due to the ongoing nuclear disaster at the Fukushima No. 1 Nuclear Power Plant, a Mainichi survey has found.

As of the end of August, a total of 101,931 residents from 12 cities, towns and villages in Fukushima Prefecture that are subject to a range of evacuation measures were forced to live outside their municipalities. Some locations near the crippled nuclear power plant are estimated to be contaminated with accumulated radiation doses of more than 500 millisieverts a year, diminishing residents' hopes of a homecoming anytime soon.

Even areas away from the plant are still suffering from a sharp decline in the number of tourists and sluggish financial conditions, underscoring the impact of the nuclear crisis that is plaguing Fukushima Prefecture six months on from the March 11 earthquake and tsunami that started it.

The Mainichi Shimbun asked 12 municipalities in the no-go zones, planned evacuation zones, and emergency evacuation preparation zone how many of their residents had been evacuated to other municipalities as of Aug. 31. The city of Minamisoma had the most evacuees, at 25,184, followed by the town of Namie at 20,115.

The Ministry of Education, Culture, Sports, Science and Technology estimates that annual radiation doses will top 20 millisieverts at 35 locations within the no-go zones. Decontamination is also a major issue faced by affected municipalities in the emergency evacuation preparation zones. As of Sept. 8, a total of 16 elementary and junior high schools in such zones remained closed.

The estimated population of Fukushima Prefecture has also dipped below 2 million for the first time in 33 years, standing at 1,997,400 as of July 1. While the prefecture's population had already been on the decline since before the nuclear crisis, the number of residents who moved out of the prefecture rose to 32,471 between March and June -- 1.7 times higher than the figure a year earlier. Including those who had not shifted their residence certificates from Fukushima to where they live now, 55,793 residents had evacuated out of the prefecture as of Aug. 25.

The nuclear disaster has also cast a shadow on Fukushima's economy and employment. The industrial output index dropped to 86.1 in June from the 2005 level of 100. Although the figure has recovered from the 79.9 recorded in May, it still fell shy of the level of 95.8 marked in February before the nuclear disaster broke out.

The number of employment insurance beneficiaries came to 23,862 in July, up 1.9 times from the same month last year, while 8,881 people were seeking work as of Aug. 21 after they lost their jobs due to the disaster.

The city of Aizuwakamatsu -- a popular destination for school trips -- saw a steep decline in the number of visitors on school trips, with only 2,506 students from 31 schools coming between April and August. During the same period last year, 43,785 students from 545 schools had visited the city.

[!\[\]\(5276f5c0826b6e62447a6456445c9372\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) September 9, 2011

## Radioactive waste disposal conundrum slowing recovery efforts



A sign in the Fukushima city district of Onami reads: "Waste from outside the Onami district not permitted. Dumping is illegal." Behind it, radiation-tainted waste wrapped in linen bags is stacked together and surrounded with sandbags to prevent the spread of radioactive materials, on Sept. 5. (Mainichi)

FUKUSHIMA -- The law had not anticipated the radioactive contamination beyond the gates of nuclear power plants, and has left not only Fukushima Prefecture but also municipalities in the Tokyo metropolitan area with radiation-tainted waste that has no place to go. The road to resolution and recovery remains bumpy, despite a special measures law implemented in response to the disaster at the Fukushima No. 1 nuclear plant.

In Fukushima Prefecture, the need to decontaminate residences and roads has become increasingly urgent, while little headway has been made in securing temporary storage for radiation-tainted mud. And while the central government is hoping to set up interim storage facilities in the prefecture, no concrete timeline has been established. In addition, rubble still litters Japan's northeastern coast.

Part of the Kamioguni district of the Fukushima Prefectural city of Date has been designated a "hot spot" where radiation exposure could exceed 20 millisieverts per year, and residents there are worried about leaving radioactive waste around without proper facilities.

"What if it contaminates the well water?" said Yasuo Kanno, 74, a local district leader, as he watched water drip from a faucet in his home. He decided to stay back even after the government issued an evacuation advisory in the area.

The Date Municipal Government has plans to decontaminate the entire city, which will involve the removal of mud and grass from gutters and gardens, where radioactive materials tend to accumulate. And while it is searching for waste storage locations in the five towns that existed before they were incorporated into the city, for the time being residents will be asked to keep the tainted materials on their property.

Residents have been instructed by the city to store the waste in thick plastic bags, preventing the contents from seeping into groundwater. But those who use well water in their daily lives are not convinced of the measure's effectiveness.

"We want the decontamination process to take place as soon as possible, and for the young people who have evacuated elsewhere to come back," Kanno said.

Fukushima is the third largest prefecture in the country, with a large area of mountainous terrain. As a result, use of water mains stands at 92.4 percent of the population -- lower than the national average of 97.5 percent -- leaving many residents, like those in Kamioguni, worried about the effects of radioactive waste on their groundwater.

Securing temporary storage sites for radioactive waste is a problem for urban areas as well. The city of Fukushima is planning to store its radioactive waste on publicly-owned properties, but the only location that it has secured thus far is in the Onami district, far from the city center. The 7,000-square-meter city-owned property is located 180 meters from the nearest private residence.

"It was a difficult decision to accept the city government's plan, and we don't want to allow the city to dump contaminated waste from other areas here," said a 60-year-old member of the local neighborhood association.

The central government announced on Aug. 26 that "for the time being, it is realistic for cities, towns, villages and communities to set up temporary storage space for tainted waste that is left over from decontamination measures." While the government's nuclear disaster headquarters is aware that local governments are having difficulty securing temporary storage sites, it says, "We have no choice but to ask each municipality to make those decisions."

Little headway has been made in securing sites for interim radioactive waste repositories or in designing such facilities, leaving municipal officials at the front lines of the recovery effort dissatisfied with the central government's performance.

"The government will likely force interim storage facilities onto the communities close to the nuclear power plant, where the chances of residents being able to return home are slim," one said.

"It will take quite some time before (the government) earns the understanding and cooperation of residents," said a different municipal official, while another commented, "It's like we're just running and running despite the lack of a visible goal."

Meanwhile, the disposal of radiation-tainted rubble along the coast has also run into trouble. There is an estimated 610,000 metric tons of rubble in the Fukushima Prefectural city of Minamisoma. The 400,000 tons of rubble found in parts of the city not designated as no-entry zones have been gathered in nine locations. In late August, the national government finally issued guidelines on how to handle ash produced from incinerating waste. A city official said, however, that municipalities are overwhelmed.

"There's so much rubble that the separation of waste takes a long time. We don't know when we'll be able to get going on incineration or hauling waste to treatment facilities."

[!\[\]\(06260960c456284893f6553943e14df9\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) September 9, 2011

## **Cheap radiation detectors give inaccurate results, consumer watchdog reports**

Nine types of low-price radiation detectors on the market, some now being used to monitor radiation in the Tokyo area, give incorrect measurements, the National Consumer Affairs Center of Japan (NCAC) announced on Sept. 8.

The NCAC purchased the nine radiation detectors, all priced at less than 100,000 yen and all believed to have been made in China, on Internet shopping sites. When used to measure atmospheric radiation the detectors displayed results as much as four times higher than devices known to meet international standards, and also failed to measure radiation emissions of 0.06 microsieverts per hour or less correctly.

When exposed to radioactive cesium 137, the detectors displayed results far lower than actual radiation levels, in some cases delivering figures more than 30 percent off the genuine emissions.

"These cheap devices are not accurate, and cannot be used to check radiation in food or drink," an NCAC official stated.

The nine models tested were: AK2011, BS2011+, DoseRAE2 PRM-1200, DP802i, FJ2000, JB4020, RAY2000A, SW83 and SW83a. Of these, the Tokyo Metropolitan Government has bought 70 DoseRAE2 PRM-1200 detectors. Two of the devices have been distributed to each of the local governments within metropolitan Tokyo to measure atmospheric radiation. A representative of the

environment and hygiene section of the metropolitan government's health and welfare bureau told the Mainichi, "We are lending out the detectors to local governments after telling them that they can't use them for anything but the simplest of measurements."

 [Click here for the original Japanese story](#)

(Mainichi Japan) September 9, 2011

US quake exceeded nuclear plant design

The earthquake that hit the eastern US in August caused shaking beyond what nuclear plants in the area are designed to withstand.

The operator of the North Anna nuclear plant, located some 20 kilometers from the quake's epicenter in central Virginia, reported the finding at a hearing of the Nuclear Regulatory Commission on Thursday.

The plant lost external power and saw its back-up generators kick in when the magnitude-5.8 earthquake struck on August 23rd.

At the hearing, the plant operator said the shaking did not continue long enough to cause any serious damage.

The NRC said it is the first time for an operating nuclear plant in the US to be hit by an earthquake exceeding its designed strength.

The commission plans to carefully consider the need for new measures to protect against future tremors and may reassess seismic risks at all the country's nuclear plants.

The last time Virginia was hit by an earthquake of magnitude 5 or more was 114 years ago, in 1897.

The latest quake has raised concerns over the seismic resistance of nuclear power plants on the US east coast, where experts until now believed that major tremors were unlikely to occur.

Friday, September 09, 2011 18:21 +0900 (JST)

## **Six months later: The Fukushima nuclear disaster in retrospect**

As Japan approaches the six-month anniversary of its worst nuclear disaster, when an unprecedented meltdown occurred in three of the Fukushima No. 1 Nuclear Power Plant's reactors in a combination of natural and manmade calamities, the road to recovery is still long and unclear. In anticipation of the anniversary, the Mainichi looks back over the past six months to outline what has been done, learned, and where Japan currently stands on the issue in this time of crisis.

On March 11, a magnitude 9.0 earthquake followed by a series of tsunami waves -- the worst in the history of Japan -- severely damaged the Tokyo Electric Power Co. (TEPCO)-operated Fukushima No. 1 nuclear complex, located along the coast of the towns of Futaba and Okuma in Fukushima Prefecture. As a result of the disaster, all external power sources were lost, causing the supply of cooling water to the plant's No. 1, 2 and 3 reactors to stop. Hydrogen was generated as a result of a chemical reaction

between fuel rods and water, leading to hydrogen explosions which badly damaged reactor buildings. The government, which initially estimated the accident level at 4 on the International Nuclear Event Scale (INES), later raised the level to 7 -- the highest rank. This matched the level of the Chernobyl catastrophe, which at that stage was the worst nuclear accident in history.

The next six months were a huge struggle for both TEPCO and the government as they tried to deal with the tainted water. Shortly after the accident, every possible means was employed to inject water into reactors and spent nuclear fuel pools in a desperate effort to cool down nuclear fuel. Self-Defense Forces helicopters, fire engines and pumping vehicles were mobilized to inject sea water into the reactors and spent fuel pools. However, the injected water started piling up within reactor buildings, creating a mass of water contaminated with huge amounts of radiation. The water began to leak from the damaged containment vessels and piping.

At the end of March, water contaminated with high levels of radiation was found in a tunnel connecting the buildings housing the No. 1 to 3 reactors with the ocean. The water contained about 40,000 times the amount of water in reactors. Workers managed to prevent the water from leaking into the sea through a stopgap measure. However, as long as water continued to be injected into the reactors, the amount of radioactive water would only increase and overflow. Haruki Madarame, chairman of the Cabinet Office's Nuclear Safety Commission of Japan, said neither the government nor the power supplier has the expertise to treat water contaminated with high levels of radiation, suggesting that they were not prepared to respond to any accident beyond the scope of their assumption.

According to the Nuclear and Industrial Safety Agency, contaminated water leaked into the ocean at least twice. The first instance occurred between April 1 and 6 at the No. 2 reactor, when 520 cubic meters was released; the second, between May 10 and 11 at reactor No. 3, when a total of 250 cubic meters of water was released into the open sea.

In a desperate effort to prevent further leaks, workers were forced to shift contaminated water into any tank on the premises of the plant that had some available capacity. While releasing 10,000 cubic meters of relatively low-level radioactive water into the sea, TEPCO shifted more water to neighboring facilities, and even purchased a nearby man-made floating island known as "Megafloat," capable of holding up to 10,000 cubic meters of water and transported it to an area near the power plant.

Meanwhile, in its action plan released in April, TEPCO announced that it would cool down the reactor cores by filling their containment vessels with water. Even though the utility thought it would be an effective way to cool down the reactor cores, the water did not reach the level that was considered necessary to cool down the reactors. In May, a hole was discovered in one of the containment vessels -- from which injected water was leaking, forcing TEPCO to abandon the method. As a result, contaminated water was continuing to build up within the power plant. As of the end of August, there was a total of 90,000 cubic meters of water stored in the reactor and turbine rooms of the plant's No. 1 to 4 reactors. Counting the water stored in other facilities, the figure stood at about 113,000 cubic meters -- enough to fill some 570,000 drums.

Following the failure of its initial plan, TEPCO then released a new one, announcing that the company would attempt to remove all radioactive materials from the contaminated water and reuse the purified water to cool down the reactor cores. The method would allow the utility to continue to cool down the reactors while preventing the amount of radioactive water from increasing further. TEPCO created a water purification system by combining machines produced by U.S.-based Kurion Co. and Areva Co.

headquartered in France and other firms, which was put in full operation in June. In addition, the Toshiba-manufactured machine SARRY (Simplified Active Water Retrieve and Recovery System) was added in order to increase the system's capacity to remove radioactive materials from the contaminated water.

The government hoped that if the plan was successful, it could lift emergency evacuation preparation orders for areas lying between 20 and 30 kilometers from the plant. However, a series of minor accidents, including temporary malfunctions and leaks from the 4-kilometer-long hose used to carry the water, slowed down the operation, and the operations of the system has not yet been stabilized. According to official data, 32 mishaps with the water purification system had occurred by mid-August.

"The lack of preparation and vision on how to deal with this crisis is a major point of regret," says Yoichi Enokida, a professor of nuclear chemical engineering at Nagoya University. "The lack of objective views of the operation rate of the newly adopted nuclear waste removal system has only contributed to everyone's rising distrust of nuclear power as a way of generating electricity."

 [Click here for the original Japanese story](#)

(Mainichi Japan) September 10, 2011

## **7-year-old boy worked in restricted radiation zone at Fukushima No. 2 plant**

A 17-year-old boy worked in a restricted radiation zone at the Fukushima No. 2 nuclear plant for five months in 1993-1994, plant operator Tokyo Electric Power Co. (TEPCO) revealed on Sept. 9.

The restricted zone experiences higher levels of radiation than other areas of the plant, and the Labor Standards Act forbids work in the zone for people under 18. TEPCO, which has reported the five-month stint by the minor to the Nuclear and Industrial Safety Agency, stated that the boy had lied about his age and obtained a radiation tracking booklet (used by nuclear workers to monitor their cumulative exposure). The boy worked at the plant from September 1993 to January 1994.

The violation came to light in late August this year when the same person applied to work in the same restricted zone again. TEPCO staff noticed that the birthday on the person's ID was different than the one recorded in 1993.

 [Click here for the original Japanese story](#)

(Mainichi Japan) September 10, 2011

## **Nuclear experts discuss radiation in Fukushima**

Nuclear experts from around the world have exchanged views on how to provide information about radiation exposure.

Some 40 experts from 14 countries are taking part in the 2-day meeting in Fukushima City, Fukushima

Prefecture.

The symposium was organized by the Nippon Foundation in cooperation with the International Commission on Radiological Protection. The body provides guidance and recommendations on protection from radiation.

An US epidemiologist, John Boice, said he does not think people's health will be affected by the Fukushima accident. He said Japan prevented contaminated food from being distributed, unlike what happened after the Chernobyl accident.

Boice said counseling and timely information are essential for those worried about radiation in food.

The participants discussed ways to provide information on radiation exposure. Some said the radiation levels following the Fukushima accident should have been made public as they were much lower than the levels deemed safe by scientists.

There was also a suggestion that comparative data with other risks such as traffic accidents should have been made available.

Makoto Akashi, whose organization is co-sponsoring the gathering, said he hopes to find ways to convince people that there will be no health impact from radiation from the Fukushima accident.

The experts will compile recommendations on ways to resolve the Fukushima accident including how to limit possible radiation exposure.

Sunday, September 11, 2011 22:59 +0900 (JST)

## **High levels of radiation found in remote areas**

Japan's science ministry has compiled a map showing radiation levels in Fukushima and 4 surrounding prefectures, based on the results of an aerial survey.

Removal of radioactive substances will be required in the affected areas.

In the map, levels of radioactivity at locations one meter above the ground are highlighted in different colors.

Red is for areas where the radiation level is 19 microsieverts per hour or higher.

The red band spreads from the crippled Fukushima Daiichi nuclear power plant to the northwest and extends about 30 kilometers.

Areas with radiation levels of 3.8 microsieverts per hour or above are highlighted in yellow. The figure translates to above 20 millisieverts per year, a threshold in designating an evacuation zone. The yellow area extends beyond the current evacuation zone.

Light green shows levels between 0.5 and one microsieverts per hour. They still are far beyond the annual level of one millisievert which is believed to cause no harm to people. Much of Fukushima

Prefecture, southern parts of Miyagi Prefecture, and northern parts of Tochigi and Ibaraki prefectures lie in this zone.

Sunday, September 11, 2011 10:49 +0900 (JST)

## **Japan to report to IAEA on efforts to enhance nuclear regulation**

TOKYO (Kyodo) -- Japan will report to the International Atomic Energy Agency later this month its latest efforts to improve its nuclear regulatory system, including plans to create a new nuclear safety agency and a nuclear safety training institute, the government said Sunday.

"We would like to show how we are working on regulation issues," nuclear disaster minister Goshi Hosono told a press conference after the government endorsed a new report on the crisis at the Fukushima Daiichi power plant, which will soon be submitted to the U.N. nuclear watchdog.

It is the second report compiled by the Japanese government and to be forwarded to the IAEA, detailing the situation at the crisis-hit plant and lessons learned from the disaster. The latest report will be presented at a side event of the IAEA general conference on Sept. 19.

In an outline of the report, the government touched on its decision made last month to separate the Nuclear and Industrial Safety Agency from the industry ministry by creating a new nuclear regulatory body under the Environment Ministry by April next year.

The move came as public confidence in the current nuclear regulatory body was shaken by its failure to prevent the disaster at the Fukushima plant, while major criticism focused on problems caused by having regulators under the industry ministry, which also promotes nuclear power.

The report stressed the "vital importance" of training more nuclear safety personnel to respond to another nuclear crisis and referred to an idea to establish what it tentatively called an International Nuclear Safety Training Institute.

The institute, the creation of which should be deliberated by the new government nuclear safety regulatory body to be established by next April, would seek to improve the quality of nuclear regulators within Japan and may also invite people from abroad to contribute to global nuclear safety, the report and a government official said.

The report also said work to contain the crisis is proceeding steadily, but "several more months" are needed to bring damaged reactors to a more stable condition known as "cold shutdown."

Hit by a magnitude-9.0 earthquake and ensuing tsunami on March 11, the Fukushima nuclear plant lost nearly all its power sources, and consequently the ability to cool the reactors and spent fuel pools at the Nos. 1 to 4 units.

As a result, temperatures soared along with a build-up of hydrogen gas, leading to catastrophic explosions which badly damaged three of the four reactor buildings and the release of a large amount of radioactive material in the worst nuclear accident since Chernobyl.

Workers have now installed a new water circulation system to cool the crippled reactors, marking some progress in bringing the plant to a stable condition.

The government and plant operator Tokyo Electric Power Co. seek to achieve a cold shutdown of the plant by January at the latest.

As for long-term issues, the report pointed to the task of removing the melted fuel from the reactors, storing and disposing of it, but did not elaborate.

The utility known as TEPCO separately said Sunday that it has succeeded in reducing the amount of highly radioactive water accumulating in the plant's two reactor turbine buildings to the target level.

(Mainichi Japan) September 12, 2011

## **2 out of 3 municipalities opposed to more nuclear plants: survey**

TOKYO (Kyodo) -- Roughly two out of three municipal leaders in Japan are opposed to building more nuclear power plants while nearly half of local governments are interested in hosting big solar power plants, a Kyodo News survey showed Saturday.

The survey, conducted ahead of the six-month mark of the March 11 earthquake and tsunami, also shows that most are dissatisfied with measures taken by the central government to cope with the crisis at the Fukushima Daiichi power plant crippled by the disasters.

According to the survey of 1,793 prefectural, city, town and village offices, of which 1,697 responded, 38 percent say they are against building new nuclear power plants while 27 percent are not only against building new plants but also want to see the early abolition of existing plants.

It also showed 17 percent say they will allow new plants and reactors when it is confirmed that they will have sufficient safety measures in place while 0.5 percent back the immediate abolition of atomic power plants.

Many respondents call for a more cautious decision-making process on the operation of nuclear plants, with 54 percent backing the suggestion that consent must be secured not only from the host communities but also from those in the vicinity as conditions for constructing a new plant or restarting an idled reactor.

On possible use of renewables in the wake of the Fukushima accident, 47 percent express interest in inviting large-scale solar power plants to their areas.

In a multiple-choice question about the most appropriate natural energy source, 80 percent picked solar energy and 37 percent selected water power, although not involving dams, followed by wind power and biomass, at 34 percent each.

Most of the respondents, or 88 percent, complain about insufficient measures taken by the government to deal with contamination by radioactive substances after the Fukushima Daiichi accident.

In addition, 75 percent do not appreciate ongoing measures taken by the government to reconstruct areas devastated by the disaster, while some 19 percent said that they do.

The survey also showed 33 percent have reviewed or are reviewing their disaster prevention plans and 53 percent plan to do so.

(Mainichi Japan) September 12, 2011

## L'accident sur l'installation nucléaire du Gard est "terminé"

LEMONDE.FR avec AFP | 12.09.11 | 13h56 • Mis à jour le 12.09.11 | 17h



### Le site nucléaire de Marcoule dans le Gard.Reuters/SEBASTIEN NOGIER

Un four a explosé dans un centre de traitement de déchets faiblement radioactifs, sur le site nucléaire de Marcoule, dans le Gard, lundi 12 septembre, vers midi, causant la mort d'une personne et en blessant quatre autres.

A 16 heures, l'Autorité de sûreté nucléaire (ASN) a indiqué que *"l'accident était terminé"* et *"qu'aucune contamination n'avait été relevée"*. *"Aucune contamination n'a été détectée par nos six balises dans la vallée du Rhône"*, confirme la Commission de recherche et d'information indépendantes sur la radioactivité (Criirad) sur son [site Internet](#). *"Il n'y a pas de risque radioactif ou chimique"*, ajoute le ministre de l'énergie, [Eric Besson](#). *"Il n'y a aucun risque de rejet à venir"*, indique encore EDF.

*"Cet accident ne comporte pas d'action de protection des populations. L'ASN suspend son organisation de crise"*, ajoute l'ASN. *"Aucune mesure de confinement ou d'évacuation"* des salariés *"n'a été nécessaire"* car les blessés *"n'ont pas été contaminés"*, confirme le ministère de l'intérieur. De plus, l'homme décédé est *"mort dans l'explosion"* et non des suites d'éventuels rejets radioactifs. Le salarié

grièvement blessé a été évacué d'urgence vers un hôpital de Montpellier. Les autres, légèrement blessés, ont été dirigés vers l'hôpital de Bagnols-sur-Cèze. La ministre de l'écologie, [Nathalie Kosciusko-Morizet](#), doit se [rendre](#) sur place à 17 h 30.

## FUSION DE MÉTAUX RADIOACTIFS

L'explosion, suivie d'un incendie qui a été maîtrisé vers 13 heures, a eu lieu au Centre de traitement et de conditionnement des déchets de faible activité (Centraco) exploité par la société Socodei, filiale d'EDF, et installé sur la commune de Codolet. Ce site s'occupe du conditionnement des déchets de faible et de très faible activité.

La déflagration a touché un four électrique, mis en service en 1999, servant à [diminuer](#) le volume des déchets radioactifs de faible et très faible activité pour ensuite les [conditionner](#). Le four procède par incinération pour les déchets textiles (gants, combinaisons ou encore masques) ou par fusion pour les métaux (vannes, pompes outils, etc.).

## "LE BÂTIMENT A GARDÉ SON INTÉGRITÉ"

Au moment de l'explosion, le four contenait 4 tonnes de métaux, dont la radioactivité était de 67 000 becquerels, soit moins de 17 becquerels par kilogramme. *"C'est une activité radioactive très faible, incomparable avec celle d'un réacteur nucléaire"*, explique [Thierry Charles](#), directeur de la sûreté à l'Institut de radioprotection et de sûreté nucléaire (IRSN), joint par Le Monde.fr.

*"Le four se trouve dans un local, lui-même contenu dans un bâtiment. Le local a été affecté, mais le bâtiment a gardé son intégrité. Il n'y a donc pas de rejets radioactifs à l'extérieur du bâtiment"*, poursuit Thierry Charles. L'IRSN a toutefois dépêché une équipe sur place, qui doit [faire](#) lundi des prélèvements – herbe, terre, poussière sur les capots de voiture – qui seront analysés d'ici lundi soir.

## UNE ERREUR HUMAINE PEUT-ÊTRE EN CAUSE

Les causes de l'explosion sont pour l'instant inconnues. Selon une source gouvernementale, *"il semblerait y [avoir](#) eu une erreur humaine"*. *"Il peut aussi s'[agir](#) d'une fuite d'eau qui a réagi avec le métal en fusion, ou bien d'un déchet contenu dans le métal qui aurait provoqué une réaction"*, ajoute Thierry Charles.

Le directeur général de l'Agence internationale de l'énergie atomique (AIEA) a annoncé [avoir](#) demandé des informations à la France concernant l'explosion, conformément à la procédure classique. L'accident sera suivi de près par la Commission européenne en lien avec les autorités françaises, a ajouté l'exécutif communautaire.

Greenpeace, [comme d'autres militants écologistes](#), a réclamé aux autorités une transparence totale et immédiate sur cet incident. *"Il est indispensable que les populations locales soient informées en temps réel sur la situation et sur les éventuels rejets radioactifs"*, a déclaré [Yannick Rousselet](#), chargé de campagne nucléaire à Greenpeace France.

## France nuclear: Marcoule site explosion kills one

<http://www.bbc.co.uk/news/world-europe-14883521>

One person has been killed and four injured, one seriously, in a blast at the Marcoule nuclear site in France.

There was no risk of a radioactive leak after the blast, caused by a fire near a furnace in the Centraco radioactive waste storage site, said officials.

The owner of the southern French plant, national electricity provider EDF, said it had been "an industrial accident, not a nuclear accident".

The cause of the blast was not yet known, said the company.

The explosion hit the area at 11:45 local time (09:45 GMT). A security cordon was set up as a precaution.

But interior ministry spokesman Pierre-Henry Brandet later said there had been no leak of radiation, neither inside nor outside the plant.

None of the injured workers was contaminated by radiation, said officials. The worker who died was killed by the blast and not by exposure to nuclear material.

The Centraco treatment centre belongs to a subsidiary of EDF. It produces MOX fuel, which recycles plutonium from nuclear weapons. There are no nuclear reactors on site.

The EDF spokesman said blast happened in a furnace used to burn waste, including fuels, tools and clothing which had been used in nuclear energy production but had only very low levels of radiation.

"The fire caused by the explosion was under control," he said. Another official later said the incident was over.

The International Atomic Energy Agency (IAEA) said it was in touch with the French authorities to learn more about the nature of the explosion.

Speaking on the sidelines of a scheduled meeting of the IAEA's board, Director General Yukiya Amano said the organisation's incident centre had been "immediately activated".

France's Environment Minister Nathalie Kosciuscko-Morizet visited the site on Monday, to "help carry out a precise evaluation of the possible radiological impact of this accident".

"For the time being, no exterior impact has been detected," the AFP news agency quoted a ministry spokesman as saying.

"There are several detectors on the outside and none of them detected anything, the building is sound."

Stress tests

Marcoule was opened in **1955** and is **one of France's oldest nuclear sites**, though it has been extensively modernised.

It is located in the Gard department in Languedoc-Roussillon region, near France's Mediterranean coast.

Marcoule is one of France's oldest nuclear facilities but has no reactors on site

All the country's 58 nuclear reactors have been put through stress tests in recent months, following the disaster at Japan's Fukushima nuclear plant which was hit by an earthquake and tsunami.

**EDF's share prices fell by more than 6% as news of the blast emerged.**

France is the world's most nuclear-dependent country, relying on nuclear power to meet 75% of its energy needs, so safety in the industry is a highly sensitive issue, says the BBC's Christian Fraser in Paris.

In June, France announced it was investing 1bn euros (£860m) in nuclear power, including a significant boost for safety research.

French nuclear giant Areva is developing the next generation of nuclear reactors and has been involved in a huge publicity campaign since the Fukushima disaster to reassure the public of the safety of nuclear energy.

Other countries in Europe, including Germany, Italy and Switzerland, have said they will reduce or phase out their use of nuclear power over the next few years.

## **1 dead in explosion at French nuclear plant**

PARIS (AP) -- The French nuclear safety body says one person died and another was seriously injured Monday in an explosion at the Marcoule nuclear site in southern France.

The Nuclear Safety Authority said there have been no radiation leaks outside of the plant, which treats nuclear waste with little radioactivity.

Three other people were injured in the explosion, the statement said.

Staff at the plant reacted to the accident according to planned procedures, it said.

The Marcoule site is located in Languedoc Roussillon, in southern France, near the Mediterranean Sea.

(Mainichi Japan) September 12, 2011

## **Explosion occurs at French nuclear facility**

The French nuclear safety agency says an explosion occurred at a nuclear processing plant in the suburb of Nimes in southern France on Monday.

The blast took place at a furnace in the nuclear waste processing center in Marcoule.

One person reportedly died and 4 others were injured.

Officials at the facility say there has been no radioactive leaks, and that there is no reactor at the site.

Local media say no evacuation orders have been issued for residents living near the facility.

The nuclear safety authority says nuclear waste is processed at the facility.

A fire that broke out briefly has been extinguished.

The nuclear safety authority is investigating how the blast occurred.

Monday, September 12, 2011 22:19 +0900 (JST)

## **Blast at French nuclear site kills 1, injures 4**

PARIS (AP) -- An explosion at a nuclear waste facility in southern France has killed one person and injured four others. Authorities said there was no radioactive leak, but critics urged France to rethink its nuclear power in the wake of the catastrophe at Japan's Fukushima plant.

The Nuclear Safety Authority declared the accident "terminated" soon after the blast Monday at a furnace in the Centraco site, in the southern Languedoc-Roussillon region, about 20 miles (32 kilometers) from the city of Avignon. One of the injured suffered severe burns.

The agency said the situation had been brought under control in less than an hour after it broke out shortly past noon. The building that houses the furnace wasn't damaged, no leaks were reported and residents who live near the site were not evacuated, the agency said in a statement.

The cause of the accident is not known, and an investigation has been opened to see what went wrong, authorities here said.

France is the world's most nuclear-dependent nation. It relies on the 58 nuclear power plants that dot the country for about three-quarters of its total electricity, and it's also a major exporter of nuclear technology throughout the world.

While the March meltdown at Japan's Fukushima plant prompted other countries to re-evaluate their nuclear programs - with neighboring Germany vowing to shut all its plants by 2022 - France has remained steadfast in its support for nuclear energy.

**Authorities here downplayed the importance of Monday's incident.**

"It's an industrial accident and not a nuclear accident," Industry Minister Eric Besson said on i-Tele television. "There have been no radioactive leaks and there have been no chemical leaks."

Still, French environmentalists have long called for an end to the country's nuclear program, and several ecology and leftist parties urged authorities here to rethink nuclear policy after Monday's incident.

Sophia Majnoni, who runs Greenpeace's nuclear campaign in France, noted that **the plant was not part of a French safety audit conducted in the wake of the Fukushima accident.**

"It is a nuclear plant yet its resistance to earthquake or flooding won't be checked, which allows us to think that the government has not drawn all the lessons from the Fukushima catastrophe," she said. "It is not only the nuclear power plants that are dangerous for population."

Ecology Minister Nathalie Kosciusko-Morizet was slated to visit **Centraco** - one of four industrial installations at the Marcoule nuclear site - later Monday. The 300-hectare (740-acre) **Marcoule site also houses a research center and four industrial sites, including one that makes Mox**, a fuel made from plutonium and uranium.

France's EDF electric power company, whose subsidiary operates Centraco, said the furnace in Monday's accident is used to melt slightly radioactive metal waste, including gates, pumps and tools into easy-to-store bars.

The furnace went into service in 1999, EDF said, and **treats mostly waste from EDF's own power plants, as well as a small amount of material from hospitals or medical research labs.** Nothing comes from weapons manufacture, company spokeswoman Carole Trivi said.

The person killed was a foundry worker who was near the furnace when it exploded. The prognosis for the seriously injured worker, evacuated to a hospital in nearby Montpellier, was not immediately known.

None of those involved in the accident were exposed to radiation, the nuclear safety agency said.

The head of the Vienna-based International Atomic Energy Agency, Yukiya Amano, said his organization's "incident and emergency center was immediately activated and has sent requests for detailed information."

Nuclear power is big business in France. EDF and state-owned nuclear giant Areva have built reactors the world over and inked recent deals to build Poland's first nuclear plant and to create a joint-venture with a Chinese nuclear company. France also treats nuclear waste from around the globe. Japan's March 11 tsunami and the disaster at the Fukushima nuclear plant didn't spark the kind of soul-searching over reliance on nuclear energy in France that it did in other countries, including neighboring Germany. There, eight older reactors were quickly taken off the grid, and the nine remaining plants are to close over the coming decade.

France's President Nicolas Sarkozy appeared to dig in his heels in the wake of the Japanese meltdown, pledging as recently as June to stick to a plan to invest 1 billion euros (\$1.37 billion) in future nuclear reactors.

James Acton, an expert in nuclear policy at the Carnegie Endowment for International Peace, said that - **provided the information from French authorities was correct** - the accident appeared not to be very serious

Acton said the biggest concern in the coming hours will be to monitor whether any radiation is released. That will depend in large part on where exactly the furnace is on the site and how well contained it is.

If EDF's assurances that no radiation has escaped so far and that the building around the furnace is intact prove correct, Acton said it would be considered "an industrial accident that happened to contain radioactive material" - and far less serious than an accident involving nuclear fuel.

Asked whether he thought the Monday's accident could sway public opinion in France, Acton said it was "unlikely."

"French public opinion has been robust to date about nuclear," he said. He also noted that even without nuclear power, waste treatment facilities like the one at Centraco would still need to exist to handle medical waste and other sources of radioactivity.

(Mainichi Japan) September 13, 2011

## **Nuclear agency's safety plan irks Germany, others**

VIENNA (AP) -- A post-Fukushima nuclear safety plan prepared by the International Atomic Energy Agency has strained traditional alliances, with the United States comfortable with a watered down plan pushed by Russia and China and objected to by Washington's normal allies.

Germany on Monday was unusually outspoken in expressing its unhappiness with the voluntary nature of undertakings outlined in the IAEA paper, which was authorized in June by a special conference of government ministers and other officials from the agency's 151 member nations.

The plan -- up for passage Tuesday by a 35-nation IAEA board meeting -- "does not fully meet our expectations," Ruediger Luedeking, Germany's chief IAEA representative, told the board.

Suggesting that the text was vague and too nonbinding in nature, Luedeking said Germany would have wanted a plan where member states' commitments to peer reviews and IAEA oversight of their civilian nuclear programs had been "more clearly and stringently set out."

A diplomat from another IAEA member state familiar with the issue said that several EU states beside Germany, Canada, Australia and New Zealand were also unhappy with what they consider the lack of teeth in the "IAEA Action Plan on Nuclear Safety."

Some of their concerns would be voiced on Tuesday, ahead of likely passage of the plan by the board by acclamation or -more likely -- by a vote, he said, asking for anonymity because his information was privileged.

Russia, China, India, Pakistan and Argentina were chief opponents of giving the IAEA more authority to police nuclear safety, said the diplomat.

But the United States was also comfortable with the decision to strip the plan of language entrusting the agency with more clout that was present in earlier drafts and leaving oversight to governments, national safety authorities and power companies, he said. Such a stance reflects Washington's strong belief in domestic regulatory bodies having full control of nuclear safety.

The six-page document outlines steps to be taken by states with civilian nuclear programs to establish weaknesses in their networks and remedy them. But these measures -- whether they are peer reviews, IAEA safety checks, or other proposals meant to improve nuclear safety -- can only be carried out "upon request" of the nation involved.

Instead of being required to do so, member states are "strongly encouraged to voluntarily" open their facilities to outside checks of potential weak links that could result in a nuclear disaster.

IAEA chief Yukiya Amano was spirited in his defense of the plan, saying the steps it outlined to strengthen international cooperation and information exchange were "clearly a step forward" compared to what existed before March 11 earthquake and tsunami that devastated Japan's coastal Fukushima No. 1 Nuclear Power Plant and prompted the action plan.

At the same time he indirectly acknowledged that its effectiveness would depend on willingness by IAEA member countries to implement it -- the voluntary component that its critics object to.

"Every country is expected to support this action plan," he told reporters. "We need to do it now. We cannot postpone."

(Mainichi Japan) September 13, 2011

## **French envoy says no radiation leak from blast**

A French envoy to the UN nuclear watchdog says there is no radioactive leakage after an explosion at a nuclear waste processing facility in southern France.

France's ambassador to the International Atomic Energy Agency, Florence Mangin, confirmed that there was an explosion but said it was not a nuclear accident and no radiation has leaked.

Mangin is attending an IAEA board meeting in Vienna, Austria.

She said the French government will send an emergency response team to the site to gather further information.

France's interior ministry says the explosion was an industrial accident, not a terrorist attack.

Tuesday, September 13, 2011 05:55 +0900 (JST)

## **France probes explosion at nuclear-related site**

Authorities in France say radiation levels around the nuclear waste processing facility where an explosion occurred are normal. They add that the furnace did not explode.

The explosion happened on Monday in Marcoule, southern France, at a building housing a facility to melt low-level radioactive waste. One worker was killed and 4 others were injured in the accident.

According to the facility, the blast was not in the furnace, as initially presumed, but near the furnace.

The French Institute for Radioprotection and Nuclear Safety says radiation readings in the air around the facility are the same as before the accident. No evacuation order has been issued for nearby residents.

The country's nuclear regulatory authority has sent an emergency response team to the site to investigate the cause of the accident.

The ecology minister Nathalie Kosciusko-Morizet has gone to the site to assure residents that there is no nuclear leak.

Observers say the French government is trying to reassure the public. There has been growing concern over nuclear power stations in France following the accident in March at Japan's Fukushima Daiichi plant.

Tuesday, September 13, 2011 07:15 +0900 (JST)

## **German media report French explosion harshly**

German media have reported harshly Monday's explosion at a nuclear waste treatment site in southern France, which killed a worker onsite.

German newspaper, Die Welt, called it the first major nuclear accident since the crisis at the Fukushima Daiichi nuclear plant in Japan.

The daily says that French ministers are calling it an industrial, not a nuclear accident, but that there is no doubt it happened in the country's nuclear industry.

German weekly magazine, Der Spiegel, meanwhile highlights differences between the 2 countries in their energy policies.

Germany decided this year to shut down all its nuclear power plants.

The magazine says the accidents in Chernobyl and Fukushima did not change French attitudes toward nuclear energy, so the latest one will not either.

The magazine criticizes the **slowness of the French nuclear safety authorities in disclosing information, and their response to the accident, describing it as very passive.**

Tuesday, September 13, 2011 12:02 +0900 (JST)

## **French institute examines radioactive samples**

A French nuclear institute says metals containing 67,000 becquerels of radioactive substances were being burned at a nuclear waste treatment site near Nimes in southern France when an explosion occurred there on Monday.

The Institute for Radioprotection and Nuclear Safety says that the radioactive level is so low that there is no possibility of anything hazardous leaking into the environment.

It says the building housing the furnace has not been damaged, and there is no need for residents around the plant to evacuate.

But the institute says as **wind was blowing from north to south at the time of the accident**, it is now examining radioactive levels at several locations in the south of the compound.

The institute says the results will be available within a few hours.

It also says a fire broke out immediately after the explosion, but has been extinguished.

The institute monitored the impact of highly radioactive substances on the sea, after the explosion at Japan's Fukushima Daiichi nuclear power plant in March.

Tuesday, September 13, 2011 05:55 +0900 (JST)

## **EPCO submits more redacted Fukushima nuke plant manuals to Diet committee**

Tokyo Electric Power Co. (TEPCO), operator of the Fukushima No. 1 nuclear plant, has handed a Diet science committee another heavily redacted accident manual for the stricken plant.

The House of Representatives Special Committee on Promotion of Science and Technology and Innovation had requested TEPCO submit two operating manuals -- one each for accidents and severe accidents -- through the Economy, Trade and Industry Ministry (METI). On Sept. 7, the committee announced it had received only the first of the two manuals, the majority of which had been blacked out, prompting the body to demand TEPCO resubmit both manuals by Sept. 9.

The committee revealed on Sept. 12 that the severe accident manual subsequently handed over by TEPCO was also almost entirely redacted.

Meanwhile, at a meeting of the committee's directors on the same day, representatives of METI's Nuclear and Industrial Safety Agency (NISA) revealed for the first time that under the laws governing nuclear power in Japan, the committee has the power to order TEPCO to disclose the manuals in full. As such, the committee requested the minister of economy, trade and industry issue such an order to the utility -- a legal first. The request marks the fourth time the committee has demanded TEPCO disclose the manuals.

"It is unacceptable for TEPCO to refuse to disclose these materials in the wake of this kind of disaster," committee chair Hiroshi Kawauchi said. "Furthermore, the fact that NISA knew there were legal grounds to demand the documents' disclosure but did nothing about it angered many of the committee directors."

Meanwhile, a TEPCO representative stated, "These manuals are entirely internal documents pertaining to the operation of the reactors. They are not for general publication."

NISA and TEPCO representatives brought copies of the three-page severe accident manual to the board of directors meeting. However, only two lines of the document -- one reading "firefighting" and the other "inert gases" -- remained visible. Neither NISA nor the TEPCO representatives provided an explanation for the redactions at the meeting. The utility also collected the blacked-out documents at the meeting's end, saying only, "The issue here is the protection of nuclear materials, and our intellectual property rights."

(Mainichi Japan) September 13, 2011

## **Spent nuclear fuel holds key to restart of Hamaoka nuclear plant: Shizuoka governor**

Shizuoka Prefecture Gov. Heita Kawakatsu said on Sept. 12 that the Hamaoka Nuclear Power Plant should not be restarted until it becomes clear how to deal with spent nuclear fuel kept at the nuclear facility in remarks that could force further delay in resumption of the nuclear reactors there.

Gov. Kawakatsu said at a regular news conference, "The Hamaoka nuclear plant should not be restarted until ways of disposing of spent nuclear fuel become clear." It was the first time Kawakatsu had made the solution to the problem of spent nuclear fuel a condition for the resumption of the nuclear power plant in Omaezaki, Shizuoka Prefecture.

Kawakatsu had previously said he would endorse a plan to resume operations of the nuclear power plant if the prefectural government confirms the safety of anti-tsunami measures taken by Chubu Electric Power Co., the operator of the nuclear facility.

While the prefectural government does not have legal authority to decide whether to restart the nuclear power plant, Chubu Electric has said it will respect the intention of local residents and governments. Chubu Electric had planned to restart the nuclear plant when it got its anti-tsunami measures ready. But the new condition will make it increasingly unclear when the nuclear power station can actually be restarted.

There are a total of 6,625 spent nuclear fuel rods kept at the Hamaoka Nuclear Power Plant, and Chubu Electric plans to ask the nuclear waste reprocessing plant in the village of Rokkasho, Aomori Prefecture, to dispose of the used fuel rods. The reprocessing plant had been scheduled to be fully operational in autumn of 2012.

But even the test operation of the reprocessing plant has been suspended following the outbreak of the nuclear crisis at the Fukushima No. 1 Nuclear Power Plant, and therefore it is not clear whether the plant will begin its operation as originally scheduled. "We are not in a situation where we can take the spent nuclear fuel to the village of Rokkasho. I want to present things like that to Chubu Electric," said Gov. Kawakatsu.

 [Click here for the original Japanese story](#)

(Mainichi Japan) September 13, 2011

## **Schroeder: Japan can form energy policy without nuclear power**

BERLIN -- Former German Chancellor Gerhard Schroeder said Japan is technologically capable of establishing a non-nuclear-based energy policy and could become a pioneer in sources of energy other than nuclear power.

The former chancellor, who played a leading role in passing legislation to phase out nuclear power in Germany in 2002, made the comments in an interview with the Mainichi as Japan marked six months since the onset of the ongoing crisis at the Fukushima No. 1 nuclear plant.

"Japan is in a position where it is technologically capable of forming different energy policies," Schroeder said, adding that when Germany decided to eliminate nuclear power, "there was tremendous resistance from the power industry, which had believed that nuclear power was the essence of their business model, but debate was continued with industry executives until they understood." In making the comment, Schroeder stressed the importance of political leadership in forming new policy.

In Europe, countries can import electricity from their neighbors if they run short, but Japan, being an island nation, is unable to rely on other nations. However, Schroeder said that by working to conserve energy, expanding forms of renewable energy such as solar and wind power, and temporarily using energy such as natural gas, which contributes less to global warming, "Japan could become a pioneer in energy other than nuclear power."

Since the outbreak of the Fukushima nuclear crisis, most developed countries, as well as emerging and developing countries concerned about shortages of electricity, have continued to rely on nuclear power, on condition that safety is enhanced.

Commenting on events that could threaten the safety of nuclear power plants, Schroeder said, "Even risks of less realistic dangers like terrorism or airplane accidents must not be ruled out if there is even a slim possibility of them happening."

"Germany's safety philosophy is more solid than that of Japan," Schroeder added.

Pointing to Japan's failure to predict the tsunami that caused the nuclear crisis in Fukushima Prefecture, he said, "The massive tsunami could probably have been envisaged, and the fact that it was not envisaged when it should have been is problematic," he said.

In 1998, Schroeder's Social Democratic Party of Germany formed a coalition with the German Green Party. In 2002, the coalition passed legislation to eliminate nuclear power by around 2020.

The administration of Angela Merkel had put this policy on hold, but after the accident at the Fukushima No. 1 Nuclear Power Plant, quickly returned to the line of eliminating nuclear power. The administration decided to cease operation of all 17 nuclear power plants in Germany by 2022, a move approved by the German parliament.

 [Click here for the original Japanese story](#)

(Mainichi Japan) September 13, 20

## **Edano: Create society not reliant on nuclear power**

Economy and industry minister Yukio Edano says Japan should become a society that can live without nuclear power before it can have a national debate on the need for such energy.

Edano was giving his first news conference since taking office on Monday.

He said the swift development of alternative power sources and the promotion of energy saving measures could lead to a society that does not rely on nuclear power.

He said a public debate on the necessity of nuclear plants should be initiated at that time.

Edano also called on Japan to keep reducing gas emissions, but said there should be a fresh discussion of its stated target of a 25 percent cut from the 1990 level by 2020.

He said the emissions target should be reconsidered as Japan reviews its energy policy following the accident at the Fukushima Daiichi nuclear power plant.

Referring to possible power shortages this winter, Edano said the government hopes to allow some of the country's idled nuclear plants to be restarted.

Tuesday, September 13, 2011 05:55 +0900 (JST)

## **Nuclear agency's board adopts safety plan**

VIENNA (AP) -- A 35-nation meeting of the U.N. nuclear agency on Tuesday adopted a post-Fukushima nuclear safety plan -- despite gripes by influential member nations that it was too timid in making compliance voluntary.

Germany and several other EU states -- as well as Canada, Australia, Singapore and New Zealand -- are unhappy with the plan because **it does not obligate countries to allow outside monitoring of their civilian nuclear programs and gives the International Atomic Energy Agency no enforcement powers on safety.**

Board member nations adopted the document by consensus, but not before Canada aired grievances shared by other critics in an unusually blunt statement.

"The draft Action Plan before Governors today will be seen as a timid response by the Agency," said Canada's statement to the closed meeting.

Canada said the plan is neither as comprehensive as recommended by a special post-Fukushima IAEA conference attended by dozens of government ministers in June, nor recommendations by IAEA chief Yukiya Amano.

"It is disappointing, therefore, that the draft contains few new commitments and little in the way of increased transparency or safety peer reviews," said the statement, which was made available to The Associated Press.

It chastised both the agency and its member states for **missing "an opportunity to make necessary reforms to the global nuclear safety framework."**

Earlier in the debate on the plan, which began Monday, Ruediger Luedeking, Germany's chief IAEA representative, said the document "does not fully meet our expectations."

Suggesting that the text was vague and too nonbinding in nature, Luedeking said Germany would have wanted a plan in which member states' commitments to peer reviews and IAEA oversight of their civilian nuclear programs had been "more clearly and stringently set out."

Russia, China, India, Pakistan and Argentina were chief opponents of giving the IAEA more authority to police nuclear safety, said a diplomat from an IAEA member state attending the meeting.

But the United States was also comfortable with the decision to strip the plan of language entrusting the agency with more clout that was present in earlier drafts and leaving oversight to governments, national safety authorities and power companies, he said. Such a stance **reflects Washington's strong belief in domestic regulatory bodies having full control of nuclear safety.**

The six-page document outlines steps to be taken by states with civilian nuclear programs to establish weaknesses in their networks and remedy them. But these measures -- whether they are peer reviews, IAEA safety checks, or other proposals meant to improve nuclear safety -- can only be carried out "upon request" of the nation involved.

Instead of being required to do so, member states are **"strongly encouraged to voluntarily"** open their facilities to outside checks of potential weak links that could result in a nuclear disaster.

(Mainichi Japan) September 14, 2011

## Les tests de résistance sur le nucléaire français seront rendus publics

LEMONDE.FR avec AFP | 14.09.11 | 11h14 • Mis à jour le 14.09.11 | 11h17

Eric Besson, le ministre de l'énergie a demandé mercredi à l'Autorité de sûreté nucléaire (ASN) de rendre publics les tests de résistance sur les installations nucléaires françaises.

*"Je vous indique que c'est ce jeudi 15 [septembre] que les exploitants doivent répondre à l'ASN en remettant leur rapport, et nous avons souhaité, le premier ministre a confirmé, que l'Autorité de sûreté nucléaire remette publiquement ces rapports à la disposition de quiconque", a déclaré M. Besson sur i-Télé.*

*"Donc, nous, on ne peut pas avoir, contrairement à ce qu'on a entendu depuis quelques jours, de transparence plus grande", a fait valoir M. Besson, interrogé sur la sécurité des centrales françaises après l'explosion lundi d'un four servant au recyclage de déchets radioactifs à Marcoule (Gard).*

Le cabinet du ministre a indiqué que les rapports seraient rendus publics lors de leur analyse par l'autorité nucléaire et avant les éventuelles premières mesures attendues vers la mi-novembre.

Une annonce accueillie favorablement par Areva. *"Areva a toujours soutenu la transparence, qui est une des conditions du développement du nucléaire",* affirme une porte-parole du groupe.

Les tests de résistance concernent notamment les cinquante-huit réacteurs d'EDF ainsi que quatre sites d'Areva, dont l'usine de traitement des combustibles usés de La Hague (Manche), l'usine de fabrication de combustibles recyclés Melox dans le Gard. Le CEA compte, lui, un grand nombre de diverses petites installations.

Après la catastrophe de Fukushima au Japon, survenue en mars, le premier ministre François Fillon avait chargé l'ASN de procéder à l'audit des installations françaises, avec pour mission de fournir des premières conclusions d'ici à la fin de l'année.

## Hydrogen dissolved from water exploded at Fukushima nuclear reactor: experts

The No. 4 reactor building at the Fukushima No. 1 Nuclear Power Plant exploded four days after the March 11 Great East Japan Earthquake and ensuing tsunami, and experts believe the **explosion occurred partly because huge amounts of hydrogen were produced in the process of water being dissolved by radiation in a boiling spent nuclear fuel pool.**

A group of researchers from the University of Tokyo and the Japan Atomic Energy Agency made an analysis of the hydrogen explosion at the No. 4 reactor at the Fukushima nuclear power station. The finding will be announced at the Atomic Energy Society of Japan meeting in Kitakyushu that kicks off on Sept. 19. Radiation dissolves water into hydrogen and other elements.

When the explosion occurred, there were 1,535 fuel rods in the fuel pool of the No. 4 reactor, the largest number among the No. 1 to 4 reactors. When the Great East Japan Earthquake struck, the No. 4

reactor was suspended for regular inspections, but it lost power supply to the tsunami. The explosion occurred at the reactor on March 15, four days after the quake-triggered tsunami, because it lost cooling functions.

In reference to the No. 1 and 3 reactors where hydrogen explosions occurred, hydrogen is believed to have been produced from damaged fuel rods in the reactors. But there was no serious damage to the fuel rods in the No. 4 reactor. Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima nuclear complex, assumes that hydrogen entered the No. 4 reactor from the No. 3 reactor through a common exhaust pipe and exploded.

Nevertheless, the team of experts noted the fact that there was a gap of about 20 hours between the explosions at the No. 3 and 4 reactors and came to suspect that there could be other factors involved. When radiation was applied to water in flasks in three stages -- water at room temperature, at 97 degrees Celsius, and at the boiling point -- the amount of hydrogen produced at 97 degrees Celsius was 1.5 times larger than that at room temperature and 100 times that at boiling point.

**Hydrogen can explode when its concentration in air surpasses 4 percent.** Steam that was stuck to the upper parts of the reactor building became water again when it cooled down, but the hydrogen is believed to have remained in gas form and increased its concentration in the air.

"In addition to the hydrogen entering from the No. 3 reactor, water was probably dissolved into hydrogen by radiation. We want to verify whether it will occur in an environment in sizes equal to those of the reactor building or the spent nuclear fuel pool," said Yosuke Katsumura, professor of radiation chemistry at the University of Tokyo.

(Mainichi Japan) September 14, 2011

## **Fukushima survey sparks call for allocation of personal radiation monitoring badges**

The National Cancer Center has called for radiation monitoring badges to be distributed to residents of Fukushima Prefecture following a survey on health workers that failed to find a correlation between their radiation dosages and the time they spent outside.

On Sept. 13, the center and Mutsuko Watarai, an associate professor at Tokyo Health Care University, released the results of a radiation exposure survey on health workers in areas near the crisis-hit Fukushima No. 1 Nuclear Power Plant. The workers were given radiation monitoring devices called "glass badges" to determine their radiation exposure. However, **no correlation was seen between their exposure levels and the time they spent outside**, suggesting that determining residents' radiation exposure by simply asking when and where people were at certain times would be difficult.

"It would be hard to calculate radiation dosages through a survey on people's movements alone. Each person should have their own glass badge," a National Cancer Center representative said.

The survey was conducted between May 1 and 31, with a total of 147 workers being given radiation exposure badges. Accumulated dosages for the month ranged between 0.1 and 0.3 millisieverts in the town of Kawamata, up to 0.1 millisieverts in the city of Tamura, and up to 0.7 millisieverts in Minamisoma. Exposure varied among individuals within the same municipality. In the city of Iwaki, radiation dosages ranged between 0 and 0.1 millisieverts over a two-week period.

A total of 85 of the 147 workers gave detailed accounts of the time they spent outdoors, but no proportional relationship was seen between the time they spent outside and their radiation dosages.

"Glass badges should be distributed to the people of Fukushima as soon as possible," said Takamasa Kayama, chief director of the National Cancer Center, indicating that the center would work to win understanding from the Ministry of Health, Labor and Welfare and the Fukushima Prefectural Government.

Fukushima Prefectural Government officials said the prefecture has started distributing monitoring devices to children mainly up to junior high school age and pregnant women.

(Mainichi Japan) September 14, 2011

## **Cesium in Pacific likely to flow back to Japan in 20-30 years**

TOKYO (Kyodo) -- Radioactive cesium that was released into the ocean in the nuclear accident at the Fukushima Daiichi power plant is likely to flow back to Japan's coast in 20 to 30 years after circulating in the northern Pacific Ocean in a clockwise pattern, researchers said Wednesday.

Researchers at the government's Meteorological Research Institute and the Central Research Institute of Electric Power Industry disclosed the findings at a meeting of the Geochemical Society of Japan, an academic association, in Sapporo.

The researchers estimated that **the amount of radioactive cesium-137 that was directly released into the sea came to 3,500 terabecquerels over the period from March to the end of May, while estimating that roughly 10,000 terabecquerels fell into the ocean after it was released into the air.**

One terabecquerel equals 1 trillion becquerels. Cesium-137, which has a relatively long half life of about 30 years, can accumulate in the muscles once it is in the body and can cause cancer.

A total of 13,500 terabecquerels of radioactive cesium-137 is slightly more than 10 percent of that of the residual substance left in the northern Pacific after previous nuclear tests, according to the researchers.

The researchers, including chief researcher Michio Aoyama of the Japan Meteorological Agency's research institute, analyzed how the radioactive material dispersed in the sea during the latest accident, using data on radioactive materials detected after the nuclear tests.

According to the analysis, the cesium is expected to first disperse eastward into the northern Pacific from the coast of Fukushima Prefecture, northeast of Tokyo, via relatively shallow waters about 200 meters deep or less.

The cesium will then be carried southwestward from the eastern side of the International Date Line at a depth of 400 meters before some of it returns to the Japanese coast carried northward by the Japan Current from around the Philippines.

The analysis showed that some of the cesium will flow into the Indian Ocean from near the Philippines, and in another 40 years will reach the Atlantic, while some will turn westward south of the equator after reaching the eastern end of the Pacific and crossing the equator.

**Tokyo Electric Power Co., the operator of the crisis-hit plant, said about 1,000 terabecquerels of radioactive cesium had leaked into the sea from cracks at the plant.**

**The researchers' estimate, which was calculated using the density of cesium detected in seawater, is more than triple that.**

"To get a complete picture of cesium-137 released in the accident, we need highly precise measurements across the Pacific," Aoyama said before Wednesday's meeting.

(Mainichi Japan) September 14, 2011

## **TEPCO starts cooling No. 2 reactor in more efficient way**

TOKYO (Kyodo) -- The plant operator of the crippled Fukushima Daiichi nuclear complex said Wednesday that it has started cooling the No. 2 reactor core in what is believed to be a more efficient method.

The method of showering water onto the reactor core has already been applied at the No. 3 reactor, which saw the temperature measured at the bottom of the reactor pressure vessel drop below 100 C on Sept. 5 for the first time since the nuclear crisis erupted in March, according to Tokyo Electric Power Co.

Bringing the temperature of the bottom of the vessels below around 100 C is part of the key conditions for achieving the plant's cold shutdown. The No. 1 reactor is already below 90 C.

As for the mission to reduce the amount of highly radioactive water accumulating in the plant, the utility said it has decided to rely mainly on a recently introduced device developed by Toshiba Corp. and other companies from October, rather than the installation developed by Kurion Inc. of the United States and France's Areva.

The decision to use what is named SARRY, an acronym for simplified active water retrieve and recovery system, was apparently taken because it has fewer problems.

The installation developed by Kurion and Areva will be used as a backup system for SARRY.

Ensuring stable operation of the water decontamination system is seen as key to ending the nuclear crisis as it helps to reduce the amount of polluted water created as a result of the continued injection of coolant water into the troubled Nos. 1 to 3 reactors at the six-reactor complex.

The cleaned water is recycled as a coolant for the reactors.

(Mainichi Japan) September 15, 2011

## **Obama urged Kan to work hard to enhance nuclear security**

TOKYO (Kyodo) -- U.S. President Barack Obama urged former Japanese Prime Minister Naoto Kan in a letter to work hard on enhancing nuclear security, indicating U.S. frustration over the delay in Japan's actions caused by the March earthquake and tsunami, Japanese government sources said Wednesday.

The content of the letter was conveyed to the Japanese government through diplomatic channels on Aug. 22, the sources said.

Obama, who hosted the first nuclear security summit in Washington in April last year to boost international cooperation to prevent nuclear terrorism, said in the letter, "I am working hard on the tasks set at the April Summit, and I urge you to do the same."

Referring to the Nuclear Security Working Group set up by the United States and Japan, Obama said, "As two nations with an advanced nuclear infrastructure, we need to take leadership on nuclear security, especially at plutonium and highly enriched uranium processing facilities."

"We have seen many encouraging steps to improve the security of nuclear materials around the world and to strengthen our individual and collective ability to prevent nuclear smuggling," the president said.

"At the same time, we are reminded almost daily of the ongoing threat of terrorism and of the necessity to do all we can to avoid the global catastrophe of a terrorist nuclear attack," he said.

Obama said the two countries need to use the second nuclear security summit to be held in Seoul in April next year "to highlight our progress on nuclear security, and to identify new steps we can take together toward the vision of a more prosperous and peaceful world, one in which nuclear threats are diminished through cooperation and purposeful action."

He also called on Japan to make good use of the Integrated Support Center for Nuclear Non-Proliferation and Nuclear Security it established in the village of Tokai, Ibaraki Prefecture, in December.

To strengthen nonproliferation and nuclear security, the center provides training for nuclear industry personnel in emerging countries that are introducing commercial nuclear power.

Obama has sent similar letters to countries other than Japan, according to U.S. government sources.

Japan and the United States held the first meeting of the Nuclear Security Working Group in January and agreed to jointly study nuclear forensics, a sophisticated technology to analyze the composition of nuclear materials and specify their source.

The two countries also reached an accord on cooperation in establishing technologies to measure nuclear materials contained in spent nuclear fuel and boosting security during times of nuclear substance transportation.

However, Japan has been slow in implementing the agreements following the March 11 disaster, which triggered the crisis at the Fukushima Daiichi nuclear plant. Japanese government officials believe the letter demonstrates Washington's concerns over Tokyo's efforts to enhance nuclear security.

The two countries have yet to start joint research on nuclear forensics technology, and a planned experiment in Tokai to measure plutonium contained in spent nuclear fuel was changed as a facility necessary for the test was damaged by the quake.

The announcement by Tokyo Electric Power Co., the operator of the crippled Fukushima plant, that it had lost contact with 88 nuclear workers deployed to contain the crisis as of late August is also believed to have raised concerns in the United States, which is keen to prevent terrorism by those who have access to nuclear materials.

(Mainichi Japan) September 15, 2011

## **IAEA: N.Korean threat in nuke proliferation**

The UN nuclear watch dog agency has condemned North Korea for posing a threat through nuclear proliferation.

The regular board meeting of the International Atomic Energy Agency in Vienna discussed a report on North Korea's nuclear development on Wednesday.

The report says Libya had procured uranium material through the so-called nuclear black market, and that the material is highly likely to have originated in North Korea. It says Libya possessed the material until the country declared that it was abandoning its nuclear ambition.

The report also says a facility in Syria, which appeared to house a reactor, is supposed to have been constructed with the aid of North Korea.

Israeli warplanes destroyed the Syrian facility in an air attack 4 years ago.

At the board meeting, Japan, the US and others expressed concern over the possibility of nuclear technology spilling from North Korea into other countries.

In a chair statement, the IAEA condemned North Korea for threatening the international nuclear non-proliferation scheme.

The UN agency is expected to adopt a resolution at its annual ministerial meeting to begin on Monday urging North Korea to renounce its nuclear development program.

Thursday, September 15, 2011 08:06 +0900 (JST)

nuclear | 09.09.2011 – *(One week old, but worth reading)*

## **Fukushima spoils world appetite for nuclear power**

*In the six months since the Fukushima disaster, a global survey has detected mounting opposition to nuclear energy, especially in Asia. Yet Germany remains the only country to abandon the technology to date.*

<http://www.dw-world.de/dw/article/0,,15352996,00.html>

Several months after the nuclear disaster in Japan, market research company Ipsos asked citizens in 24 countries how they feel about atomic energy.

In all but three of them - India, the United States and Poland - there was consensus that the time has come for cleaner, safer sources of power.

Many of the 55 percent who expressed opposition to nuclear energy cited the reactor catastrophe in Japan as the reason why they were against nuclear power.

The most notable shift was in Asia, where several countries including South Korea, Japan and China have seen the number of anti-nuclear activists double in recent months.

Those are same countries that have major nuclear expansion plans. At the start of this year, Japan's 55 reactors covered some 29 percent of its power needs. Tokyo was planning to add another 14 plants to its network.

In South Korea, 21 reactors currently supply 35 percent of the energy, and there are another 11 plants in the pipeline.

China and India, each of which generate just 2 percent of their fuel from nuclear power, were planning 77 and 23 new reactors, respectively.

*More on Deutsche Welle web site : <http://www.dw-world.de/dw/article/0,,15352996,00.html>*

## **Up to one-seventh of Fukushima may be contaminated**

TOKYO (Kyodo) -- It is likely that more than 2,000 square kilometers of land in Fukushima Prefecture have been contaminated with radioactive substances released from the Fukushima Daiichi nuclear power plant and need to be decontaminated, research indicated Thursday.

The area accounts for about one-seventh of the whole prefecture, according to the estimation by Yuichi Moriguchi, a professor at the University of Tokyo. The volume of contaminated top soil that would need to be removed totals 100 million cubic meters.

As forests account for about 70 percent of the estimated contaminated areas, leaves and branches will need to be removed, according to the study that was based on radiation distribution maps released by the government in late June.

Moriguchi said that although it is unrealistic to remove all the contaminated soil, it would be necessary to implement various decontamination methods depending on the type of land -- forests, farmland and urban areas.

His calculations indicate that contaminated areas with an estimated dose of radiation of 1 microsievert per hour or higher at a height of 0.5-1.0 meter came to 2,000 sq. km which include no-go zones near the Fukushima plant that was hit by the March 11 earthquake and tsunami.

Most of the areas are within Fukushima, while some parts of Miyagi, Ibaraki and Tochigi prefectures surrounding Fukushima are also included.

(Mainichi Japan) September 15, 2011

## **Sunflowers having little effect on reducing radiation; scraping soil effective**

Growing sunflowers to remove radioactive cesium has turned out to have little effect, while scraping off the topsoil of contaminated farmland has been effective, the Ministry of Agriculture, Forestry and fisheries has announced.

The ministry released on Sept. 14 the results of experiments on the removal of radioactive materials from farmland it had conducted in the Fukushima Prefecture village of Iitate and other locations since May.

According to the results, radioactive cesium can be reduced by 70 to 90 percent from farmland if three to four centimeters of its topsoil was scraped off. Meanwhile, growing sunflowers with the hope that they would absorb radioactive substances turned out to have little effect.

"It is difficult to put the sunflower method into practical use at the moment," said the ministry.

The sunflowers that the ministry had planted in Iitate in May had absorbed around 52 becquerels of cesium per kilogram, according to the ministry. Even if sunflowers worth 10 kilograms were grown per square meter of farmland, only about 1/2000th of cesium in the soil could be absorbed, the ministry said.

The topsoil removal method, on the other hand, proved to be highly effective, with radioactive cesium in the soil plunging from 10,370 becquerels to 2,599 becquerels per kilogram after three to four centimeters of the topsoil was scraped off.

The method becomes even more effective when the topsoil is hardened by pharmacological agents before being removed, or when the topsoil was taken away all together with grass roots. Both methods could reduce levels of cesium by 82 to 97 percent.

However, these methods would generate 30 to 40 tons of waste soil per 100 square meters. **Since an estimated 8,300 hectares of farmland in Fukushima Prefecture is contaminated with 5,000 or more becquerels of cesium per kilogram, decontaminating those areas could result in some 3.5 million tons of waste soil, according to the ministry.**

(Mainichi Japan) September 15, 2011

## UN: Fukushima plant based on poor safety assessment

UN Secretary General Ban Ki-moon has blamed the nuclear accident at the Fukushima Daiichi power plant in northern Japan on its design which, he says, was based on poor hazard assessments of natural disasters.

The secretary general released a 43-page report on Wednesday, after studying the March accident with UN entities including the International Atomic Energy Agency and the World Health Organization.

The report says it is necessary for nuclear power stations to strengthen their safety standards.

It proposes the creation of a global system to allow the IAEA to internationally monitor radiation levels, citing the international impact of major nuclear accidents and emergencies.

The report calls for an international emergency response framework in the event of nuclear accidents, to secure human health and food safety.

The report also stresses the importance of the peaceful use of nuclear energy, in order to help improve the lives of the 2.4 billion people in developing countries suffering from energy poverty.

The UN secretary general is to convene a high-level meeting on nuclear safety and security on September 22nd in New York.

Thursday, September 15, 2011 16:40 +0900 (JST)

## Areva suspend la production de deux usines d'uranium à cause du Japon

LEMONDE.FR avec AFP | 15.09.11 | 17h54 • Mis à jour le 15.09.11 | 20h35

Areva a suspendu pour deux mois la production de deux usines françaises de transformation d'uranium, la Comurhex, à Malvesi, dans l'Aude, et le Tricastin, dans la Drôme.

La raison invoquée par le groupe nucléaire est la baisse de la demande des centrales nucléaires au Japon après la catastrophe de Fukushima. *"Cette décision se justifie par les événements intervenus au Japon qui amènent aujourd'hui à une baisse des livraisons des électriciens japonais et à une pression sur les prix à court terme de ce marché"*, explique Areva, jeudi 15 septembre.

La Comurhex, filiale à 100 % d'Areva, transforme l'uranium naturel en deux phases pour obtenir de l'hexafluorure d'uranium, qui est ensuite enrichi et transformé en combustible pour les centrales nucléaires.

Aucune mesure de chômage technique n'est prévue, du fait de congés et de formations prévues pour les employés, selon Areva.

## **AREVA VA TERMINER LA CENTRALE DE BELLEFONTE**

Le groupe nucléaire a par ailleurs annoncé aux [Echos](#) (article payant), jeudi, qu'il avait été choisi pour terminer la construction de la centrale nucléaire américaine de Bellefonte (Alabama), dont les travaux avaient été interrompus en 1988.

Areva n'a pas voulu communiquer d'éléments financiers sur ce contrat, que le président du directoire, Luc Oursel, dit devoir signer jeudi.

## **La France saurait-elle faire face à une catastrophe nucléaire ?**

LEMONDE.FR | 15.09.11 | 18h36

Même s'il a rapidement été maîtrisé, [l'accident](#) de la centrale de Marcoule n'a pas manqué de rouvrir le [débat](#) sur la gestion d'un accident nucléaire grave en France. Cette fois, les conséquences sont restées confinées au périmètre le plus réduit : celui de ce centre de traitement de déchets nucléaires du Gard où l'explosion d'un four a fait un mort et quatre blessés.

Mais que se serait-il passé si l'accident de Marcoule avait entraîné des fuites de particules radioactives, portées vers Avignon, à une trentaine de kilomètres, par le mistral qui soufflait ce jour-là ? Plus généralement, maintenant que le drame de Fukushima a laissé entendre que l'impensable était possible, la question se pose : comment une telle catastrophe nucléaire serait-elle gérée en France ?

Selon Jean-Luc Godet, à la tête de la Direction des rayonnements ionisants et de la santé à l'Autorité de sûreté nucléaire (ASN), *"l'accident de Tchernobyl a montré les limites d'une mentalité probabiliste"*, qui suppose que les probabilités statistiques d'un accident sont si faibles que nul n'ait besoin de s'en préoccuper.

## **DANS L'URGENCE**

La catastrophe dans la centrale ukrainienne conduit donc les autorités à se pencher enfin sur une doctrine française à suivre en cas d'accident... trente ans après la construction du premier réacteur produisant de l'électricité nucléaire en France, à Marcoule justement. Les Plans particuliers d'intervention (PPI) font alors leur apparition, supervisés, autour de chaque site nucléaire, par les préfets, et encadrés désormais par [un décret de 2005](#). Le principe : prévoir un confinement de la population, une éventuelle évacuation, et la prise de comprimés d'iode.

Ces PPI forment une base indispensable à l'intervention en phase d'urgence, mais encore limitée. [Au Japon](#), des villages ont été évacués dans un rayon de cinquante kilomètres autour de la centrale de Fukushima. En France, ces plans couvrent une zone ne dépassant pas dix kilomètres, voire 500 mètres pour certaines installations, déplore Roland Desbordes, président de la Criirad (Commission de recherche et d'information indépendante sur la radioactivité). Au-delà, rien n'est prévu pour les populations.

Ce n'est pas la seule limite. A Marcoule par exemple, [la zone couverte par le PPI](#) est répartie entre le préfet du Gard et celui du Vaucluse, avec les risques que cela soulève en termes d'ordres contradictoires.

## **DES PLANS OPÉRATIONNELS ?**

Mais surtout, des doutes existent sur l'application des PPI et leur capacité à parer à toute éventualité. Concernant la première mesure, le confinement : *"Lors de l'accident d'AZF à Toulouse, le préfet a ordonné de s'enfermer chez soi. Mais dans certaines maisons, les fenêtres avaient éclaté. Et dans les zones rurales, si on coupe la ventilation d'un élevage en batterie, tous les animaux meurent"*, explique Raymond Sené, physicien nucléaire membre du GSIEN (Groupement des scientifiques pour l'information sur l'énergie nucléaire).

Les PPI prévoient également la mise à disposition de comprimés d'iode – qui permettent uniquement de [se protéger d'une contamination à l'iode radioactive](#), à l'origine de cancers de la thyroïde. Mais l'épisode de Marcoule a démontré les dysfonctionnements du dispositif : *"c'est un fiasco"*, affirme Alexandre Pissas, président de la CLI (Comité local d'information) de ce site. *"Toutes les communes concernées n'ont pas été chercher leurs boîtes, certains habitants non plus, et des stocks entiers d'iode sont périmés dans les pharmacies..."* De plus, selon Roland Desbordes, *"il est désormais interdit de se procurer de l'iode au-delà de la zone très limitée du PPI."*

Reste la question sensible de l'évacuation. Dans les PPI, un accident aussi important que celui de Fukushima n'est clairement pas envisagé. Car de [nombreuses centrales](#) sont installées à proximité de grands foyers de population – la centrale de Bugey est à 35 kilomètres de Lyon, celle de Nogent-sur-Seine à une centaine de kilomètres de la région parisienne... Pour Yves Cochet, député EELV (Europe Ecologie-Les Verts), *"s'il y a un accident grave dans la centrale de Nogent, que les vents soufflent vers l'Ouest, que les nappes phréatiques et la Seine sont contaminées, ce sont potentiellement 12 millions de Franciliens qui sont touchés. Or, rien n'est prévu pour faire face à cette éventualité, et de toute façon, il est totalement impossible d'évacuer rapidement Paris et sa banlieue."*

## **PLAN "PLUTÔT CONFIDENTIEL"**

*Selon Yves Cochet, après la phase d'urgence, l'armée a toutefois élaboré un plan "plutôt confidentiel", où il est notamment prévu, si aucune évacuation rapide n'est possible, "de départager la population déjà trop contaminée pour être évacuée, et celle qui pourra partir. Une discrimination assez effrayante..."* En tout cas, au-delà des premiers jours, aucun *"document officiel"* ne prévoit pour le moment la marche à suivre, assure Jean-Luc Godet.

Une enveloppe financière est par contre prévue pour faire face aux dommages nucléaires, à hauteur de 1,5 milliard d'euros, dont près de la moitié avancée par l'exploitant. Le montant est insuffisant, estime le président de la Criirad : *"Il n'y a pas d'assurance pour le nucléaire. Et l'argent mis sur la table équivaut seulement au prix du sarcophage posé autour de la centrale de Tchernobyl."*

## **"PENSER LA SUITE"**

Pour faire face à ces lacunes, l'ASN est chargée, depuis 2005, de penser le moyen et le long terme. *"A l'époque, on faisait des exercices où le préfet ordonnait la mise à l'abri des gens, puis c'était tout, il ne savait pas comment lever cet ordre... Il fallait logiquement penser la suite"*, explique Jean-Luc Godet.

Depuis six ans, le [Codirpa](#) (Comité directeur pour la gestion de la phase post-accidentelle) mobilise donc environ 130 membres – associations, élus, CLI, agences sanitaires, experts européens en radioprotection, exploitants nucléaires, etc. – pour plancher sur ce problème complexe. Avec un tas de questions sensibles : comment nettoyer les maisons dans les zones urbaines contaminées ? Que faire des objets et déchets radioactifs ? Comment enfouir ou déplacer les sols superficiels contaminés ? Comment réhabiliter les terres devenues improductives pour l'agriculture ?

Une des premières avancées du Codirpa est de dessiner un zonage du territoire en cas d'accident : une première zone dite "d'éloignement" de quelques kilomètres ; une deuxième zone de "protection" où *"il est plus avantageux de rester que de partir"*, selon M. Godet, et où la population vivrait dans des habitations nettoyées sans pouvoir consommer les produits de la terre ; puis une zone de "surveillance", sur une soixantaine de kilomètres à la ronde, où les produits alimentaires sont susceptibles de dépasser les niveaux maximum admissibles de radioactivité.

## **RIEN DE PRÉVU EN CAS D'ACCIDENT GRAVE**

Mais pour l'instant, le Codirpa ne réfléchit pas encore à un scénario à la hauteur de Tchernobyl ou de Fukushima. Il se fonde sur les simulations de deux accidents, dont le plus grave occasionnerait des rejets radiocatifs pendant seulement vingt-quatre heures, alors qu'à Fukushima, six mois après la catastrophe, les fuites n'ont pas pu être maîtrisées !

L'examen d'un accident plus grave et complexe viendra dans un second temps, après la publication d'une première doctrine sur la gestion d'un accident modéré début 2012 et après avoir tiré les leçons de Fukushima, promet Jean-Luc Godet.

Autre faiblesse du Codirpa : malgré un effort de concertation avec les associations et les acteurs locaux, plusieurs voix se sont élevées contre une **implication et un pouvoir encore insuffisants de la population**. La Criirad, elle, a refusé de participer au comité de l'ASN. Notamment parce que le Codirpa accorderait *"une place maîtresse à une association comme le CEPN [Centre d'étude sur l'évaluation de la protection dans le domaine nucléaire], composée d'Areva, d'EDF, du CEA et de l'IRSN, représentant en fait le lobby nucléaire"*. Plus grave, selon Roland Desbordes : *"Sur le fond, le Codirpa construit son travail sur des programmes de recherche européens sur Tchernobyl – Ethos et Core – qui ont conclu, en gros, que la vie pouvait très bien s'organiser dans des zones contaminées, en minorant largement les problèmes de la radioactivité et de l'état de santé de la population. Il veut adapter ce modèle en France"*.

Angela Bolis

## **Edano says Fukushima Daiichi nuclear power plant's resumption difficult**

TOKYO (Kyodo) -- Japan's new industry minister Yukio Edano said Thursday it will be difficult to restart the Fukushima Daiichi nuclear power plant, in addition to the Nos. 5 and 6 reactors of the crippled Fukushima Daiichi plant, as **local residents are unlikely to approve the resumption**.

In an interview with Kyodo News and other media organizations, Edano said that winning approval of local municipalities where idled reactors are located is a "precondition" for their reactivation.

Tokyo Electric Power Co., which operates the two nuclear power complexes in Fukushima Prefecture, plans to scrap the troubled Nos. 1-4 reactors of the six-reactor Fukushima Daiichi plant, and Edano had earlier said when he was chief Cabinet secretary in the wake of the start of the Fukushima nuclear crisis that the remaining Nos. 5 and 6 reactors will likely be decommissioned, too.

Asked if he still believes so, Edano said, "I do not believe that we can obtain local approval" in both cases.

The Nos. 5 and 6 units at the Fukushima Daiichi plant and all four reactors at the Fukushima Daini plant, which is located about 15 kilometers south of the crippled plant, achieved a stable condition called cold shutdown in the early days of the crisis.

Edano said the government will try to disclose lessons learned from the Fukushima nuclear crisis, including the cause of the nuclear accident, in a more appropriate manner, as he believes distrust among the public about government information disclosure is among the reasons municipalities hosting idled reactors are reluctant to allow them to resume operating.

A number of reactors in Japan remain shutdown for regular checkups amid heightened public concern over nuclear power following the nuclear accident at the Fukushima Daiichi plant, triggered by the March earthquake and tsunami, and the reactors need to pass the so-called nuclear "stress tests" before resuming operations.

If the resumption of their operation is not allowed, all of Japan's 54 reactors will be out of operation by May.

Regarding electricity supply, Edano said the government intends to avoid ordering restrictions this winter on electricity use.

"I believe there is a plenty of room that we can live through this situation without issuing a power-saving order, if we combine (power-saving) efforts," Edano said.

On trade issues, Edano suggested that Japan could decide to participate in the U.S.-led Trans-Pacific Partnership free trade negotiations if a consensus that the trade accord would not devastate the agriculture and other sectors in Japan is reached.

"If agriculture and other policies are solidly promoted, I believe there are a plenty of chances that we reach a positive decision about the TPP," he said.

The Japanese government postponed its earlier plan to decide by June on whether to join the negotiations for the major Pacific free trade accord as the March disaster prompted the government to review its policy priorities.

As for Japan Business Federation head Hiromasa Yonekura's recent remarks that he hopes Edano will "study various economic mechanisms more," the new economy minister expressed a sense of discomfort, saying that it was a way of saying Yonekura looked down on him.

Yonekura has been critical of Edano's earlier remarks that debt waivers by Tokyo Electric's lender banks would be necessary because of the massive compensation the utility bears due to the nuclear accident.

Edano became the minister of economy, trade and industry Monday after his predecessor Yoshio Hachiro resigned after making remarks deemed insensitive to those affected by the Fukushima nuclear crisis.

(Mainichi Japan) September 16, 2011

## **Institute probing radioactive contamination of Fukushima forests**

FUKUSHIMA, Japan (Kyodo) -- The Forestry and Forest Products Research Institute in Tsukuba, Ibaraki Prefecture, is investigating the extent of radioactive contamination of wooded areas in Fukushima Prefecture, where the crippled Fukushima Daiichi Nuclear Power Station is located.

The government, which has concentrated so far on how to decontaminate residential areas, has yet to start to remove radioactive substances from the forests, which cover 70 percent of the prefecture.

Shinji Kaneko, director of the institute's Forestry Site Environment, said, "It is crucial for us to make clear the state of contamination (of forests) in considering how to decontaminate (the woodland) effectively."

In October, the institute plans to release the results of its analysis of samples of cedar trees, taken from the villages of Kawauchi and Otama and the town of Tadami.

The findings are likely to help the government devise decontamination methods for the forests, now that it is set to rescind restrictions on movements of residents in areas within 20-30 kilometers from the crippled plant.

In August, the government acknowledged difficulties involved in removing soil and ground cover from the forests, saying, "Huge volumes of soil and other (contaminated) items would be involved as the forests occupy a huge area."

The government effectively shelved any approach to decontaminating the forests when it said a removal of both contaminated soil and compost materials would strip the forests of their functions such as water retention.

(Mainichi Japan) September 16, 2011

## **Excessive cesium found in burned industrial waste in 3 prefs.**

TOKYO (Kyodo) -- Radioactive cesium in excess of the benchmark of 8,000 becquerels per kilogram was discovered in ashes and dust from industrial waste incinerators in six locations in Iwate, Fukushima and Chiba prefectures, the Environment Ministry said Thursday.

Among 110 industrial waste disposal facilities covered as samples in 16 prefectures in eastern and northeastern Japan, the cesium reading stood at 10,800 to 144,200 becquerels at four in Fukushima, 23,000 becquerels at one in Iwate and 11,500 becquerels at one in Chiba, it said.

A similar study found in late August that ashes from nonindustrial incinerators were polluted with over 8,000 becquerels of cesium per kg in Tokyo and six prefectures. A worker exposed daily to 8,000 becquerels of cesium would still not exceed the annual radiation exposure limit of 1 millisievert.

At the end of August, the ministry decided to get local authorities to solidify with cement incinerated dust and ashes containing 8,000 to 100,000 becquerels of cesium per kg and cover them with watertight sheeting before they are buried in the ground.

As for those with more than 100,000 becquerels, the ministry made it possible to bury them after the level of cesium falls below the mark by solidifying them with cement. It earlier decided to allow those containing up to 8,000 becquerels to be buried in waste disposal sites only if residential houses are not built there in the future.

(Mainichi Japan) September 16, 2011

## **Japan nuclear agency chief regrets lenient crisis management approach**

TOKYO (Kyodo) -- Japan's nuclear safety agency chief has voiced regret that its crisis management approach was too lenient in light of the Fukushima Daiichi nuclear plant accident.

"Our approach on crisis management had been lenient," Nuclear and Industrial Safety Agency Director General Hiroyuki Fukano said in a recent interview with Kyodo News, after his predecessor who was dismissed in August over his handling of the meltdown accident.

When the March 11 earthquake and tsunami hit northeastern Japan, the plant lost electricity sources due primarily to the large tsunami, leading to meltdowns of three reactor cores, explosions at three reactor buildings and widespread radioactive contamination.

"We should have taken a realistic approach to the possibility that all electricity sources could be lost for real," Fukano said.

"If we had taken a realistic approach, we could have made a difference in training, human resources development and the plant operator's preparedness," he said.

Fukano also said the government's disaster preparations "had been insufficient in many ways." "As we had taken much time to assess quake resistance, we had lagged in taking anti-tsunami measures," he said.

He indicated that the presence of as many as six reactors at the plant made it difficult to effectively address the accident in which all six suffered damage. "It was very difficult to secure sufficient human resources and equipment such as power-supply vehicles," he said

The government plans to create a new nuclear safety agency under the Ministry of Environment next April to take over the nuclear regulatory operations of Fukano's agency under the Ministry of Economy, Trade and Industry and other government bodies.

"A major challenge for the new agency would be to develop human resources with 'frontline' expertise such as knowledge about the real operations of a nuclear plant," he said. "We will provide anything as required to allow the new body to become a firm regulatory organization and avoid any similar failures."

(Mainichi Japan) September 16, 2011

## **Cesium found in industrial waste**

Industrial waste at 6 incineration facilities has been found to contain radioactive cesium at levels that exceed the government-set limit for disposal.

Following the nuclear accident in Fukushima, the ashes of garbage from private homes were found to contain levels of radioactive cesium, well above the limit of 8,000 becquerels per kilogram. The contaminated garbage was treated at waste disposal plants in the Kanto and Tohoku regions.

The Environment Ministry had asked 16 prefectures in the Tohoku, Kanto and Koshin-etsu regions to examine ashes from woodchips and other industrial waste.

Out of the 110 incineration facilities tested, levels of radioactive cesium exceeded 8,000 becquerels per kilogram at 4 sites in Fukushima Prefecture and one each in Iwate and Chiba prefectures. The highest measurement was 144,420 becquerels per kilogram at one facility in Fukushima.

These facilities were found to be temporarily keeping the ashes without disposing of them in landfill sites.

Since the 6 facilities had been storing the waste material outdoors before incineration, the Environment Ministry plans to examine other facilities that follow similar methods.

Friday, September 16, 2011 06:50 +0900 (JST)

## **Researchers say meltdown could have been avoided**

A group of researchers says the meltdown of a reactor at the Fukushima Daiichi nuclear power plant could have been avoided **if water injection had been carried out 4 hours earlier than it was.**

The researchers at the Japan Atomic Energy Agency on Thursday reported the finding based on a computer simulation of the accident at the plant's No. 2 reactor.

The core meltdown took place within a few days after the reactor's cooling system failed due to the major earthquake and tsunami on March 11th.

The Tokyo Electric Power Company, or TEPCO, said earlier that data analysis shows that the cooling system may have stopped working shortly after 1 PM on March 14th.

The utility started injecting water to cool the reactor at around 8 PM that day, after reducing pressure in the facility. But by 8 PM the next day -- around 100 hours after the quake -- much of the reactor's fuel had melted and collected at the bottom of the reactor's pressure vessel.

The simulation suggests that if water had been injected by around 4 PM, it could have prevented the meltdown by lowering the temperature of the fuel before it reached 1,200 degrees Celsius, destroying the fuel's container.

Group leader Masashi Hirano says the damage to the fuel could have been avoided, and that **he wonders why TEPCO did not start injecting water earlier despite difficulties.**

**TEPCO says it doesn't believe the operation was delayed, adding that workers did their best amid high radiation levels and other severe conditions.**

Of the plant's 6 reactors, the No. 1 to No. 3 suffered meltdowns after losing cooling functions.

At the No. 2 reactor, a hydrogen explosion on March 15th caused the release and spread of massive amounts of radioactive substances.

Thursday, September 15, 2011 21:46 +0900 (JST)

## **Infants to be tested for radiation exposure**

Minamisoma City in Fukushima Prefecture has decided to include infants and small children in tests for radiation taken into their bodies.

Parts of the city are designated as evacuation zones following the accident at the Fukushima Daiichi nuclear plant.

Since July, the city has been testing residents for internal radiation exposure, but infants and small children were excluded as the equipment did not fit them. It has been studying other test methods for them.

A city-run general hospital, working with a Tokyo-based medical firm, has decided on a method to measure amounts of radioactive substances in urine and began accepting applications on Thursday.

The new test will be provided free of charge for children 6 years old and under. Results will be mailed about 2 weeks after urine samples are received.

A mother said she has not been allowed to go outside with her baby, adding she wants to have her baby tested as soon as possible.

An official at the hospital said many parents must be worried about the health of their children, and that he hopes the tests would ease their concerns.

Thursday, September 15, 2011 14:01 +0900 (JST)

## **17 Tons of U.S.-Supplied Weapons-Grade Nuclear Material Missing**

Thursday, September 15, 2011 -

[http://www.allgov.com/US\\_and\\_the\\_World/ViewNews/17\\_Tons\\_of\\_US\\_Supplied\\_Weapons\\_Grade\\_Nuclear\\_Material\\_Missing\\_110915](http://www.allgov.com/US_and_the_World/ViewNews/17_Tons_of_US_Supplied_Weapons_Grade_Nuclear_Material_Missing_110915)

The United States has lost sight of enough nuclear material, which was provided to friendly countries for civilian energy use, to manufacture hundreds of nuclear warheads.

An [investigation](#) by the [Government Accountability Office](#) found that the [U.S. Department of Energy](#) and the [Nuclear Regulatory Commission](#) could not completely account for about 17 tons of weapons-grade uranium and plutonium that was shipped to 27 nations over the past few decades. The agencies also were faulted for not having a sound policy for tracking down the materials.

America's accounting for the exported nuclear material is so bad that the [International Atomic Energy Agency](#) may rule that the U.S. is in violation of its international anti-proliferation treaty obligations.

Although the U.S. has given more than two dozen countries nuclear fuel, reactors and reactor components for non-military purposes, it only conducts annual inventories with five of the nations. But because the location of this material is not properly monitored, it could be used to develop weapons of mass destruction, if it fell into the wrong hands.

-Noel Brinkerhoff

## **Radiation fears, shipment bans, weigh heavily on mushroom pickers, growers**



A poster seen on Sept. 16 in Tanagura, Fukushima Prefecture, urges potential mushroom hunters not to pick mushrooms or ship them due to radiation concerns. (Mainichi)

The ban on wild mushroom shipments from 43 Fukushima Prefecture municipalities announced on Sept. 15, paired with widespread radiation fears, is discouraging pickers from their usual mushroom-hunting trips into the woods.

The ban came after wild mushrooms containing cesium beyond the legal limit of 500 becquerels per kilogram were found in the prefecture. Tawny milkcap mushrooms containing cesium over the legal limit, meanwhile, have also been found in Takahagi, Ibaraki Prefecture, endangering mushroom-picking in that region as well.

In the town of Tanagura in Fukushima, tawny milkcap mushrooms picked this month were found to contain 28,000 becquerels of cesium, or 56 times the legal limit. The town is famous for matsutake mushroom hunting between the end of September and late October each year.

The town holds an annual mushroom festival in October, and the festival is a big draw for the matsutake mushrooms in Japanese sake on offer, as well as a bingo game offering expensive locally harvested matsutake as a major prize. The events were canceled this year amid radiation concerns, leading an official of the town's tourism association to say, "We wonder if we can hold such events next year."

Tanagura is about 70 kilometers from the crippled Fukushima No. 1 nuclear power station, and it has atmospheric radiation of about 0.2 to 0.3 microsieverts per hour.

The Japanese Society of Soil Science and Plant Nutrition says wild mushrooms are more likely to absorb radioactive materials than other food products. Some studies indicate that mushrooms such as matsutake and tawny milkcap mushrooms, both of which grow out of the ground, tend to register higher levels of radiation than mushrooms which grow on dry vegetation, like maitake and nameko.

The impact of radiation fears is not limited to Fukushima and Ibaraki prefectures, however.

The Jindaira Farm in Nakanojo, Gunma Prefecture, also organizes a mushroom hunting tour every autumn, but the number of participants -- mainly from Tokyo, Saitama and other neighboring prefectures -- is down by half this year. Its 76-year-old owner said, "The mushroom season is going to start soon, but I am worried the effects (of the radiation fears) are going to get worse."

The Mikawa Kanko mushroom park in Aga, Niigata Prefecture, says it has received inquiries from potential visitors about radiation but told them its mushrooms are safe because it grows them indoors.

Amid the radiation furor and news of shipment bans, major mushroom growers are taking measures to defend themselves.

Yukiguni Maitake Co. in Minamiuonuma, Niigata Prefecture, bought testing devices at a price of 15 million yen each, and on Sept. 15 started testing mushrooms for radiation. The firm is posting serial numbers of its mushroom products on its website to allow customers to check the safety of their purchases.

"No radioactive materials have been detected so far, but we want to assure our customers of the safety of our products," a Yukiguni Maitake representative said.

Unlike other farm products, wild mushrooms are picked by mushroom hunters who then bring them to retailers, direct sales stores, and local roadside markets.

The Forestry Agency is advising those planning to go mushrooming to check the websites of respective local governments for the results of radiation tests and gather other pertinent information.

(Mainichi Japan) September 16, 2011

## **Most core detectors found damaged at Fukushima No. 1 reactor**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Friday most of the detectors lying below the pressure vessel at the No. 1 reactor of the crippled Fukushima Daiichi nuclear power plant that check the condition of the control rods have been found damaged.

The damage -- mostly burnt wiring or electrical shortages -- is believed to have been caused by the intense heat in the wake of a core meltdown.

The utility conducted current tests on the detectors, which each cover 97 control rods, and found only one detector functioned normally, it said.

Junichi Matsumoto, a senior official at the utility, said he believes the detectors suffered such damage as both pressure and temperatures exceeded the given design limits for the pressure vessel.

(Mainichi Japan) September 16, 2011

## **Head of nuclear watchdog criticizes TEPCO over blacked-out documents**



The largely blacked-out emergency operation manual submitted by TEPCO to a special Diet committee is seen in this Sept. 7 photo. (Mainichi)

The head of a government nuclear watchdog has criticized Tokyo Electric Power Co. (TEPCO) for not being transparent enough, after it submitted documents earlier this month that were mostly blacked out.

"Why don't they release all the information? **There are problems with TEPCO's attitude toward providing information,**" Hiroyuki Fukano, 54, head of the Nuclear and Industrial Safety Agency (NISA), told the Mainichi in an interview on Sept. 16.

The documents in question include an operation manual for responding to nuclear accidents.

"NISA has still not received the manual (in full)," Fukano said. "It is our job to investigate problems such as why the emergency condenser (for cooling the No. 1 reactor at the Fukushima No. 1 Nuclear Power Plant) didn't work properly, and the operation manual serves as a base for such investigations." Fukano indicated that NISA will request non-blacked out documents from TEPCO.

Regarding the current state of the Fukushima No. 1 nuclear plant six months on from the start of the crisis, Fukano said, "Although conditions have stabilized, there are still large amounts of radioactive water at the site, and we can't say the situation is under control. There are still many problems to tackle."

On the plant's complete loss of electricity after the earthquake, Fukano said, "Such a possibility hadn't seemed real to us. There was a feeling that a complete loss of power was rare, and a disaster situation would end before it got too serious."

Regarding the threat of tsunamis, he said, "We considered them as only an 'accompanying phenomenon' to earthquakes, and did not do enough (to make sure plants were prepared.)"

Commenting on criticism that NISA suffered for initially giving the Fukushima disaster a "Level 4" rating on the International Nuclear Event Scale, Fukano said, "We should have given (an accurate) rating sooner. That's something that we are rightly criticized over."

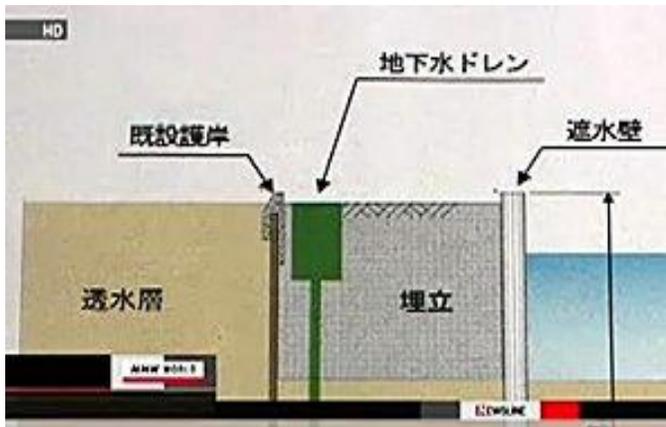
On the safety of other nuclear plants around the country, Fukano said, "I cannot say that they are absolutely safe, and I won't. Nothing involving humans is 100 percent safe. However, in stress tests from here on, we will announce what risks the plants face and how prepared they are for disasters."

Fukano, who worked under the Ministry of Economy, Trade and Industry at the time of the March 11 disaster, joined NISA in late March. In August, he replaced Nobuaki Terasaka as head of NISA.

(Mainichi Japan) September 17, 2011

Vendredi 16 septembre 2011

## [Un barrage sur la faille de Fukushima](#)



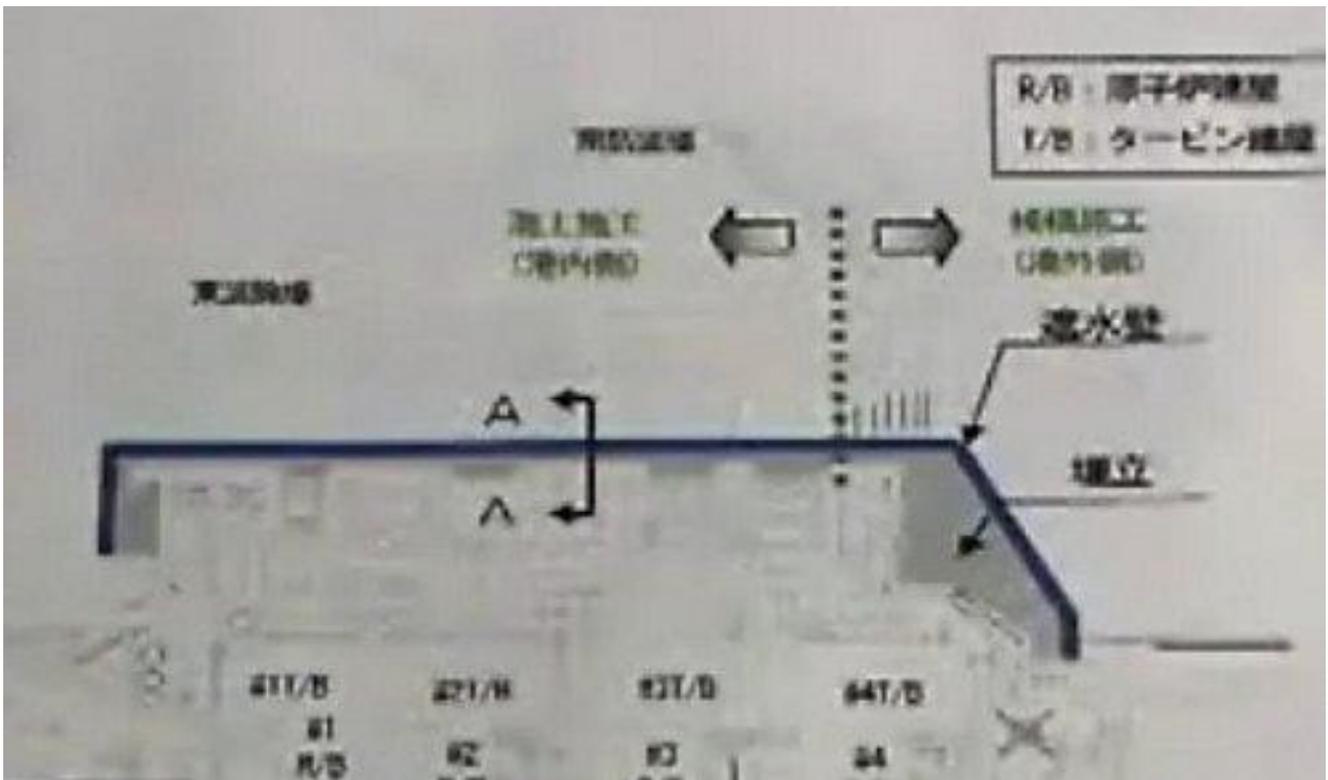
**Un des grands axes de la feuille de route de Tokyo Electric Power Company pour contenir l'accident nucléaire est la prévention de la contamination de l'eau de mer. Pour cela, l'exploitant de la centrale nucléaire de Fukushima Daiichi prévoit de construire un mur en acier pour empêcher l'eau radioactive de s'écouler dans l'océan.**

Actuellement, selon la firme nipponne, plus de 110 000 tonnes d'eau hautement radioactive sont actuellement stockées dans les caves des bâtiments de la centrale. L'entreprise compte utiliser entre 600 et 700 palplanches en acier pour créer un mur de 800 mètres longeant la côte. Chaque élément, de 22 mètres de long et un mètre de large, sera enfoncé profondément dans le sol sous le niveau du fond de la mer pour arrêter l'écoulement des eaux souterraines.

Cet ouvrage, prévu pour une durée de 30 ans, sera complété par un système de captage des eaux contaminées, à l'intérieur d'une importante chape de béton qui sera coulée dans l'espace entre la digue existante et la barrière en acier. Tepco estime qu'il faudra se préparer à une hausse des niveaux d'eau souterraine autour de l'usine quand le mur aura été construit. Une surveillance étroite des niveaux, le pompage des eaux souterraines et leur décontamination seront ainsi nécessaires afin d'éviter tout débordement vers l'océan.

Tepco reconnaît donc implicitement que l'eau contaminée des sous-sols est actuellement en train de s'écouler dans la mer, ce qui est en concordance avec les conclusions de [l'analyse géologique du terrain](#) : les couches aquifères en correspondance avec le plateau d'Abukuma ont un pendage dirigé vers la mer. Même si la vitesse de déplacement des eaux souterraines est lente – de l'ordre de quelques mètres par semaine – il faut être conscient que de l'eau radioactive va continuer à se

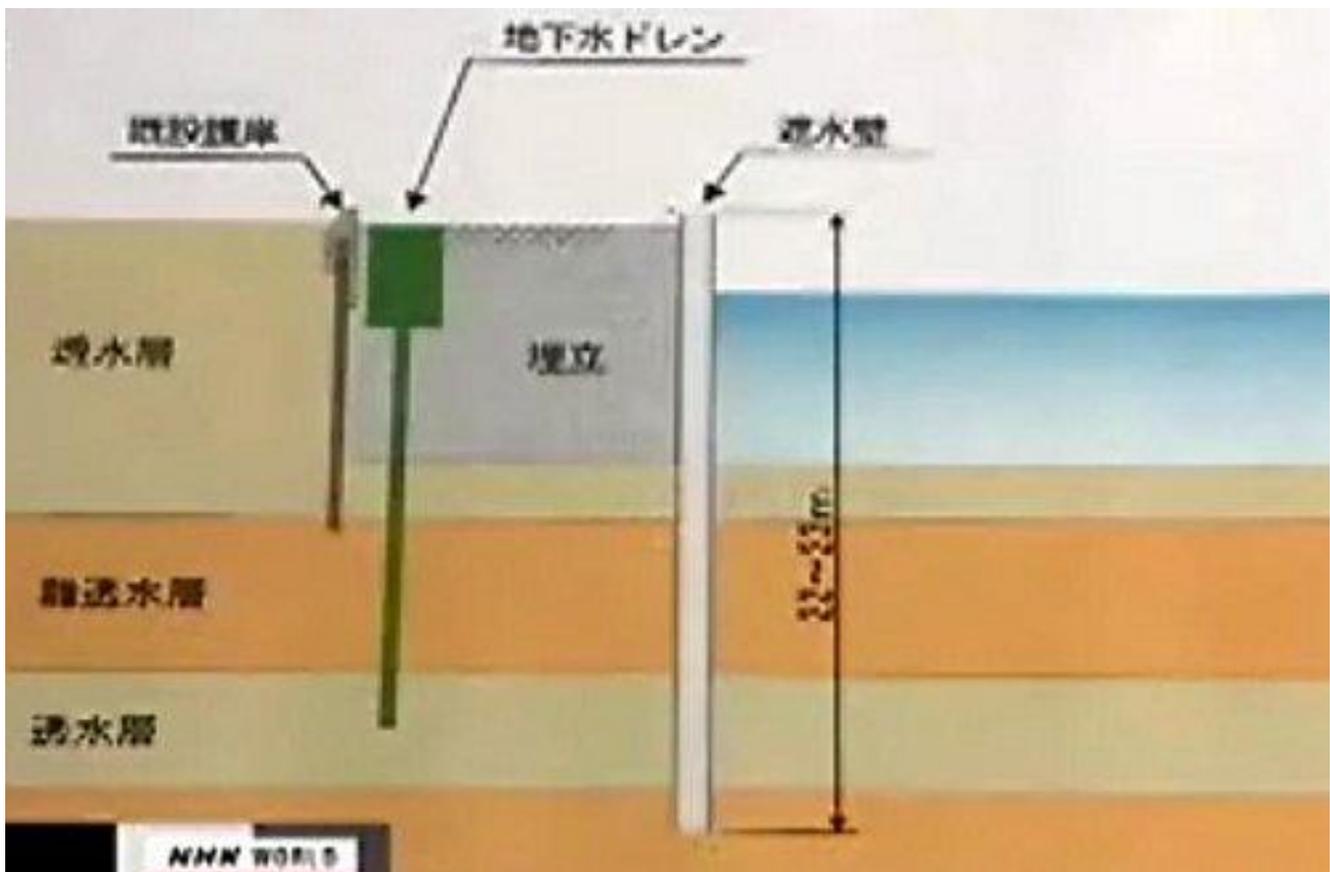
déverser régulièrement dans la mer durant au moins deux ans, date à laquelle la construction du barrage est sensée être terminée.



Plan de situation du barrage

Selon un schéma représentant la future construction en plan et en coupe, ce barrage sera établi dans le bassin de décharge des eaux de refroidissement de la centrale et au-delà, au nord et au sud, jusqu'aux quais longeant la centrale.

D'après la coupe fournie par Tepco, le barrage traversera 3 couches géologiques et le début d'une quatrième. Celles-ci font partie de la couche géologique de Tomioka, datant du Miocène Supérieur. Nous avons donc ici la confirmation que des couches aquifères se situent juste sous la centrale.



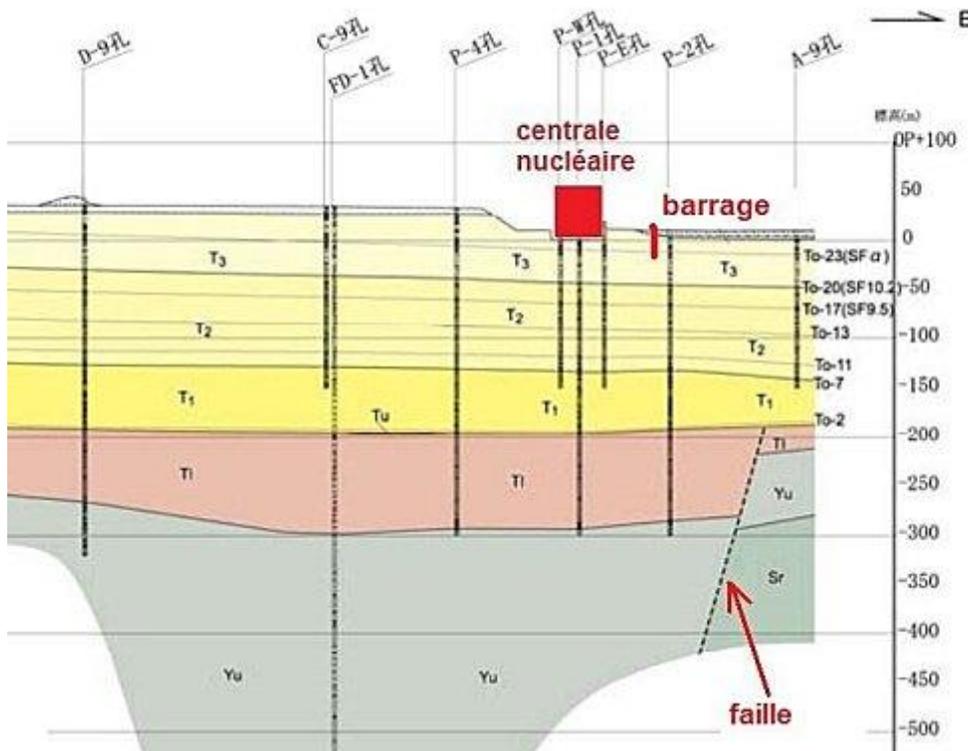
Coupe du barrage

Toutefois, même si l'effort de l'entreprise semble louable, il restera un coup d'épée dans l'eau, et ce pour plusieurs raisons :

- La première est que l'ensemble des couches sédimentaires sur lesquelles a été construite la centrale a une profondeur d'au moins 1000 mètres. Les tremblements de terre réguliers de la région font qu'il est illusoire de compter sur l'imperméabilité de ces roches. En effet, même si un grès fortement argileux a une porosité médiocre, sa friabilité le rend perméable. On peut se demander pourquoi Tepco a choisi une profondeur de 22 mètres. Peut-être tout simplement à cause d'une limite technique. C'est peut-être un indice aussi sur la localisation éventuelle des [coriums](#) ? En tout état de cause, la profondeur de ce barrage ne garantira en rien le confinement de l'eau contaminée car son passage dans les couches inférieures, même ralenti, sera toujours possible par les fissures intrinsèques à ce genre de terrain.

- La deuxième est que ce barrage va être construit sur une faille. Tepco évite de communiquer sur le sujet mais il est clair que le terrain ne se prête à aucune construction, que ce soit un réacteur ou un barrage. Cette faille est clairement visible sur un [document](#) de la NSC (autorité de sûreté nucléaire du Japon), et il est vraisemblable que durant le tremblement de terre du 11 mars, celle-ci soit redevenue

active, vus les dégâts causés aux dalles en béton en bordure de mer. Etant donné l'existence de cette faille à 200 mètres sous le niveau du sol, il est probable que la future construction ne sera pas épargnée par les mouvements de terrain causés par celle-ci. D'où de légitimes doutes sur la pérennité de l'étanchéité de la structure



Faïlle de Fukushima

- La troisième est que le barrage n'est pas fermé. Si l'eau ne peut pas passer directement vers la mer, elle va simplement contourner la barrière, en passant au nord ou au sud.

Ce barrage est donc seulement un nouvel élément dans la communication de Tepco : l'entreprise fait tout pour paraître maîtriser la situation. Elle décontamine l'eau de refroidissement des réacteurs et des piscines, elle crée de nouvelles enceintes autour des réacteurs détruits pour éviter la propagation de la radioactivité aérienne, et enfin elle construit un barrage pour épargner la mer.

Mais malheureusement l'avenir dira que tout ceci est vain : le plus gros de la contamination aérienne a été répandu sur le Japon en mars. Trop tard pour revenir en arrière. Les [coriums](#) sont sans doute quelque part dans le sous-sol. Trop tard pour les retenir. La nappe phréatique est contaminée. Trop tard pour la préserver. Le barrage souterrain est ouvert et ne sera jamais assez profond. Trop tard,

l'océan pacifique va connaître une source de pollution radioactive continue qui va contaminer l'ensemble des mers de la planète durant des dizaines d'années...

ci-dessus files 31 to 50

## Local governments in Fukushima experiment with radiation-removing techniques



Workers experiment with draining radioactively contaminated mud from a paddy field, left, onto a tarp-covered adjacent field in Iitate, Fukushima Prefecture, on Aug. 24. (Mainichi)

Local governments in Fukushima Prefecture are experimenting with efforts to remove radioactive material spread from the crippled nuclear power plant following a request by the national government.

**In August, the national government asked that local governments handle decontamination work in areas with under 20 millisieverts of radiation per year.**

At a farm house in the Onami district of the city of Fukushima with mountains behind it and rice paddy fields surrounding it, the Fukushima Prefectural Government experimented with decontamination techniques in late August.

Seven painters used to working at heights participated in the experiment. Wearing helmets, boots and rubber gloves and tied with safety ropes, they used high-pressure hoses to spray the entire roof with water. At one point, one of the painters slipped and lost his balance.

"This is **too dangerous for regular people to do**," muttered Hisashi Katayose, chief of the prefecture's nuclear energy safety department, as he watched on.

Workers focused their cleaning efforts on the roof, walls, and rain gutters of the house. They hoped doing so would also reduce radiation levels in the bedroom on the second floor and the living room on the first floor.

After working for around three hours, the greatest drop in radiation levels was measured in the rain gutter on the side of the house facing the mountains. The levels had fallen from 14.5 microsieverts per hour to 1.8 microsieverts per hour. However, the second-floor bedroom's radiation level barely changed, falling from 0.7 microsieverts per hour to 0.61 microsieverts per hour.

Katayose was disappointed with the results. The area where he had most wanted to see dropped radiation levels -- the bedroom, since that is where much of a resident's time would be spent -- did not show the results he had anticipated.

Those conducting the experiments judged that radiation from the mountain slopes at the back, the garden by the house or other areas that weren't decontaminated were continuing to affect the readings. Additional efforts, using different techniques and targeting different locations, would be needed to lower the indoor levels.

"Decontamination work requires incredible money and patience," says Katayose. "The national government and Tokyo Electric Power Company should take responsibility for it, rather than leaving it to local governments."

Giving the Fukushima Prefectural Government advice on decontamination work is Hiroshi Kurigami of the Japan Atomic Energy Agency (JAEA). "They should approach it in the same way as cleaning a house," he says. According to Kurigami, in addition to wearing masks and gloves to reduce radiation exposure, those doing decontamination work should work from top to bottom, the same way that those dusting a room should.

He says that **in decontaminating a house, one should first remove the leaves from trees around the house. Next, one should remove the topsoil and fallen leaves from around the home. After that, one should remove the bushes and other small plants, especially those under the eaves of the house. The drain by the road should be emptied of dirt before it is washed. For cleaning surfaces, a high-pressure hose is useful, but a scrubbing brush can be more effective in removing material.**

"If levels haven't fallen even after repeated decontamination, one should consult an expert," Kurigami says.

Fukushima Prefecture is sending experts on request from neighborhood associations to help with decontamination efforts. Furthermore, the Japanese Society of Radiation Safety Management (JRSM) is offering detailed decontamination advice and consultations with experts through their website.

Additionally, the National Institute for Rural Engineering has been working to drain mud containing radioactive cesium from rice paddy fields in the village of Iitate, Fukushima Prefecture. The JAEA has developed a technique to decontaminate pools using the mineral zeolite, which can absorb radioactive cesium, and is using the technique in Fukushima Prefecture.

Another issue is what to do with contaminated soil and other remains of decontamination work. According to the JRSM, they were able to reduce the radiation coming from contaminated soil by over 90 percent by putting it in plastic bags and burying it 10 to 20 centimeters in the earth. The national government says it will give instructions on what to do with contaminated soil, but for the time being, it is asking local governments to secure temporary storage sites. However, local governments are struggling to win the agreement of local residents to host such sites.

For areas with over 20 millisieverts of radiation per year, the national government has said it will handle decontamination work itself, but details and an estimate for completion have not been released.

(Mainichi Japan) September 18, 2011

## **TEPCO scraps plan to raise power charges 10-15%**

TOKYO (Kyodo) -- Tokyo Electric Power Co. has decided to scrap its plan to raise electricity charges 10 to 15 percent from next April due to **growing criticism among government officials and the public**, company sources said Saturday.

The operator of the crisis-hit Fukushima No. 1 nuclear power complex previously planned to raise charges to keep its financial standing from being seriously hurt due to payment of damage compensation over the nuclear crisis.

The utility has already informed its creditor banks about the decision, the sources said. The company known as TEPCO may propose a smaller increase in charges instead when its power generation cost is sure to rise further once regular inspections begin for more of its nuclear reactors still in service and its increased use of fossil fuel.

TEPCO has informally told a government committee that has been assessing the utility's assets and costs about the plan to raise charges by up to 15 percent for three years. But committee members have agreed not to allow the company to lift electricity charges unless additional steps are considered to cut pension payments, employees' salaries and other costs.

(Mainichi Japan) September 18, 2011

## **Future radiation levels forecast on electronic map**

A group of Japanese researchers has drawn up an electronic map which shows changing radiation levels at about 2,200 locations in a 5-year period.

The map was made by a research group led by Professor Isao Tanihata at Osaka University's Research Center for Nuclear Physics.

The group calculated estimated radiation levels at each of about 2,200 points over the next 5 years based on data released by the education and science ministry.

Most of the locations are in Fukushima Prefecture, where a nuclear accident was triggered in March by the massive earthquake and tsunami.

The group took into account the level of radioactive cesium, which drops as time passes.

By using Google Earth services, the group forecast the level at individual sites and point of time with a bar graph. Possible changes in level naturally caused by rain and wind and the decontamination effort

are not included.

For example, the map shows that a radiation level of 4.36 microsieverts per hour detected in June in Kawamata Town about 30 kilometers northwest of the troubled plant will fall to 1.75 microsieverts 5 years later.

Professor Tanihata hopes that the map will help state and local authorities to work out a specific plan to decontaminate areas to get people to return to their hometowns.

The map will be made public at the research center's Website on Monday.

Sunday, September 18, 2011 14:59 +0900 (JST)

## Cesium detected in 4% of tested rice

Radioactive tests on rice have been completed in more than half of the Tohoku and Kanto regions, and radioactive cesium has been detected in 4 percent of the samples. But the highest level detected so far is about a quarter of the government's safety limit.

Based on the interim results, shipments of rice have started in municipalities in 15 prefectures.

A preliminary examination is conducted while the rice is still growing and another test is carried out after the harvest. Rice can only be shipped if the amounts of cesium in the post-harvest test are below the **government-set safety limit of 500 becquerels per kilogram in all the locations within a municipality.**

Preliminary tests have been completed in 7 prefectures, but not in Fukushima or Miyagi.

Radioactive cesium has been detected in 72 places so far, including 64 locations in Fukushima Prefecture, where the Fukushima Daiichi power plant is located. But the highest level detected was 136 becquerels per kilogram, which is about a quarter of the government's safety limit.

The main test is being conducted in 17 prefectures, and has been completed in more than half of them. Radioactive materials were detected in rice harvested in 22 locations. But the highest level detected so far is 101.6 becquerels per kilogram, or one fifth of the government's safety limit.

With the preliminary and main tests combined, the results are known for more than 60 percent of the test locations. Radioactive materials have been detected in 94 locations, or 4.3 percent of the total.

Shipments of rice have started in municipalities in 15 prefectures, including all 52 municipalities in Chiba Prefecture.

In Fukushima Prefecture, shipments of ordinary rice have started in 2 municipalities, and those of early-harvested rice in 20 municipalities.

Sunday, September 18, 2011 22:23 +0900 (JST)

# Kenzaburo Oe: Resignation to and responsibility for Fukushima disaster

It hasn't been long since I read a science fiction piece in which humankind decides to bury massive amounts of radioactive waste deep underground. They are stumped by how they should warn the people of the future who will be left to deal with the waste, and by who should sign the warning.

Unfortunately, the situation is no longer a matter of fiction. **We are one-sidedly unloading our burdens onto future generations.** When did humankind abandon the morals that would stop us from doing such a thing? Have we passed a fundamental turning point in history?

After March 11, I stayed up until late every night watching television (a newly formed habit following the disaster). There was a television reporter who went to check in on a house with the lights on in an area that was otherwise dark due to evacuation orders. As it turned out, a horse was in labor and the owner was unable to leave its side. Several days later, the reporter visited the farm once again, and saw the mare and its foal indoors in the dark. Their owner's expression was gloomy. The foal had not been allowed outside to run around freely because radioactive material-contaminated rain had fallen on the grass.

The crisis has taken away lives that many people are still trying to get back. What messages can we deliver to those people and how? I need to hear those words, too, and the person I have turned to for guidance is the physician Shuntaro Hida, who has been speaking about the dangers of internal exposure to radiation since the atomic bombing of Hiroshima.

In an interview in the September issue of the magazine *Sekai*, Hida says: "If you have already been exposed, you must be prepared. Resign yourself. Tell yourself that you might be unlucky and see horrendous effects several decades down the line. Then, try to build up your immune system as much as you can to fight the hazards of radiation.

"But will making the effort to avoid buying vegetables that may be tainted be sufficient in protecting you? **It's better to take precautions than to not take them.** But radioactive materials continue to leak from Fukushima, even now. Tainted food has infiltrated the market, so unfortunately, there's no guaranteed method of protecting yourself from internal exposure. Abolishing nuclear power and cutting off radioactivity at its source is a much faster way of dealing with it."

I do not want to deliver these words to the men -- the politicians, the bureaucrats, the businessmen -- who intend to thrust the difficult task of dealing with radioactive waste, which was generated and continues to be generated by an electric power policy that puts production power and economic strength before everything else, upon future generations. Rather, I want to deliver these words to the women -- the young mothers -- who have been quick to catch on to the dangers being posed to their children, and are trying to deal with the problem head on.

After Italian voters rejected the resumption of operations at their nuclear power plants, a senior official in Japan's Liberal Democratic Party (LDP) attributed the referendum result to "mass hysteria," suggesting that the power of women was behind the results. An Italian woman in the film industry responded to the insult, saying: "Japanese men are likely moved to action by a 'mass hysteria' that puts productivity and economic power before all else. I'm only talking about men here, because no matter

where you are, women never put anything before life. If Japan were to not only lose its status as an economic superpower but fall into long-term poverty, we all know from Japanese films that women will overcome such hardships!"

The bombings of Hiroshima and Nagasaki, Japan's World War II defeat, and the subsequent occupation of Japan by the Allied Forces took place during my childhood. We were all poor. But when the new Constitution was unveiled, I was struck by the repetition of the word "determination" in its preamble. It filled me with pride to know that the grown-ups were so resolute. Today, through the eyes of an old man, I see Fukushima and the difficult circumstances that this country faces. And still I have hope in a new resolve of the Japanese people. (By Kenzaburo Oe, author)

-----

Kenzaburo Oe, born 1935, was awarded the 1994 Nobel Prize for Literature. After the crisis started at the Fukushima No. 1 Nuclear Power Plant, musicians and writers, including Oe, released a statement calling for the abolishment of nuclear power. An antinuclear rally will be held in Tokyo's Meiji Park on Sept. 19.

(Mainichi Japan) September 19, 2011

## **Noda to emphasize continuing need for nuclear plants in Japan at U.N.**

TOKYO (Kyodo) -- Prime Minister Yoshihiko Noda is set to emphasize the continuing need for nuclear power plants in Japan and will pledge to ensure the highest level of operational safety during an upcoming U.N. conference, according to a draft of his speech obtained by Kyodo News on Sunday.

Noda will adopt a different position to that of his predecessor Naoto Kan, who sought to reduce the country's reliance on nuclear power in the wake of the crisis at the Fukushima Daiichi power plant.

According to the draft, Noda will tell a session of the U.N. high-level meeting on nuclear safety and security on Thursday that his government will "raise the safety of nuclear plants to the highest level."

Noda will also say, "There will be a continuing necessity to secure nuclear energy that is safe and more reliable," while promising a thorough investigation into what caused the world's worst nuclear accident in 25 years and to fully disclose information.

"There is a consensus among the international community that enhancing safety measures related to nuclear energy should take priority," Noda is expected to say.

The premier will also stress his resolve to enhance measures aimed at protecting nuclear plants and materials to underscore Japan's intention to work with the United States on the issue at the United Nations.

U.S. President Barack Obama had urged Japan to make efforts to ensure nuclear safety in a letter to Kan.

Noda will also say that Japan will work on developing and promoting renewable energy as well as decontaminating areas affected by the Fukushima nuclear crisis triggered by the March 11 earthquake and tsunami.

On overall energy policy, Noda will pledge to speed up work on mapping out concrete measures, including target ratios for various renewable energy sources, saying, "We will release a best energy mix shortly."

(Mainichi Japan) September 19, 2011

## **Kan told Tokyo residents may have to evacuate due to nuclear crisis**

TOKYO (Kyodo) -- Former Prime Minister Naoto Kan said in a recent interview with Kyodo News that he learned shortly after the nuclear crisis erupted at the Fukushima Daiichi power plant that around 30 million people in Tokyo and surrounding prefectures may have to be evacuated in a worst-case scenario.

Kan said he contemplated the chaos that would have ensued if such a measure had been taken. "It was a crucial moment when I wasn't sure whether Japan could continue to function as a state," he said.

After the March 11 earthquake and tsunami crippled the plant, Kan instructed several entities to simulate what would happen in a worst-case scenario and received assessments that people living in areas located 200 to 250 kilometers from the power plant, encompassing a large swath of Tokyo, would have to be evacuated.

"I felt that the risk was at its highest during the first 10 days (after the disaster struck)," said Kan, who resigned as prime minister earlier this month.

He also said when the disaster occurred, there were no effective safeguards in place because "We had never foreseen a situation in which a quake, tsunami and a nuclear plant accident would occur at the same time."

Concerning Tokyo Electric Power Co.'s failure on March 11 to immediately perform "venting" to release radioactive steam from the nuclear reactors at the plant, despite his repeated requests, Kan said,

"Even TEPCO officials (who were with me) at the prime minister's office were unable to fully explain why they were not doing the venting, so I wasn't sure whether there was good communication between the TEPCO head office and the Fukushima plant."

Because of this, Kan said, he went to inspect the Fukushima plant the following day.

Upon hearing on March 15 that TEPCO wanted to evacuate the workers at the Fukushima plant, Kan said, "I thought that was impossible." He subsequently rejected TEPCO's request.

(Mainichi Japan) September 19, 2011

## **Siemens to leave nuclear industry**

German industrial and engineering giant Siemens is withdrawing from the nuclear industry following the German government's decision to phase out nuclear power generation.

Chief Executive Peter Loescher revealed the plan in an interview in the edition of the German weekly magazine "Der Spiegel" published on Sunday.

Loescher said the company will no longer be involved with construction of nuclear power stations. He said the decision is the company's answer to the clear positioning of Germany's society and government for a pullout from nuclear energy.

He said the company will still produce steam turbines and other parts for non-nuclear facilities such as gas-fired power stations.

Siemens is the first major nuclear power equipment manufacturer to withdraw from the nuclear industry.

The German government decided in June to shut down all of the country's 17 nuclear reactors by 2022 in light of the accident at the Fukushima Daiichi Nuclear Power Station in Japan in March.

Monday, September 19, 2011 09:28 +0900 (JST)

## **Thousands march against nuclear power in Tokyo**

TOKYO (AP) -- Several thousand people are marching in downtown Tokyo calling on the government to abandon nuclear energy in the wake of the Fukushima nuclear accident.

The demonstrators chanted "Sayonara nuclear power" while holding banners and placards as they marched Monday, a national holiday in Japan.

Police gave an initial estimate that just over 20,000 people participated, but protest organizers put the figure at 60,000.

Either way, it is one of the biggest demonstrations since the March 11 accident, in which the tsunami-damaged Fukushima Dai-ichi power plant spewed radiation into the air in the worst nuclear disaster since Chernobyl.

(Mainichi Japan) September 19, 2011

## **Density of cesium over Fukushima plant's No. 2 reactor declines sharply**

The density of cesium and other radioactive materials in the air over the Fukushima No. 1 nuclear plant's No. 2 reactor has dropped radically, Tokyo Electric Power Co. (TEPCO) said on Sept. 18.

Samples taken Sept. 17 from two openings at the top of the No.2 reactor building showed that the cesium density was one-10,000th to one-100,000th of a becquerel per cubic centimeter, a sharp decline from the end of August.

TEPCO said the density of cesium-134 and cesium-137 was less than one-100th of the permissible level and that of iodine-131 was below the detectable level.

Commenting on the drops in radioactive substance densities, TEPCO said, "The release (of radioactive substances) has been curtailed due to the ongoing cooling of the reactor, but wind outside the building may have influenced (the results)."

(Mainichi Japan) September 19, 2011

## **Largest antinuclear rally held in Tokyo since Fukushima crisis**

TOKYO (Kyodo) -- Tens of thousands of people took to the streets in downtown Tokyo on Monday to call for the shutdown of all nuclear power plants in Japan, in the largest protest rally in the country since the Fukushima Daiichi plant catastrophe.

Nobel Prize-winning novelist Kenzaburo Oe, journalist Satoshi Kamata and actor Taro Yamamoto were among the speakers to address the crowd, which organizers put at 60,000 people. Tokyo police estimated the crowd at half that size, or 30,000 people.

"We need to let leaders of major parties and the Japan Business Federation know our intention to resist" nuclear power generation, Oe, a leading organizer of the event, told the gathering at Tokyo's Meiji Park.

Ruiko Muto, a 58-year-old activist who leads a movement to dismantle nuclear reactors in Fukushima Prefecture, delivered a more personal message.

"To escape or not to escape? To eat or not to eat? I was forced to make such choices every day" since the March earthquake and tsunami crippled the plant, said Muto.

The March 11 natural disasters knocked out all power supplies to the Fukushima Daiichi nuclear plant, leading to explosions that damaged three reactor buildings. The massive amount of radioactive material that escaped prompted the emergency evacuation of thousands of people living in surrounding communities, and concern about radioactive food contamination.

Muto urged people not to forget that a nuclear power plant is behind any power outlet.

"Each of us has to decide and act in order to achieve a life at the opposite extreme of nuclear power generation."

Yamamoto as a guest speaker said, "We already have sufficient electricity (even without nuclear plants). If we do nothing now, Japan will be a disposal site of nuclear waste."

Later participants split into three groups and marched in Tokyo, including through the fashionable district of Omotesando to protest against nuclear power generation.

(Mainichi Japan) September 19, 2011

## **Japan vows at IAEA confab to stabilize Fukushima Daiichi by year-end**

VIENNA (Kyodo) -- Japan pledged Monday to move up the deadline for bringing the crippled Fukushima Daiichi nuclear power plant to a stable condition, telling an International Atomic Energy Agency conference it will do so by year-end.

Goshi Hosono, Japan's minister in charge of the nuclear accident, revealed the revised schedule at the annual conference of the U.N. nuclear watchdog. Japan previously said it would bring the plant to a condition known as "cold shutdown" by mid-January.

"We will move up the existing target period, and endeavor to achieve this 'cold shutdown' by the end of this year," Hosono said.

Hosono made the promise as the government and Tokyo Electric Power Co., the operator of the Fukushima plant, plan to update the current timeline Tuesday.

Hosono also said that the Japanese government is working to set up a Nuclear Safety and Security Agency in next April as an external body of the Environment Ministry to fully achieve "separation of authorities for regulation and promotion" of nuclear power.

Japan will subsequently accept an IAEA team sent to assess how effectively the new entity will function, Hosono said.

The IAEA began a five-day conference on Monday convened to endorse an action plan that its board of governors adopted last week and meant to enhance global nuclear safety in the aftermath of the Fukushima disaster. The conference will also discuss a draft resolution on the scrapping of North Korea's nuclear programs.

On the sidelines of the conference, Hosono said in a meeting with IAEA chief Yukiya Amano that he agreed that Japan will accept a team of IAEA experts in October sent to advise on decontaminating areas near the radiation-leaking Fukushima plant.

Japan also agreed to seek the agency's assistance in assessing safety measures related to the restart of atomic power plants in Japan currently shut down for regular checkups, Hosono said.

(Mainichi Japan) September 20, 2011

## **Hosono: Cooling down to be achieved this year**

Japan's minister in charge of the nuclear disaster says reactors at the troubled Fukushima Daiichi plant will be cooled to below 100 degrees Celsius within this year.

Goshi Hosono spoke at the International Atomic Energy Agency's annual ministerial meeting on Monday.

He thanked the international community for assisting Japan in dealing with the accident at Fukushima.

Hosono said that decontaminated water has been successfully used to cool down the troubled nuclear reactors, bringing the temperature close to 100 degrees Celsius. He also said spent nuclear fuel pools have been cooled in a stable manner.

Hosono also said the spent nuclear fuel has been steadily cooled and will fall below 100 degrees by the end of this year, instead of early next year as initially predicted.

When the reactors and spent fuel have been cooled below 100 degrees, radiation emissions can be kept very low.

The minister also said Japan will work with the IAEA to remove radioactive materials from areas near Fukushima Daiichi.

He explained the plan to separate the Nuclear and Industrial Safety Agency from the Economy, Trade and Industry Ministry, saying it will be merged with the Cabinet Office's Nuclear Safety Commission to create a nuclear safety agency under the Environment Ministry by next April.

Tuesday, September 20, 2011 07:00 +0900 (JST)

## **Hosono seeks US, French help to scrap reactors**

Japan's cabinet minister in charge of the nuclear disaster has asked the United States and France for help in scrapping the reactors at the Fukushima Daiichi power plant.

Goshi Hosono on Monday held separate meetings with US Nuclear Regulatory Commission Chairman Gregory Jaczko, US Energy Secretary Steven Chu and French Industry Minister Eric Besson in Vienna. They are in the Austrian capital for the general assembly of the International Atomic Energy Agency.

Hosono told the officials that the Japanese government is aiming for a cold shutdown of the Fukushima plant before the end of the year.

The government's plan to stabilize the plant originally called for achieving a cold shutdown early next year.

Hosono asked the US and French officials to help with essential work after the cold shutdown,

including scrapping the reactors, decontaminating soil and disposing of radioactive waste.

The officials responded positively.

Tuesday, September 20, 2011 07:00 +0900 (JST)

## **IAEA to send experts to Japan**

The International Atomic Energy Agency says it will send experts to Japan to cooperate in the removal of radioactive materials in Fukushima Prefecture.

IAEA chief Yukiya Amano made the remarks on Monday in Vienna. He was responding to a request from Japan's nuclear crisis minister, Goshi Hosono.

Hosono said Japan needs international experience and expertise in order to make progress in the removal of radioactive materials in areas near the Fukushima Daiichi nuclear plant.

He also asked the IAEA for advice regarding stress tests for nuclear reactors in preparation for their restart after checkups. Amano said the agency will help.

After the meeting, Hosono said Japan is removing radioactive materials on a scale that no country has ever experienced.

He went on to say his country will seek advice from the IAEA on how to win public support for the restart of its safety-checked nuclear plants until its new nuclear safety agency is established.

Tuesday, September 20, 2011 07:00 +0900 (JST)

## **Groundwater flowing into Fukushima nuclear plant**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Tuesday it suspects that 200 to 500 tons a day of groundwater might be flowing through pits and wall cracks into reactor and turbine buildings at the Fukushima Daiichi nuclear plant crippled by the March 11 earthquake and tsunami.

The suspicion is based on the fact that a decline in water levels in these buildings has slowed down.

"The suspected groundwater inflow is now unlikely to cause problems as the plant is capable of treating nearly 1,000 tons of radiation-contaminated water," said an official at the company known as TEPCO.

But the inflow is expected to affect efforts to contain the Fukushima nuclear crisis. "We should assess the groundwater inflow and readjust an overall plan for treating contaminated water," said an official of the Nuclear and Industrial Safety Agency at the Ministry of Economy, Trade and Industry.

(Mainichi Japan) September 20, 2011

## **TEPCO:Groundwater may be flowing into plant**

The Tokyo Electric Power Company, or TEPCO, says a large amount of groundwater may be entering the crippled Fukushima Daiichi nuclear power plant.

TEPCO says it has found that 200 to 500 tons of what is probably rainwater that seeped into soil may be entering daily through cracks in walls into the basements of buildings housing reactors and turbines.

The utility says it's worried that this will increase the amount of highly radioactive water in the basements.

Workers at the plant are injecting about 550 tons of water a day to cool 3 of its damaged reactors. About 80,000 tons of highly radioactive water has already accumulated in the buildings.

TEPCO says it plans to keep levels of radioactive water lower than those of groundwater to stop further inflows.

The government's Nuclear Safety Agency says groundwater inflow must be considered in drawing up a long-term decontamination plan.

Tuesday, September 20, 2011 17:31 +0900 (JST)

## **A new plan set to reduce radiation emissions**

The Japanese government and the operator of the troubled Fukushima Daiichi nuclear plant say they will install new devices to reduce the amount of radioactive substances released into the air.

The government and Tokyo Electric Power Company, TEPCO, originally planned to achieve a cold shutdown, in which temperatures of the reactors reach below 100 degrees Celsius by January next year.

They now say that they will aim to reach that status within this year, as their work is making steady progress.

The government and TEPCO revealed the plan in their monthly review of the timetable for containing the nuclear crisis.

They will install new devices at the NO.1, No.2 and No.3 reactors to take contaminated gases out of the reactors using filters. They plan to start installing the devices next week.

TEPCO also plans to complete the construction of a giant polyester shield over the No.1 reactor by mid-October.

The operator also plans to improve its cooling systems so that the temperatures of all 3 reactors will drop below 100 degrees Celsius.

They say the amount of radioactive substances released from the plant was about 200-million becquerels per hour in the first half of September. They say that's about one-four millionths of the level of the initial stages of the accident in March.

Tuesday, September 20, 2011 20:02 +0900 (JST)

## **65 percent of Japanese prefer to cut electricity use even if living standards drop**

(Mainichi Japan) September 20, 2011 -

<http://mdn.mainichi.jp/mdnnews/news/20110920p2a00m0na017000c.html>

Sixty-five percent of Japanese people think that they should reduce their use of electricity even if their living standards have to be lowered in the wake of the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant, according to a recent survey conducted by the Mainichi Shimbun.

A survey of 2,413 people, conducted in an interview format by the Mainichi from Sept. 2 to 4, shows 65 percent of the respondents prefer to cut electricity use even if they have to lower their standards of living. The survey did not cover people in Iwate, Miyagi and Fukushima prefectures hit hard by the March 11 disasters. Thirty-two percent of the people polled said power supply should be increased in order to maintain their standard of living.

The survey also shows that most people want to see nuclear power being phased out, with 60 percent of the respondents preferring to gradually reduce the number of nuclear reactors while halting the operations of high-risk reactors.

By gender, 60 percent of male respondents and 70 percent of female respondents said the use of electricity should be reduced even if the standards of living have to be lowered. By age groups, relatively young people tend to think the use of electricity should be cut at the expense of living standards, with 71 percent of those in their 30s and 67 percent of those in their 20s sharing such views. Of those respondents who put priority on cutting electricity consumption rather than on maintaining current living standards, 66 percent of them said the number of nuclear reactors should be gradually reduced.

On the question of what should be done to the nuclear reactors in the future, 60 percent of those surveyed said the number of reactors should be reduced gradually, while 20 percent said the nuclear reactors should be operated without increasing the number of reactors. Twelve percent of the respondents said all reactors should be stopped as soon as possible, while 6 percent said the existing reactors should be operated and new reactors should be built. The survey shows 70 percent of people seeking an end to the country's reliance on nuclear power generation.

On a plan to have a backup of Tokyo's capital functions to prepare for large-scale natural disasters, only 10 percent of the respondents said no backup would be necessary, while 43 percent said a backup should be created in Kansai, followed by 18 percent for Kanto outside of the metropolitan area and 9 percent for Tokai.

Because of the widespread impact of the Great East Japan Earthquake, many people prefer to have a backup of the capital's functions in Kansai rather than in Kanto and Tokai. Osaka Gov. Toru Hashimoto told Tokyo Gov. Shintaro Ishihara in July that he would try to make Osaka a backup for Tokyo's capital functions.

## Local governments in Fukushima experiment with radiation-removing techniques



Workers experiment with draining radioactively contaminated mud from a paddy field, left, onto a tarp-covered adjacent field in Iitate, Fukushima Prefecture, on Aug. 24. (Mainichi)

Local governments in Fukushima Prefecture are experimenting with efforts to remove radioactive material spread from the crippled nuclear power plant following a request by the national government.

**In August, the national government asked that local governments handle decontamination work in areas with under 20 millisieverts of radiation per year.**

At a farm house in the Onami district of the city of Fukushima with mountains behind it and rice paddy fields surrounding it, the Fukushima Prefectural Government experimented with decontamination techniques in late August.

Seven painters used to working at heights participated in the experiment. Wearing helmets, boots and rubber gloves and tied with safety ropes, they used high-pressure hoses to spray the entire roof with water. At one point, one of the painters slipped and lost his balance.

"This is **too dangerous for regular people to do**," muttered Hisashi Katayose, chief of the prefecture's nuclear energy safety department, as he watched on.

Workers focused their cleaning efforts on the roof, walls, and rain gutters of the house. They hoped doing so would also reduce radiation levels in the bedroom on the second floor and the living room on the first floor.

After working for around three hours, the greatest drop in radiation levels was measured in the rain gutter on the side of the house facing the mountains. The levels had fallen from 14.5 microsieverts per

hour to 1.8 microsieverts per hour. However, the second-floor bedroom's radiation level barely changed, falling from 0.7 microsieverts per hour to 0.61 microsieverts per hour.

Katayose was disappointed with the results. The area where he had most wanted to see dropped radiation levels -- the bedroom, since that is where much of a resident's time would be spent -- did not show the results he had anticipated.

Those conducting the experiments judged that radiation from the mountain slopes at the back, the garden by the house or other areas that weren't decontaminated were continuing to affect the readings. Additional efforts, using different techniques and targeting different locations, would be needed to lower the indoor levels.

"**Decontamination work requires incredible money and patience,**" says Katayose. "The national government and Tokyo Electric Power Company should take responsibility for it, rather than leaving it to local governments."

Giving the Fukushima Prefectural Government advice on decontamination work is Hiroshi Kurigami of the Japan Atomic Energy Agency (JAEA). "They should approach it in the same way as cleaning a house," he says. According to Kurigami, in addition to wearing masks and gloves to reduce radiation exposure, those doing decontamination work should work from top to bottom, the same way that those dusting a room should.

He says that **in decontaminating a house, one should first remove the leaves from trees around the house. Next, one should remove the topsoil and fallen leaves from around the home. After that, one should remove the bushes and other small plants, especially those under the eaves of the house. The drain by the road should be emptied of dirt before it is washed. For cleaning surfaces, a high-pressure hose is useful, but a scrubbing brush can be more effective in removing material.**

"If levels haven't fallen even after repeated decontamination, one should consult an expert," Kurigami says.

Fukushima Prefecture is sending experts on request from neighborhood associations to help with decontamination efforts. Furthermore, the Japanese Society of Radiation Safety Management (JRSM) is offering detailed decontamination advice and consultations with experts through their website.

Additionally, the National Institute for Rural Engineering has been working to drain mud containing radioactive cesium from rice paddy fields in the village of Iitate, Fukushima Prefecture. The JAEA has developed a technique to decontaminate pools using the mineral zeolite, which can absorb radioactive cesium, and is using the technique in Fukushima Prefecture.

Another issue is what to do with contaminated soil and other remains of decontamination work. According to the JRSM, they were able to reduce the radiation coming from contaminated soil by over 90 percent by putting it in plastic bags and burying it 10 to 20 centimeters in the earth. The national government says it will give instructions on what to do with contaminated soil, but for the time being, it is asking local governments to secure temporary storage sites. However, local governments are struggling to win the agreement of local residents to host such sites.

For areas with over 20 millisieverts of radiation per year, the national government has said it will handle decontamination work itself, but details and an estimate for completion have not been released.

(Mainichi Japan) September 18, 2011

## **TEPCO scraps plan to raise power charges 10-15%**

TOKYO (Kyodo) -- Tokyo Electric Power Co. has decided to scrap its plan to raise electricity charges 10 to 15 percent from next April due to **growing criticism among government officials and the public**, company sources said Saturday.

The operator of the crisis-hit Fukushima No. 1 nuclear power complex previously planned to raise charges to keep its financial standing from being seriously hurt due to payment of damage compensation over the nuclear crisis.

The utility has already informed its creditor banks about the decision, the sources said. The company known as TEPCO may propose a smaller increase in charges instead when its power generation cost is sure to rise further once regular inspections begin for more of its nuclear reactors still in service and its increased use of fossil fuel.

TEPCO has informally told a government committee that has been assessing the utility's assets and costs about the plan to raise charges by up to 15 percent for three years. But committee members have agreed not to allow the company to lift electricity charges unless additional steps are considered to cut pension payments, employees' salaries and other costs.

(Mainichi Japan) September 18, 2011

## **Future radiation levels forecast on electronic map**

A group of Japanese researchers has drawn up an electronic map which shows changing radiation levels at about 2,200 locations in a 5-year period.

The map was made by a research group led by Professor Isao Tanihata at Osaka University's Research Center for Nuclear Physics.

The group calculated estimated radiation levels at each of about 2,200 points over the next 5 years based on data released by the education and science ministry.

Most of the locations are in Fukushima Prefecture, where a nuclear accident was triggered in March by the massive earthquake and tsunami.

The group took into account the level of radioactive cesium, which drops as time passes.

By using Google Earth services, the group forecast the level at individual sites and point of time with a bar graph. Possible changes in level naturally caused by rain and wind and the decontamination effort

are not included.

For example, the map shows that a radiation level of 4.36 microsieverts per hour detected in June in Kawamata Town about 30 kilometers northwest of the troubled plant will fall to 1.75 microsieverts 5 years later.

Professor Tanihata hopes that the map will help state and local authorities to work out a specific plan to decontaminate areas to get people to return to their hometowns.

The map will be made public at the research center's Website on Monday.

Sunday, September 18, 2011 14:59 +0900 (JST)

## Cesium detected in 4% of tested rice

Radioactive tests on rice have been completed in more than half of the Tohoku and Kanto regions, and radioactive cesium has been detected in 4 percent of the samples. But the highest level detected so far is about a quarter of the government's safety limit.

Based on the interim results, shipments of rice have started in municipalities in 15 prefectures.

A preliminary examination is conducted while the rice is still growing and another test is carried out after the harvest. Rice can only be shipped if the amounts of cesium in the post-harvest test are below the **government-set safety limit of 500 becquerels per kilogram in all the locations within a municipality.**

Preliminary tests have been completed in 7 prefectures, but not in Fukushima or Miyagi.

Radioactive cesium has been detected in 72 places so far, including 64 locations in Fukushima Prefecture, where the Fukushima Daiichi power plant is located. But the highest level detected was 136 becquerels per kilogram, which is about a quarter of the government's safety limit.

The main test is being conducted in 17 prefectures, and has been completed in more than half of them. Radioactive materials were detected in rice harvested in 22 locations. But the highest level detected so far is 101.6 becquerels per kilogram, or one fifth of the government's safety limit.

With the preliminary and main tests combined, the results are known for more than 60 percent of the test locations. Radioactive materials have been detected in 94 locations, or 4.3 percent of the total.

Shipments of rice have started in municipalities in 15 prefectures, including all 52 municipalities in Chiba Prefecture.

In Fukushima Prefecture, shipments of ordinary rice have started in 2 municipalities, and those of early-harvested rice in 20 municipalities.

Sunday, September 18, 2011 22:23 +0900 (JST)

## Kenzaburo Oe: Resignation to and responsibility for Fukushima disaster

It hasn't been long since I read a science fiction piece in which humankind decides to bury massive amounts of radioactive waste deep underground. They are stumped by how they should warn the people of the future who will be left to deal with the waste, and by who should sign the warning.

Unfortunately, the situation is no longer a matter of fiction. **We are one-sidedly unloading our burdens onto future generations.** When did humankind abandon the morals that would stop us from doing such a thing? Have we passed a fundamental turning point in history?

After March 11, I stayed up until late every night watching television (a newly formed habit following the disaster). There was a television reporter who went to check in on a house with the lights on in an area that was otherwise dark due to evacuation orders. As it turned out, a horse was in labor and the owner was unable to leave its side. Several days later, the reporter visited the farm once again, and saw the mare and its foal indoors in the dark. Their owner's expression was gloomy. The foal had not been allowed outside to run around freely because radioactive material-contaminated rain had fallen on the grass.

The crisis has taken away lives that many people are still trying to get back. What messages can we deliver to those people and how? I need to hear those words, too, and the person I have turned to for guidance is the physician Shuntaro Hida, who has been speaking about the dangers of internal exposure to radiation since the atomic bombing of Hiroshima.

In an interview in the September issue of the magazine *Sekai*, Hida says: "If you have already been exposed, you must be prepared. Resign yourself. Tell yourself that you might be unlucky and see horrendous effects several decades down the line. Then, try to build up your immune system as much as you can to fight the hazards of radiation.

"But will making the effort to avoid buying vegetables that may be tainted be sufficient in protecting you? **It's better to take precautions than to not take them.** But radioactive materials continue to leak from Fukushima, even now. Tainted food has infiltrated the market, so unfortunately, there's no guaranteed method of protecting yourself from internal exposure. Abolishing nuclear power and cutting off radioactivity at its source is a much faster way of dealing with it."

I do not want to deliver these words to the men -- the politicians, the bureaucrats, the businessmen -- who intend to thrust the difficult task of dealing with radioactive waste, which was generated and continues to be generated by an electric power policy that puts production power and economic strength before everything else, upon future generations. Rather, I want to deliver these words to the women -- the young mothers -- who have been quick to catch on to the dangers being posed to their children, and are trying to deal with the problem head on.

After Italian voters rejected the resumption of operations at their nuclear power plants, a senior official in Japan's Liberal Democratic Party (LDP) attributed the referendum result to "mass hysteria," suggesting that the power of women was behind the results. An Italian woman in the film industry responded to the insult, saying: "Japanese men are likely moved to action by a 'mass hysteria' that puts productivity and economic power before all else. I'm only talking about men here, because no matter

where you are, women never put anything before life. If Japan were to not only lose its status as an economic superpower but fall into long-term poverty, we all know from Japanese films that women will overcome such hardships!"

The bombings of Hiroshima and Nagasaki, Japan's World War II defeat, and the subsequent occupation of Japan by the Allied Forces took place during my childhood. We were all poor. But when the new Constitution was unveiled, I was struck by the repetition of the word "determination" in its preamble. It filled me with pride to know that the grown-ups were so resolute. Today, through the eyes of an old man, I see Fukushima and the difficult circumstances that this country faces. And still I have hope in a new resolve of the Japanese people. (By Kenzaburo Oe, author)

-----

Kenzaburo Oe, born 1935, was awarded the 1994 Nobel Prize for Literature. After the crisis started at the Fukushima No. 1 Nuclear Power Plant, musicians and writers, including Oe, released a statement calling for the abolishment of nuclear power. An antinuclear rally will be held in Tokyo's Meiji Park on Sept. 19.

(Mainichi Japan) September 19, 2011

## **Noda to emphasize continuing need for nuclear plants in Japan at U.N.**

TOKYO (Kyodo) -- Prime Minister Yoshihiko Noda is set to emphasize the continuing need for nuclear power plants in Japan and will pledge to ensure the highest level of operational safety during an upcoming U.N. conference, according to a draft of his speech obtained by Kyodo News on Sunday.

Noda will adopt a different position to that of his predecessor Naoto Kan, who sought to reduce the country's reliance on nuclear power in the wake of the crisis at the Fukushima Daiichi power plant.

According to the draft, Noda will tell a session of the U.N. high-level meeting on nuclear safety and security on Thursday that his government will "raise the safety of nuclear plants to the highest level."

Noda will also say, "There will be a continuing necessity to secure nuclear energy that is safe and more reliable," while promising a thorough investigation into what caused the world's worst nuclear accident in 25 years and to fully disclose information.

"There is a consensus among the international community that enhancing safety measures related to nuclear energy should take priority," Noda is expected to say.

The premier will also stress his resolve to enhance measures aimed at protecting nuclear plants and materials to underscore Japan's intention to work with the United States on the issue at the United Nations.

U.S. President Barack Obama had urged Japan to make efforts to ensure nuclear safety in a letter to Kan.

Noda will also say that Japan will work on developing and promoting renewable energy as well as decontaminating areas affected by the Fukushima nuclear crisis triggered by the March 11 earthquake and tsunami.

On overall energy policy, Noda will pledge to speed up work on mapping out concrete measures, including target ratios for various renewable energy sources, saying, "We will release a best energy mix shortly."

(Mainichi Japan) September 19, 2011

## **Kan told Tokyo residents may have to evacuate due to nuclear crisis**

TOKYO (Kyodo) -- Former Prime Minister Naoto Kan said in a recent interview with Kyodo News that he learned shortly after the nuclear crisis erupted at the Fukushima Daiichi power plant that around 30 million people in Tokyo and surrounding prefectures may have to be evacuated in a worst-case scenario.

Kan said he contemplated the chaos that would have ensued if such a measure had been taken. "It was a crucial moment when I wasn't sure whether Japan could continue to function as a state," he said.

After the March 11 earthquake and tsunami crippled the plant, Kan instructed several entities to simulate what would happen in a worst-case scenario and received assessments that people living in areas located 200 to 250 kilometers from the power plant, encompassing a large swath of Tokyo, would have to be evacuated.

"I felt that the risk was at its highest during the first 10 days (after the disaster struck)," said Kan, who resigned as prime minister earlier this month.

He also said when the disaster occurred, there were no effective safeguards in place because "We had never foreseen a situation in which a quake, tsunami and a nuclear plant accident would occur at the same time."

Concerning Tokyo Electric Power Co.'s failure on March 11 to immediately perform "venting" to release radioactive steam from the nuclear reactors at the plant, despite his repeated requests, Kan said,

"Even TEPCO officials (who were with me) at the prime minister's office were unable to fully explain why they were not doing the venting, so I wasn't sure whether there was good communication between the TEPCO head office and the Fukushima plant."

Because of this, Kan said, he went to inspect the Fukushima plant the following day.

Upon hearing on March 15 that TEPCO wanted to evacuate the workers at the Fukushima plant, Kan said, "I thought that was impossible." He subsequently rejected TEPCO's request.

(Mainichi Japan) September 19, 2011

## **Siemens to leave nuclear industry**

German industrial and engineering giant Siemens is withdrawing from the nuclear industry following the German government's decision to phase out nuclear power generation.

Chief Executive Peter Loescher revealed the plan in an interview in the edition of the German weekly magazine "Der Spiegel" published on Sunday.

Loescher said the company will no longer be involved with construction of nuclear power stations. He said the decision is the company's answer to the clear positioning of Germany's society and government for a pullout from nuclear energy.

He said the company will still produce steam turbines and other parts for non-nuclear facilities such as gas-fired power stations.

Siemens is the first major nuclear power equipment manufacturer to withdraw from the nuclear industry.

The German government decided in June to shut down all of the country's 17 nuclear reactors by 2022 in light of the accident at the Fukushima Daiichi Nuclear Power Station in Japan in March.

Monday, September 19, 2011 09:28 +0900 (JST)

## **Thousands march against nuclear power in Tokyo**

TOKYO (AP) -- Several thousand people are marching in downtown Tokyo calling on the government to abandon nuclear energy in the wake of the Fukushima nuclear accident.

The demonstrators chanted "Sayonara nuclear power" while holding banners and placards as they marched Monday, a national holiday in Japan.

Police gave an initial estimate that just over 20,000 people participated, but protest organizers put the figure at 60,000.

Either way, it is one of the biggest demonstrations since the March 11 accident, in which the tsunami-damaged Fukushima Dai-ichi power plant spewed radiation into the air in the worst nuclear disaster since Chernobyl.

(Mainichi Japan) September 19, 2011

## **Density of cesium over Fukushima plant's No. 2 reactor declines sharply**

The density of cesium and other radioactive materials in the air over the Fukushima No. 1 nuclear plant's No. 2 reactor has dropped radically, Tokyo Electric Power Co. (TEPCO) said on Sept. 18.

Samples taken Sept. 17 from two openings at the top of the No.2 reactor building showed that the cesium density was one-10,000th to one-100,000th of a becquerel per cubic centimeter, a sharp decline from the end of August.

TEPCO said the density of cesium-134 and cesium-137 was less than one-100th of the permissible level and that of iodine-131 was below the detectable level.

Commenting on the drops in radioactive substance densities, TEPCO said, "The release (of radioactive substances) has been curtailed due to the ongoing cooling of the reactor, but wind outside the building may have influenced (the results)."

(Mainichi Japan) September 19, 2011

## **Largest antinuclear rally held in Tokyo since Fukushima crisis**

TOKYO (Kyodo) -- Tens of thousands of people took to the streets in downtown Tokyo on Monday to call for the shutdown of all nuclear power plants in Japan, in the largest protest rally in the country since the Fukushima Daiichi plant catastrophe.

Nobel Prize-winning novelist Kenzaburo Oe, journalist Satoshi Kamata and actor Taro Yamamoto were among the speakers to address the crowd, which organizers put at 60,000 people. Tokyo police estimated the crowd at half that size, or 30,000 people.

"We need to let leaders of major parties and the Japan Business Federation know our intention to resist" nuclear power generation, Oe, a leading organizer of the event, told the gathering at Tokyo's Meiji Park.

Ruiko Muto, a 58-year-old activist who leads a movement to dismantle nuclear reactors in Fukushima Prefecture, delivered a more personal message.

"To escape or not to escape? To eat or not to eat? I was forced to make such choices every day" since the March earthquake and tsunami crippled the plant, said Muto.

The March 11 natural disasters knocked out all power supplies to the Fukushima Daiichi nuclear plant, leading to explosions that damaged three reactor buildings. The massive amount of radioactive material that escaped prompted the emergency evacuation of thousands of people living in surrounding communities, and concern about radioactive food contamination.

Muto urged people not to forget that a nuclear power plant is behind any power outlet.

"Each of us has to decide and act in order to achieve a life at the opposite extreme of nuclear power generation."

Yamamoto as a guest speaker said, "We already have sufficient electricity (even without nuclear plants). If we do nothing now, Japan will be a disposal site of nuclear waste."

Later participants split into three groups and marched in Tokyo, including through the fashionable district of Omotesando to protest against nuclear power generation.

(Mainichi Japan) September 19, 2011

## **Japan vows at IAEA confab to stabilize Fukushima Daiichi by year-end**

VIENNA (Kyodo) -- Japan pledged Monday to move up the deadline for bringing the crippled Fukushima Daiichi nuclear power plant to a stable condition, telling an International Atomic Energy Agency conference it will do so by year-end.

Goshi Hosono, Japan's minister in charge of the nuclear accident, revealed the revised schedule at the annual conference of the U.N. nuclear watchdog. Japan previously said it would bring the plant to a condition known as "cold shutdown" by mid-January.

"We will move up the existing target period, and endeavor to achieve this 'cold shutdown' by the end of this year," Hosono said.

Hosono made the promise as the government and Tokyo Electric Power Co., the operator of the Fukushima plant, plan to update the current timeline Tuesday.

Hosono also said that the Japanese government is working to set up a Nuclear Safety and Security Agency in next April as an external body of the Environment Ministry to fully achieve "separation of authorities for regulation and promotion" of nuclear power.

Japan will subsequently accept an IAEA team sent to assess how effectively the new entity will function, Hosono said.

The IAEA began a five-day conference on Monday convened to endorse an action plan that its board of governors adopted last week and meant to enhance global nuclear safety in the aftermath of the Fukushima disaster. The conference will also discuss a draft resolution on the scrapping of North Korea's nuclear programs.

On the sidelines of the conference, Hosono said in a meeting with IAEA chief Yukiya Amano that he agreed that Japan will accept a team of IAEA experts in October sent to advise on decontaminating areas near the radiation-leaking Fukushima plant.

Japan also agreed to seek the agency's assistance in assessing safety measures related to the restart of atomic power plants in Japan currently shut down for regular checkups, Hosono said.

(Mainichi Japan) September 20, 2011

## **Hosono: Cooling down to be achieved this year**

Japan's minister in charge of the nuclear disaster says reactors at the troubled Fukushima Daiichi plant will be cooled to below 100 degrees Celsius within this year.

Goshi Hosono spoke at the International Atomic Energy Agency's annual ministerial meeting on Monday.

He thanked the international community for assisting Japan in dealing with the accident at Fukushima.

Hosono said that decontaminated water has been successfully used to cool down the troubled nuclear reactors, bringing the temperature close to 100 degrees Celsius. He also said spent nuclear fuel pools have been cooled in a stable manner.

Hosono also said the spent nuclear fuel has been steadily cooled and will fall below 100 degrees by the end of this year, instead of early next year as initially predicted.

When the reactors and spent fuel have been cooled below 100 degrees, radiation emissions can be kept very low.

The minister also said Japan will work with the IAEA to remove radioactive materials from areas near Fukushima Daiichi.

He explained the plan to separate the Nuclear and Industrial Safety Agency from the Economy, Trade and Industry Ministry, saying it will be merged with the Cabinet Office's Nuclear Safety Commission to create a nuclear safety agency under the Environment Ministry by next April.

Tuesday, September 20, 2011 07:00 +0900 (JST)

## **Hosono seeks US, French help to scrap reactors**

Japan's cabinet minister in charge of the nuclear disaster has asked the United States and France for help in scrapping the reactors at the Fukushima Daiichi power plant.

Goshi Hosono on Monday held separate meetings with US Nuclear Regulatory Commission Chairman Gregory Jaczko, US Energy Secretary Steven Chu and French Industry Minister Eric Besson in Vienna. They are in the Austrian capital for the general assembly of the International Atomic Energy Agency.

Hosono told the officials that the Japanese government is aiming for a cold shutdown of the Fukushima plant before the end of the year.

The government's plan to stabilize the plant originally called for achieving a cold shutdown early next year.

Hosono asked the US and French officials to help with essential work after the cold shutdown,

including scrapping the reactors, decontaminating soil and disposing of radioactive waste.

The officials responded positively.

Tuesday, September 20, 2011 07:00 +0900 (JST)

## **IAEA to send experts to Japan**

The International Atomic Energy Agency says it will send experts to Japan to cooperate in the removal of radioactive materials in Fukushima Prefecture.

IAEA chief Yukiya Amano made the remarks on Monday in Vienna. He was responding to a request from Japan's nuclear crisis minister, Goshi Hosono.

Hosono said Japan needs international experience and expertise in order to make progress in the removal of radioactive materials in areas near the Fukushima Daiichi nuclear plant.

He also asked the IAEA for advice regarding stress tests for nuclear reactors in preparation for their restart after checkups. Amano said the agency will help.

After the meeting, Hosono said Japan is removing radioactive materials on a scale that no country has ever experienced.

He went on to say his country will seek advice from the IAEA on how to win public support for the restart of its safety-checked nuclear plants until its new nuclear safety agency is established.

Tuesday, September 20, 2011 07:00 +0900 (JST)

## **Groundwater flowing into Fukushima nuclear plant**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Tuesday it suspects that 200 to 500 tons a day of groundwater might be flowing through pits and wall cracks into reactor and turbine buildings at the Fukushima Daiichi nuclear plant crippled by the March 11 earthquake and tsunami.

The suspicion is based on the fact that a decline in water levels in these buildings has slowed down.

"The suspected groundwater inflow is now unlikely to cause problems as the plant is capable of treating nearly 1,000 tons of radiation-contaminated water," said an official at the company known as TEPCO.

But the inflow is expected to affect efforts to contain the Fukushima nuclear crisis. "We should assess the groundwater inflow and readjust an overall plan for treating contaminated water," said an official of the Nuclear and Industrial Safety Agency at the Ministry of Economy, Trade and Industry.

(Mainichi Japan) September 20, 2011

## **TEPCO:Groundwater may be flowing into plant**

The Tokyo Electric Power Company, or TEPCO, says a large amount of groundwater may be entering the crippled Fukushima Daiichi nuclear power plant.

TEPCO says it has found that 200 to 500 tons of what is probably rainwater that seeped into soil may be entering daily through cracks in walls into the basements of buildings housing reactors and turbines.

The utility says it's worried that this will increase the amount of highly radioactive water in the basements.

Workers at the plant are injecting about 550 tons of water a day to cool 3 of its damaged reactors. About 80,000 tons of highly radioactive water has already accumulated in the buildings.

TEPCO says it plans to keep levels of radioactive water lower than those of groundwater to stop further inflows.

The government's Nuclear Safety Agency says groundwater inflow must be considered in drawing up a long-term decontamination plan.

Tuesday, September 20, 2011 17:31 +0900 (JST)

## **A new plan set to reduce radiation emissions**

The Japanese government and the operator of the troubled Fukushima Daiichi nuclear plant say they will install new devices to reduce the amount of radioactive substances released into the air.

The government and Tokyo Electric Power Company, TEPCO, originally planned to achieve a cold shutdown, in which temperatures of the reactors reach below 100 degrees Celsius by January next year.

They now say that they will aim to reach that status within this year, as their work is making steady progress.

The government and TEPCO revealed the plan in their monthly review of the timetable for containing the nuclear crisis.

They will install new devices at the NO.1, No.2 and No.3 reactors to take contaminated gases out of the reactors using filters. They plan to start installing the devices next week.

TEPCO also plans to complete the construction of a giant polyester shield over the No.1 reactor by mid-October.

The operator also plans to improve its cooling systems so that the temperatures of all 3 reactors will drop below 100 degrees Celsius.

They say the amount of radioactive substances released from the plant was about 200-million becquerels per hour in the first half of September. They say that's about one-four millionths of the level of the initial stages of the accident in March.

Tuesday, September 20, 2011 20:02 +0900 (JST)

## **65 percent of Japanese prefer to cut electricity use even if living standards drop**

(Mainichi Japan) September 20, 2011 -

<http://mdn.mainichi.jp/mdnnews/news/20110920p2a00m0na017000c.html>

Sixty-five percent of Japanese people think that they should reduce their use of electricity even if their living standards have to be lowered in the wake of the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant, according to a recent survey conducted by the Mainichi Shimbun.

A survey of 2,413 people, conducted in an interview format by the Mainichi from Sept. 2 to 4, shows 65 percent of the respondents prefer to cut electricity use even if they have to lower their standards of living. The survey did not cover people in Iwate, Miyagi and Fukushima prefectures hit hard by the March 11 disasters. Thirty-two percent of the people polled said power supply should be increased in order to maintain their standard of living.

The survey also shows that most people want to see nuclear power being phased out, with 60 percent of the respondents preferring to gradually reduce the number of nuclear reactors while halting the operations of high-risk reactors.

By gender, 60 percent of male respondents and 70 percent of female respondents said the use of electricity should be reduced even if the standards of living have to be lowered. By age groups, relatively young people tend to think the use of electricity should be cut at the expense of living standards, with 71 percent of those in their 30s and 67 percent of those in their 20s sharing such views. Of those respondents who put priority on cutting electricity consumption rather than on maintaining current living standards, 66 percent of them said the number of nuclear reactors should be gradually reduced.

On the question of what should be done to the nuclear reactors in the future, 60 percent of those surveyed said the number of reactors should be reduced gradually, while 20 percent said the nuclear reactors should be operated without increasing the number of reactors. Twelve percent of the respondents said all reactors should be stopped as soon as possible, while 6 percent said the existing reactors should be operated and new reactors should be built. The survey shows 70 percent of people seeking an end to the country's reliance on nuclear power generation.

On a plan to have a backup of Tokyo's capital functions to prepare for large-scale natural disasters, only 10 percent of the respondents said no backup would be necessary, while 43 percent said a backup should be created in Kansai, followed by 18 percent for Kanto outside of the metropolitan area and 9 percent for Tokai.

Because of the widespread impact of the Great East Japan Earthquake, many people prefer to have a backup of the capital's functions in Kansai rather than in Kanto and Tokai. Osaka Gov. Toru Hashimoto told Tokyo Gov. Shintaro Ishihara in July that he would try to make Osaka a backup for Tokyo's capital functions.

## **Noda voices confidence over resolution of Fukushima nuclear crisis**

NEW YORK (Kyodo) -- Japanese Prime Minister Yoshihiko Noda on Thursday expressed confidence that the ongoing nuclear crisis at the Fukushima Daiichi power plant will be brought under control in the not-too-distant future.

In a speech at the United Nations, Noda pledged that Japan will disclose all information related to the crisis, the worst since the Chernobyl disaster in 1986, and share with the international community the lessons Japan has learned about nuclear safety.

Noda explained that he had visited the power plant, crippled by the March 11 earthquake and tsunami, earlier this month to get a closer look at its reactor buildings.

"This very fact demonstrates the steady progress in our efforts to bring the accident under stable control," he told the world body's high-level meeting on nuclear safety and security.

The prime minister informed U.N. Secretary General Ban Ki Moon and other world leaders of the latest Japanese estimates showing that the amount of radioactive substances being released from the reactors has fallen to around one-four millionth of the level at the early stage of the crisis.

Noda, who took office three weeks ago, said Japan will aim to bring the reactors into a state of cold shutdown by the end of this year, one month ahead of the initial target.

While admitting Japan's emergency response and preparedness for an enormous tsunami was insufficient, he said, "Japan is determined to raise the safety of its nuclear power generation to the highest level in the world," signaling that his government has no immediate plans to phase out the country's nuclear reactors.

Noda also said Japan stands ready to continue to export its technology and expertise to emerging economies seeking to introduce nuclear facilities and at the same time to step up its efforts to take the lead in expanding the use of renewable energy.

Noda, who is making his international debut as premier in New York, noted that Japan will present the specifics of its new energy policy over the medium and long terms around next summer.

He added that Japan will strengthen nuclear security with the rest of the world to prevent terrorist access.

In closing his remarks, Noda said he is confident Japan will overcome the nuclear crisis and there will be a time when Fukushima will be remembered as "the place where, through people's strong will and courage, a new era was opened for the future of humankind."

The high-level meeting, organized at the request of the U.N. chief in the wake of the Fukushima crisis, was attended by world leaders including Brazilian President Dilma Rousseff, French President Nicolas Sarkozy and South Korean President Lee Myung Bak, as well as top officials from more than 50 countries.

Many of them proposed that global nuclear safety standards be enhanced in conjunction with the International Atomic Energy Agency.

"Participants affirmed that the responsibility for ensuring the application of the highest standards of nuclear safety...lies with each state and operating organization," the U.N. chief said in his chairman's summary.

Nassir Abdulaziz Al-Nasser, president of the 66th U.N. General Assembly, said the Fukushima disaster was "a loud global wake-up call."

"When one of the world's best-prepared countries can experience such a large-scale nuclear accident, it is all too clear that we must continue to evolve our thinking and practices for the safe and secure operation of nuclear facilities worldwide," Al-Nasser said.

Still, many attendees at the same time said it would be unrealistic to abandon nuclear energy in the near future.

South Korean leader Lee said the Fukushima accident was "a hard blow" to trust in nuclear safety. But he said this should not be "cause to renounce nuclear energy. On the contrary, this is a moment to seek ways to promote the safe use of nuclear energy based on scientific evidence."

(Mainichi Japan) September 23, 2011

## **IAEA adopts action plan for nuclear safety**

The International Atomic Energy Agency has unanimously endorsed an action plan on nuclear safety at its annual general conference in Vienna.

The plan calls for sending IAEA inspectors to member countries to evaluate the safety of nuclear plants at their request. It also requires the signatories to quickly organize a response team after a nuclear accident.

The plan was approved by the agency's 35-nation board last week -- six months since the nuclear crisis began at Japan's Fukushima Daiichi plant.

But the approval exposed differences on nuclear safety between the member states.

Some countries, including Germany, which has voted to scrap nuclear power, wanted the safety evaluation to be mandatory.

Others, such as the United States, insisted that it be voluntary. Ultimately, that view won the day.

The IAEA plans to implement the action plan swiftly, seeking cooperation from the member states.

Thursday, September 22, 2011 21:49 +0900 (JST)

## **UN to study implications of Fukushima accident**

The United Nations says it will conduct a study on the implications of the Fukushima Daiichi nuclear power plant accident.

UN Secretary General Ban Ki-moon issued a chairman's summary after a high-level meeting on Nuclear Safety and Security in New York on Thursday.

About 60 heads of state and cabinet ministers took part in the talks including Japanese Prime Minister Yoshihiko Noda, French President Nicolas Sarkozy, and South Korean President Lee Myung-bak.

Ban said the Fukushima accident has raised concerns about international safety standards and emergency preparedness.

He said safety standards must be raised to the highest level possible, and urged member nations to review their nuclear power plants to make sure they can withstand serious natural disasters. He stressed the need for international cooperation to strengthen nuclear safety.

Ban noted that people near the Fukushima Daiichi plant are living in fear of the effects of radiation. He said the United Nations will survey their health.

Friday, September 23, 2011 14:20 +0900 (JST)

### **A Visit to J-Village**

## **Fukushima Workers Risk Radiation to Feed Families**

- By [Cordula Meyer](#)
- <http://www.spiegel.de/international/world/0,1518,786650,00.html>

Since the nuclear disaster at Fukushima, the power plant's operator TEPCO has relied on temporary workers to help bring the reactors under control. Many of the workers, whose radiation levels are measured daily, say they are not doing the work for Japan, but for the money. SPIEGEL visited J-Village, which is strictly off-limits, and met the unsung heroes of Fukushima.

Milepost 231 now marks the end of the road. Barricades prevent traffic from proceeding farther north on Highway 6, a four-lane road that leads to the ruin of the Fukushima Daiichi nuclear power plant. Men in uniform are waving stop signs. In the evening twilight, a red illuminated sign flashes the following message: "No access... disaster law." Two policemen armed with red glow sticks vigorously turn away every lost driver.

Three of their colleagues are blocking the exit to the right. They yell at anyone approaching on foot.

A total of 20 officers guard this intersection, day and night. To the right of the road block, the highway leads to J-Village, a former training center for the Japanese national soccer team. Since March 11, Japan's largest soccer complex has been transformed into the base camp for Japan's peculiar heroes -- the workers who are trying to regain control of the crippled Fukushima Daiichi nuclear power plant.

More than 1,000 of these workers prepare themselves for their shifts here, day after day. The TEPCO power company, which is the operator of the stricken nuclear power plant, sponsored construction of the sports facility years ago. Since it has become the hub for the nuclear cleanup workers, though, the company has sealed off the area to the media and the general public.

Only buses and vans with a TEPCO authorization on the front windshield are allowed to pass. The vehicles shuttle workers to the reactors and back to J-Village. The heads of the exhausted men are visible through the buses' windows: Many of them have fallen asleep during the over 30-minute trip home.

In one of the buses that struggles up the hill to J-Village sits Hitoshi Sasaki, 51, wearing a white Tyvek suit. The construction worker started here three weeks ago. His job is to surface a road to the destroyed reactor. The job involves laying down steel struts that will make it possible to support a 600-ton crane, which will be used to pull a plastic protective cover over the ruins.

### **Standing in Line for Radiation Checks**

Sasaki's first stop in J-Village is the gymnasium to the right of the main building. Long lines of workers wearing protective suits and masks march up to the building.

There are boxes at the entrance of the gym, and Sasaki pulls the plastic covers off of his shoes and places them in the first box. Then the respirator, the white protective suits made of synthetic paper and the gloves are each placed in additional boxes.

A number of workers trudge toward the gym; hardly anyone speaks. Some stumble when they have to stoop over to strip off the plastic covers from their shoes. Others rip off their suits with both hands, as if every tenth of a second counts before they can finally remove the hot and sweaty suits from their bodies. Then they stand in line for radiation checks.

Most workers wear only long-sleeved dark-blue underwear under the suits. Those who have to spend particularly long periods in the oppressive heat and humidity are also allowed to wear turquoise vests under their protective suits. These vests contain a coolant designed to protect the men from heat exhaustion. Several workers have already collapsed. In August alone, 13 were admitted to an emergency room set up in front of reactors 5 and 6. A 60-year-old worker died in May, presumably of a heart attack.

A team of workers who have been quickly trained in radiation levels checks each man's exposure.

The inspectors are wearing protective suits, blue caps and paper masks. Under the basketball hoop at the end of the gym, folding tables have been set up with four mobile Geiger counters, and next to these are three permanently installed radiometers.

The inspectors are holding bulky instruments and gazing at the gauges. They move the sensors first over the head of each worker, then left and right along the arms, chest, abdomen and legs. During the check, the workers stand on a mat with an adhesive film designed to capture radioactive particles. Many of the men are young and look as if they are in their early twenties, but a number of weary old men are also among them.

### **Temporary Workers Doing the Dirty Work**

One of the workers feels that the public has a right to know what is happening in J-Village. He has decided to speak with SPIEGEL, although he would prefer not to give his name. He will be referred to as Sakuro Akimoto here. On busy days, he says, more than 3,000 workers pass through the radiation detection station.

Every day a brigade is deployed to the Fukushima Daiichi nuclear power plant in an attempt to bring the stricken reactor under control. The workers toil in sweltering heat and dangerously high radiation levels. The maximum annual dose for workers in Japanese nuclear power plants is normally 50 millisievert. After consulting with the authorities, TEPCO has decided to raise the maximum allowed dose to 250 millisievert, high enough to significantly increase the likelihood of developing cancer.

Some 18,000 workers have helped manage the disaster since March 11. Most of them are not employed by TEPCO, but by subcontractors, who in turn recruit their workers from temporary employment agencies. Before the tsunami, many of these temporary workers had already done their fair share of the dirty work at other nuclear power plants.

Most of them are not doing this to save Japan, but to feed their families. Sasaki, the construction worker, has also come for the money. He was approached by a company from Hokkaido in northern Japan where he lives. As a young man, he had helped with major overhauls at other power plants.

Each morning, says Sasaki, he dons his suit and mask in J-Village, and makes a second stop behind the plant's gates. Here he has to put on a lead vest, and over this an additional protective suit made of especially thick material, safety glasses, a mask that covers his entire face, and three different pairs of gloves, one on top of the other. "It is so unbearably hot," says Sasaki. "I feel like pulling the mask right off my face, but that's not allowed anywhere." Nonetheless, there are reports of workers who take off their masks, sometimes to smoke a cigarette.

### **'It Looks Much Worse There Than on TV'**

There are meetings in the morning where every worker finds out what he is doing that day, after which the buses head off to the reactor. Sasaki is only allowed to work one hour per day, or at most 90 minutes, otherwise he will receive an excessively high dose of radiation. Then he heads back to J-Village, and on to his boarding house in Iwaki- Yumoto, where he shares a room with three men. Days like this have him on the go for six hours.

Sasaki is a small but muscular man. His arm muscles ripple under his black T-shirt.

He vividly remembers how he saw the destroyed reactor for the first time in mid-August. "It looks much worse there than on TV," he says. "Like New York after September 11. Destruction everywhere." He hasn't told his family that he works at the plant. He doesn't want them to worry.

He has his own worries. He needs the money, which is just under €100 a day. But if things keep going like this, he says that he will only be able to do the job a few more weeks until he reaches his company's radiation limits.

### **Workers Pushed to Their Limits**

TEPCO is preparing to spend decades in J-Village. Workers have spread gravel around the large soccer stadium and in a number of adjacent areas. Here they have placed row after row of gray trailers. There are 40 per row and they sit two stories high, extending right up to the blue plastic seats in the stands.

The stadium's large scoreboard still hangs behind this makeshift community. The stadium clock has stopped at 2:46 p.m., which was the moment when the earthquake cut off the electricity here and at the power plant 20 kilometers (12 miles) away. Now, the power is on again and white neon lights illuminate the rows of trailers.

In one room the workers can pick up bento boxes. Next door TEPCO has built a laundromat with more than a hundred washing machines. Behind the main building in J-Village, buses are parked on the former soccer fields and debris is stored in large plastic bags on the tartan track.

### **Stacks of Contaminated Suits**

In the courtyard of the main building, TEPCO has had a small store built, where workers can purchase cigarettes and tea. Some of them, still wearing their work overalls, have gathered around a number of ashtrays and are smoking in silence.

There is an Adidas advertisement glued to one of the doors and an obsolete warning sign: "No SPIKES!" An exhausted worker is asleep on the floor in the hallway.

In the window of the atrium hang huge banners for TEPCO Mareeze, the soccer team that belongs to the energy company. In the center of the building stands a panel with a large white and green map of J-Village. There was a time when this was there to help athletes find their way around. Now, a man in a TEPCO uniform stands here and uses a red felt pen to post the current radiation levels for over a dozen different places on the premises.

Three TEPCO employees are sitting nearby with their laptops. The workers hand them their daily dosimeters. In return, they are given a receipt that resembles a cash register sales slip and shows the dose of radiation that they have received that day.

In the corridors hang large framed photographs of famous moments in soccer history.

One of them shows German goalkeeper Manuel Neuer during the match between Germany and England at the 2010 World Cup. Outside on the covered playing field, eight goal posts have been

pushed aside and are nestled together. Workers' underwear has been hung out to dry on one of the crossbars.

At the entrance someone has used pink tape to attach a sign to the bare concrete: "Caution! Contaminated material." Behind this sign, used protective suits and masks are stacked in piles that are 4 to 5 meters high.

### **Three Shifts Around the Clock**

A stooped-over man in a white and blue uniform leads the way to the far corner, where radioactive dirt is lying in a kind of rubber pool. The man says the dirt was washed off cars that had been close to the reactor. Nearby, someone has taped markers to the artificial turf, much like the ones that runners use to gauge their run-ups. Here, however, workers have written radiation levels on the tape. With every meter that you approach the pool, the radiation levels increase: 4.5 microsievert, 7.0 and then, finally, one meter away: 20 microsievert.

The men from the radiation detection team bring new bags full of refuse from the gym out onto this field every few minutes. The work here at J-Village is less dangerous than at the reactor.

"There are two types of jobs," says Sakuro Akimoto. "Either you work in J-Village for many hours with less radiation or in Daiichi for fewer hours, but at radiation levels that are 10 to 100 times higher." Akimoto is tall and wiry. He wears his hair short and loves casual jeans. He started working 30 years ago, right after leaving school, for a company that does maintenance work for TEPCO.

There are hardly any other jobs in the village where he comes from, which is located near the power plant. On March 11, he was working at the plant and was able to flee in time to escape the tsunami. His village was evacuated. A few weeks later, he says, he received the order to come to J-Village, "whether I wanted to or not." But he says he also felt a sense of responsibility because the plant had brought so many jobs to the region.

The members of the radiation detection team are now working in three shifts around the clock. He has often seen workers "at their limit -- not only physically, but also mentally."

Most jobs are simply dirty work, he says. According to Akimoto, many of his co-workers who work for subcontractors had no choice but to come here. "If they refuse, where will they get another job?" he asks. "I don't know anyone who is doing this for Japan. Most of them need the money." Whenever possible, highly qualified workers like Akimoto are only exposed to comparatively low levels of radiation. After all, they will be needed later.

### **A Move to Raise Radiation Thresholds**

In an internal paper, Japan's nuclear safety agency NISA warns that there will soon be a lack of technicians because too many have exceeded their radiation limits. As early as next year, NISA anticipates that there will be a shortage of 1,000 to 1,200 qualified workers, "which will severely affect the work at Fukushima Daiichi and at nuclear power plants throughout the country."

The nuclear safety agency's solution is simple: create higher thresholds. It recommends raising the limits to allow workers to be exposed within a few years to significantly greater amounts of radiation than before.

By mid-August, 17,561 men had been registered at the Health Ministry as radiation workers. There are plans to monitor their health in a future study. Six of them have been exposed to radiation levels exceeding the high limit of 250 millisievert. More than 400 people have been exposed to levels exceeding the normally allowed 50 millisievert.

And TEPCO simply does not know about some of its workers. Despite months of searching, the company can no longer locate 88 workers who were employed in the power plant from March to June. The company had merely handed out badges to contractors without meeting the workers in person. Worker IDs with barcodes and photos have only recently been introduced.

### **Earning €100 Per Day**

Hiroyuki Watanabe is a city council member from Iwaki, the city that lies to the south of J-Village. For the past two years, he has been trying to determine where TEPCO recruits its workers. "The structure is dodgy," says Watanabe. "It is amazing that one of Japan's largest companies pursues such business practices."

In fact, TEPCO has been using shadowy practices to acquire its workers for a number of years. In 2008, Toshiro Kitamura from the Japan Atomic Industrial Forum criticized the Japanese power company for "outsourcing most of its maintenance work of nuclear power plants to multi-layered contractors." The industry expert's main concern, however, was the safety risk, since these workers are not as familiar with the reactors as permanent employees.

According to Watanabe, TEPCO has budgeted up to €1,000 per person per day to pay the workers. But unskilled workers, he says, often receive only about €100 of that money. "These are men who are poor or old, with no steady job and limited employment opportunities," he says. Some of them don't even have a written employment contract, he contends. When they reach their radiation exposure limit, he adds, they lose their jobs and the employment agency finds a replacement.

Watanabe wants to ensure that all workers are paid appropriately. Even the lowest ranking workers should have a trade union, he says. "If we have a problem, we have nobody to turn to," says a young worker who is eating dinner along with seven co-workers at the Hazu restaurant in Iwaki-Yumoto. They are drinking beer and sake with their meal and smoking countless cigarettes. The men actually don't want to talk about the power plant -- but they go ahead and do it anyway. They also talk about their families and the fear of the radiation and its consequences.

### **'Somebody Has To Do It'**

Next door in the laundromat, 24-year-old Yutaka is stuffing his socks and T-shirts into a washing machine. He is wearing plaid shorts and a polo shirt with a matching collar. Every night in his boarding house room, he calculates his current level of radiation exposure.

"To be honest, it makes my wife worried," he says. He has no intention of quitting, however. "Somebody has to do it," he says. Yutaka is in charge of the break room. His wife has been living far from here ever since they were evacuated. "I don't know if we will ever be able to return," he says.

The presence of so many workers has fundamentally changed Iwaki-Yumoto. This small town on the southern edge of the exclusion zone was known for its hot springs, which attracted large numbers of tourists. Now, there are no more tourists, and many residents have also fled. The hot springs are still very popular, though now it is with the workers. Between 1,000 and 2,000 of them live here now, says a hotel owner in the city. There are plans to move many of them soon to new trailers on the playing fields of J-Village.

One of the workers in Iwaki-Yumoto comes from the now-abandoned village of Tomioka in the restricted area. He smokes Marlboro menthols, and his arms and legs are covered with tattoos. During the day, he works in front of reactor 4, assembling plastic tubes for the decontamination system.

The hardest thing for him, he says, is the daily trip to work. The bus drives past his house twice a day, passing directly in front of the bar where he used to play pachinko, a Japanese game similar to pinball.

"I feel sad when I see it all so empty," he says. He says he dreams of returning there some day to play pachinko again.

*Translated from the German by Paul Cohen*

## **Fukushima finds cesium in Nihonmatsu rice, to hold more tests before shipment decision**

The Fukushima Prefectural Government said on Sept. 23 that it had detected 500 becquerels of radioactive cesium per kilogram -- the government-set allowable limit -- in a sample of "Hitomebore" rice collected in Nihonmatsu's Obama district. It will greatly increase the number of testing locations there for a second test to decide whether to allow shipments of rice from the city.

After discovering radioactive cesium in the rice crop from the city, Nihonmatsu became the first area to be designated a "priority test area," which means the local government will increase the number of locations in the city where rice crops are tested for radioactive substances before deciding whether to allow shipments.

Early-season rice from across Fukushima Prefecture was already previously approved for shipments, and some municipalities have started shipping their regular season rice. The test results from Nihonmatsu have again stirred worries among farmers and others about effects on Fukushima products' reputation.

According to the prefectural government, 500 becquerels of radioactive cesium were detected in a rice sample collected on Sept. 12, and soil in its paddy field contained 3,000 becquerels of cesium per kilogram. Rice crops from 11 other locations in the Obama district had from undetectable amounts up to 212 becquerels of cesium.

Preliminary tests such as the one that found the problem rice in Nihonmatsu are being conducted about one week before harvesting in 370 zones covering the whole prefecture. Those municipalities where rice with 200 becquerels or more of cesium are found are designated as "priority test areas." Such areas get two testing locations per 15 hectares of land for a later second test that determines whether shipments from the zone will be allowed.

Following the Nihonmatsu test results, the Fukushima Prefectural Government plans to increase the number of testing locations there from around 40 to around 300. If rice with 500 becquerels or more cesium per kilogram is again found, shipments of all rice crops from that part of the city will be restricted.

Before the Nihonmatsu finding, the highest level of cesium detected in ordinary rice from Fukushima Prefecture in preliminary tests was 136 becquerels in Fukushima city's Onami district.

The Ministry of Agriculture, Forestry and Fisheries estimated the transfer coefficient of cesium from soil to rice crops at 0.1 (10 percent) and banned planting rice in paddy fields with more than 5,000 becquerels of cesium per kilogram of soil. Based on these values, in theory rice from the prefecture should not contain more than 500 becquerels of cesium.

(Mainichi Japan) September 24, 2011

## Hydrogen detected in pipe at Fukushima No. 1 reactor

The Yomiuri Shimbun - <http://www.yomiuri.co.jp/dy/national/T110923004917.htm>

**Hydrogen has been detected in a pipe at the No. 1 reactor at the Fukushima No. 1 nuclear power plant, but there is no possibility it will cause an explosion "in the immediate future,"** the plant's operator said Friday.

According to Tokyo Electric Power Co., hydrogen of at least 10,000 parts per million was detected at two spots in a pipe passing through the containment vessel on the reactor building's first floor. This concentration was higher than TEPCO had anticipated.

Although TEPCO is not certain how much hydrogen is still inside the vessel, the utility believes **it is possible the concentration of the highly flammable gas is higher than had been assumed.**

In air and liquid, 10,000 ppm is equivalent to 1 percent. Air containing at least 4 percent hydrogen and 5 percent oxygen is at risk of causing explosion.

TEPCO has been injecting nitrogen into the containment vessel since April so **it is assumed there is virtually no oxygen.** As a result, the utility ruled out the possibility of an explosion "in the immediate future."

The hydrogen was detected during an examination of the pipe before installation of a radioactive gas purification system inside the containment vessel. TEPCO said it had closely examined the hydrogen concentration and **would inject nitrogen into the pipe to flush out the remaining hydrogen.**

TEPCO said it had expected hydrogen would still be inside the containment vessel, but that it would have no effect on the radioactive gas purification system.

The nuclear plant's Nos. 1, 3 and 4 reactors were damaged by hydrogen explosions in the days after the March 11 earthquake and tsunami knocked out the plant's cooling systems.

(Sep. 24, 2011)

## **Noda changing Kan's N-plant stance**

The Yomiuri Shimbun

Prime Minister Yoshihiko Noda is slowly changing the government's stance on nuclear power generation, which his predecessor, Naoto Kan, wanted to replace with other energy sources.

In July, when he was prime minister, Kan revised the long-held Japanese policy of promoting nuclear power and exports of nuclear technology because of the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant.

Noda seems to be taking a more moderate approach by insisting that a stable electric power supply utilizing nuclear power plants is essential for economic growth.

In his opinion, both economic growth and fiscal health are inseparable for rebuilding the economy.

At a high-level U.N. meeting in New York on nuclear safety and security Thursday, Noda said: "For several years, emerging nations and many other countries around the world have earnestly explored ways of using nuclear energy amid the need for energy security and in response to global warming. Japan supported their efforts and remains steadfast in responding positively to their interest in our undertakings."

This indicated that the prime minister was committed to continuing Japan's policy of exporting nuclear power plant equipment and technology.

In an interview with the Wall Street Journal on Tuesday ahead of his visit to the United States, Noda clearly mentioned the timing for reactivating nuclear reactors idled for regular checkups.

Though Noda said the "biggest precondition" was winning the understanding of prefectures where nuclear power plants are located and confirming the safety of the plants, he emphasized, "From spring through summer next year, we must bring them [the reactors] back online as best as we can." He also indicated nuclear power plants now under construction would eventually go online.

Since becoming prime minister, Noda has announced one policy after another.

A government source said this was because Noda wanted "to clearly show other countries that his policies were different from those of the Kan administration."

The prime minister believes that to revitalize the Japanese economy and achieve fiscal health, Japan must secure a stable electric power supply by utilizing nuclear power plants, the source said.

In his first policy speech to the Diet as the prime minister on Sept. 13, Noda said he would compile a new energy strategy, including the use of nuclear power, by summer.

However, political analysts said Noda so far had yet to draw up a long-term energy strategy.

The prime minister pledged in the Diet to "lower reliance on nuclear power plants as much as possible," indicating he would reduce reliance on nuclear power.

Though he drew a clear line between his and Kan's policy, Noda's remarks about the construction of new nuclear power plants or reactors have been ambiguous.

At one point, Noda suggested the number of reactors in service would be zero within a few decades. But on another occasion, he hinted that the construction of new reactors would be possible depending on the situation.

(Sep. 25, 2011)

## **Fukushima municipality heads concerned over lifting of evacuation advisory**

FUKUSHIMA (Kyodo) -- Heads of five municipalities in Fukushima Prefecture affected by the ongoing nuclear crisis have aired concerns over the government's plan to lift its evacuation advisory in the event of an emergency, saying **not enough has been done to ensure the safety of residents.**

In recent interviews with Kyodo News, the chiefs of the five local governments said they were especially worried about the cleanup of radioactive substances released from the crippled Fukushima Daiichi plant and the disposal of radioactive waste. The Fukushima Daiichi plant, the source of the worst nuclear disaster since Chernobyl, suffered massive damage due to the March 11 earthquake and tsunami.

The advisory covers the entire town of Hirono and parts of Naraha, the village of Kawauchi, and the cities of Tamura and Minamisoma, where roughly 59,000 residents have been told to be prepared to evacuate or remain indoors in the event of an emergency. About 25,000 have evacuated.

The areas are in a ring located 20-30 kilometers from the crisis-hit nuclear plant. Children, pregnant women and people who need medical support have been advised to evacuate, and schools and kindergartens there are closed based on the government advisory issued on April 22.

In August, the central government said it would lift the evacuation advisory in the near future, saying there is only a slight risk of cooling system failures at the nuclear plant and radiation exposure levels are very low in the area.

The government is set to lift the advisory by the end of September as the five municipalities have submitted recovery plans which spell out details of decontaminating their areas and rebuilding basic infrastructure.

The municipal governments of Kawauchi and Tamura said they are planning to allow residents to return to their homes next March, while Hirono said it would do so by the end of 2012.

Minamisoma, whose residents account for some 80 percent of the 59,000 residents covered by the advisory, asked its citizens in July to return to the city by the end of August and has not issued instructions since then.

Naraha said it would ask residents to return home when the central government abolishes the 20-kilometer no-go zone around the nuclear plant.

In an interview, **Hirono Mayor Motohoshi Yamada criticized the central government for lifting the advisory before implementing steps to thoroughly decontaminate radiation-contaminated areas.**

"We will not allow our residents to return home unless their safety is secured. We are also concerned about how to finance the cost of the decontamination work," Yamada said.

Minamisoma Mayor Katsunobu Sakurai said the city began clean-up activities in August, but has found it difficult to decontaminate mountains, farmlands and rivers.

"There are no benchmark figures to refer to in our efforts to lower radiation and reassure our residents. We will proactively release information so that they can judge themselves whether to return home," Sakurai said.

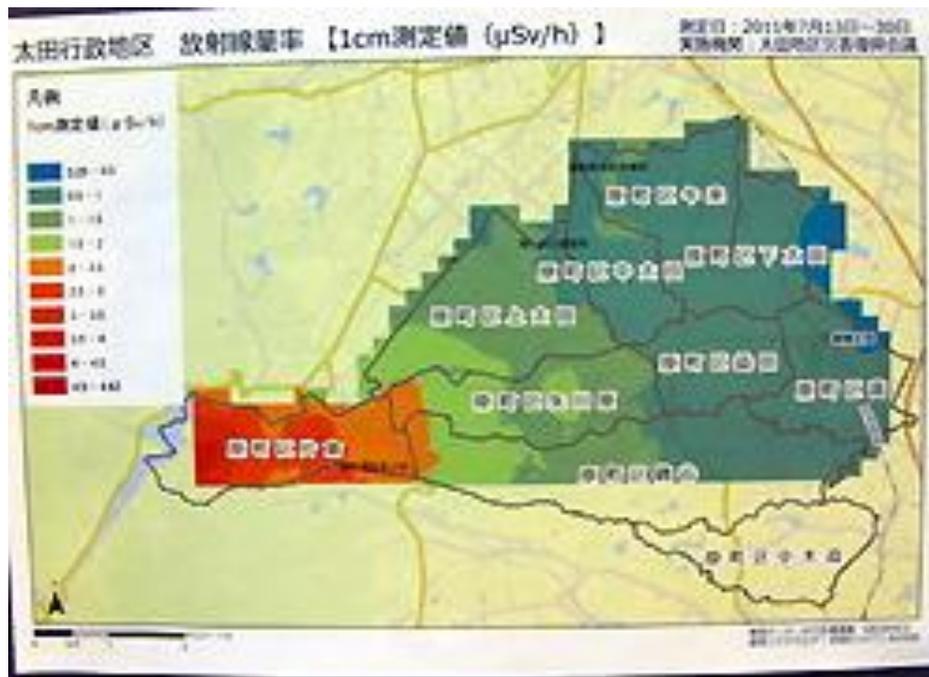
Tamura Mayor Yukei Tomitsuka urged the central government to clarify the target amounts for radiation decontamination because the city lacks the expertise to do so itself.

Kawauchi Mayor Yuko Endo said villagers are uneasy as they do not know how long the decontamination process will continue and radioactive waste will remain.

Naraha Mayor Takashi Kusano said the town will not urge its residents to return home even after the government lifts the evacuation advisory because most of the residential areas fall in the 20-km no-entry zone. He said the city will give priority to the decontamination of industrial areas so companies can resume operating.

(Mainichi Japan) September 25, 2011

## Residents near Fukushima nuclear plant make own radiation map, clean contaminated areas



A map, created as an initiative of the Ota district residents' council, shows radiation levels within the district in Minamisoma, Fukushima Prefecture. (Mainichi)

MINAMISOMA, Fukushima -- Residents in this city, some areas of which fall within the 20-kilometer no-entry zone from the crippled Fukushima No. 1 nuclear plant, have organized a council to measure radiation levels and remove radioactive material spread from the power plant.

The council has also published a radiation map that is twice as precise as the one released by the government, making it the most up-to-date and detailed radiation map available for the area.

In the beginning of July, residents from the Ota region in the Haramachi Ward in the city of Minamisoma, gathered to organize the 'Ota area reconstruction council,' the activities of which involve measuring radiation levels within the area and decontaminating public roads.

"We can't keep on relying only on the government," Kisao Watanabe, 70, the chairman of the council, said. "We decided to do what we could by ourselves, hoping we can return to normal life as soon as possible."

After inviting nuclear experts to teach them how to use radiation measuring devices -- which they purchased with a 500,000-yen subsidy from the local government -- the members spent two weeks from July 13 through July 30, dividing themselves into groups of two to three, to inspect various locations within the region. With the help of a GPS (global positioning system) and four measuring instruments, they inspected radiation levels at a total of 470 locations within the Ota district.

Based on the results of their findings, the council completed a map on Sept. 2, which displays radiation levels within the district, **given for one centimeter and one meter aboveground for all 470 locations, one location for every 200 meters.**

The map is the most up-to-date and detailed one currently available, as the one issued by the government -- also in September -- shows radiation levels in the areas around the Fukushima No. 1 Nuclear Power Plant at one location for every 500 meters.

On Sept. 15 council members distributed the map to all 1,000 households in the area.

According to the council's map, radiation levels in all inspected locations were measured at 0.25 to 4.62 microsieverts, but with the exception of mountains and forests in the western part of the prefecture, radiation was comparatively low.

Meanwhile, on Aug. 28, 90 council members decontaminated approximately 800 meters of sidewalks along the ward's main public roads in another initiative to speed up the city's recovery.

"It is very sad indeed," Watanabe said, referring to the fact that after the Fukushima disaster many schools in the city have closed and a number of families with small children have left. "All we want is to return to a normal life. We understood well that the government never had a disaster-preservation plan, despite building 54 nuclear power plants across the country," he added, vowing to continue the council's initiatives.

(Mainichi Japan) September 25, 2011

## **28 million cubic meters of 'hot' soil in Fukushima / Ministry aims to set storage site guidelines**

The Yomiuri Shimbun

Up to 28 million cubic meters of soil contaminated by radioactive substances may have to be removed in Fukushima Prefecture, according to the Environment Ministry.

In a simulation, the ministry worked out nine patterns according to the rates of exposure to and decontamination of radioactive materials in soil, mainly in forests.

The ministry found if all the areas which were exposed to 5 millisieverts or more per year were to be decontaminated, 27.97 million cubic meters of contaminated soil would have to be removed. The calculation covered 13 percent of the prefecture's area.

These figures indicate the size of the temporary facilities that will be needed to store the soil, and the capacity of intermediate storage facilities where the soil will be taken later.

The assumptions were made using three categories according to yearly radiation doses in soil--20 millisieverts or more; 5 millisieverts or more; and 5 millisieverts or more plus some areas with contamination of from 1 to 5 millisieverts.

The three categories were divided further according to possible decontamination rates in forests--100 percent, 50 percent and 10 percent. The resulting nine patterns were broken down further to include "houses and gardens," "schools and child care centers" and "farmland."

The ministry calculated that the largest amount of contaminated soil was 28.08 million cubic meters in the case of 100 percent decontamination in forests in the category of 5 millisieverts or more plus some areas with contamination of from 1 to 5 millisieverts.

The smallest amount was 5.08 million cubic meters if 10 percent decontamination is carried out in forests with radiation doses of 20 millisieverts or more.

In the breakdown of areas with yearly radiation doses of 5 millisieverts or more, it was found 1.02 million cubic meters of soil should be removed from houses and gardens, 560,000 cubic meters from schools and child care centers and 17.42 million cubic meters from farmland.

The total amount of contaminated soil with a yearly radiation dose of 5 millisieverts or more is 27.97 million cubic meters in the case of 100 percent decontamination in forests that cover an area of 1,777 square kilometers.

The figures will be submitted Tuesday to a ministry study group that decides on the nation's decontamination policy.

The ministry made its calculation based on an aerial survey by the Education, Culture, Sports, Science and Technology Ministry and a land use survey by the Land, Infrastructure, Transport and Tourism Ministry.

A senior Environment Ministry official said, "The standard we basically agreed on at a study meeting is decontamination in areas with yearly radiation doses of 5 millisieverts or more."

**Even though forests occupy about 70 percent of contaminated areas in the prefecture, the ministry does not believe it will be necessary to remove all contaminated soil, as long as the government restricts the entry of residents in mountainous areas and recovers cut branches and fallen leaves, according to the official.**

The usual practice is to remove soil up to a depth of five centimeters. However, a senior official said this depends on the location of the contaminated soil.

The Environment Ministry will draw up plans based on a law concerning special measures on dealing with environmental contamination by radioactive substances as early as the end of November and start full-scale decontamination in January.

**But the government still has not procured sufficient storage sites for contaminated soil, which has been temporarily buried in school yards or piled on vacant lots.**

According to the central government, contaminated soil should be collected at temporary storage sites by local governments. The government recommends placing impermeable sheets under the soil at locations far from living areas.

The government also has no prospect of setting up intermediate storage facilities. Shortly before he stepped down, former Prime Minister Naoto Kan called on the Fukushima Gov. Yuhei Sato to set up facilities in the prefecture. The request was rejected.

Contaminated soil must be removed as soon as possible to allow evacuees to return to their houses within no-entry and evacuation zones.

(Sep. 26, 2011)

## Hydrogen check ordered at No.2, 3 reactors

Japan's nuclear safety agency has instructed the operator of the stricken Fukushima Daiichi nuclear power plant to check if hydrogen is building up in its No.2 and 3 reactors.

This is after the Tokyo Electric Power Company, or TEPCO, recently detected hydrogen in a pipe leading to the containment vessel of No.1 reactor. A hydrogen explosion occurred at the No.1 reactor on March 12th, after the March 11th quake and tsunami.

The government's Nuclear and Industrial Safety Agency on Sunday instructed TEPCO to check pipes in the No.2 and No.3 reactors. The No.3 reactor suffered hydrogen explosion on March 14th and No. 2 reactor had a hydrogen explosion on March 15th.

The utility says it will measure the levels of hydrogen at the No.1 reactor before injecting nitrogen and taking other measures to prevent another explosion.

[on the 24<sup>th</sup> TEPCO said : "TEPCO said it had closely examined the hydrogen concentration and would inject nitrogen into the pipe to flush out the remaining hydrogen."]

The firm is expected to take similar measures if hydrogen is detected at the No.2 and No.3 reactors as well.

Monday, September 26, 2011 05:26 +0900 (JST)

## Makinohara assembly adopts resolution seeking Hamaoka nuclear plant's permanent halt

MAKINOHARA, Shizuoka -- The city assembly here on Sept. 26 adopted a resolution calling for a permanent halt to operation of the Hamaoka Nuclear Power Plant as long as its safety in the event of a major earthquake and tsunami cannot be guaranteed.

Makinohara, a city with a population of about 50,000 located within a radius of 10 kilometers from the suspended plant, is the first of five local governments with nuclear safety pacts with Chubu Electric Power Co. to call for a permanent end to the plant's operations.

Makinohara Mayor Shigeki Nishihara said during the assembly meeting, "There is a high probability of an inland Tokai earthquake, and we cannot give up our demand for a permanent halt."

Chubu Electric halted the plant's operations in May at the request of the central government. It plans to restart the plant after completing tsunami preparations such as an 18-meter-high breakwater and getting approval from local authorities.

The Makinohara assembly's resolution did not touch on the new tsunami preparations. It read in part, "In light of the serious accident at the Fukushima No. 1 Nuclear Power Plant, we must think foremost about protecting the lives and property of our citizens."

In a city-administered survey of Makinohara residents conducted in June and July, 60 percent of respondents said the Hamaoka plant should remain suspended. A separate survey conducted in May and June revealed that of 10 large companies with holdings in the city such as Suzuki Motor Corp., six were considering moving out of the city to minimize risks associated with an accident at the plant or a Tokai earthquake.

Chubu Electric's public relations group at its Shizuoka branch responded to the Makinohara assembly's resolution by saying, "We will steadily implement tsunami prevention measures and improve the plant's safety while doing our utmost to give complete explanations that will allow residents to feel secure."

(Mainichi Japan) September 26, 2011

## **Gov't to allow ash containing over 100,000 becquerels of cesium per kg to be buried**

The Environment Ministry decided Sept. 25 to allow ash with radiation levels of more than 100,000 becquerels per kilogram to be buried **if steps to prevent leaks of radioactive substances are properly taken,[???** ministry officials said.

The ministry made the decision on contaminated ash following a similar decision on rubble contaminated with radioactive substances that spewed from the crippled Fukushima No. 1 Nuclear Power Plant after the March 11 Great East Japan Earthquake and tsunami.

From now on, ash with radiation levels of over 100,000 becquerels is required to be **solidified with cement and can be buried at facilities where measures are in place to prevent the seeping of rainwater and the leakage of contaminated ash to groundwater.**

The ministry is also considering utilizing existing permanent disposal sites that are surrounded by concrete walls to bury toxic heavy metals or those sites equipped with measures to stop such materials from leaking into groundwater.

Of a survey of about 650 industrial waste incineration plants in Tokyo, Fukushima and 14 other prefectures, the ministry checked the density of radioactive cesium at 110 of them and found ash with a radiation level of 144,200 becquerels of cesium per kilogram at one incineration plant in Fukushima.

(Mainichi Japan) September 26, 2011

## **Burying of radioactive household waste challenging**

Japan's environment ministry says that the disposal of radioactive ashes from household garbage is not going well in Tokyo and surrounding areas, partly due to residents' objections.

Following the nuclear accident in Fukushima, waste facilities in the Tohoku, Kanto and Koshin-etsu regions showed that **ashes in garbage from private homes contained radioactive cesium.**

The ministry has set guidelines for disposing of the ashes. They say that if the level is 8,000 becquerels per kilogram or lower, the ashes can be buried. For ashes with cesium levels between 8,000 and 100,000 becquerels, the ministry says they must be deposited in cement and put in concrete vessels.

The ministry recently surveyed waste incineration facilities in the regions to see how the ash disposal is proceeding.

Of 410 facilities where cesium levels of ashes were 8,000 becquerels or lower, 22 sites mainly in the Tokyo Metropolitan area have been storing the ashes. They say they cannot bury the ashes due to residents' objections.

The survey also found ashes which had over 8,000 becquerels of cesium had not been buried at 42 facilities. They said that disposal was difficult.

The ministry plans to send officials to municipalities' meetings to explain to residents the safety of waste disposal. It also plans to demonstrate more specific ways of disposing of the highly contaminated ashes.

Monday, September 26, 2011 05:26 +0900 (JST)

## **Japan to freeze fast-breeder reactor project**

Japan is likely to freeze a research and development project related to putting a fast-breeder nuclear reactor into practical use.

The education, science and technology ministry plans to request more than 20 billion yen, or about 260 million dollars, in its 2012 budget to maintain and manage the troubled prototype fast-breeder Monju reactor. This is roughly the same amount budgeted for the project as in the current fiscal year.

But the ministry is planning to ask for only 20 to 30 percent of the 10 billion yen, or about 130 million dollars, allocated in the current fiscal year for research and development on the project.

This is due to uncertainty over Japan's future nuclear policy in the wake of the accident in Fukushima.

Fast-breeder reactors run on recycled spent fuel as the core of a nuclear fuel-recycling program. Japan has been conducting research to put such a reactor to practical use by 2050. Test runs are now under way at the Monju experimental reactor in Tsuruga City, Fukui Prefecture.

Following the accident at the Fukushima Daiichi nuclear power plant, the government has been reviewing its basic energy plan, making its future nuclear policy unclear.

The ministry says it has concluded that it cannot proceed with the project when it is unclear which way the government's energy policy will go.

Monday, September 26, 2011 16:47 +0900 (JST)

## **Researchers to study effects of radiation on Fukushima marine life to rejuvenate fisheries**

IWAKI, Fukushima -- Authorities here will study how radioactive cesium effects marine life in a bid to rejuvenate local fisheries in the wake of the Fukushima nuclear disaster.

The Fukushima prefectural fisheries experiment station in Iwaki will launch an experiment study in October on how fish and shellfish take in cesium and how long it will take to reduce the effects of cesium by keeping marine life in cesium-laced water tanks.

While coastal fishing in Fukushima has been suspended following the crisis at the Fukushima No. 1 Nuclear Power Plant and the ensuing release of radiation-contaminated water into the ocean, local authorities are seeking to find ways to secure the safety of marine life for the future recovery of Fukushima fisheries.

According to a survey by the prefectural fisheries experiment station that concluded on Sept. 12, levels of radioactive cesium exceeding the government's provisional safety limit of 500 becquerels per

kilogram have been detected in 18 out of 94 varieties of fish and shellfish caught along the coast off Fukushima.

However, the experiment station did not detect cesium in white bait in September even though it had detected 850 becquerels of cesium in the fish in May. Meanwhile, levels of cesium three times the provisional limit have been detected in some flatfish. It is unknown why the effect of cesium differs depending on fish species and even individual fish.

The fisheries experiment station is teaming up with the Fisheries Research Agency, an independent administrative institution based in Yokohama, to conduct the research. They have already started keeping red sea bream and will start keeping several other species including flatfish, abalone and sea urchin.

Researchers will keep uncontaminated fish and shellfish in radiation-contaminated water while keeping contaminated fish in uncontaminated seawater to study the relationship between the concentration of contamination in seawater and the degree of resultant contamination in fish and shellfish, as well as how long it will take to reduce radioactive contamination.

"Fukushima's fisheries have a long way to go to overcome harmful rumors. If we could reveal how radiation effects marine products, we can establish the means to secure seafood safety. We are committed to producing results that can help the recovery of local fisheries," said Satoshi Igarashi, head of the fisheries experiment station.

While offshore fishing was resumed in Fukushima Prefecture in June, coastal fishing has still been suspended out of fears for radiation contamination, with a blanket ban imposed on sea urchin and abalone fishing throughout the May-August harvest season. Trawl fishing has also been suspended even though its off-season is over, as has been gill net fishing that has no off season.

The prefecture's federation of fisheries cooperative associations decided on Sept. 22 that local fisheries will continue to refrain from operations through October. The federation, however, started looking into the possibility of resuming the fishing of octopus, squid and other species whose levels of cesium are within the safety limit -- on an experimental basis. The federation will double the number of sampling survey ships to two and equip fisheries cooperative associations with five radiation measurement devices.

(Mainichi Japan) September 26, 2011

## **Fukushima evacuation advisory to be lifted**

The government will lift an evacuation advisory for 5 municipalities in Fukushima outside the 20-kilometer no-entry zone around the troubled Fukushima Daiichi nuclear power plant.

Senior Vice Minister of Economy Trade and Industry Tadahiro Matsushita on Monday met with Mayor Yuko Endo of Kawauchi Village, one of the municipalities, and said the advisory would be lifted by around Friday.

The municipalities are located in a ring between 20 and 30 kilometers from the Fukushima Daiichi

plant. Residents of the areas have been advised to evacuate or remain indoors in the event of an emergency. About 29,000, or half of them, have evacuated.

The advisory covers the entire town of Hirono and parts of Naraha, the village of Kawauchi and the cities of Tamura and Minamisoma.

Mayor Endo said government support is essential to realizing the village's plan to allow all evacuees to return by March.

Matsushita assured Endo that he will take steps to lift the evacuation advisory.

The 5 municipalities had earlier submitted to the government plans to decontaminate the areas and restore lifelines to meet conditions for lifting the advisory.

Monday, September 26, 2011 15:28 +0900 (JST)

## **Anti-nuclear experts join energy panel**

Japan's industry ministry has decided to add experts who favor reducing the nation's reliance on nuclear power to a panel tasked with crafting a new energy policy.

Industry minister Yukio Edano revealed the decision on Tuesday.

The new panel is to hold its first meeting on October 3rd. It will review Japan's mid- to long-term energy policy, which had been focused on increasing nuclear power until the March 11th disaster.

Compared to previous panels, the new panel includes more experts who have been critical of the government's energy policies, such as NPO leaders Tetsunari Iida and Hideyuki Ban.

There will be no representatives from the energy industry, such as power companies.

The panel is to meet once or twice a month and detail a new energy program by around next summer.

Industry minister Edano said that the panel members were chosen so that a balanced debate could be held. He added the meetings will be posted on the Internet and he hopes they will be as open as possible.

Tuesday, September 27, 2011 13:37 +0900 (JST)

## **Anti-nuclear researcher to sit on gov't panel on energy policies**



Tetsunari Iida (Mainichi)

A researcher who is calling for a decrease in Japan's reliance on nuclear power will be appointed to a government panel to review the country's energy policies, officials said.

The Economy, Trade and Industry Ministry will name Tetsunari Iida, head of the Institute for Sustainable Energy Policies, as a member of a subcommittee on basic energy policy set up under the Advisory Committee on Energy and Natural Resources. However, the ministry did not appoint anybody representing energy industries, including the electric power industry, to the subcommittee.

Also among its 25 members are Ritsumeikan University professor Kenichi Oshima and others critical of Japan's nuclear power policy as well as Osaka University visiting professor Tatsuo Hatta, who has called for a split of power suppliers into power generating and power transmitting firms. The panel will be headed by Akio Mimura, chairman of Nippon Steel Corp.

Economy, Trade and Industry Minister Yukio Edano said he selected the panel members to enable well-balanced discussions on overall energy policies.

The panel will also hold meetings to listen to opinions from those representing energy industries.

At its first meeting on Oct. 3, the subcommittee will begin to review the current basic energy plan, which calls for installations of new nuclear power stations, and work out a new plan in summer next year.

On behalf of the ministry, the panel will report its opinion based on the new plan to the government's Energy and Environment Council, which will reflect it in comprehensive energy policies it will compile by summer 2012.

Deliberations on the issue will be broadcast live on the Internet.

(Mainichi Japan) September 27, 2011

## Fukushima N-response center lost functions

The Yomiuri Shimbun

A power loss shut down an off-site emergency response center near the Fukushima No. 1 nuclear power plant for half a day after the Great East Japan Earthquake on March 11, delaying the initial response to the nuclear disaster at the power plant, according to sources.

According to the Nuclear and Industrial Safety Agency, **the center lost its external power supply immediately after the earthquake, and an emergency diesel generator stopped operating soon after. Due to the power loss, agency officials stationed at the center were unable to use important equipment such as monitors that show conditions inside the plant.**

The agency, which believes the earthquake caused the generator to break down, had not taken any anti-seismic reinforcement measures to protect the generator, the agency said.

The government panel tasked with investigating the nuclear crisis has begun studying the case, according to the sources.

The off-site center is located in Okumamachi, Fukushima Prefecture, about five kilometers from the nuclear power plant.

Based on the Law on Special Measures Concerning Nuclear Emergency Preparedness, **22 off-site emergency response centers have been set up near nuclear power plants around the nation**, including the one in Okumamachi.

**In the event of nuclear accidents, the government is to establish local emergency headquarters at the centers, where officials of the central and local governments and power plant operators are to share information about accidents and related information such as the evacuation of residents, and discuss countermeasures.**

According to the Nuclear and Industrial Safety Agency and the Fukushima prefectural government, the emergency generator went on when the external power supply was lost immediately after the earthquake occurred at 2:46 p.m.

However, the generator stopped working within about one hour after the earthquake, and the center lost all its functions. The generator was on the first floor of the center.

Agency officials moved to the Fukushima prefectural government's Environmental Radioactivity Monitoring Center next to the off-site center building. The government's local emergency headquarters for the nuclear crisis was established at the response center at about 7 p.m., but the agency officials had to continue working in one of the rooms of the radioactivity monitoring center.

The radioactivity monitoring center became so crowded with people that the activities of the agency officials and Fukushima prefectural government officials were delayed. "We weren't able to perform some of the work that should have been done soon after the earthquake, such as preparing to measure radiation doses," a Fukushima prefectural government official said.

Due to the power loss, officials were unable to use a videoconference system at the center, which connects the center to the central and local governments, and a TV monitor displaying communications between the Fukushima No. 1 nuclear power plant and Tokyo Electric Power Co.'s head office in Tokyo.

At that time, the Nuclear and Industrial Safety Agency in Kasumigaseki, Tokyo, did not have a TV monitor displaying communications between the Fukushima No. 1 plant and TEPCO.

The power was out when Motohisa Ikeda, then senior vice minister of the Economy, Trade and Industry Ministry, arrived at the response center at midnight with senior officials of the Nuclear and Industrial Safety Agency to serve as the chief of the local emergency headquarters.

Sometime after Ikeda's arrival, an electrician determined that a pump sending diesel oil to the generator from a tank placed in the basement was not working due to a **faulty switch on the pump's control panel**. The electrician fixed the fault, and the center's functions were restored at about 3 a.m. the next day.

According to the agency, the emergency generator has the capacity to provide electricity to the off-site center for two days. The agency did not find any defects in the generator during a periodic inspection in February.

The agency said it had not taken any anti-quake measures for the emergency generator as operational regulations of the Law on Special Measures Concerning Nuclear Emergency Preparedness do not require any. The agency believes the shock of the earthquake caused the generator to break down. The tremor registered in the upper 6 level on the Japanese seismic intensity scale of 7 in areas around the off-center site.

On March 15, the agency ordered officials to evacuate from the center after radiation levels went up due to the repeated hydrogen explosions at the power plant's nuclear reactors and the shortage of water and food. The local emergency headquarters was moved to Fukushima city, about 60 kilometers from the nuclear power plant.

**Several other failures of the center to prepare for major earthquakes became evident after the March 11 disaster, such as failing to cover the building with materials to block radiation.**

A spokesman of the Nuclear and Industrial Safety Agency said: "**Off-site center buildings meet the quake-proofing standards of the Building Standards Law, but we apparently did not pay attention to the earthquake resistance of generators.** We deeply regret the inconvenience caused to local residents [near the power plant].

"The Nuclear Safety Commission is now discussing matters related to off-site centers, such as the suitability of their locations. We'll take necessary measures on off-site centers after the commission announces its conclusion."

(Sep. 27, 2011)

## **Govt resumes review of Japan's nuclear policy**

Japan's Atomic Energy Commission has resumed discussions on revising the country's nuclear policy.

Work to revise the policy started last December, but was suspended after the accident at the Fukushima Daiichi nuclear plant in March.

Following the disaster, the commission added members who are experts on safety and take a tough stance on nuclear power.

On Tuesday, commission head Shunsuke Kondo apologized for the accident. He said it left him unsure what the panel should do, but that he decided the panel must resume work to fulfill its duty.

Some commission members called for shutting down all of Japan's nuclear plants and promoting alternate energy sources. Others said it's too early to determine long-term nuclear policy, as the Fukushima Daiichi plant remains out of control.

Members advocating nuclear power noted that resource-poor Japan must aim for a realistic energy policy.

The policy on nuclear power use, research and development was drawn up in 1956 and has been revised about every 5 years. It was last revised 6 years ago. The policy calls for promotion of nuclear power despite accidents at nuclear facilities and scandals such as cover-ups of trouble, and for at least 30 percent reliance on nuclear power after 2030.

The commission is to draw up a new policy outline over the next year.

Tuesday, September 27, 2011

## **Panel: TEPCO unprepared for Fukushima accident**

A government panel says Tokyo Electric Power Company was unprepared for the accident at the Fukushima Daiichi nuclear plant and failed to take steps to minimize the damage.

The panel investigating the accident held its third meeting on Tuesday. It met behind closed doors, saying that allowing media access would negatively affect its interviews with the plant's staff.

Panel leader Yotaro Hatamura told reporters after the meeting that they are looking into whether Tokyo Electric was ready to protect the plant from tsunami and other severe accidents.

Hatamura said the company could have taken more effective steps after the March 11th tsunami if it had come up with ways to minimize the damage.

He added that the panel will further investigate why the utility was unable to contain the damage from the accident.

The panel is scheduled to release an interim report on its probe at the end of the year.

Wednesday, September 28, 2011 00:56 +0900 (JST)

## Alcoholic products to be tested for radiation

Japan's tax officials have decided to check alcoholic beverages produced near the Fukushima Daiichi nuclear plant for radiation to ensure their safety.

The National Tax Agency says testing will be conducted starting next month on all kinds of alcoholic drinks, **including sake, wine, and beer, produced at breweries and factories located within 150 kilometers of the plant.**

Brewing facilities outside the radius will also be randomly tested.

Taxation bureaus in 6 major cities including Tokyo and the National Research Institute of Brewing will check water samples used for alcoholic products.

If they find radioactive cesium or iodine above the government-set safety limit in any of the samples they will ask local authorities to issue a shipment ban or take other measures, as necessary.

**The National Tax Agency says it will post the test results on its website.**

Rice and barley, the main ingredients for alcoholic beverages, have already been tested for radiation.

The agency hopes the additional testing will put consumers at ease.

Tuesday, September 27, 2011

## Fukushima City to decontaminate all houses

Fukushima City, about 60 kilometers from the crippled Dai-ichi nuclear power plant, plans to remove radioactive materials from all private houses in the city.

The plan was decided after high levels of radiation were detected in some areas of the city. The amounts were close to a level that would prompt authorities to recommend evacuation of nearby residents.

Some people concerned about possible health risks to their children have already moved out of the city.

The plan aimed at substantially lowering radiation levels in the air for the next 2 years includes decontamination of all 110,000 households in the city.

Of those, highly contaminated houses where children of high school age or younger live will be given extra thorough cleaning.

Under the plan, professional cleaners commissioned by the city will scrub radioactive substances from roofs and ditches of the houses, and remove concrete, which radioactive material tends to adhere to. They will also decontaminate roofs and ditches of other nearby houses, but residents will be required to remove surface soil and weed gardens by themselves.

The city says it will recruit volunteers from around the nation, if necessary, and send them to households that need manpower. The city also plans to decontaminate parks and community halls.

**But it has yet to be determined how the contaminated soil and other materials will be disposed of.**  
[what about all that water used for cleaning ?]

Tuesday, September 27, 2011 10:39 +0900 (JST)

<http://fukushima.over-blog.fr/article-presence-d-hydrogene-inquietante-a-la-centrale-de-fukushima-daiichi-85254542.html>

## Risque d'une nouvelle explosion d'hydrogène au réacteur 1 de Fukushima

*Le Monde* | 24.09.11 | 13h42 • Mis à jour le 25.09.11 | 18h51

Une concentration anormalement élevée d'hydrogène a été détectée, jeudi 22 septembre, dans une conduite reliée à l'enceinte de confinement du réacteur 1 de la centrale nucléaire de Fukushima. De 1 %, elle reste inférieure au 4 % considérés comme pouvant provoquer une explosion, au cas où cet hydrogène entrerait en contact avec une concentration d'oxygène supérieure à 5 %.

La découverte de la concentration d'hydrogène à un niveau "*supérieur aux attentes*", selon l'opérateur du site, la Compagnie d'électricité de Tokyo (Tepco), a été faite par des techniciens qui travaillaient sur l'installation d'un nouveau système de ventilation lié à l'enceinte de confinement. Ils ont découvert dans le tuyau et en deux endroits une forte concentration de plusieurs gaz inflammables, dont de l'hydrogène.

Lors d'une conférence de presse samedi, Junichi Matsumoto, porte-parole de Tepco, a déclaré qu'"*en l'absence d'un facteur détonnant, on ne peut pas dire qu'il existe, dans l'immédiat, un risque élevé d'explosion*". L'entreprise souhaite effectuer des mesures complémentaires pour évaluer avec précision la quantité d'hydrogène présente.

Cette découverte soulève des inquiétudes car ce sont des explosions d'hydrogène, consécutives à la surchauffe des réacteurs après l'arrêt des systèmes de refroidissement, qui ont provoqué des dommages, entre le 12 et le 15 mars, aux enceintes de confinement des réacteurs 1, 2 et 3 de la centrale. Des explosions qui ont provoqué la diffusion de panaches radioactifs fortement radioactifs : le dégagement de césium 137 aurait été 168,5 fois plus élevé que lors de l'explosion de la bombe atomique larguée sur Hiroshima, en 1945.

Au mois d'avril, Tepco, qui cherche à reprendre le contrôle des installations fortement endommagées, a mis en place des circuits d'injection d'azote dans les réacteurs pour empêcher de nouvelles explosions. Ces injections permettent de réduire la quantité d'oxygène, et donc de limiter ce risque. Mais la situation reste fragile.

Le refroidissement des réacteurs en circuit fermé est en cours depuis le mois de juillet et la température des réacteurs 1 et 3 a pu être abaissée sous les 100 °C, début septembre. Cela signifie que les techniciens sont sur le point de réussir l'arrêt à froid de ces réacteurs, ce qui est l'un des principaux objectifs de l'opérateur.

**Mais les installations mises en place à cet effet restent à la merci du moindre problème.** Le typhon qui a frappé le Japon du 20 au 22 septembre et qui est passé à la verticale de la centrale a obligé les techniciens à suspendre plusieurs opérations. Il a même provoqué une élévation importante des niveaux de radiations : 1,38 microsievert par heure a été observé à Tokyo. Et l'ensemble du site reste à la merci d'un puissant séisme et d'un tsunami.

Philippe Mesmer

Article paru dans l'édition du 25.09.11

## **Industry ministry underreported opponents to reactivation of nuclear plant in Kyushu**

The Ministry of Economy, Trade and Industry (METI) is suspected of underreporting the number of people who were opposed to the reactivation of the Genkai Nuclear Power Plant in Saga Prefecture, sources close to the case said on Sept. 28.

If about 100 respondents to an Internet broadcast survey who were excluded from counting because their responses were sent after the deadline were included, the total number against would far outnumbered those who were in favor of reactivating the plant.

Moreover, one of the online responses pointed to the possibility that Kyushu Electric Power Co., the operator of the plant, instructed employees as well as subsidiaries to send opinions to the program to express support for reactivation in an apparent attempt to manipulate public opinion, but the ministry failed to act on the claims.

METI's Agency for Natural Resources and Energy denied that it attempted to decrease the ratio of those against reactivation.

"We stopped accepting opinions during the broadcast, calculated them and released the results during the program. We never tried to make it look as though those who were opposed to the resumption of operations at the plant outnumbered those who were in favor by a smaller margin," said an official with the agency's public relations division.

METI had announced that 589 messages were sent from viewers to the program broadcast online on June 26 -- 286 expressing support for the resumption of operations at the plant and 163 against reactivation.

Of the messages in support of the resumption, 141 messages subsequently turned out to have been sent by Kyushu Electric insiders. After these messages are excluded, messages against reactivation slightly outnumbered those in favor.

If about 100 messages sent to the broadcaster after the deadline were included, the ratio of those opposed to reactivation becomes larger, according to the sources.

(Mainichi Japan) September 28, 2011

## **Gov't to decontaminate areas with radiation exposure of 5 millisieverts or more per year**



An experiment to decontaminate soil is conducted in Kawamata, Fukushima Prefecture, on Aug. 11. (Mainichi)

The Environment Ministry has decided to decontaminate areas where people could be exposed to radiation of 5 millisieverts or more per year by removing up to 28.78 million cubic meters of radioactively contaminated soil in Fukushima and four other adjacent prefectures affected by the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant.

The areas subject to the decontamination project are in Fukushima, Miyagi, Yamagata, Ibaraki and Tochigi prefectures. A huge temporary storage facility for contaminated materials needs to be built, and therefore the government is likely to have tough talks with local municipalities on selecting a space for such a facility.

Under the special measures bill passed into law in August to deal with radiation contamination and debris, the environment minister designates highly contaminated areas as "special decontamination areas" and the central government becomes directly in charge of decontaminating such areas. The central government also designates other areas with certain levels of contamination as "priority inspection areas for contamination" and local governments are to check the levels of contamination in those areas to determine locations to be decontaminated and actually decontaminate them.

In mapping out the decontamination program for those areas, the Environment Ministry decided that areas where people could be exposed to radiation of 5 millisieverts or more per year should be decontaminated. On the reason to set the levels of radiation at 5 millisieverts or more per year, the Environment Ministry said, "If the dose of radiation exposure is less than 5 millisieverts, the dose of additional radiation exposure will fall below the official dose limit of 1 millisievert as it decreases with the passage of time and is spread by rain and wind."

The amounts of soil to be removed are calculated on these assumptions, with 5 centimeters of topsoil being removed from contaminated areas. For calculating the amounts of soil to be decontaminated in forests, the areas are divided into three sections of 10 percent of the whole areas, 50 percent and 100 percent.



Workers measure the ground near a rain water outlet in Minamisoma, Fukushima Prefecture, on June 12. (Mainichi)

As a result, if 100 percent of the designated areas were to be decontaminated, the amounts of radioactive soil and other materials to be removed would reach 28.785 million cubic meters, which

would fill the Tokyo Dome stadium 23 times. Of the estimated total amounts of soil and other materials to be removed, 1.02 million cubic meters comes from residential and urban areas, 17.42 million cubic meters from farmland, and 8.75 million cubic meters from forests. The total area is 2,419 square kilometers, which is equal to about 17 percent of Fukushima Prefecture.

The Environment Ministry said it would try to work out specific decontamination plans by the end of this year.

(Mainichi Japan) September 28, 2011

### **3 Fukushima reactors cooled below 100 degrees**

The temperature of another troubled reactor at the Fukushima Daiichi nuclear power plant has fallen below 100 degrees Celsius for the first time since the nuclear disaster in March.

Tokyo Electric Power Company or TEPCO says the temperature in the lower area of the Number 2 reactor stood at 99.4 degrees at 5 PM on Wednesday.

Temperatures at the Number 1 and 3 reactors have been maintained below 100 degrees Celsius since August.

The utility says its cooling efforts have achieved results although it is too early to say that it has attained a state of cold shutdown for all 3 troubled reactors.

Cold shutdown is a state where temperatures below 100 Celsius are sustained and the situation remains stable.

The utility now says it is important to ensure a reliable cooling system to achieve cold shutdown.

Wednesday, September 28, 2011

**OCTOBRE 2011**

October 01, 2011

## Ministry maps strontium, plutonium fallout

<http://ajw.asahi.com/article/0311disaster/AJ2011100112896>

Levels of strontium in soil near the Fukushima No. 1 nuclear power plant are up to six times the highest concentrations deposited in Japan by pre-1980 atmospheric nuclear tests, according to the science ministry.

Official maps of soil contamination by strontium and plutonium were published for the first time on Sept. 30 and reveal that, while concentrations are dwarfed by the radioactive cesium leaked from the stricken plant since March 11, significant quantities are present in some locations.

The survey team collected soil samples within a 100-km radius of the nuclear plant between June 6 and July 8.

The concentrations of different nuclides of strontium and plutonium per square meter were analyzed at 100 locations, including each of the 59 municipalities within an 80-km radius of the plant. Forty-one additional locations within the 20-km no-entry zone were studied.

Strontium-90, which has a half-life of about 30 years, was most concentrated at a location in Futaba town within the zone. The 5,700 becquerels per square meter detected there was six times the maximum of 950 becquerels per square meter found during fiscal 1999-2008 nationwide surveys by the science ministry and attributed to nuclear tests.

Strontium-90 concentrations exceeding 950 becquerels per square meter were detected at eight locations. Seven of them were either within 20 km of the plant or beyond that radius to the northwest.

The maximum concentration of plutonium-238 was 4 becquerels per square meter, while the maximum combined concentration of plutonium-239 and plutonium-240 was 15 becquerels per square meter. At all locations, the plutonium concentrations were below the maximum levels detected before the accident.

At six locations lying either within a 30-km radius of the nuclear plant or beyond that radius to the northwest, however, the proportion of total plutonium consisting of plutonium-238 was much higher than in residual levels left by the nuclear tests, clearly indicating that the contamination was caused by the Fukushima disaster, the ministry said. Plutonium from the latest accident had previously only been detected on the grounds of the Fukushima No. 1 nuclear plant.

On average, the strontium concentrations were less than 1 percent of the concentrations of radioactive cesium.

"Both the plutonium and strontium concentrations are very small compared to those of cesium. Future assessment of the impact of radiation exposure and the design of decontamination measures should be focused on cesium," a ministry official said.

The current, temporary safety standard for cesium in food includes a 10-percent increment that accounts for strontium.

"The ratio (of less than 1 percent) given by the latest study is low. You will probably not have to worry about strontium as long as cesium remains below the threshold level," said Shigeo Uchida, director of the Research, Development and Support Center at the National Institute of Radiological Sciences.

Wherever there is radioactive cesium, strontium is believed to exist in a low but fixed ratio to the amount of cesium. Strontium is easily soluble in water and resembles calcium in its chemical properties. It can accumulate in human bones.

Plutonium-239, which is used in the manufacturing of atomic bombs and nuclear fuel rods, has a half-life of about 24,000 years. It is not thought to be easily absorbed by digestive organs and tends to be excreted when taken into the body with food.

(This article was written by Hiroshi Ishizuka and Hisae Sato.)

<http://fukushima.over-blog.fr/article-fukushima-le-site-de-tous-les-dangers-85515879-comments.html#anchorComment>

## **from Yomiuri : Tests show all 143 reactors in EU safe**

Takehito Kudo / Yomiuri Shimbun Correspondent

### Number of nuclear reactors subject to stress tests in EU

France	58
Britain	19
Germany	17
Sweden	10
Spain	8
Belgium	7
Czech Republic	6
Finland	4
Hungary	4
Slovakia	4
Romania	2
Bulgaria	2
Slovenia	1
Netherlands	1

BRUSSELS--All 143 nuclear reactors in 14 European Union countries that were subjected to "stress tests" are considered free from grave safety risks, according to interim reports disclosed by Friday.

A stress test is a new, more stringent type of reactor resilience inspection to determine safety risks.

The nuclear power plant operators of the 14 nations have submitted the interim reports to the European Commission, the EU's executive arm, via the respective countries' nuclear regulatory organizations.

If no major changes to the interim reports are made in the final reports scheduled to be worked out in June, no reactor is likely to be shut down and decommissioned, according to experts.

Some civic bodies, however, are skeptical, saying the tests are woefully inadequate in making nuclear safety assessments.

The EU countries embarked on the stress tests in June in the wake of the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant.

The tests are designed to gauge whether the reactors are capable of withstanding natural disasters or other threats, including terrorist attacks. The tests exceed the standards set by individual governments.

The French Nuclear Safety Authority (ASN), the nuclear safety watchdog of France, which has 58 reactors, the largest number among EU nations, said it had reached the conclusion that none of the country's 150 nuclear facilities, including nuclear power plants under construction and nuclear research laboratories, need to undergo emergency safety measures.

British regulators believe that additional safety arrangements are needed for some of its nuclear power plants, such as enhancing measures against flooding and strengthening cooling systems. They said, however, that no reactor appeared to be immediately vulnerable to safety problems.

In the Czech Republic, where old-fashioned reactors designed during the days of the former Soviet Union are still in operation, regulators said none of its reactors required any urgent safety measures.

The interim reports presented by other countries also said their reactors had sufficient resilience to withstand flooding and other natural disasters.

Dutch nuclear regulators, however, described the interim report by the country's nuclear facility operator inadequate, and are reportedly planning to call for new stress tests.

The European Commission is scheduled to explain the interim reports at a summit meeting in December of EU member nations.

Mutual verification procedures will then be carried out among EU nations, with the participation of officials from the commission and third-party experts, before submission of the final reports, commission officials said.

(Oct. 2, 2011)

## **Radioactive waste piles up at Fukushima nuclear plant as disposal method remains in limbo**



Workers at the Fukushima No. 1 Nuclear Power Plant stand around the radioactive water decontamination system "Sally" in this photo provided by TEPCO.

Three months after the start of full-scale water circulation system operations at the crippled Fukushima No. 1 Nuclear Power Plant, high-level radioactive waste has kept piling up amid no clear indications of its final disposal destination.

As of Sept. 27, plant operator Tokyo Electric Power Co. (TEPCO) had accumulated about 4,700 drums of radioactive waste after three months of cesium decontamination operations initially using U.S. and French equipment which was later joined by Toshiba Corp.'s "Sally" system in August.

Since the start of October, TEPCO has conducted the plant's water circulation operations using the Sally system alone while relegating its U.S. and French counterparts built by Kurion Inc. and Areva SA, respectively, to backups.

The Kurion and Sally systems are designed to purify decontaminated water through an absorption unit called a "vessel" that contains zeolites. The vessel is changed every few days and the used vessels become radioactive waste.

Areva's water treatment system filters contaminated water by having sand absorb radioactive materials and precipitate with the help of chemicals. But the treatment produces highly polluted sludge.

According to TEPCO, radioactive waste as of Sept. 27 included 210 Kurion-made vessels (a total of about 307 cubic meters) with each vessel measuring 0.9 meters in diameter and 2.3 meters in height and 581 cubic meters of sludge via the Areva unit.

The radioactive waste has been kept at a temporary storage site on the premises of the Fukushima plant, which was heavily damaged by the March 11 earthquake and tsunami, and subsequent hydrogen explosions and meltdowns. But TEPCO has been unable to fully grasp the details such as the types and the concentration of nuclear materials.

Professor Akio Koyama at Kyoto University Research Reactor Institute says, "The density of high-level decontaminated water is believed to be a maximum 10 billion becquerels per liter, but if it is condensed to polluted sludge and zeolites, its density sometimes increases by 10,000 times. The density cannot be dealt with through conventional systems."

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 3, 2011

## **Thyroid gland irregularities found in young evacuees from Fukushima**

NAGANO (Kyodo) -- Hormonal and other irregularities were detected in the thyroid glands of 10 out of 130 children evacuated from Fukushima Prefecture, a Nagano Prefecture-based charity dedicated to aid for the victims of the 1986 Chernobyl nuclear accident said Tuesday.

The Japan Chernobyl Foundation and Shinshu University Hospital did blood and urine tests on youngsters aged up to 16 including babies under the age of one for about a month through the end of August in Chino, Nagano, when the children stayed there temporarily after evacuating from Fukushima.

As a result, one child was found to have a lower-than-normal thyroid hormone level and seven had thyroid stimulation hormone levels higher than the norm. The remaining two were diagnosed with slightly high blood concentrations of a protein called thyroglobulin, possibly caused by damage to their thyroid glands.

Three of the 10 children used to live within the 20-km no-go zone around the nuclear plant and one was from the so-called evacuation-prepared area in case of emergency in areas between 20 and 30 kilometers from the plant, while six others were from towns outside such zones.

"At present, we cannot say the children are ill but they require long-term observation," said Minoru Kamata, chief of the foundation. No clear link has been established between the children's condition and the radiation from the crippled Fukushima Daiichi nuclear power plant, according to the nonprofit organization.

Radioactive iodine tends to get lodged in children's thyroid glands more than those of adults, placing youngsters at greater risk of developing disorders and diseases including cancer.

(Mainichi Japan) October 4, 2011

## **High dosage of cesium found in soil outside Fukushima no-go zone**

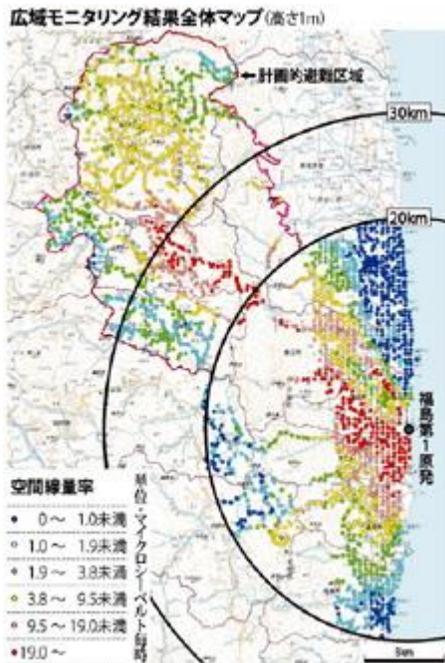
TOKYO (Kyodo) -- High levels of radioactive cesium were found in an independent study in a Fukushima city district, prompting a citizens group and others involved to urge the government on Wednesday to promptly designate the area as one of the contamination hot spots for possible evacuation and ensure proper decontamination.

Up to 307,000 becquerels of cesium per kilogram of soil was detected in the Sept. 14 survey, triple that of the benchmark above which the government requires tainted mud to be sealed by concrete. The

contamination is believed to have been caused by radiation leaked by the Fukushima Daiichi nuclear plant crippled in the March 11 earthquake and tsunami disaster.

The readings are comparable to the high levels in special regulated zones where evacuation was required after the 1986 Chernobyl accident, said the citizens group, Citizens Against Fukushima Aging Nuclear Power Plants.

It urged the government to designate the area as one of the hot spots, where residents are urged to evacuate, albeit not mandatory, due to accumulation of radiation in certain districts and would be eligible for state assistance if they decide to do so.



A government map displaying radiation levels in the area around the Fukushima No. 1 Nuclear Power Plant.

Kobe University professor Tomoya Yamauchi, who was in charge of the study that tested soil samples from five locations in and around the district, noted that decontamination conducted in some of the areas tested has not yet succeeded in reducing radiation back to the same levels prior to the March accident.

The Japanese government currently has designated two categories of evacuation zones -- the 20-kilometer no-go zone around the Fukushima Daiichi plant, and hot spots outside the zone where radiation level is expected to top 20 millisieverts a year.

The city of Fukushima is about 60 km from the crippled plant.

(Mainichi Japan) October 5, 2011

## **Progress on nuclear plant seawalls**

In response to the accident at the Fukushima nuclear power plant, the government instructed the nation's power companies on March 30 to take urgent safety measures to prevent damage from tsunami.

The utilities are preparing their anti-tsunami measures, including the construction of seawalls.

45 of the 54 reactors around the country are planning to build seawalls.

Construction is expected to be completed as early as spring 2012, or in the next 3 years at the latest.

Wednesday, October 05, 2011 18:54 +0900 (JST)

## **Construction of seawall begins at nuclear plant**

A Japanese electric power company has begun building an anti-tsunami embankment at a nuclear power plant on the Sea of Japan coast.

Hokuriku Electric Power Company on Wednesday started construction of a reinforced concrete seawall at the plant in Shika Town, Ishikawa Prefecture. The wall is 4 meters high, 700 meters long, and sits 11 meters above the sea level.

A 15-meter-high tsunami caused flood damage at the Fukushima Daiichi nuclear power plant following the March 11th earthquake. After the disaster, the government instructed utilities to take anti-tsunami measures.

Hokuriku Electric plans to install a new drainage gate to minimize damage to plant facilities in case seawater manages to climb over the wall and flood the plant.

Other emergency safety measures to be taken by the utility include installing an extra pump to cool reactors with seawater and a power source to operate a valve for venting steam out of reactors.

The company intends to complete construction by the end of March 2013.

Wednesday, October 05, 2011 18:15 +0900 (JST)

## **Noda dismisses speculation of turning back in favor of nuclear power**

Following criticism from opposition parties, Prime Minister Yoshihiko Noda is striving to sweep away speculation that he has turned back in favor of nuclear power.

In an Oct. 5 meeting of the House of Representatives special committee on recovery from the quake and tsunami, Noda rejected the suggestion that he was aspiring to export nuclear power overseas, stating, "We're not going to rush forward and form new agreements (with other countries) or engage in marketing efforts."

His comments came after he indicated in a United Nations high-level meeting on nuclear safety and security in New York on Sept. 22 that Japan would continue to sell nuclear power plants to other countries. In the U.N. meeting he stated "Japan is determined to raise the safety of nuclear power generation to the highest level in the world," and "Japan stands ready to respond to the interest of countries seeking to use nuclear power generation."

Opposition parties responded by saying that his stance on eliminating reliance on nuclear power had wavered.

Replying to the criticism, Noda told a news conference on Sept. 30, "What I said (at the U.N. meeting) has been taken as if I were giving exports the green light, but I've said nothing of the sort."

In a related development, Minister of Economy, Trade and Industry Yukio Edano told the lower house special committee on quake and tsunami recovery on Oct. 5, "Deals in which negotiations are already underway involve issues of trust, so we will go ahead with them." He indicated that the government had not departed from its statement approved by the Cabinet in August that the nation would proceed with nuclear power deals that were already underway.

(Mainichi Japan) October 6, 2011

## **Your Party chief Watanabe urges end to nuclear power**

Yoshimi Watanabe, leader of the reform-minded Your Party, said Oct. 6 that Japan should end its dependence on nuclear energy and liberalize its electricity industry in the aftermath of the crisis at the Fukushima No. 1 Nuclear Power Plant.

"We want to extricate Japan from its dependence on nuclear energy," Watanabe said at a meeting at the Foreign Correspondents' Club of Japan. He proposed introducing a system to hold national and local referendums to help deregulate the nation's electricity industry.

Through such referendums, he said, Japanese consumers would be able to freely choose electric power companies and their sources of electric power. He also called for creating an independent regulatory agency to oversee the industry.

Your Party's calls for an end to over-reliance on bureaucrats, and further decentralization, along with its nuclear-free policy and strong opposition to tax increases, are catching the fancy of growing numbers of Japanese people who have been disillusioned with both the ruling Democratic Party of Japan (DPJ) and the largest opposition Liberal Democratic Party (LDP).

The two-year-old party's vocal opposition to tax increases, excessive bureaucratic control in the government and nuclear power means that "we are of course exposing ourselves to tremendous friction and tremendous pressure to change," a defiant Watanabe said.

According to a recent poll by the Mainichi Shimbun, Your Party was the third most popular political party in Japan with 7 percent of respondents in favor of it, after the LDP at 18 percent and the DPJ at 16 percent. The figure surpasses the New Komeito party's 5 percent support rating.

Watanabe, 59, said Your Party will field more than 100 candidates in the next House of Representatives election due to take place in two years. The party currently has five members in the lower house and 11 in the House of Councillors. He added that his party's objective over the next two years is to replace New Komeito as the nation's third largest political party, earning a casting vote. (By Shiro Yoneyama, Staff Writer)

(Mainichi Japan) October 6, 2011

## **Gov't panel eyes higher interim radiation exposure limit**

TOKYO (Kyodo) -- A government panel on reviewing radiation dose standards plans to propose that the government adopt an interim annual radiation exposure limit between 1 to 20 millisieverts for ordinary people instead of the current 1 millisievert limit, panel sources said Wednesday.

The recommendation by a group under the panel, headed by Otsura Niwa, a professor emeritus at Kyoto University, would be employed when the government reviews provisional radiation limits for food products and soil, many of which were hurriedly set after the start of the nuclear crisis at the Fukushima Daiichi power plant.

However, the plan to raise the annual radiation exposure limit for ordinary people could be criticized for endangering health, potentially affecting the subsequent review process, observers said.

The group has apparently determined it is difficult at present to maintain the 1 millisievert limit.

The group envisions setting an achievable interim limit without specifying a numerical target, while looking at the 1 millisievert limit as a long-term goal, according to the sources.

Prior to the disaster at the Fukushima complex, Japan had few standards for radiation exposure or radioactive materials in the event of emergencies.

After the start of the nuclear crisis triggered by the March 11 earthquake and tsunami, government ministries and agencies rushed to set provisional limits for radiation exposure and radioactive materials as problems arose.

(Mainichi Japan) October 6, 2011

## **Gov't panel mulls interim goals on radiation dose**

A government panel is calling for Japan's one-millisievert annual radiation limit to be eased for the interim, saying it will be difficult to restrict exposure in some areas near the troubled Fukushima nuclear plant.

The environment is contaminated by radioactive substances in areas hit by fallout from the Fukushima Daiichi nuclear power plant, causing concern that residents may be exposed to radiation for long periods.

The panel on radiation believes it will be difficult to keep their dose below the one-millisievert limit set by the government for normal times and proposed on Thursday to set an interim exposure target.

It says the target should be set between one and 20 millisieverts in line with recommendations by the International Commission for Radiological Protection.

The panel says the target should be lowered in steps as decontamination progresses.

It adds that targets could differ by region and that residents should have a voice in setting the targets.

The panel will wrap up its proposal at its next meeting, but its plan to ease the radiation exposure limit is expected to arouse controversy.

Thursday, October 06, 2011 15:39 +0900 (JST)

## **True radiation decontamination still a long way away**

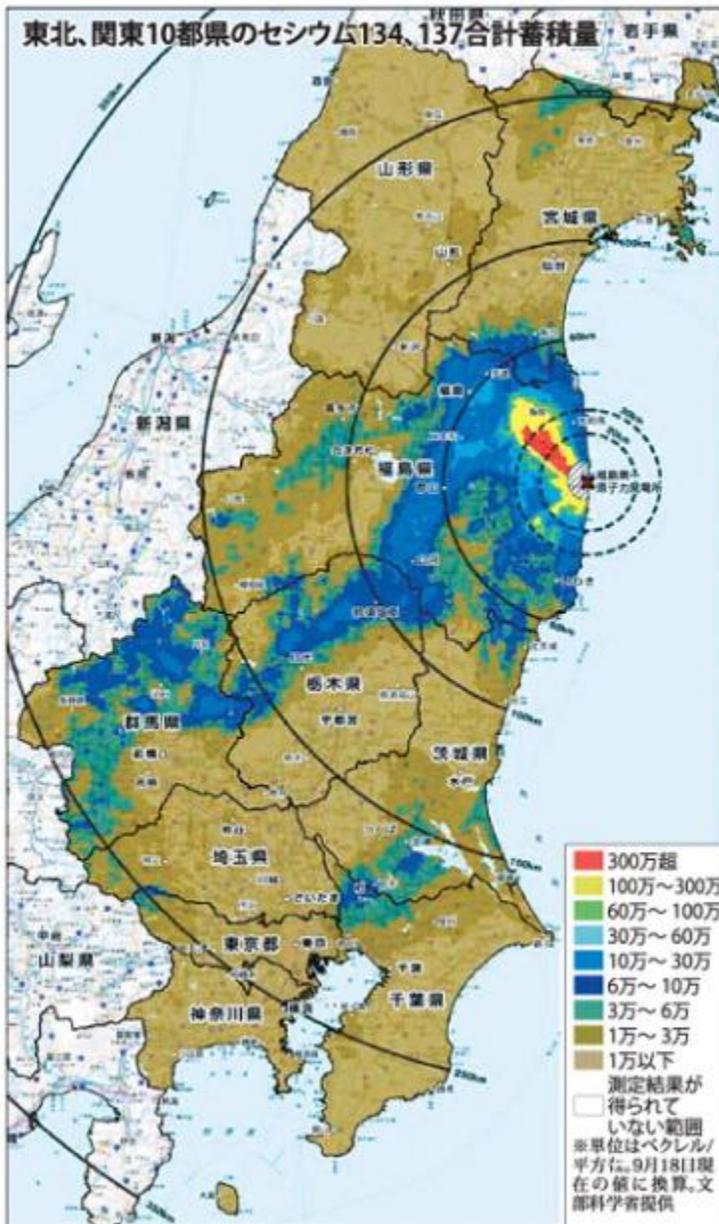
Though the government last month lifted the "emergency evacuation preparation zone" designation of some areas greatly affected by the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant, radiation decontamination efforts are still taking place in areas with high levels of radiation.

The three main decontamination methods that have been highly publicized through media reports are: the stripping away of surface soil from school playgrounds and athletic fields, the removal of mud accumulated in gutters, and the washing of roofs using high-pressure water cleaners. While the first method is considered effective, the remaining two have been found to be effective only to a certain point, and some especially warn against overestimating the effects of high-pressure water cleaners.

"It might make you feel like you're decontaminating, but there's a limit to the amount of radioactive cesium that's caked onto roofs that can be eliminated with high-pressure water cleaners," says Kunihiro Yamada, a professor of environmental science at Kyoto Seika University. "The water cleaners wash surface dirt off, but then that tainted water goes into sewers and can contaminate rivers, thereby affecting farm goods and seafood. If people in highly populated areas were to begin using water cleaners, we may end up finding people forcing tainted water onto each other."

Since his launch of the "Radiation Contamination and Recovery Project" with colleagues from Fukushima University and Osaka University in May, Yamada has been running trials in the city of Fukushima on methods of decontamination that residents can undertake themselves. He has compiled a

manual, which is available on the website of the Society for Studies on Entropy, an organization of which he is a representative.



A government map displaying radiation levels in 10 prefectures relatively close to the Fukushima No. 1 Nuclear Power Plant. Areas in red show over 3 million becquerels of cesium per square meter, whereas those in light brown show less than 10,000. (Data as of Sept. 18. Image courtesy of the Ministry of Education, Culture, Sports, Science and Technology)

What exactly is meant by the "limitations" of high-pressure water cleaning, a method that is featured in manuals available from both the central government and the Fukushima Prefectural Government?

According to Yamada, radioactive cesium is believed to exist in three states: dissolved in water, loosely bonded to organic materials such as moss and leaves, or tightly bonded to rock such as silicate salt. In other words, if soil is removed and washed away with high-pressure water cleaners, radioactive cesium found in surface soil and gutters can be eliminated. The cesium that has become affixed to roofs remains, however.

At the request of Fukushima residents and civic groups, on Sept. 14, Kobe University Professor Tomoya Yamauchi, a radiation metrology specialist, measured radiation levels in Watari, which was believed to have some of the highest radiation levels in the city of Fukushima. At a building used for afterschool activities for elementary school children, Yamauchi found 0.33 microsieverts of radiation close to the floor, while radiation levels near the beams and the ceiling were 0.52 microsieverts and 0.72 microsieverts, respectively. Near the concrete roof tiles, radiation levels were at 1.74 microsieverts.

"Apparently the roof had been cleaned using high-pressure water cleaners, but that was as low as the radiation levels got," says Yamauchi. "To bring the roof's radiation levels down, there's probably no other way but to replace the roof. First and foremost, we must aim to bring indoor radiation levels to 0.05 microsieverts, which they were before the disaster unfolded, and thereby creating safety zones."

According to Yamauchi, just like what has happened with roofs, radioactive cesium has become stuck to asphalt on the road, concrete gutters and cobblestones, and high-pressure water cleaners can only do so much.

At a July 27 meeting of the House of Representatives Committee on Health, Labor and Welfare, Tatsuhiko Kodama, professor and director of the University of Tokyo's Radioisotope Center, denounced the government's handling of the nuclear crisis: "What is the Diet doing at a time when 70,000 people have had to leave their homes and are wandering around?"

He illustrated the gravity of the situation and the dire need for decontamination efforts, saying: "The amount of radioactive materials that have been released in the latest nuclear disaster, if converted to uranium, is the equivalent of 20 of the atomic bomb that was dropped on Hiroshima."

At a lecture held at the Japan National Press Club in Tokyo on Sept. 30, Kodama explained that radiation decontamination referred to isolation of radioactive materials in the environment to await its radioactive decay, and that the "radiation decontamination" that he had thus far conducted at kindergartens and other facilities in the Fukushima Prefecture city of Minamisoma were not enough. "The decontamination I've done is a type of emergency measure to protect children and pregnant women, and not true decontamination." He continued: "Permanent decontamination requires the knowledge and technology of experts and corporations, and a massive amount of funds. It must not become an interest-driven public project."

Kodama says that before his decontamination activities, a certain kindergarten in Minamisoma was found to have small hot spots, recording 33 microsieverts of radiation on the roof and 5 to 10 microsieverts under a slide. While radiation levels can be lowered by around 50 percent after a single

decontamination session, Kodama says that it's difficult to bring roof radiation levels down to 0.5 microsieverts or lower.

"To take the next step, we need the cooperation of house builders to determine whether a roof's surface should be scraped off or the roof in its entirety should be replaced, depending on the materials used," says Kodama.

Meanwhile, because replacing roofs will inevitably result in more radioactive waste, Kyoto Seika professor Yamada and his project team are collaborating with a house manufacturer to create cloth-like adhesive stickers that would be affixed to roofs and peeled off to remove just the radiation-contaminated surface.

According to the Basic Policy for Emergency Response on Decontamination Work released by the government's Nuclear Response Emergency Headquarters on Aug. 26, the government has set a provisional goal for the next two years to reduce yearly radiation exposure by 50 percent (60 percent for children). In setting this goal, the government presupposes that natural phenomena such as physical attenuation and weathering will decrease radiation exposure by 40 percent in two years, and that the remaining 10 percent (20 percent for children) will come from decontamination activities.

"What residents want is not half the exposure to radiation," says Yamada. "What they want is for a return to levels that allow them to live with peace of mind. Massive amounts of radioactive materials have been spread across wide areas in the ongoing disaster, so we can't count on the weathering effect. There's also the possibility that radiation will not only spread, but will start to accumulate in large concentrations in certain places. The half life of cesium 137 is approximately 30 years, but that of cesium 134 is 2 years. What the government has said is the equivalent of saying that they won't engage in full-fledged decontamination activities."

Both Yamada and Yamauchi agree that children and pregnant women living in areas that have not been subject to evacuation orders but have nonetheless been found to have high levels of radiation -- like the cities of Fukushima and Koriyama -- should be evacuated temporarily, and that those areas be thoroughly decontaminated while those populations are away. Kodama also says that residents living in areas with yearly radiation exposure of 1 millisievert or higher who want to evacuate should be fully supported by the government and Tokyo Electric Power Co., the operator of the stricken power plant.

Kodama finishes his book, "Naibu hibaku no shinjitu" (The Truth about Internal Exposure), with the following: "We have contaminated our country's earth, this irreplaceable inheritance from our ancestors that we had been charged with and must pass on to our children. However, if humans are the ones who contaminated it, then we humans should be able to clean it up again."

With challenges such as the designation of temporary radioactive waste dumps and interim storage facilities yet unsolved, the road to true decontamination remains a long one.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 7, 2011

## **New safety rules for outdoor nuclear workers**

Japan's health ministry will introduce safety guidelines to protect workers who clean up radioactive substances around the disabled Fukushima Daiichi nuclear power plant.

Existing guidelines target only those working indoors at the plant.

Citizens groups had complained that the ministry was not doing enough to minimize the exposure of workers who engage in decontamination outdoors.

The new guidelines will require outdoor clean-up workers to wear protective masks and carry dosimeters to monitor radiation.

The ministry says it will work to ensure that the rules are upheld, as efforts to decontaminate farmland and residential areas near the Daiichi plant will soon begin in earnest.

Friday, October 07, 2011 16:45 +0900 (JST)

## **TEPCO starts sprinkling decontaminated water**

The Tokyo Electric Power Company, or TEPCO, has started sprinkling decontaminated water on the premises of the Fukushima nuclear power plant.

TEPCO on Friday began spraying the water onto trees cut down and piled on the plant's compound. The utility says dry trees could catch fire spontaneously.

**The water was taken from facilities for temporary storage of water with low levels of radioactivity that had accumulated in the basements of 2 reactor turbine buildings.** The buildings did not incur major damage in the March disaster.

**The facilities contain about 17,000 tons of such water, and are filled to nearly 90 percent of their capacity.**

**TEPCO removed salt and radioactive substances from the water before the sprinkling process, and says levels of cesium and other radioactive substances in the water are below government standards for public beaches.**

The company also says local communities and fishery associations approved the operation.

TEPCO plans to release 100 tons of decontaminated water daily on about 1.2 million square meters of land in the compound.

Friday, October 07, 2011 18:15 +0900 (JST)

---

<http://fukushima.over-blog.fr/article-les-enigmes-du-combustible-de-fukushima-daiichi-86055793.html>

about the corium : <http://fukushima.over-blog.fr/article-le-corium-de-fukushima-1-description-et-donnees-81378535.html>

## Removal of hydrogen starts at Fukushima plant

The operator of the troubled Fukushima Daiichi nuclear power plant on Saturday afternoon began to remove hydrogen that has built up in pipes connected to the No.1 reactor.

Tokyo Electric Power Company, or TEPCO, last month found that the level of hydrogen inside pipes connected to the No.1 reactor containment vessel accounted for between 61 and 63 percent of the total gas present.

TEPCO says an explosion is unlikely as there is no oxygen in the pipes now.

It adds that Saturday's work will not pose any risk of explosion as nitrogen is to be injected into the pipes to lower hydrogen levels.

TEPCO explains that it will use special hoses that do not generate static electricity to prevent an explosion while releasing hydrogen outside the reactor building.

Following a government instruction, TEPCO is planning to check the level of hydrogen in pipes linked to the No.2 and No.3 reactors.

Saturday, October 08, 2011 13:22 +0900 (JST)

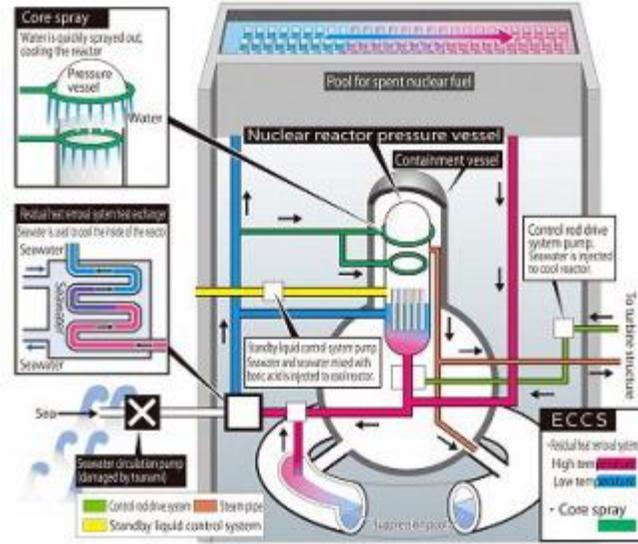
## TEPCO starts to eject dense hydrogen from Fukushima reactor pipe

TOKYO (Kyodo) -- Tokyo Electric Power Co., the operator of the crisis-hit Fukushima Daiichi nuclear plant, said Saturday it has started to discharge hydrogen with high concentration levels from a pipe connected to a reactor containment vessel at the plant, as a measure to prevent an explosion.

The utility said it has injected nitrogen into the pipe for the No. 1 reactor vessel to **eject hydrogen found with high density of over 60 percent. The hydrogen has been generated by radiation that dissolved water.**

TEPCO said it will make sure that the concentration level of hydrogen is lowered to less than 1 percent before removing the pipe and going ahead with a plan to connect a system to clean up radioactive materials in the vessel.

Layout of cooling systems at Fukushima No. 1 nuclear power plant



Layout of cooling systems at the Fukushima No. 1 Nuclear Power Plant. (Mainichi)

While TEPCO said a hydrogen explosion is not expected to occur in the pipe in a lack of oxygen, it has decided to lower the level of concentration to prevent an explosion from occurring during the work to cut off the pipe.

The utility plans to check the levels of hydrogen in the pipes at the plant's Nos. 2 and 3 reactors which were also damaged in the crisis that caused radiation leakage.

(Mainichi Japan) October 8, 2011

## Removal of hydrogen continues at Fukushima plant

Tokyo Electric Power Company will try to remove more hydrogen from the troubled Fukushima Daiichi nuclear power plant on Sunday. The density of the gas increased in pipes connected to the No. 1 reactor after a significant drop on Saturday.

Last month, TEPCO found that hydrogen had built up inside pipes leading to the No. 1 reactor containment vessel and its density was between 61 and 63 percent of the total gas present.

This poses a problem because releasing high densities of hydrogen outside the reactor building could cause another explosion.

On Saturday, TEPCO spent one hour removing hydrogen, while at the same time injecting nitrogen to the pipes to reduce the risk of an explosion.

About half an hour later, the company found the percentage of hydrogen had dropped to nearly zero.

However 2 hours later, the density was measured at 3.9 percent. Even though TEPCO says an explosion is unlikely, **hydrogen at a density of over 4 percent could cause a blast when mixed with**

oxygen.

TEPCO believes that the hydrogen level rose because gas accumulated in the upper part of the pipes may have redistributed internally.

Sunday, October 09, 2011 08:58 +0900 (JST)

## Temperatures drop at Fukushima damaged reactors

New footage of the troubled Fukushima Daiichi plant has been released by the Tokyo Electric Power Company. No steam is seen leaving the No.2 and 3 reactors, which indicates that internal temperatures have dropped.

On Saturday TEPCO released video footage taken from above the No. 1 through No. 3 reactor buildings between Monday and Thursday.

As for the No. 1 reactor building, a hydrogen explosion collapsed its roof, blocking a clear view of the inside.

The video shows that the No. 2 reactor building suffered no major damage to its pipes and other equipment.

However, inside the No. 3 reactor building debris are scattered everywhere.

**TEPCO confirmed that no steam is presently being released from reactors No.2 and 3. In August, the 2 reactors were emitting steam.**

Officials say the temperature inside the No. 3 reactor dropped below 100 degrees Celsius 3 weeks ago, followed by a decline in temperature at reactor No.2.

TEPCO believes that the drop in temperatures has led to the reduction in steam.

Photos of the central control rooms for No. 1 and 2 reactors were also released.

**The maximum radiation level in the control rooms is 0.01 millisieverts per hour.**

Sunday, October 09, 2011 08:58 +0900 (JST)

## IAEA radiation team arrives in Fukushima

A team of radiation experts from the International Atomic Energy Agency has visited Fukushima Prefecture to exchange views with members of the Japanese government decontamination task force.

The 12-member IAEA team has been in Japan since Friday to give advice on ways to effectively clean up radioactive substances, at the request of Environment Minister Goshi Hosono.

The team includes IAEA experts on radiation protection and radioactive waste as well as Russian experts with knowledge of the 1986 Chernobyl accident.

The team arrived in the prefecture on Sunday morning and exchanged views with prefectural officials and members of the government decontamination task force.

The head of the Japanese task force, Masaru Moriya, said it is essential to make living space safe through decontamination, as tens of thousands of people are still living in shelters.

Moriya said he hopes members of the IAEA team will give advice from a technical viewpoint based on their knowledge of and experience in decontamination.

The IAEA team's leader, Juan Carlos Lentijo, said the team will inspect demonstration experiments for decontamination and try to make a useful report to Japan and the rest of the world. Lentijo is general director at Spain's nuclear regulatory authority.

The team will later visit Minami Soma City to inspect areas for the government's model decontamination projects. For the remaining 2 days, the team will also visit Date City and Iitate Village.

Sunday, October 09, 2011 13:03 +0900 (JST)

## Thyroid checkups begin for Fukushima children

The Fukushima prefectural government has begun thyroid examinations for children in an effort to assess the health impact of the nuclear accident.

The examinations will cover around 360,000 youths aged 18 or younger as of April 1st.

**Their health will be monitored for their lifetime.** Radioactive iodine released from the damaged nuclear plant could accumulate in children's thyroid glands, raising the possibility of cancer.

On Sunday, 150 children from some municipalities in the government-designated evacuation zone, such as Iitate Village and the Yamakiya district of Kawamata town, underwent ultrasound examinations for tumors or other problems at Fukushima Medical University.

The results are expected to be mailed to them in about a month.

The prefectural government says it plans to **have all the children examined by 2014.**

**After that, it says the children will undergo a thyroid check every 2 years until they turn 20, and will be examined once every 5 years after that age.**

Sunday, October 09, 2011 12:49 +0900 (JST)

## Farmers frustrated on removing tainted straw

The Yomiuri Shimbun

MORIOKA--Livestock farmers in three disaster-hit prefectures in the Tohoku region are having difficulty disposing of rice straw contaminated with radioactive cesium from the Fukushima No. 1 nuclear power plant.

**Cattle farmers are complaining that the central and local governments have not decided how to get rid of the contaminated straw.**

"We have no space to store new straw, even though the rice harvest season has started. We want the government to remove the contaminated straw as soon as possible," one farmer said.

More than 600 bales of straw sat in one greenhouse at a cattle farm in southern Iwate Prefecture. Their combined weight was more than 60 tons, the farmer said.

Radioactive cesium of more than 8,000 becquerels per kilogram was detected in the straw, more than the limit allowed for incinerating the straw or taking it to a landfill.

A woman at the farm said in bewilderment, "How long will this situation continue?"

According to the Iwate prefectural government, 230 cattle farms in 23 municipalities in the prefecture are storing a total of 700 tons of contaminated straw.

In August, the Agriculture, Forestry and Fisheries Ministry announced interim measures to deal with contaminated straw. According to the policy, straw contaminated with cesium of more than 8,000 becquerels per kilogram should be stored temporarily on farmers' land or public land by covering it with sheets. Straw contaminated with cesium of 8,000 becquerels or less should be incinerated or sent to landfills as general waste by municipalities.

Municipalities in the prefecture preferred sending straw with lower levels of cesium to landfills, because it would be difficult to get residents worried about scattered ash to agree to incineration.

But the Environment Ministry is recommending against such a measure. According to a spokesman, **"It's unrealistic to put the straw in landfills, given the massive amount. It might produce gas and result in a fire."**

**However, incineration would involve a different problem. Radioactive cesium might be condensed in the ash, making it difficult for municipalities to store ash contaminated with cesium beyond the government-set limit.**

The prefectural government decided at the end of August to fully subsidize municipalities' expenses for disposing of contaminated straw. However, **concrete methods for disposal remain undecided.**

Shigemi Takaizumi, chairman of a commercial cattle production organization in Ichinoseki, Iwate Prefecture, comprising 28 cattle farmers, said: "It will snow in a month. If the contaminated straw isn't removed by then, we can't store this year's straw."

Takaizumi, 60, said cattle farmers who have a large amount of contaminated straw have to rent land to store new straw or leave the new straw outside.

In Miyagi Prefecture, about 4,700 tons of contaminated straw is being stored by livestock farmers and straw dealers in 22 municipalities, according to the prefectural government.

The prefectural government plans to keep the straw at temporary storage sites to be set up in collaboration with municipalities.

According to government projection, a total of 35,000 square meters of storage space will be needed. Municipalities are in the process of selecting suitable sites. The contaminated straw will be incinerated after temporary storage, but the time and place for incineration have yet to be decided, the government said.

In Fukushima Prefecture, 143 livestock farmers currently store contaminated straw. The prefectural government instructed them to separate contaminated straw from ordinary straw by covering contaminated straw with sheets or coloring it with a spray.

The prefectural government plans to deal with straw contaminated with cesium of over 8,000 becquerels after the central government decides on a disposal method.

(Oct. 9, 2011)

## **Nuclear stress test survey**

An NHK survey shows that more than 40 percent of the country's prefectures and municipalities hosting nuclear power plants approve of the government's stress tests to confirm the safety of idle nuclear reactors. But nearly 80 percent were cautious about resuming their operation.

NHK received survey replies from all 29 prefectures and their municipalities that host nuclear power plants, excluding Fukushima Prefecture, in late September.

41 percent of them approved of the tests, while 14 percent disapproved. 45 percent were undecided.

But 79 percent of the prefectures and municipalities said they want to be careful about the timing of resuming operations at their idle reactors.

The results are similar to a survey taken in June before the introduction of the stress tests, indicating that the tests have not helped to win the public's understanding toward resuming operations.

Meanwhile, 2 villages said they want to resume operations at their nuclear reactors as soon as possible. These were part of the 21 percent in favor of continuing nuclear power generation.

A Nuclear and Industrial Safety Agency official said nuclear experts will examine the stress-test results

and publish the information. The official added that he will make sincere efforts to explain the tests to local residents.

Sunday, October 09, 2011 22:37 +0900 (JST)

## **Hosono: transparent stress tests**

Japan's minister in charge of the nuclear disaster says the results of the government's stress tests on nuclear reactors will be fully disclosed.

In a speech in Sanjo City, Niigata Prefecture, on Sunday, Goshi Hosono said he told IAEA Director General Yukiya Amano in Vienna that he would like the agency to observe the tests.

He said that although the Japanese government is responsible for securing the safety of the nation's nuclear plants, he also wants international evaluations.

Hosono said he will disclose the results of the tests to the municipalities and residents concerned, and make the testing process highly transparent.

Sunday, October 09, 2011 22:37 +0900 (JST)

## **Tokyo under illusion that things are normal while Fukushima remains a war zone**

We are well into autumn. And despite the growing sense in the Tokyo metropolitan area that things are now all right -- with train services back to pre-disaster schedules and the regret we once felt over our wasteful consumption of electricity dissipating -- Fukushima remains a war zone.

It was reported on Oct. 7 that the Watari district of Fukushima was not designated by the government as a "specific evacuation recommendation spot."

The following day, at an information session held for local residents at Watari Elementary School, participants demanded to know why their district was excluded from the list when it was a dangerous place for children to be, to which a government official responded: "It's not a final decision."

While this battle was taking place, I went to visit Watari residents Chieko Tanji, 64, and her husband, Hiroshi, 63, to hear about their personal battles with radiation and decontamination.

Once a week, the couple, who run a cafe in the district, put on long-sleeved work clothes and 3M-Sumitomo dust masks to scan their property for high levels of radiation, using a U.S.-made Geiger counter and a Chinese-made radiation dosimeter.

The Tanjis often find high radiation levels under the gutters, and scrape off any accumulated dirt and dust. They climb onto the roof, which they sweep with a broom, and remove the trash and leaves that have collected in the gutters. They also diligently trim the greenery in their yard that prior to the nuclear disaster, they'd allowed to grow freely.

"We wish we could count on the government to do something, but we've realized that we can't wait for their instructions. We have to listen to what other people have to say, do our own research, and make our own decisions," Hiroshi said. "I think it'll take 100 years before everything is clean again. At the moment, it's more like we're pursuing the possibility of decontamination than actually undertaking decontamination, but we're putting our faith in the possibility, even if it's just 1 percent."

I'd worked in Fukushima in the past, which was when I came into contact with the Tanjis. But that was already 17 years ago, and it was only through the newly released book, "Chronicle Fukushima," that I learned about what happened to them after the triple disasters of March 11.

The book is a record of lectures on the nuclear disaster and seven interviews, including one with the Tanji family. Guitarist and composer Yoshihide Otomo, 52, who has composed music for films and television dramas both in Japan and abroad, served as lecturer and interviewer. Having spent his youth in Watari, Otomo's emotional attachment to the area comes through crystal clear in the book.

As it turned out, the Tanji family had been torn apart. The book provides a vivid account of the Tanjis sending their son's wife and child off to Nagoya on March 14, just before the explosions at the nuclear power plant that spread radioactive materials far and wide.

Among the others who appear in the book is Shinzo Kimura, 44, a radiation hygiene expert who resigned from his post at a research institute under the jurisdiction of the Ministry of Health, Labor and Welfare when it prohibited an initial investigation into the disaster, and immediately went to work in the disaster area. Also appearing in the book is award-winning poet and Fukushima resident Ryoichi Wago, 43, whose Tweet: "It's raining radiation. It's a quiet night," received a massive response.

The interviews are all directed at Tokyo. The core message is summed up by Otomo, who says: "Come here and look at the reality."

Watari first took the spotlight when 24 times the radiation level permitted in school playgrounds by the central government was found in a daycare playground there in May. Just last week, reports emerged of there being 300,000 becquerels of radioactive cesium per kilogram of soil in the district. This figure, too, far exceeds the maximum permissible amount set by the government.

The persimmons growing in front of the Tanjis' cafe, Fu to boku (wind and trees), have turned orange. There's been an unusual abundance of the fruit this year, but they've been found to have 176 becquerels of radioactive cesium per kilogram. The light purple flowers that adorn a tabletop inside the cafe were picked by the couple in the Yamagata Prefecture city of Yonezawa.

Of utmost urgency now are the evacuation of children, decontamination, and the installation of becquerel monitors to measure radiation levels in food. But meanwhile, in Tokyo, we're talking about economic growth and the export of nuclear technology, as if what's going on in Fukushima is somehow irrelevant to us. That, I believe, is simply wrong. (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) October 10, 2011

## **City of Fukushima to decontaminate orchards on test basis**

FUKUSHIMA -- The municipal government here is poised to conduct a test decontamination of local orchards tainted by radioactive substances leaking from the Fukushima No. 1 nuclear plant, officials said.

If the test run proves effective, it will work out a schedule for decontaminating farmlands and incorporate it in the city's overall decontamination plan. However, **finding enough space to store removed soil will likely pose a challenge.**

In the experiment, the municipal government will cooperate closely with local agricultural cooperatives to decontaminate **pear and peach orchards** in areas where radiation doses are high. **The city of Fukushima was ranked No. 1 nationally in the harvest of pears and No. 2 in peaches in 2006.**

After surveying the geographical features of the orchards, such as the degrees of their inclinations, workers will remove surface soil, tree bark and fallen leaves.

The city will not conduct the experiment in ordinary farmland because **most fields have been plowed since the disaster.**

The municipal government has not yet secured enough space to store removed soil. If a 5-centimeter layer of surface soil is removed from all the orchards in the city, it will generate about 1.2 million cubic meters of soil, enough to fill the Tokyo Dome baseball stadium.

Still, the municipal government will try its utmost to look for storage space.

"Decontamination is indispensable to ensure the safety and security of our food. We'll select space to store soil while gaining cooperation from local residents," a city official said.

Orchard owners in the city have mixed feelings about the city's plan.

One, Kiyoshi Sato, 65, owns an orchard covering about six hectares along National Route 13. He relies little on insecticide and mainly uses organic fertilizers.

"If a five-centimeter layer of surface soil is removed from ordinary farmland, it will lose a considerable amount of nutrition. I don't know whether it's also the case with orchards, but I fear decontamination could adversely affect my orchard," Sato said.

"However, if data shows the levels of radiation have decreased following decontamination, it will help prevent nasty rumors about our products, and we can be optimistic about the future. We must do whatever we can do," he added.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 10, 2011

## **IAEA team in Japan; Fukushima starts thyroid tests**

TOKYO (AP) -- Experts from the International Atomic Energy Agency arrived in the Japanese city of Fukushima on Sunday to observe the massive decontamination effort following the world's worst nuclear disaster since Chernobyl.

Local doctors also began a long-term survey of children for thyroid abnormalities, a problem associated with radiation exposure. Officials hope to test some 360,000 people who were under the age of 18 when the nuclear crisis began in March, and then provide follow-ups throughout their lifetimes.

The 12-member IAEA group was to visit farms, schools and government offices throughout Fukushima prefecture in northeastern Japan to observe the cleanup process. It is the U.N. atomic agency's second major mission to Japan since the crisis at Fukushima's Dai-ichi nuclear power plant began.

Nearly 20,000 people were killed when the earthquake and tsunami hit Japan on March 11, and the disaster severely damaged the Fukushima complex. Officials say the plant is now relatively stable, but tens of thousands of people still cannot -- or choose not to -- return to their homes because of the radioactive contamination.

No one has died from radiation in the nuclear crisis, but concerns remain high over how the lingering contamination will impact the safety of Fukushima's children.

The thyroid testing program is intended to allay those fears and build a database that might help deal with future disasters. On its opening day Sunday, more than 100 children, whose thyroid glands are more susceptible to radioactive iodine than adults, were checked.

The results were not made public, but officials have said that if any abnormalities are discovered, the children -- to be tested every two years until age 20, and then every five years after that -- will be provided with further care.



In this photo released by Tokyo Electric Power Co., a tent to cover Unit 1 reactor building is under construction at the crippled Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, northeastern Japan, Saturday, Oct. 8, 2011. (AP Photo/Tokyo Electric Power Co.)

More than 6,000 cases of thyroid cancer have been detected in people who were children or adolescents when exposed to high levels of radioactive fallout in the period immediately after the 1986 Chernobyl disaster.

A 12-mile (20-kilometer) no-go zone remains in effect around the Fukushima nuclear plant. Japan recently lifted other advisories that warned residents just outside of that zone to be prepared to evacuate at any time, a move largely aimed at reassuring evacuees that it is safe to return.

To further bring down contamination levels, towns outside of the no-go zone have begun washing down public areas and removing the top soil in parks and schoolyards.

The task is a daunting one because the nuclear accident spread radiation unevenly over a broad swath of Fukushima, leaving some areas near the plant relatively safe, while creating dangerous hotspots farther away.

Japan's government has acknowledged that the effort could take years. According to a report Sunday in the Asahi, a major newspaper, officials are aiming to complete the decontamination outside of the exclusion zone by the end of March 2014.

(Mainichi Japan) October 10, 2011

## **Stress tests not likely nuclear safety criteria**

An NHK survey shows that nearly 60 percent of the country's prefectures and municipalities hosting nuclear plants say it is important to gain the understanding of local communities to permit the resumption of idle reactors. But less than 20 percent say they will put priority on the results of the government's stress tests on nuclear reactors.

NHK received survey replies in late September from all 29 prefectures and their municipalities that host nuclear power plants. Fukushima Prefecture was not included in the survey.

41 percent approved of the stress tests, while 14 percent disapproved. 45 percent were undecided.

Even among those that approved, many said the government abruptly introduced the tests and that their contents have not been made clear.

Answering multiple-choice questions on what factors they consider important in deciding on restarting reactors, 59 percent cited **local consent** and 45 percent said **explanations from the government**. **Only 17 percent said the results of the stress test will be important.**

In July, the central government decided to carry out the new safety assessment in an effort to reassure residents.

Yoshinori Moriyama of the government's Nuclear and Industrial Safety Agency said his agency wants to make the testing process more open and explain the situation to local residents.

Monday, October 10, 2011 06:28 +0900 (JST)

## Hydrogen level falls at Fukushima plant

The operator of the troubled Fukushima Daiichi nuclear power plant says the level of hydrogen in a pipe at the No. 1 reactor has become **low enough to make an explosion unlikely**.

Tokyo Electric Power Company, or TEPCO, on Sunday finished removing hydrogen from inside a pipe connected to the reactor's containment vessel.

The utility had been injecting nitrogen into the pipe to remove hydrogen since Saturday.

Last month, the hydrogen levels inside the pipe were found to account for between 61 and 63 percent of the total gas present, posing a risk of explosion.

TEPCO says the hydrogen level is now low enough and even if it were to rise again, it would not exceed 4 percent -- the lowest level that poses a risk of explosion.

On Sunday evening, TEPCO cut 2 points of the pipe to allow the installation of a device that filters radioactive substances inside the containment vessel.

**The cutting operation was about 2 weeks behind the schedule the company set for its plan to contain the nuclear accident at the plant.**

TEPCO says it wants to install and start operating the device as early as possible.

Monday, October 10, 2011 06:28 +0900 (JST)

## Decontamination plan compiled

The Japanese Environment Ministry has come up with a revised plan to clear away radioactive substances from the crippled Fukushima Daiichi nuclear plant.

It announced details on Monday at a meeting of a panel of experts.

Ministry officials say decontamination will be **carried out in areas where radiation levels are higher than 1 millisievert per year**.

The ministry revised an earlier plan to only decontaminate places with more than 5 millisieverts per year. Municipalities in Fukushima Prefecture that have areas with less than 5 millisieverts argued they should be included in the cleanup.

The government will be responsible for the decontamination of no-entry zones and government-designated evacuation zones. Local governments will clean up the rest of the affected areas.

**Areas with radiation levels higher than 20 millisieverts per year will be reduced stage by stage as soon as possible.**

In areas with less than 20 millisieverts per year, radiation levels recorded at the end of August will be cut up to 60 per cent in the next 2 years.

Environment Ministry officials say the government will help prefectures that have a massive amount of radioactive waste.

The ministry's decontamination plan will be further discussed within the government before being adopted by the Cabinet as the basic national plan.

Monday, October 10, 2011 22:04 +0900 (JST)

## **IAEA team chief welcomes Japan's handling of decontamination waste**

FUKUSHIMA, Japan (Kyodo) -- The head of a team of experts from the International Atomic Energy Agency on Tuesday hailed Japan's efforts in ensuring the safe handling and management of waste from the cleanup of radiation-tainted areas near the crippled Fukushima Daiichi nuclear power plant.

In talks with Fukushima Gov. Yuhei Sato, Juan Carlos Lentijo, general director for radiation protection at Spain's nuclear regulatory authority, also said the 12-member team has had meaningful discussions with Japanese officials during their visit to advise on the decontamination work.

Meanwhile, Sato told Lentijo, "Decontamination is most important in order for our residents to resume their daily lives. It is the first time for Japan to conduct decontamination over such an extensive area and taking this opportunity, I hope to ask for (the IAEA's) continued support for Fukushima for many years to come."

The IAEA team, which arrived in Japan on Friday, is scheduled to head to Tokyo later on Tuesday after visiting the Fukushima Daiichi plant.

The experts will stay in Japan until Saturday and present a preliminary report to the Japanese government at the end of their mission.

Tuesday's meeting coincided with the seven-month anniversary of the March 11 earthquake and ensuing tsunami that crippled the Fukushima plant.

(Mainichi Japan) October 11, 2011

## **Govt reviews nuclear power generation costs**

Japan's Atomic Energy Commission is creating a new estimate of the cost of nuclear power as **part of a review of the country's nuclear policy**.

For the first time, it will take into account the **cost of compensation for possible nuclear accidents**.

The review of Japan's policy on nuclear power use, research and development had been suspended after the accident at the Fukushima Daiichi nuclear plant in March. It resumed last month.

A subcommittee tasked with calculating the cost of nuclear power was set up by the commission on Tuesday.

Acting commission head **Tatsujiro Suzuki** said it will be the first cost assessment since the Fukushima accident, and will gain attention both at home and abroad.

He said he hopes to conduct an **objective** estimate in which the data as well as premises and procedures of the calculation are **transparent**.

The subcommittee will calculate the cost of recycling spent nuclear fuel by extracting plutonium, a main pillar of the current nuclear policy. It will estimate the cost of discarding it as waste as well.

It will also debate how far to include the costs of compensation, decontamination and reactor decommissioning after nuclear accidents.

**While the commission plans to release its overall cost estimates by March, projections for the costs of accidents will be submitted to a government panel now reviewing Japan's energy policy before the end of this month.**

Tuesday, October 11, 2011 12:55 +0900 (JST)

## **Residents near Fukushima mountains face nuclear recontamination every rainfall**

As the crisis at the Fukushima No. 1 Nuclear Plant drags on, worries are growing particularly among Fukushima Prefecture residents over drawn-out and in some cases apparently futile nuclear decontamination operations.

The unease is especially strong in areas in and around mountains that must be repeatedly decontaminated, as **every rainfall brings a new batch of radioactive substance-contaminated leaves and soil washing down from the hills**. Since some 70 percent of Fukushima Prefecture is mountainous, such instances of regular recontamination could occur over a broad area, while the same effect has also been observed in some undeveloped areas of cities.

The central government is considering paying for any decontamination operations conducted by local governments at sites with radiation emissions of 1 millisievert per year or more, but residents in places faced with regular recontamination after every major rainfall are concerned the national government may not keep the cleanup funding flowing.

The city of Fukushima decontaminated its Onami and Watari district in July and August after a surge in local radiation levels. In the week following the end of the operation, the city took fresh radiation readings at 885 points, of which seven actually registered levels exceeding those found before the

decontamination. One gutter measured even showed a rise from 3.67 microsieverts per hour before the cleanup to 4.63 after the work.

"Radiation increased close to the mountains and in spots where water and soil washed down the slopes," the Fukushima Municipal Government stated.

One 52-year-old resident of the city's Onami district, whose home backs onto woodland slopes, told the Mainichi that soil washes into her backyard with every rainfall. Radiation emissions at her front door are 1 microsievert per hour or less, but in the backyard they're more than 2 microsieverts per hour.

"Everywhere around here is in the same situation," she says.

Meanwhile, a man living in the Watari district with his wife and his son's family discovered that the waterway running by his property had cesium levels of more than 300,000 becquerels after a citizen's group did tests in the area.

"There's no point in doing just one round of official decontamination," he told the Mainichi. "We residents will get nowhere near anything like peace of mind if decontamination operations can't be done regularly."

According to guidelines in a Ministry of Agriculture, Forestry and Fisheries study released on Sept. 30, removing fallen leaves and other natural forest debris from the area within about 20 meters of residential properties is effective in keeping contamination at bay. However, the guidelines also warn that "conifer needles also accumulate radioactive cesium over time, and can normally be expected to fall after three to four years," signaling a **constant and long-term need to keep clearing properties of fallen needles.**

The municipality of Fukushima has created a plan to bring radiation exposure in all inhabited areas of the city to below a microsievert per hour within two years. As part of this, cleanup operations will begin in the Onami district in October. No schedule has been set for decontaminating the city's mountains and forests, but the municipal government is considering removal of the leaf soil (soil made up of decaying leaves) within 75 meters of local properties, pending the consent of land owners -- significantly more than the forestry ministry's 20-meter guideline. It's thought that the decontamination process will have to go on for a long time to come, but **the city has said it has yet to receive confirmation that financial support will continue to flow from the central government.**

**Furthermore, the problem of where to put all the contaminated material collected in the cleanups remains a serious headache.** The central government has begun considering national forests as dump sites, but according to a disposal official in Date, Fukushima Prefecture, "'20 meters of forest' applied to every region here would be an enormous amount of material. Setting aside a site for that much soil is extremely difficult. On top of that, **how could we secure enough workers to do the job?"**

On top of concerns about the sheer volume of contaminated material and manpower, there is also the issue of the important natural roles played by forests, such as collecting water that eventually ends up as well water. The village of Kawauchi, removed from the emergency evacuation standby zone at the end of September, is almost 90 percent mountain forest, and depends on streams and well water for all its fresh water needs.

The village plans to decontaminate all the forest under its jurisdiction over the next 20 years, but "the village needs the forests to guarantee its source of fresh water," the decontamination project official said. "Is there no way to do decontamination while at the same time preserving the functions of the forest, without cutting down the trees?"

 [Click here for the original Japanese story](#)

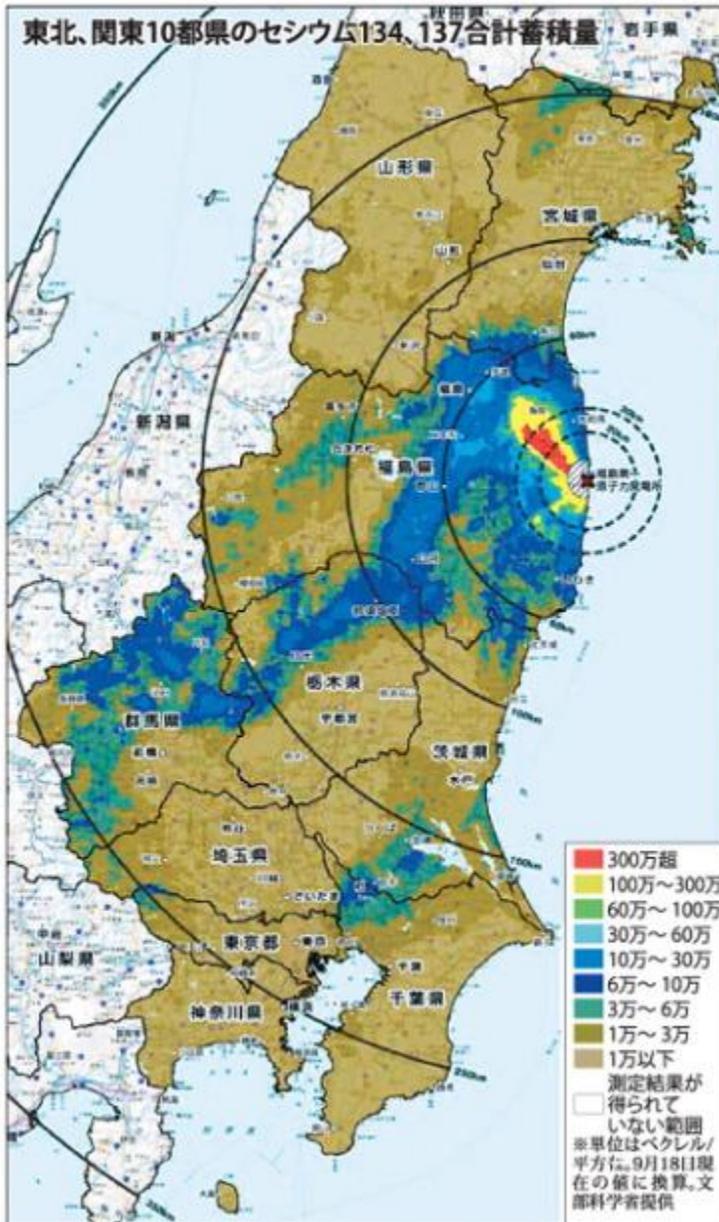
(Mainichi Japan) October 11, 2011

## **Gov't decontamination work to cover low-radiation areas**

TOKYO (Kyod) -- The Environment Ministry has decided to widen the area covered by a government-funded decontamination project to those with a minimum annual radiation exposure of 1 millisievert in the aftermath of the Fukushima nuclear crisis, officials said Tuesday.

The ministry lowered the minimum annual radiation exposure level from the previous 5 millisieverts in the face of calls by local governments.

The policy change is aimed at decontaminating low-radiation areas frequented by children, such as schools, the officials said.



A government map displaying radiation levels in 10 prefectures relatively close to the Fukushima No. 1 Nuclear Power Plant. Areas in red show over 3 million becquerels of cesium per square meter, whereas those in light brown show less than 10,000. (Data as of Sept. 18. Image courtesy of the Ministry of Education, Culture, Sports, Science and Technology)

The latest decision also includes the government's responsibility to dispose of incineration ashes and sludge contaminated with radioactive cesium of more than 8,000 becquerels per kilogram.

The Cabinet will endorse a basic plan for decontamination in early November at the earliest, they said.

Under the envisioned plan the government will decontaminate relatively highly contaminated areas, such as no-go zones near the Fukushima Daiichi power plant that was crippled by the March 11 earthquake-tsunami disaster. Local governments will work out decontamination plans for other areas.



Workers measure the ground near a rain water outlet in Minamisoma, Fukushima Prefecture, on June 12.  
(Mainichi)

The government will also try to reduce the annual exposure for adults by 50 percent and for children by 60 percent in two years through the end of August 2013 in areas with annual radiation at less than 20 millisieverts.

On the controversial issue of disposing of radiation-contaminated incineration ashes and sludge, the central government will do so in the prefectures where they accumulated, according to the basic plan.

(Mainichi Japan) October 11, 2011

## **Students return to Fukushima schools for first time since start of nuclear crisis**



Students are seen at work on Oct. 11, the first day of school in their original school building since the beginning of the Fukushima nuclear crisis, in Iwaki, Fukushima Prefecture. (Mainichi)

IWAKI, Fukushima -- On Oct. 11, seven months after the earthquake and the beginning of the Fukushima nuclear crisis, students of three schools here returned to their classrooms for the first time since the disasters.

The schools, south of the stricken Fukushima No. 1 nuclear plant, had been part of the government-designated indoor advisory zone, and their reopening is the first for any schools within the indoor standby and evacuation zones.

One part of the Hisanohama district of the city where the schools are located is within 30 kilometers of the plant, and had been under an indoor advisory from the beginning of the disaster until April 22. One of the schools to reopen, Hisanohama No. 2 Elementary School, had been within this zone, while parts of the districts of Hisanohama No. 1 Elementary and Hisanohama Junior High School had also come under the zone. All the schools had been borrowing space from other schools in the center of the city, but decided to move back to their home buildings after decontamination efforts brought radiation levels on the ground and surrounding streets down significantly.

Many of the schools' students have already moved out of the prefecture, dropping student numbers. The 225 kids enrolled at Hisanohama No. 1 Elementary School before the disaster had dropped to about 190 on Oct. 11, many of whom were bussed to class from leased housing scattered across the city. Once there, however, the children appeared pleased to be back at their original schools.

"I'm happy to be back in this school, which is full of so many memories," said sixth grader Ryota Suzuki with a smile. Some parents, however, remain concerned.

"I'm still a little worried about radiation levels," said one 38-year-old woman who dropped off her two sons -- one in third grade and one in first -- by car in the morning.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 11, 2011

## **Daycare center near Fukushima plant reopens**

A daycare center some 20 kilometers from the Fukushima Daiichi nuclear power plant has reopened for the first time since the accident there in March.

18 children aged 2 months to 5 years arrived with their parents at the center in Minami Soma City, Fukushima Prefecture, on Tuesday.

The facility decided to reopen when the Japanese government lifted its evacuation advisory for the city on September 30th.

Before reopening, the center reportedly took decontamination measures such as removing topsoil from its playground.

The head of the center said parents are understandably worried about the effects of radiation, so he wants to continue efforts to ensure the children's safety.

Tuesday, October 11, 2011 16:37 +0900 (JST)

## **Radiation checking facility opens**

A facility that allows consumers to check radiation levels of food and other items has opened near Tokyo.

On Tuesday, about 20 people including housewives brought rice, water and vegetables to the facility in Kashiwa City. The facility was started by a computer software firm owner.

Kashiwa is about 200 kilometers from the troubled Fukushima Daiichi nuclear power plant. Radiation levels higher than those in surrounding areas have been detected in the air in the city.

The customers received explanations from staff members while using radiation counters. Results were shown in about 20 minutes.

A woman in her 40s said she checked rice because she's worried about her child, and that she was relieved because no radioactive substances were detected.

The facility charges about 13 dollars per use of a counter that can detect more than 20 becquerels per kilogram, and about 50 dollars per measurement to an accuracy of over 10 becquerels. The prices are lower than those of other test facilities.

The owner plans to increase the number of counters from the current 6 to 8.

Tuesday, October 11, 2011 20:52 +0900 (JST)

## **Britain's nuclear facilities declared safe despite Fukushima alert**

There were 38 areas where the industry and regulators could learn lessons from the Japanese disaster

By Steve Connor, Science Editor The Independent

*Wednesday, 12 October 2011*

Britain's chief nuclear inspector has found no significant safety weaknesses in the UK's nuclear facilities following his detailed analysis of the Fukushima disaster in Japan which led to a 20-km (12-mile) evacuation zone around the stricken Japanese reactors.

Mike Weightman, HM Chief Inspector of Nuclear Installations and head of the Office of Nuclear Regulation, said there were lessons to be learned from Fukushima but that the fundamental safety rules governing Britain's nuclear power facilities are still sound.

"I remain confident that nuclear facilities in the UK continue to be safe to operate and I remain confident in the robustness of the nuclear safety regime in the UK," Dr Weightman said.

"I remain confident that our UK nuclear facilities have no fundamental safety weaknesses. The Office for Nuclear Regulation already requires protection of nuclear sites against the worst-case scenarios that are predictable for the UK," he said.

"But we are not complacent. Our philosophy is one of continuous improvement. No matter how high our standards, the quest for improvement must never stop. We will ensure lessons are learned from Fukushima," he added.

A report by the chief inspector into the implications for the UK of the Japanese earthquake and tsunami last March found that there were 38 areas where the Government, industry and its regulators could learn safety lessons.

The reactors at Fukushima-1 safely shut down after the initial magnitude-9 earthquake on 11 March but the critical cooling system failed after a 14-metre tsunami later inundated the site.

"A magnitude-9 earthquake and the associated 14m-high tsunami, are far beyond the most extreme natural events that the UK would be expected to experience," the chief inspector's report says.

However, Paul Dorfman of Warwick University and a member of the academic group NuclearConsult, said that many of Britain's nuclear facilities are built near the coast and are vulnerable to flooding. Dr Dorfman said the chief inspector's statement saying that there are no fundamental safety weaknesses in UK nuclear facilities is a "clear abrogation of regulatory responsibility".

## **Noda vows safer use of nuclear energy in wake of Fukushima crisis**

TOKYO (Kyodo) -- Prime Minister Yoshihiko Noda expressed his strong resolve in a message Tuesday to a nuclear disarmament campaign's meeting in California to boost safety over the civil use of nuclear energy in the wake of Japan's ongoing nuclear crisis at the Fukushima Daiichi power plant.

"Japan will share with the international community, with the maximum transparency, all the lessons to be learned from the (Fukushima) accident...and is determined to raise the safety of nuclear power generation to the highest level in the world," Noda said in the prepared message delivered at the Global Zero Summit in Simi Valley.

Noda's message, which is the first for a Japanese premier to a summit of the international nonpartisan campaign launched in 2008 for the abolition of nuclear arms, came as Japan continues to struggle with the aftermath of the nuclear disaster triggered by the March 11 powerful earthquake and tsunami.



In this March 11, 2011 photo released Monday, April 11, 2011 by Tokyo Electric Power Co.,(TEPCO), the access road at the compound of the Fukushima Dai-ichi nuclear power plant is flooded as tsunami hit the facility following a massive earthquake in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.,)

Noda said his country bears the "responsibility to find a path toward a future of safer nuclear power," referring to the issue of safety as another challenge to global efforts on nuclear disarmament and nonproliferation along with eliminating the risks of nuclear materials and technologies being diverted to military use.

"Being the only country to have suffered from atomic bombings, Japan is particularly convinced that the tragic consequences of the use of nuclear weapons must never be repeated," Noda said on the first day of the two-day summit, referring to the 1945 U.S. atomic bombings of Hiroshima and Nagasaki.

He also renewed his country's pledge to stick to its three non-nuclear principles of not producing, possessing or allowing nuclear weapons on its territory.

Bearing in mind the uncertainties in the security of Northeast Asia, Japan is "resolved to take the lead on international disarmament and nonproliferation efforts in a realistic and incremental approach," Noda said.

With the originators including former Soviet President Mikhail Gorbachev, former U.S. President Jimmy Carter and former Japanese Foreign Minister Yoriko Kawaguchi, the Global Zero campaign has drawn the support of more than 120 former political and military leaders, according to the Japanese Foreign Ministry.

Its summit was previously held in February 2010 in Paris and in June this year in London.

(Mainichi Japan) October 12, 2011

## **Tokaimura mayor calls for scrapping Tokai No. 2 nuclear plant**

TOKYO (Kyodo) -- The mayor of a village hosting the Tokai No. 2 nuclear power station in Ibaraki Prefecture told the central government on Tuesday that the plant should be scrapped because it is aging and located near an area where many people live, village officials said.

Tatsuya Murakami, the head of Tokaimura, said during a meeting with nuclear disaster minister Goshi Hosono in Tokyo that the plant does not meet location requirements because one million people live within a 30-kilometer radius.

"Shouldn't the plant be decommissioned?" he was quoted as saying. Murakami also noted the plant is located near Tokyo.

The Tokai No. 2 plant has one boiling water reactor which has been in operation since 1978. The reactor, capable of producing 1.1 million kilowatts of electricity, is currently undergoing a regular checkup.

Public distrust toward nuclear power has grown strong since the devastating March 11 earthquake and tsunami triggered a disaster at the Fukushima Daiichi nuclear plant, setting off the world's worst nuclear crisis in 25 years.

When the earthquake and tsunami hit eastern and northeastern Japan, the Tokai reactor shut down automatically. A nuclear crisis similar to the Fukushima Daiichi plant disaster also did not occur because the Tokai No. 2 plant has taken measures to counter tsunami waves.

In 1999, the country's first nuclear criticality accident occurred in Tokaimura, claiming the lives of two workers at a nuclear fuel processing plant. Residents living around the plant were ordered to evacuate at the time.

(Mainichi Japan) October 12, 2011

## **No-go zone soil to be moved in 2-1/2 yrs**

The Yomiuri Shimbun

Soil contaminated with radioactive substances in the no-entry zone and the expanded evacuation zone around the crippled Fukushima No. 1 nuclear power plant will be removed by the end of March 2014, the Environment Ministry has announced.

According to a draft plan compiled by the ministry, the radioactive soil will be removed in 2-1/2 years--except from areas where the level of radioactive contamination is too high--and taken to temporary storage sites.

A draft of the ministry ordinance said the central government will take responsibility for disposing of incinerated ash and sludge, including from areas other than the two zones, if their level of radioactive cesium exceeds 8,000 becquerels per kilogram.

This means that **not only Fukushima Prefecture but also the whole Tohoku region and the Tokyo metropolitan area will be included in the ministry's plan.**

The government is expected to approve the basic policy on the disposal of contaminated soil at a Cabinet meeting in early November.

The ministry gave the March 2014 deadline only to the no-entry and expanded evacuation zones. The decontamination work aims to reduce annual radiation count in the areas to less than 20 millisieverts, a senior ministry official said.

However, the ministry has not set any concrete target level or deadline for places where radiation counts remain too high to conduct decontamination work. The basic policy draft only says the ministry will try to determine effective measures by carrying out model projects in this regard.

The ministry set a long-term target of lowering the radioactive contamination level to 1 millisievert or lower annually in all areas, including the no-entry and expanded evacuation zone. The government will be responsible for decontaminating all these areas, it said.

Earlier, the ministry told local governments in Fukushima Prefecture that the government will be fully responsible for decontamination in areas with 5 millisieverts or higher, but partially responsible in areas with between 1 and less than 5 millisieverts.

The announcement sparked fierce opposition from the local governments.

The draft said the government will be responsible for securing interim storage facilities, where soil and sludge will be kept before final disposal, and final disposal sites where the soil and sludge will be permanently buried.

The basic policy draft was compiled based on the special measures law on handling environmental pollution caused by radioactive substances, which was established in August.

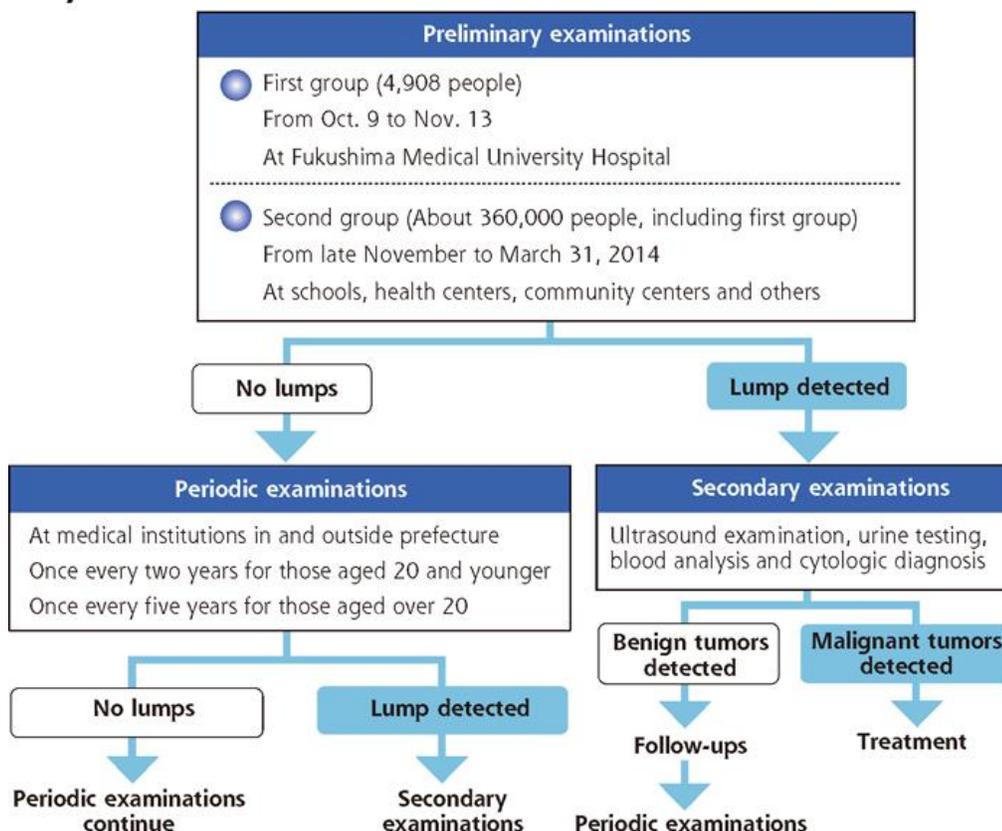
After gaining Cabinet approval, the basic policy is scheduled to come into force in January. The policy will be applicable retrospectively for local governments that have been conducting decontamination and disposal work. To promote decontamination over a wide area, the ministry has demanded 1.15 trillion yen for fiscal 2011-13, including funds in a not-yet-compiled third supplementary budget for this fiscal year.

(Oct. 12, 2011)

## Fukushima govt aims to ease parents' anxiety / Prefecture underlines its intention to monitor affected children's health throughout their lives

Sho Funakoshi and Makiko Tatebayashi / Yomiuri Shimbun Staff Writers

### Thyroid examinations for children in Fukushima Prefecture



FUKUSHIMA--The Fukushima prefectural government has started carrying out thyroid examinations on all people aged under 19 in the prefecture--a total of 360,000 children and young people--because it took very seriously parents' anxieties over the effect of the nuclear crisis on their children's health.

The scale of the thyroid examinations is unprecedented in history, according to sources. The prefectural government has to overcome many hurdles, such as securing enough qualified doctors and preparing examinations for children evacuated to other prefectures because of the accident at the Fukushima No. 1 nuclear power plant.

On Sunday, 144 children from Kawamatamachi's Yamakiya district, as well as Namiemachi and Iitatemura, which are all areas designated as no-entry zones or expanded evacuation zones, underwent thyroid examinations. **The tests will be conducted periodically throughout the lives of those concerned,** according to the prefectural government.

A 16-year-old girl from Iitatemura said she is now staying in a Kawamatamachi district outside the zones. After taking the examination, she said, "I feel a bit better now as I was about to go crazy with the worry of getting cancer at some point in the future [because of radioactive material from the nuclear plant]."

However, she added, "I'm scared about finding out the results."

About 200,000 people underwent group examinations after the 1986 Chernobyl disaster in Ukraine. However, those affected were required to undergo only one examination. An official of the prefectural government's Finance Department said, "Our examinations will be unprecedented in terms of the number of years they will cover and the amount they will cost."

**The prefectural government will secure a budget for the thyroid examinations from the central government's subsidy paid into its fund for health care projects. The prefectural government estimates that it will cost about 250 million yen in fiscal 2011.**

The 4,908 children from the Yamakiya district, as well as Namiemachi and Iitatemura will undergo the thyroid examinations before children from other areas in the prefecture. The preliminary examinations will run until Nov. 13 at Fukushima Medical University Hospital in Fukushima city.

===

### **More doctors needed**

About 30 doctors from the university, including thyroid specialists and pediatricians, will be in charge of the examinations. The average length of the thyroid in adults is about five centimeters. To diagnose children's thyroids, which are smaller than those of adults, doctors must have special knowledge and skills, the prefectural government said.

Children in other areas of the prefecture will be subject to examinations from late November, and these examinations will also take place at schools and community centers. Fukushima Medical University says it needs to double the number of doctors to examine all the children in the prefecture. The university has asked the Japanese Society of Thyroid Surgery and the Japan Endocrine Society to

dispatch doctors to the prefecture. At the same time, the university will host training sessions to nurture thyroid specialists, it said.

More than 10,000 people have been evacuated from the prefecture since the nuclear accident in March. The prefectural government said it plans to **establish at least one center in every prefecture where evacuees can take their children to have the thyroid examination.**

According to the prefectural government, it is sometimes difficult to find out the new addresses of children below school age, unlike high school, middle and primary school students whose new addresses can be obtained by making inquiries to their former schools. A Fukushima Medical University official in charge of the examinations said the university and the prefectural government will need the help of local governments and hospitals in areas to which evacuees have moved to tell them to take their children for examinations.

The prefectural government's section charged with managing and studying the health of citizens in the wake of the nuclear accident said, "The main purpose of the thyroid examinations is to allay the anxieties of parents as much as possible."

The prefectural government had received more than 20,000 inquiries from citizens about radiation as of August. About 40 percent of the inquiries were related to the impact of radiation on health, the government said.

The official who dealt with the inquiries said the phone in his office just kept ringing. Some parents told him they were unable to give their children iodine tablets that prevents radioactive iodine from building up in the body, and wanted to know whether their children would be safe.

According to a senior official of the prefectural government, the government had initially planned to start thyroid examinations in 2014, as it takes time for symptoms to appear in the thyroid, and also because of the damage caused to the prefecture's medical institutions by the March 11 disaster. However, the government brought the start date forward due to growing fears of parents over the health of their children, the official said.

One medical expert cast doubt on the effectiveness of the prefectural government's examination, saying: "There are areas where the radiation level is low. I don't see the need to carry out simultaneous thyroid examinations on 360,000 children."

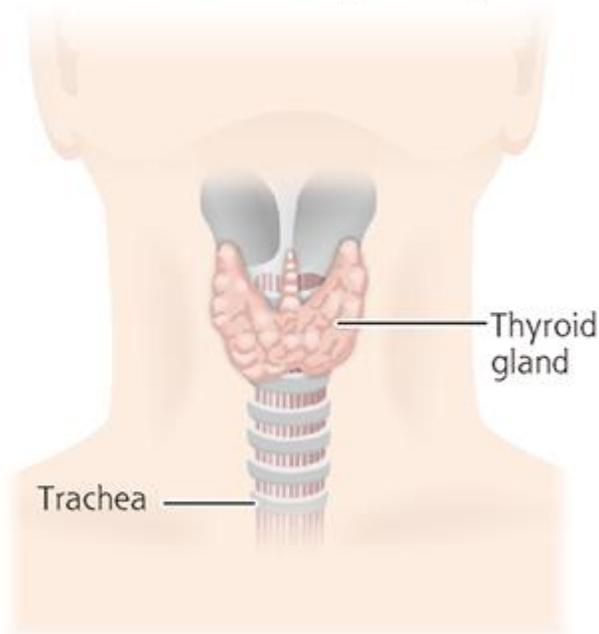
Fukushima Medical University Vice President Shunichi Yamashita, who also serves as the president of the Japan Thyroid Association, stressed the significance of the examinations. **"This [the examinations] is a message that states the prefecture's intention to protect the children's health throughout their lives,"** he said.

(Oct. 12, 2011)

## **Thyroid cancer in Chernobyl**

The Yomiuri Shimbun

## Location of thyroid gland



Several years after the 1986 disaster at the Chernobyl nuclear power plant in Ukraine, the incidence of thyroid cancer rose among local children. Local authorities have recognized only thyroid cancer as being caused by the nuclear accident.

The butterfly-shaped thyroid gland is located just below the Adam's apple and is attached to the trachea. The thyroid gland produces thyroid hormone by absorbing iodine, which is contained in foods such as kombu seaweed.

If a person breathes in or absorbs radioactive iodine through food and drink, 10 to 30 percent of this iodine is said to accumulate in the thyroid.

From about five years after the Chernobyl accident, an increasing number of children began to develop thyroid cancer. It is believed they fell ill because they consumed milk and other food contaminated with radioactive material.

Before the accident, the chance of a child living in the vicinity of the nuclear power plant developing thyroid cancer was about one in a million per year. After the accident, however, at one point this incidence increased 100 fold--to about one in 10,000--in some areas.

According to surveys conducted by the United Nations and other organizations, 6,848 local residents who were younger than 18 years old at the time of the Chernobyl accident developed thyroid cancer over the 15 years from 1991 through 2005, of whom 15 were confirmed to have died.

On the other hand, it is unclear whether adults have suffered from radioactive contamination of their thyroids, as there has been no apparent increase in the incidence of thyroid cancer among them.

However, some grown-ups who were exposed to radioactive material as children at the time of the accident have developed thyroid cancer.

Because it is difficult to estimate how much radioactive material each resident was exposed to after the accident, experts are unable to agree on the level of exposure that would cause people to develop thyroid cancer.

It is highly possible, therefore, that follow-up examinations of people affected by Chernobyl may yet reveal adverse effects.

In the case of the accident at the Fukushima No. 1 nuclear power plant, Prof. Shinichi Suzuki of Fukushima Medical University believes there is "a low probability" that local children will develop thyroid cancer.

He cites restrictions being issued on drinking locally produced milk and tap water soon after they were found to have been contaminated with radioactive material beyond regulated standards as one factor supporting his views.

Suzuki's opinion is shared by Minoru Kamata, director emeritus at Suwa Central Hospital in Chino, Nagano Prefecture, who offered medical assistance in 1991 in areas hit by the Chernobyl accident.

"However, those children who were outdoors just after the nuclear accident [at the Fukushima plant] will need to be checked for possible adverse reactions," he said.

**Tatsuhiko Kodama, head of the University of Tokyo's Radioisotope Center, said it took 20 years for experts to prove that the Chernobyl accident caused the increase in thyroid cancer incidents among the local children.**

**"Epidemiological studies alone take time [to prove a link between a disease and its cause]," he said. "And when we are able to confirm this link, it's usually too late to take countermeasures.**

"If more and more people in Fukushima Prefecture develop other types of cancers [apart from thyroid], we need to think of other measures, such as providing medical checkups to investigate possible damage to genes," Kodama said.

(Oct. 12, 2011)

## **Gov't unveils plan to expand decontamination project areas; local reactions mixed**

The government has unveiled plans to sharply expand a government-funded decontamination project to areas with annual radiation emissions of 1 millisievert or more, prompting mixed reactions from local government officials and residents.

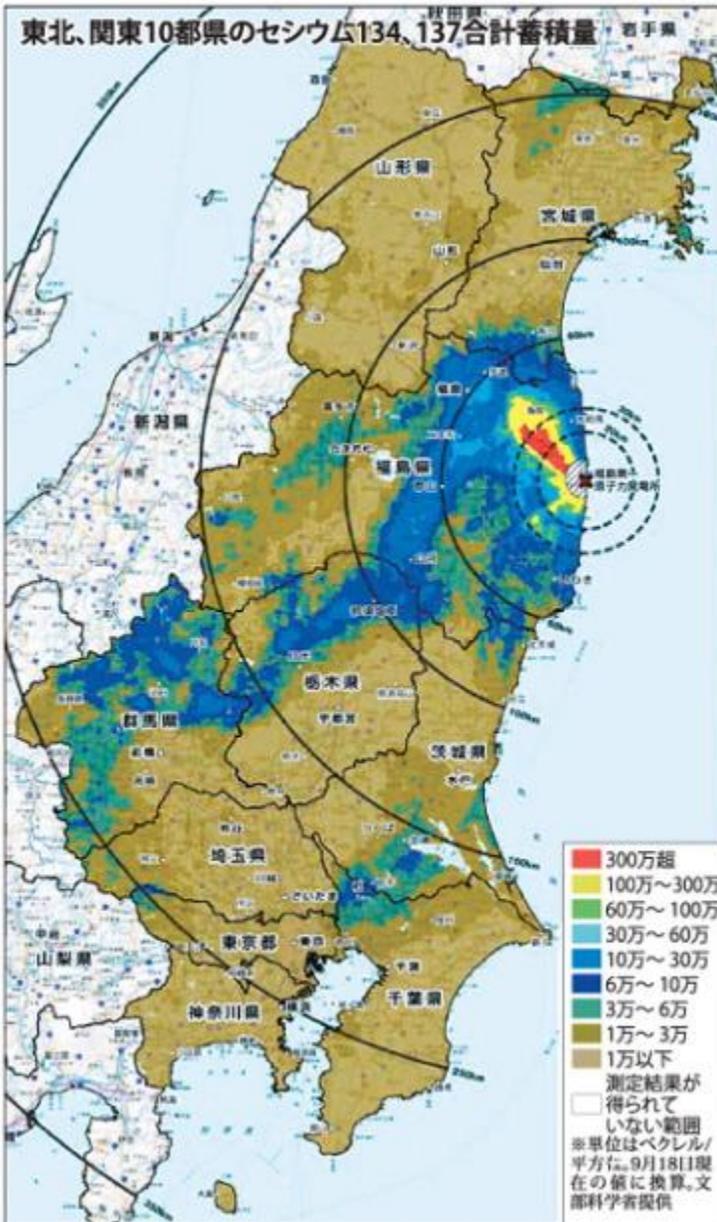
Under the plan, the Environment Ministry is to designate those areas with annual radiation exposure of 1 millisievert or more as "priority contamination inspection areas" by the end of November. In collaboration with the central government, local governments are supposed to decide on areas which need to be decontaminated and ways of decontaminating them. The central government will shoulder all the costs.

According to monitoring conducted by the Ministry of Education, Culture, Sports, Science and Technology, there are locations with annual radiation exposure of more than 1 millisievert in Tokyo, Fukushima, Miyagi, Tochigi, Gunma, Ibaraki, Chiba and Saitama prefectures. Drawing on the findings and results of other tests carried out by local municipalities, the Environment Ministry is expected to designate contaminated municipalities as "priority inspection areas".

Relatively high levels of radiation have been detected in the northwestern part of Chiba Prefecture. Seiichi Someya, head of a radiation-related taskforce at the Kashiwa Municipal Government, said, "It is impossible for the city to shoulder the decontamination costs on its own, and therefore we are thankful for the government support," adding, "We want to know the details of the project as soon as possible."

Nevertheless, some local residents are critical of the central government's response to the spread of radioactive substances from the Fukushima No. 1 nuclear plant. A 41-year-old mother of two children, who took part in a petition urging local governments to measure radiation levels and start cleanup operations, said, "It's good that the government has acknowledged the need to decontaminate areas with annual radiation of 1 millisievert or more, but it is rather late. We already knew by late April that this area was badly contaminated. Measures could have been taken earlier."

In Tokyo, meanwhile, Katsushika Ward has been measuring radiation levels at parks in seven locations every week since the end of May. Some of the parks still register 0.23 microsieverts per hour.



A government map displaying radiation levels in 10 prefectures relatively close to the Fukushima No. 1 Nuclear Power Plant. Areas in red show over 3 million becquerels of cesium per square meter, whereas those in light brown show less than 10,000. (Data as of Sept. 18. Image courtesy of the Ministry of Education, Culture, Sports, Science and Technology)

In August, the ward measured sand pits at 398 locations in such places as elementary and middle schools, parks and the like. The ward has moved to replace sand registering more than 0.25 microsieverts per hour with non-contaminated sand at 20 locations.

The "Kanamachi 2-Chome Tokiwa Park" in the ward registered 0.24 microsieverts per hour on Oct. 6. A 42-year-old office worker passing by the park said, "Because I have an elementary school child, we will feel secure if decontamination is done in accordance with the government plan."

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 12, 2011

## **Radioactive strontium found in Yokohama, 250 km from Fukushima plant**

YOKOHAMA (Kyodo) -- Radioactive strontium exceeding normal quantities has been detected in sediment from atop an apartment building in Yokohama, some 250 kilometers from the damaged Fukushima Daiichi nuclear power plant, city officials said Wednesday.

While the discovery of 195 becquerels of strontium 90 in the rooftop sediment has fueled concerns that leaked radiation may have spread further than the government had expected, the officials said the city office is carefully examining where the material came from.

This is the first time strontium at a concentration of over 100 becquerels per kilogram has been found beyond 100 km from the Fukushima plant. The strontium 90 was detected in Yokohama, south of Tokyo, by a private agency that conducted the test upon the request of a resident.

Strontium 90, with a half-life of 29 years, has been detected at concentrations roughly between 10 to 20 becquerels at various places across Japan prior to the nuclear crisis triggered by the March 11 earthquake and tsunami.

After learning about the findings, the Yokohama city is now investigating soil samples collected from areas near the building, the officials said. Meanwhile, the science ministry said it is still uncertain whether the strontium had come from the Fukushima nuclear accident.

"Radioactive substances tend to accumulate in sediments and so we still don't know whether the substance found in this test had come from the nuclear accident," an official of the Ministry of Education, Culture, Sports, Science and Technology said.

The ministry has detected radioactive strontium at various locations in Fukushima and Miyagi prefectures within 100 km from the crippled plant in earlier investigations following the accident.

If inhaled or ingested, strontium tends to accumulate in bones just like calcium. It is believed to cause bone cancer and leukemia.

(Mainichi Japan) October 12, 2011

## **Yokohama tests soil for radioactive strontium**

Officials in Yokohama City are testing soil for radioactive strontium following a report from a local resident in September that the substance had been detected in sediment on the roof of an apartment building.

In September, radioactive cesium more than 80 times the government-set limit of 500 becquerels per kilogram was found in sediment collected from roadside ditches in Yokohama City, which is near Tokyo.

The city later removed sediment from the area.

But the city decided to retest the sample for radioactive strontium due to the request of a local resident.

The resident said a private testing institution had detected 195 becquerels of strontium per kilogram -- more than 6 times the government safety limit -- in the rooftop sample.

The science ministry says radioactive strontium can accumulate in bones if inhaled and that it poses a cancer risk.

The ministry added that it has found strontium in the soil in Fukushima Prefecture, site of the crippled Fukushima Daiichi nuclear plant. But the agency says it has conducted few checks for the substance outside the prefecture because the amounts detected in Fukushima Prefecture were very small.

Yokohama is located about 250 kilometers from the Fukushima plant.

Wednesday, October 12, 2011 19:28 +0900 (JST)

## **Radioactive substance levels in Fukushima reactor building drop below legal limits**



Fukushima No. 1 nuclear plant's No. 1 reactor building, with its nearly-completed cover, is seen on Oct. 8 in this photo provided by Tokyo Electric Power Co.

Concentrations of radioactive materials inside the No. 1 reactor building at the crisis-stricken Fukushima No. 1 nuclear plant have dropped far below legal exposure limits for nuclear workers, plant operator Tokyo Electric Power Co. announced on Oct. 11.

Recent atmospheric readings taken inside the building showed concentrations of cesium 134 and 137 between one-thousandth and one-ten-thousandth becquerels per cubic centimeter -- one-tenth the legal limit for breathing air for nuclear workers. Iodine 131 was also below detectable levels.

Previous readings from September were taken above the ruined reactor building, but with the near-completion of a new cover around the structure the utility decided to take the latest measurements inside it.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 12, 2011

## **Fukushima Pref. declares all newly harvested rice safe for shipment**

FUKUSHIMA (Kyodo) -- Newly harvested rice from nuclear crisis-hit Fukushima Prefecture is safe for shipment after tests showed all samples cleared the government-set allowable limit for radioactive cesium, with 80 percent of the crop found to be completely free of contamination, prefectural government officials said Wednesday.

The prefecture tested a total of 1,174 samples of rice harvested in the 48 municipalities of the northeastern Japanese prefecture where the crop was grown this year and found none exceeded the 500 becquerels per kilogram limit.

However, the prefecture will buy up all the rice harvested from certain districts in Nihonmatsu where readings of radioactive cesium logged 470 becquerels, the officials said.

Meeting reporters following the announcement, Fukushima Gov. Yuhei Sato said, "I will take the initiative in marketing by stressing the safety and good taste" of rice harvested in the prefecture.

Rice was not grown in the remaining 11 municipalities in Fukushima this year as they are located within the 20-kilometer no-go zone around the radiation-leaking Fukushima Daiichi nuclear plant or other seriously contaminated areas.

The detection of radioactive cesium in excess of the 500 becquerels limit would have led to a halt of shipments from all farmers in the locality where the sample originated.

(Mainichi Japan) October 13, 2011

## **High levels of radiation detected in Tokyo**

TOKYO (Kyodo) -- Significant levels of airborne radiation have been detected in an area of Tokyo's Setagaya Ward, exceeding readings in some evacuation zones around the crippled Fukushima Daiichi nuclear plant, prompting local officials to urge residents to stay away from the affected area.

Radiation of up to 3.35 microsieverts per hour was recorded Thursday at a height of 1 meter along a sidewalk in a residential area of Tsurumaki in Setagaya, some 230 kilometers southwest of the Fukushima plant, the officials said.

The ward is still investigating what type of radioactive material is involved, while trying to work out how to decontaminate the sidewalk, which is regularly used by pupils at a primary school. The area has been cordoned off as a precautionary measure.

The finding comes following Wednesday's media reports that a high reading of 2.71 microsieverts per hour was detected there earlier this month and that radioactive strontium exceeding normal quantities has been found in sediment atop an apartment building in Yokohama City's Kohoku Ward, some 250 kilometers away from the nuclear plant.

The reading of 3.35 microsieverts means that if a person were to stay close to the contaminated spot for an entire year, spending eight hours each day outdoors and the rest inside a wooden house, their cumulative annual radiation dose could reach about 17 millisieverts, compared with the government-set allowable limit of 20 millisieverts a year.

The local officials said the "hot spot" could have resulted from an accumulation of rainwater due to the location's sunken geological formation. **But they could not explain why radiation readings taken at a height further above the ground were higher than close to the surface where mud and dust gather.**

Research on Oct. 4 and 6 found radiation levels varied widely even along the same sidewalk, with the lowest reading at only 0.088 microsievert and 2.707 microsievert.

The officials said they have used water and other methods in attempt to decontaminate the spot, which was discovered after a resident alerted authorities, but radiation levels have shown little improvement even after the cleaning.

Michikuni Shimo, a professor in environmental radiation at the Fujita Health University, called on the public to remain calm, noting that the amount of radiation detected is not at a level regarded as dangerous.

(Mainichi Japan) October 13, 2011

## **High radiation in Tokyo residential area**

A sidewalk in Setagaya ward, in the western part of Tokyo, has shown a radiation level of 2.707 microsieverts per hour, much higher than other areas in the same ward.

Setagaya ward made the 10-meter by 1-meter area on the roadside off limits, as elementary school

children walk by on their way to and from a nearby elementary school.

The ward tried to decontaminate the spot earlier this month by using a high-pressure washer, but it only brought down the highest radiation reading by about 0.1 microsieverts per hour.

The ward is consulting experts to figure out what to do about the highly contaminated area.

Radiation from this small patch in Setagaya would accumulate to 14.2 millisieverts per year, which is lower than the government designated evacuation level of 20 millisieverts per year.

Thursday, October 13, 2011 12:51 +0900 (JST)

## **Japan's food radiation limits set too high: Belarusian scientist**

TOKYO (Kyodo) -- A visiting Belarusian scientist, who has offered advice to residents affected by the 1986 Chernobyl nuclear disaster, said Wednesday that he believes Japan's food radiation limits have been set too high and urged the nation to lower them to realistic levels.

Vladimir Babenko, deputy director of the Belrad Institute of Radiation Safety in the former Soviet republic, told a press conference in Tokyo that he cannot understand the thresholds designated by the Japanese government for food and beverage products, saying they are much higher than Belarusian standards.

Babenko also **criticized the Japanese government for its failure to set special standards for children to better protect them from internal radiation exposure.**

For example, he pointed out that **the limit for radioactive cesium in 1 kilogram of drinking water is set at 200 becquerels in Japan, 20 times as high as the maximum allowable level in Belarus.**

The scientist is visiting Japan to promote the Japanese translation of his book about radiation protection. He is scheduled to make a speech in Fukushima Prefecture on Friday.

(Mainichi Japan) October 13, 2011

## **Drill confirms safety of Fukushima nuclear plant**

The operator of the Fukushima Daiichi nuclear plant says the facility could be kept safe even if its reactor-cooling system is knocked out by another huge earthquake.

Tokyo Electric Power Company conducted a drill on Wednesday based on the scenario that its pumps and tanks were damaged by a magnitude-8 quake near the plant. It was the first such drill since trouble began at the plant in March.

Reactors at the plant must receive a continuous injection of water to be kept in a state of cold shutdown, with temperatures below 100 degrees Celsius.

During the drill, about 40 workers attached a 300-meter hose to a fire truck, and pumped up seawater to inject into the reactors.

It took about an hour and 10 minutes for water to resume being injected into a mock facility after fire trucks arrived at the scene.

Tokyo Electric says water injection at the three reactors, No.1 through No. 3, could be restarted in about 3 hours.

Thursday, October 13, 2011 10:03 +0900 (JST)

## **Final nuclear waste disposal issue needs serious deliberation**



Little progress has been made in the debate on the construction of final disposal facilities for nuclear waste, while calls urging that Japan rely less on nuclear power plants have intensified since the ongoing crisis at the tsunami-hit Fukushima No. 1 Nuclear Power Plant emerged in March.

The construction of nuclear waste final disposal facilities is an inescapable issue that Japan as a whole needs to address.

"The national government should consider buying up land around the crippled nuclear power station and build a final disposal facility for high-level radioactive waste," said a former member of the municipal assembly of a town designated as a no-entry zone, in an interview with the Mainichi. He was quoted in a series of articles on local governments tossed about by the national government's nuclear power policy, which were carried in the Mainichi Shimbun's Aug. 19-25 morning editions.

It is harsh to require only residents of Fukushima Prefecture, many of whom have been forced to evacuate from their neighborhoods and take shelter elsewhere, to make a tough decision on the issue.

I have repeatedly visited Fukushima Prefecture to write stories about the ongoing nuclear crisis, and accompanied evacuees who temporarily returned to their homes situated in a no-entry zone within a radius of 20 kilometers from the crippled power plant.

Although the designation of many areas within a 20- to 30-kilometer radius of the plant as emergency evacuation preparation zones has been lifted, there are no prospects that the no-entry zone designation will be lifted in the foreseeable future.

Some of those people who have been forced to leave their hometowns because of the harsh realities of the nuclear disaster have expressed tough determination.

Masaatsu Amano, 73, who fled his home in Futaba and is taking shelter in Koriyama, has given up hope of returning to his hometown to live, and now believes that a radioactive waste final disposal site should be built in areas around the nuclear plant. In exchange for that, he says he will demand that the central government pay him compensation that can allow him to acquire new land elsewhere to restore his livelihood.

"It is really a tough situation to face at my age, but this is the only idea I can come up with when I think about what I can do for the country. In return, I'll demand what I am entitled to from the government," he said.

A former official of the municipal government in Tomioka, which hosts the Fukushima No. 2 Nuclear Power Plant, said, "We don't want to host such a dangerous facility in our neighborhood, but we can't spread the risks throughout this small country."

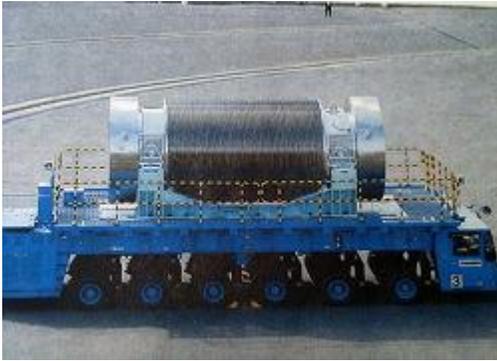
Regarding final disposal, domestic legislation stipulates that nuclear waste must be solidified with glass and sealed hermetically in stainless containers and be buried 300 meters below the surface of the ground. However, experts say it will take 100,000 years before radiation in such waste declines to safe levels.

Finland and Sweden are the only countries in the world that have already decided to build nuclear waste final disposal sites, according to the Nuclear Waste Management Organization of Japan (NUMO), an affiliate of the Economy, Trade and Industry Ministry.

In Japan, NUMO began in 2002 to invite local governments to host such facilities. NUMO is supposed to conduct a three-phase safety examination, including checking records of earthquakes and volcanic eruptions and the strength of bedrock. Each local government that offers to allow NUMO to conduct only an early-stage examination is granted up to 2 billion yen as a subsidy.

In 2007, the Toyo Municipal Government in Kochi Prefecture made such an offer, but the decision stirred protests from the municipal assembly as well as local residents. The mayor was forced to call a mayoral election, and the newly elected mayor retracted the offer. Since then, NUMO's selection of a site for final disposal facilities has been deadlocked.

Currently, about 1,700 pieces of vitrified nuclear waste are stored across the country. The central government estimates that the number will increase to some 40,000 sometime around 2021. Since there are no prospects that such disposal sites will be built, a temporary nuclear waste storage facility in the Aomori Prefecture village of Rokkasho has temporarily stored much of the waste.



In this undated photo released Wednesday, April 13, 2011 by Tokyo Electric Power Co., a standing man is partially seen above an example of the truck used to move spent fuel rods in the pools. Nothing is decided yet but TEPCO told the press at its Tokyo headquarters Wednesday morning that this is one option TEPCO officials are considering to use at the tsunami-stricken Fukushima Dai-ichi nuclear power plant in Okuma town in Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Local residents fear that the temporary storage facility will be made into a final disposal facility without sufficient discussion.

A former high-ranking official of the Rokkasho Municipal Government expressed mixed feelings about the situation.

"I don't think the central government can build a facility that can permanently store nuclear waste. However, if such waste is going to be stored here for 100 to 200 years, a facility that can respond to an emergency situation should be build 300 meters below the ground," the official said in an interview with the Mainichi. "It's acceptable that the facility will be made into a final disposal facility if it's necessary for the good of the country."

However, it is necessary to take into consideration Fukushima and Rokkasho residents' emotional attachment to their hometowns. Many of them are strongly opposed to the idea that it is inevitable that a final disposal facility will be built in areas where the crippled nuclear power plant is situated.

"Basically, I'm opposed to the idea. Residents firmly believe that their hometowns shouldn't be made a nuclear waste dumping site," said Toshitsuna Watanabe, mayor of the town of Okuma that has been designated as a no-entry zone. "First of all, the national government should decontaminate affected areas. It's extremely unreasonable that the government says we can't go home even before launching such efforts."

Norio Kimura, 46, a resident of Okuma currently taking shelter at a relative's home in Okayama, lost his 77-year-old father and 37-year-old wife as well as his home to the tsunami triggered by the March 11 Great East Japan Earthquake, and his 8-year-old daughter remains unaccounted for.

He has been unable to return home and cannot place his father and wife's ashes into their family tomb.



Yellow drums containing low-level radioactive waste are temporarily stored at a temporary storage site. (Photo courtesy of Taiwan's Atomic Energy Council)

"I want to return to my hometown full of memories of the three (my wife, father and daughter) even though it may take 10 or 20 years. It'd be too much if my hometown were made into a grave for nuclear waste," he said.

In the "As I see it," column, writers are supposed to conclude their stories by expressing their opinions or making assertions on the issues they write about, but I cannot do so. The issue is too serious for me to come up with a clear conclusion. I share the view that it would be out of the question to force disaster victims in Fukushima Prefecture, who have been tossed about by the government's nuclear power policy for many years, to host a nuclear waste final disposal facility.

However, it is necessary to confront the harsh reality -- now that Pandora's box has been opened, we need to deal with its consequences. The public needs to face this serious issue and consider how to handle it. I would like to do so as a member of the public. ("As I see it" by Takayuki Hakamada, Tokyo City News Department)

[!\[\]\(0885eaf8c696a622df4955b6828629cc\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) October 13, 2011

## **Editorial: Prioritization key to effective nuclear decontamination plan**

The basic plan for decontamination and treatment of radioactive materials released from the crisis-stricken Fukushima No. 1 nuclear plant has been decided on. Under its provisions, the central government will designate areas with radioactive emissions of 1 millisievert per year or more "important contamination condition survey sites," and will task local governments with cleanup operations.

At first, the Environment Ministry told the Fukushima Prefectural Government and local municipalities that it planned to designate primarily areas with annual emissions of 5 millisieverts for contamination surveys. However, following strong opposition to this figure from local governments, Environment Minister Goshi Hosono -- who is also minister of state for the nuclear accident -- declared that the plan

would be revised. One millisievert per year is the upper exposure limit set by the International Commission on Radiological Protection (ICRP) for regular citizens.

Aerial radiation monitoring by the Ministry of Education, Culture, Sports, Science and Technology has revealed that contamination from the nuclear disaster has spread far beyond the borders of Fukushima Prefecture, with concentrations of radioactive materials found throughout the Kanto region. If the decontamination plan indeed seeks to tackle sites with emissions of 1 millisievert and above, there is a good chance it will be committed to decontaminating areas outside of Fukushima Prefecture as well.

While it is true that the effects of low doses of radiation on the human body are uncertain, that does not mean that cleanup operations need be conservative. However, considering decontamination costs and personnel expenses, it is important to prioritize areas for decontamination, dealing with the most dangerous sites first.

For instance, schools and the routes children take to them, residential areas and so on should be decontaminated with all haste. In the mountains, too, areas with large settlements should be given high priority. To get the entire project moving in an efficient manner, all levels of government as well as local residents must come together in serious discussion.

Meanwhile, the basic plan has also set the end of March, 2014 as the goal for cleaning up comparatively less contaminated parts of the evacuation zones around the nuclear plant. For people now living the rootless lives of nuclear crisis refugees, the revelation of a concrete timeline for them to return home is of no small significance. We strongly favor an effective policy to reduce radiation levels in those areas already below doses of 20 millisieverts per year, so that residents of these places may fulfill their hopes of going home again soon.

However, despite these bright sides to the plan, a veritable mountain of challenges remains, the largest of which is perhaps the processing of contaminated materials such as mud collected in cleanup operations. At present, the growing volumes of materials are going into temporary storage sites, but especially in Fukushima Prefecture, temporary storage space is getting increasingly scarce.

Under the decontamination plan, highly contaminated material and soil would be processed and stored in the mid-term by the prefectures where they were collected. As cleanup operations get under way in Fukushima and indeed across the Kanto region, finding such mid-term storage space has taken on serious urgency. Agreement on where to put such storage facilities is elusive as those concerned worry that the "mid-term" sites will end up being "permanent" sites, and strong resistance is to be expected from local residents of any region proposed as a disposal area host.

First of all, both the national and local governments must get a firm grasp on radiation levels in different areas, and take measures to guarantee safety. They must also make that information publicly available, and explain it to residents in easily understood terms. Knowledge and expertise must also be concentrated to develop technology to reduce the volume of contaminated soil.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 12, 2011

## **High radiation dose readings marked in spots in Tokyo, Chiba**

TOKYO (Kyodo) -- High radiation doses were reported Thursday in spots in Tokyo and neighboring Chiba Prefecture, both over 200 kilometers away from the crippled Fukushima Daiichi nuclear plant, with their readings found to exceed current dose levels in some evacuation zones around the plant.

Airborne radiation of up to 3.35 microsieverts per hour was recorded Thursday along a sidewalk in a residential area in Tokyo's Setagaya Ward in an inspection commissioned by the ward, and a citizens' group detected up to 5.82 microsieverts close to the ground at a children's theme park in Funabashi, Chiba Prefecture, local officials said.

While officials are still investigating whether the radiation resulted from the nuclear accident, the levels detected were both higher than the 2.17 microsieverts per hour measured Wednesday at the village office in Iitate, Fukushima Prefecture. The village is 45 kilometers from the plant and designated as an evacuation zone due to the relatively high radiation.

Funabashi is about 210 km from the Fukushima plant, while Setagaya is about 230 km away.

In an apparent attempt to calm public concerns over the recent spate of discoveries of contaminated spots in the Kanto area, Chief Cabinet Secretary Osamu Fujimura said Thursday morning the government will continue to step up nationwide monitoring as well as consider more necessary measures.

After learning of the findings at the H.C. Andersen Park, officials in Funabashi began checking radiation levels in the park and the affected area was made off limits by its operator. The contaminated spot is located where accumulated rain water flows into and is not normally accessed by park visitors.

In Setagaya, radiation of up to 3.35 microsieverts per hour was recorded Thursday at a height of 1 meter along the sidewalk in the Tsurumaki district, ward officials said.

The ward officials took samples of tree leaves over a home's board fence in the area concerned to investigate what type of radioactive material is involved.

They are also trying to work out how to decontaminate the sidewalk, which is regularly used by pupils at a primary school. The area has been cordoned off as a precautionary measure.

The finding comes following Wednesday's media reports that a high reading of 2.71 microsieverts per hour was detected there earlier this month and that radioactive strontium exceeding normal quantities has been found in sediment atop an apartment building in Yokohama City's Kohoku Ward, some 250 km away from the nuclear plant.

The reading of 3.35 microsieverts means that if a person were to stay close to the contaminated spot for an entire year, spending eight hours each day outdoors and the rest inside a wooden house, their cumulative annual radiation dose could reach about 17 millisieverts, compared with the government-set allowable limit of 20 millisieverts a year.

Setagaya officials said the higher radiation level could have resulted from an accumulation of rainwater due to the location's sunken geological formation. But they could not explain why radiation readings

taken at a height further above the ground were higher than close to the surface where mud and dust gather.

Research on Oct. 4 and 6 found radiation levels varied widely even along the same sidewalk, with the lowest reading at only 0.088 microsievert and the highest at 2.707 microsieverts near the fence.

More detailed checks Thursday concentrating on the section along the fence detected as little as 0.15 microsievert. At the point with the highest reading, it was 1.34 microsieverts near the ground but 3.35 microsieverts at 1 meter above surface.

The officials said they have used water and other methods in attempt to decontaminate the spot, which was discovered after a resident alerted authorities, but radiation levels have shown little improvement even after the cleaning.

Michikuni Shimo, a professor in environmental radiation at the Fujita Health University, called on the public to remain calm, noting that the amount of radiation detected is not at a level regarded as dangerous.

(Mainichi Japan) October 13, 2011

## **Setagaya hotspot unrelated to Fukushima**

High levels of radioactivity observed in Tokyo's Setagaya Ward have been found to have nothing to do with the nuclear disaster in Fukushima.

Experts commissioned by the ward reported a level of 3.35 microsieverts per hour at a 1-by-10-meter area at a sidewalk near a residential fence on Thursday. A maximum of 2.707 microsieverts per hour had been detected in the location a week before.

Later on Thursday, the experts found what seemed to be the source of the radiation -- 3 or 4 old jars in a wooden box left in a storage space under the floor of a vacant house facing the sidewalk.

The jars were reportedly dirty and black, and measured about 8 centimeters long and about 6 centimeters wide.

The radiation level of the bottles reportedly exceeded 30 microsieverts per hour -- higher than the maximum that could be measured with the experts' devices.

After obtaining permission from the house's owner, the experts measured radiation levels on the premises.

The ward says it will take steps to eliminate the radiation while consulting the science ministry and other authorities.

Thursday, October 13, 2011 20:13 +0900 (JST)

## **Setagaya hotspot unrelated to Fukushima**

High levels of radioactivity observed in Tokyo's Setagaya Ward have been found to have nothing to do with the nuclear disaster in Fukushima.

Experts commissioned by the ward reported a level of 3.35 microsieverts per hour at a 1-by-10-meter area at a sidewalk near a residential fence on Thursday. A maximum of 2.707 microsieverts per hour had been detected in the location a week before.

Later on Thursday, the experts found what seemed to be the source of the radiation -- 3 or 4 old jars in a wooden box left in a storage space under the floor of a vacant house facing the sidewalk.

The jars were reportedly dirty and black, and measured about 8 centimeters long and about 6 centimeters wide.

The radiation level of the bottles reportedly exceeded 30 microsieverts per hour -- higher than the maximum that could be measured with the experts' devices.

After obtaining permission from the house's owner, the experts measured radiation levels on the premises.

The ward says it will take steps to eliminate the radiation while consulting the science ministry and other authorities.

Thursday, October 13, 2011 20:13 +0900 (JST)

## **Radium may be cause of radiation in Setagaya**

The Japanese education ministry says the high level of radiation detected in a residential area in Tokyo is likely to have come from radium 226, and has nothing to do with the nuclear disaster in Fukushima.

High levels of radiation were found at a patch of sidewalk in Setagaya Ward in Tokyo about a week ago.

Dozens of glass jars were found in a wooden box under the floor of a house facing the sidewalk by experts commissioned by the ward.

The ministry sent the experts to investigate, and a high level of radiation, 600 microsieverts per hour, was detected on the surface of the jars.

The jars contained a powder.

The experts put the glass jars in a lead box which blocks radiation and moved it away from the residential fence.

The level of radiation at the fence then dropped from around 3 microsieverts per hour to 0.1 to 0.3 microsieverts.

Analysis of the energy of the radiation revealed that the radioactive material is highly likely to be radium 226 which is used for cancer treatment and fluorescent paint.

The education ministry will investigate why the substance was there without permission.

The radioactive substance will be removed from the house on Friday and be stored in a secure place.

Friday, October 14, 2011 07:23 +0900 (JST)

## **Gov't white paper on energy not to call for promotion of nuclear energy**

TOKYO (Kyodo) -- A government white paper on energy, which is expected to be approved by the Cabinet soon, will not call for the promotion of nuclear energy in line with Prime Minister Yoshihiko Noda's policy of reducing the nation's reliance on nuclear power following the Fukushima nuclear disaster, government sources said Thursday.

The paper, however, stipulates the government's intention to resume operations of idled nuclear plants after regular checkups to secure power generation capacity for the time being, the sources said.

The latest energy white paper lacks descriptions of the advantages and significance of nuclear energy that were seen in the past annual documents. The government delayed the release of the fiscal 2010 white paper in the aftermath of the March 11 disaster.

Sentences on the government's policy of promoting nuclear power "as a key power source" and claims that "safety measures against quakes and tsunami have been fully implemented" at nuclear plants, were not included in the latest white paper, according to the sources.

The document says the Fukushima disaster triggered by the March earthquake and tsunami "underlined challenges to secure safety" at nuclear power plants, but emphasizes the policy of restarting idled plants on condition that their safety will be more closely scrutinized and local consent for the restart will be obtained.

(Mainichi Japan) October 14, 2011

## **Extra school texts on radiation fail to detail nuke accident**

TOKYO (Kyodo) -- The education ministry on Friday unveiled supplementary school texts on radiation compiled in the wake of the nuclear crisis at the Fukushima Daiichi power plant, but critics blasted them for failing to adequately describe the disaster or associated health risks.

The three texts are for elementary schools and junior and senior high schools respectively and describe the basic nature of radiation and day-to-day radiation exposure.

But critics say they fail to refer closely to the disaster at the Fukushima complex and the health risks caused.

For example, the materials for elementary school children touch on health risks only by noting, "It has not been clearly proved that exposure to radiation of less than 100 millisieverts at one time causes cancer and other diseases by itself, but it is important to minimize the exposure as much as possible."

Masako Sawai, researcher at the Citizens' Nuclear Information Center, said the supplementary materials "should have clearly noted how the (radioactive) contamination has spread following the nuclear disaster and how it will affect our future."

"As children are forced to face radioactive materials into the future, the government has a responsibility to explain the post-disaster situation and risks caused by radiation," Sawai said.

It cost around 36 million yen to compile the supplementary materials, and the Ministry of Education, Culture, Sports, Science and Technology will distribute the 80,000 copies to schools and education boards across the country later this month.

They will also be made public on the ministry's website.

(Mainichi Japan) October 14, 2011

## **Education ministry compiles booklets on radiation**

The education ministry has published booklets designed to provide students with basic knowledge on radiation, in response to increasing calls for such materials in the wake of the Fukushima nuclear plant accident.

The ministry released the 20-page booklets on Friday. There are three versions, targeting students in elementary, junior high, and high school.

The books focus mainly on basic information on radiation, its effects on human health, and ways to protect oneself from radiation exposure.

The Fukushima accident is only referred to in the preface. The text does not mention the cause or any other details of the accident.

The book for elementary school pupils explains the unit "sievert", which measures the extent of damage the human body receives from radiation exposure.

It also explains that the average radiation exposure from Japan's natural environment is about 1.5 millisievert a year.

The booklet for junior high schools explains the difference between internal and external exposure, using charts to show how radiation exposure affects human health.

After the accident in March, parents urged schools to teach children basic facts on radiation. In responding to those requests, the ministry compiled the booklets in cooperation with experts on radioactivity and radiation exposure.

Friday, October 14, 2011 13:11 +0900 (JST)

## **Radioactive cesium found in mushrooms in Kanto**

Yokohama City has stopped using dried shiitake mushrooms in school lunches after detecting 350 becquerels per kilogram of radioactive cesium in its stocks.

The city said on Thursday that it discovered the contamination during its screening of ingredients for school lunches.

Also on Thursday, 830 becquerels per kilogram of radioactive cesium, exceeding the government's limit of 500 becquerels, was detected in shiitake mushrooms grown outdoors on logs in a city in Ibaraki Prefecture.

The city is about 170 kilometers from the Fukushima Daiichi nuclear plant.

Earlier this week, shiitake mushrooms containing radioactive cesium above the official limit were found in 2 cities in Chiba Prefecture.

Restrictions have been imposed on shipments of mushrooms grown by the same method in these cities.

Yokohama says the radioactive cesium detected in the city was below the government's limit, but it has decided not to use dried shiitake in children's lunches for some time.

Friday, October 14, 2011 11:54 +0900 (JST)

## **Editorial: Safety assurances for consumers and producers still a major task**

The Fukushima Prefectural Government announced Oct. 13 that the prefecture's newly harvested rice was safe, after tests found the rice to have lower levels of radioactive cesium than the provisional safety limit set by the government (500 becquerels per kilogram). While this officially gives Fukushima rice farmers the go-ahead to put their rice on the market, the farmers are concerned that their rice may not sell at all, given the possibility that consumers may avoid Fukushima-made rice based on fears of radiation contamination.

What both consumers and producers of rice want is the assurance that the rice that makes it onto the market is safe. The central and municipal governments must establish a more scrupulous testing arrangement, and hurry in their efforts to decontaminate radiation-tainted soil.

A pre-harvest test of rice made in one section of the Obama district of Nihonmatsu, Fukushima, detected radioactive cesium exceeding levels permitted by the government. As a result, seven times the number of areas marked for pre-harvest testing were tested, and testing of harvest rice was conducted as well.

To begin with, the Ministry of Agriculture, Forestry and Fisheries (MAFF) had not expected radiation levels to exceed maximum permissible amounts in the pre-harvest testing phase. Expecting rice plants to absorb cesium from the soil at a maximum 10 percent, the ministry had restricted rice planting in areas where the soil was contaminated at 5,000 becquerels per kilogram of soil.

The MAFF's predictions were ultimately shown to be mistaken, but the reasons for it are still unknown. To prevent the same thing from happening again with other agricultural products or next year's rice, the ministry must act swiftly to pinpoint the reasons such levels of cesium accumulated.

In order to foster a sense of security among consumers, it is important to increase the number of locations that are checked, thereby preventing samples from slipping past detection. We face great challenges, such as acquiring more expensive testing equipment, and we hope the national and municipal governments will cooperate to overcome such challenges.

Regardless, as long as the soil is tainted with radioactive materials, fears over agricultural products will not be completely assuaged. Decontamination of farm land is a must, and is something that the government must deal with immediately.

Meanwhile, the price of newly harvested rice is on the rise. The National Federation of Agricultural Co-operative Associations (known as Zeno or JA) is selling to wholesalers at prices 10 to 20 percent higher than the same period the previous year, and between wholesalers themselves, rice is being sold at prices about 1 percent higher than that. The reason for this is wholesalers' sense of urgency in securing rice, in the case that the current situation surrounding radiation could result in a low supply. The price of rice found in stores has also begun to rise by about 10 percent.

According to MAFF, the national average of the rice-crop index for rice produced this year is comparable to past years, and the overall harvest is expected to exceed demand. To prevent anxiety from causing alarm, consumers also must stay calm and avoid behavior that was seen immediately after the March 11 disasters, such as buying up products.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 14, 2011

## **IAEA team reports to nuclear crisis minister**

Experts from the International Atomic Energy Agency have advised the Japanese government on how to effectively remove radioactive substances resulting from the accident at the Fukushima Daiichi

nuclear plant.

On Friday, the team of experts in radiation-related fields submitted a 12-point report to Japan's Environment Minister, Goshi Hosono.

In the report, the IAEA team recommends preferentially decontaminating areas where high levels of radiation have been detected.

Since their arrival a week ago, the 12 experts have inspected decontamination work in Fukushima Prefecture being carried out by both central and local government.

The team leader, Juan Carlos Lentijo, told Hosono that as Japan is facing a very serious challenge, he hopes the report will help enhance its decontamination measures.

After the meeting Hosono said that, as a whole, Japan's decontamination efforts are going in the right direction. He added that further clean-up operations will take the report's advice into account.

Friday, October 14, 2011 21:10 +0900 (JST)

## **Hot spot in Funabashi City**

Funabashi City, in Chiba Prefecture, east of Tokyo, says relatively high levels of radiation have been detected at a local park.

The city said a citizens' group reported on Wednesday that the radiation levels in the park were measured at up to 5.82 microsieverts per hour.

The city conducted its own measurements at the site on Thursday, and got maximum readings of 1.55 microsieverts per hour, one centimeter above the ground.

The city removed the surface soil at the site, and plans to conduct more detailed inspections.

Separately, Chief Cabinet Secretary Osamu Fujimura said on Friday that the central government is responsible for decontamination work.

He added that the environment ministry, the science ministry, and the Cabinet Office will discuss the issue later on Friday.

Friday, October 14, 2011 13:11 +0900 (JST)

## **Radiation-tainted sludge, ash to be buried in Tokyo Bay landfill**

The Tokyo Metropolitan Government has decided to bury some 3,000 tons of sludge and incineration ash contaminated with radioactive materials in a Tokyo Bay landfill area as part of a breakwater construction project, it has been learned.

Tokyo's Ota and Koto wards, which are adjacent the area for the proposed breakwater have reportedly agreed on the measure.

Ota Mayor Tadayoshi Matsubara explained the move at a ward assembly meeting on Oct. 12, saying it was "unavoidable." Later he asked the Tokyo Metropolitan Government to ensure that radioactivity of materials being brought in to a solidification facility in the ward be kept below 8,000 becquerels per kilogram, that vehicles transporting the incineration ash be carefully checked for radiation, and that water used to wash vehicles be thoroughly managed.

In Koto Ward, when the chief of the Tokyo Metropolitan Government's Regional Sewerage Office approached Mayor Takaaki Yamazaki in September about the idea, he had indicated that he would accept the proposal.

The ash contaminated with radioactive materials was produced by water treatment facilities in Tokyo's Tama district. Altogether there are seven water treatment facilities in the Tama district that are directly managed by the Tokyo Metropolitan Government. The Tokyo cities of Hachioji, Tachikawa, Machida and Mitaka also have their own water treatment facilities.

The facilities had stored sludge and incineration ash found to be contaminated with radioactive materials, but it was becoming difficult to secure facilities to process the waste.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 14, 2011

ci-dessus files to file 60 incl.

## **TEPCO completes cover around Fukushima plant's No. 1 reactor; 3 and 4 next**



The completed cover around the Fukushima No. 1 nuclear plant's No. 1 reactor building is seen on Oct. 14 in this photo provided by Tokyo Electric Power Co.

A cover enclosing the ruined No. 1 reactor building at the Fukushima No. 1 nuclear plant has been completed, plant operator Tokyo Electric Power Co. announced on Oct. 14.

Construction of the cover -- composed of 62 polyester fibre sections -- began in August to reduce the amount of radioactive materials escaping into the outside environment. With the cover now finished, TEPCO will install air scrubbers inside the reactor building to clear out airborne radioactive substances.

Once the scrubbers are in place, they are expected to process all the air in the enclosure -- a volume of about 40,000 cubic meters -- every hour, reducing airborne radioactive materials by 90 percent.

The new cover will last for two years. TEPCO is also considering replacing the cover with a stronger one should the firm decide to remove the fuel from the reactor. TEPCO plans to build similar covers over the No. 3 and 4 reactor buildings, which were also destroyed by hydrogen explosions in March.

TEPCO also released video taken by a robot on the No. 1 reactor building's first floor. The video showed there was no longer steam rising from below ground in the building, but the robot detected extremely high radiation emissions of 4,700 millisieverts per hour.

(Mainichi Japan) October 15, 2011

## **Radiation booklet plan gets mixed reception**

The Yomiuri Shimbun

The government's plan to distribute new supplementary material on energy to schools, focusing on the basics of radiation, is receiving mixed reactions.

The Education, Culture, Sports, Science and Technology Ministry is replacing earlier supplementary booklets on the same subject for primary, middle and high school students. It instructed schools not to use the previous booklets following the nuclear accident at the Fukushima No. 1 nuclear power plant, after learning they included improper descriptions about nuclear power plants.

"As the [new] supplementary material was created by the education ministry, we can use it in classes without worries," said Shiro Hayashi, 63, principal of Takinogawa Primary School in Kita Ward, Tokyo.

In May, the school's sixth graders listened to a lecture about radiation given by an official dispatched from the Japan Science Foundation in Tokyo.

After learning from reports that victims of the nuclear disaster forced to take shelter experienced discrimination, the school decided to hold the lecture to give students more precise knowledge about radiation.

Before producing the new booklets, the government had not provided materials about radiation for primary school students, considering the subject inappropriate for them. After the accident at the Fukushima No. 1 nuclear power plant, the school tried to find study material about radiation on the Internet.

"It was hard to find material that explains radiation understandably from a neutral standpoint," Hayashi said.

As part of new teaching guidelines to be fully implemented in middle schools starting in the 2012 academic year, the science guideline--which refers to radiation studies for the first time in 30 years--was implemented in the 2009 academic year.

Masaki Kobayashi, 51, a teacher of Kaishin Dai-Ichi Primary School in Nerima Ward, Tokyo, plans to teach about radiation in his science class as early as next year.

"As the supplementary material has too much content," he said, "I'm worried how to teach students about the risks of radiation or how to protect themselves [from radiation] in the limited class time, without leaving them feeling uncertain. Teachers also need to study [about radiation]."

Hisao Oshimizu, 60, principal of Ono Primary School in Okumamachi, Fukushima Prefecture, said: "When children go back to their hometown, knowledge about radiation will become necessary. We'd like to teach about it gradually." The students of the school evacuated as a group to Aizu-Wakamatsu in Fukushima Prefecture after the nuclear accident.

Watari Middle School, in the Watari district of Fukushima, measures radiation at the school almost every week. The Watari district has shown radiation levels that are relatively higher than elsewhere in the city.

While the school informs the students' parents of the radiation levels, it refrains from explaining the effects of radiation to students as it believes the word "radiation" would cause stress for some children, the school said.

Yoshinori Saito, 59, principal of the school, criticized the government's position on teaching about radiation, saying, "The information [in the new supplementary material] should have been distributed to schools before the [Fukushima] accident happened."

Meanwhile, Hosei University Prof. Takeo Samaki said: "I don't think schoolteachers will be able to teach about the effects of radiation on human bodies, which is the most important point, because the material does not clearly describe them. "Opinions are divided even among scholars over the bodily effects of a one-time exposure to below 100 millisieverts of radiation. To enable children to make objective judgments, essays expressing various opinions should have been included in the supplementary material," he said.

(Oct. 16, 2011)

## **Doubts over how to teach radiation**

Fumihiko Ito / Yomiuri Shimbun Staff Writer

New supplementary materials about the basics of radiation will be distributed to primary, middle and high schools, but how exactly they should be used remains unclear.

The Education, Culture, Sports, Science and Technology Ministry on Friday unveiled new reading materials on atomic energy amid the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant.

The booklets had been completely revised, as previous versions were criticized after the outbreak of the crisis for including inappropriate descriptions of nuclear power plants and atomic energy.

However, the latest material contains little information regarding the nuclear crisis and concrete measures to deal with it.

Middle schools have not taught about radiation for 30 years, and how schools use the supplementary materials will be a key issue in teaching about radiation at schools.

The beginning of the booklet for primary school students says, "After the nuclear accidents occurred, materials that emit radiation leaked from the nuclear power plant."

But it does not mention the nuclear crisis in the main text.

According to the ministry, some of the 13 authors of the booklets said they should describe the crisis, including conditions in Fukushima Prefecture. However, most insisted it was more important to first provide information to students about radiation, so they would understand how disaster-hit areas were contaminated.

The booklets, for example, write that radiation is constantly present in the natural environment and explain about units such as sieverts and becquerels. They also explain that radiation is used in various fields such as medicine, agriculture and industry, using many pictures.

Regarding human exposure to radiation, the booklets describe external exposure resulting from cosmic rays or X-rays, and internal exposure from ingestion of contaminated food or inhaling radiation.

They also write that Japanese receive an average of about 1.5 millisieverts of radiation annually from natural sources, and the average individual in the world receives about 2.4 millisieverts annually.

The new material instructs students to keep away from radioactive materials and shorten the time they are exposed to radiation, to protect themselves from radiation.

To prevent internal exposure, the books instruct students to cover their mouths by using masks or other means, and not to eat food the intake of which has been restricted.

Regarding the connection between radiation doses and health, one booklet says, "There is no clear evidence that people develop cancer from radiation doses below 100 millisieverts.

"It is not necessary to worry about radiation doses if the radiation comes from the natural environment or common practices such as an X-ray, but it is important to avoid receiving radiation as much as possible."

The booklet for primary students writes, "Radiation does not spread from person to person."

Regarding the damage suffered by Fukushima residents as a result of radiation fears, and students from the prefecture being bullied, a teaching guideline for primary school teachers says, "Bullying and discrimination [due to radiation] should not occur."

Such instruction is not mentioned in the booklets for students, however.

An essay in the booklet for high school students describes the "risk and benefit" theory that is used in medicine. "When people use something for their benefit, they cannot avoid a certain amount of risk," the column states.

This is implying that nuclear power plants bring benefits such as power supply, and risks such as radiation.

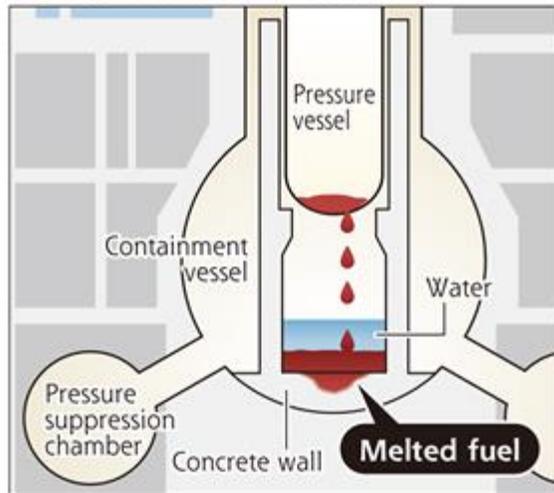
"[The essay] seems to be trying to justify the measures taken by the government regarding the nuclear crisis," said Hosei University Prof. Takeo Samaki, who specializes in science education.

(Oct. 16, 2011)

## NISA secretly calculated Fukushima meltdown risks / Agency considered worst-case scenario of 'China syndrome'

The Yomiuri Shimbun

### Erosion of bottom of containment vessel



The Nuclear and Industrial Safety Agency secretly calculated the possibility of a worst-case meltdown at Tokyo Electric Power Co.'s Fukushima No. 1 power plant, it has been learned.

The agency was working on the calculations just as TEPCO was saying the nuclear fuel in three reactors at the plant was "slightly damaged."

The trial calculations were made under the premise that the nuclear fuel at the plant's No. 1 to No. 3 reactors would melt down entirely, developing into a so-called China syndrome, the worst-possible scenario.

Coined in the United States, China syndrome refers to an imagined worst-case meltdown of nuclear fuel that burns through the bottom of a containment vessel and eventually through the Earth's crust until finally reaching China.

The trial calculations were carried out first on March 25, two weeks after the March 11 accident, followed by further calculations on April 6, 7 and 13.

The fact that the calculations were carried out secretly was revealed Friday by the **Japan Nuclear Energy Safety Organization (JNES), an independent administrative institution, which had been commissioned by the agency to undertake the trial estimations.**

The calculations indicated that if cooling water could not be injected, erosion could continue for more than 10 days, badly damaging the three-meter thick concrete walls of the Nos. 2 and 3 reactors' containment vessels, the JNES said.

The erosion of the bottom of the No. 1 reactor's containment vessel bottom would possibly stop after the vessel wall was eroded to a depth of 1.8 meters in eight days, according to the calculations.

When the JNES calculations were being conducted, both the agency--the nuclear safety watchdog of the Economy, Trade and Industry Ministry--and TEPCO publicly said the nuclear fuel in the reactors was "slightly damaged."

In announcing the calculation results Friday, the JNES said it had roughly gauged the extent to which the floor of the containment vessel bottoms, called "pedestals," would be eroded should all the nuclear fuel drop through the pressure vessel of the three reactors.

The calculations were carried out based on different scenarios. In one of them, all reactor cores dropped out at the same time, and in another, melted fuel jetted out of the vessels, the JNES said.

It said the calculation results were conveyed to the agency, but it is unknown whether the information was shared with the Cabinet Office or other government organizations.

Regarding the announcement of the calculations a half year after the outbreak of the crisis, the JNES said although the calculations were exclusively for the sake of studies within the agency and TEPCO, it decided to make them public as the initial phase of coping with the crisis has finished.

On April 18 the agency acknowledged the reactors' fuel had begun to melt down, but TEPCO failed to acknowledge the possibility of a meltdown until April 20.

(Oct. 16, 2011)

## **Cold shutdown will be achieved within this year**

The Japanese government and Tokyo Electric Power Company say that a cold shutdown of the crippled Fukushima Daiichi nuclear power plant will be achieved by the end of this year.

It will be included in a revised timetable for containing the nuclear crisis that will be issued on Monday.

They say the temperatures around the No.1, No.2, and No.3 reactors are less than 100 degrees Celsius and the amount of radioactive material being emitted has dropped to about half the level of a month ago.

The latest survey showed estimated radiation levels of about 100 million becquerels per hour.

Also a giant polyester covering for the No.1 reactor building will be completed by the end of October.[\[isn't it ready ???\]](#)

The government and TEPCO say measures to achieve the state of a stable cold shutdown are progressing steadily.

On Monday TEPCO will submit to the government nuclear safety measures that will apply to its work

to maintain a state of cold shutdown over the coming 3 years.

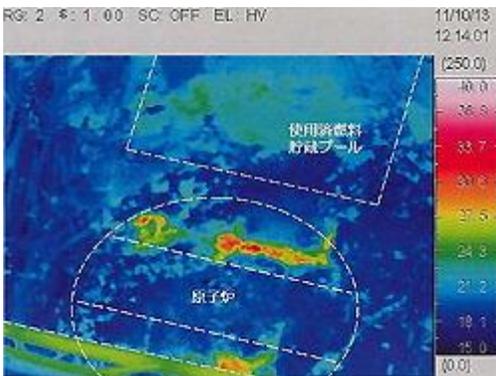
Goshi Hosono, the minister in charge of the nuclear disaster said in September that they would try to achieve cold shutdown by the end of this year. It had originally been planned for January next year.

Monday, October 17, 2011 05:54 +0900 (JST)

## Photos released by TEPCO show huge piles of used radioactive gear



Huge piles of plastic bags containing used radioactive gear and other contaminated waste are seen at the J-Village facility. (Photo courtesy of TEPCO)



An infrared view from above the No. 1 reactor building at the Fukushima No. 1 Nuclear Power Plant is seen in this photo taken Oct. 15. (Photo courtesy of TEPCO)

Photos released by the Tokyo Electric Power Co. (TEPCO) show huge piles of plastic bags containing used radioactive gear and other radioactively contaminated waste at a facility near the Fukushima No. 1 Nuclear Power Plant.

The photos show a vast number of bags piled about five meters tall. According to TEPCO, there are currently around 4,000 cubic meters of the waste piled up.

The photos are two of 32 released by TEPCO on Oct. 15 and were taken at J-Village, a sports facility serving as a base of operations for workers trying to control the nuclear plant. Other released photos show medical rooms and shops set up in the facility.

Photos taken with an infrared camera over the No. 1 and 3 reactor buildings were also released. They were taken with a camera attached to a crane, as radiation levels in the buildings are too high for people to enter them.

According to TEPCO, the hottest spot photographed of the No. 1 reactor building was around 35 degrees Celsius, and the hottest spot for the No. 3 reactor building was around 40 degrees Celsius. They believe these hot areas were due to steam escaping from small openings in the concrete lids of the reactors' containment vessels. The average temperature of the reactor buildings' exteriors was around 20 degrees Celsius.

TEPCO said that, "The steam vapor we saw before is now gone. The reactors are **probably** getting cooler."

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 17, 2011

## **Facing the reality of radioactive decontamination**

Shinzo Kimura, an associate professor in radiation hygiene at Dokkyo Medical University, has stood at the forefront of radiation decontamination efforts in Japan, listening to residents living in areas of Fukushima that are heavily contaminated with radiation.

Kimura originally worked as a researcher at a corporation under the jurisdiction of the Ministry of Health, Labor and Welfare, but the organization restrained him from conducting a survey in Fukushima right after the outbreak of the Fukushima No. 1 Nuclear Power Plant catastrophe, so he immediately quit. He entered the affected area on March 15, just four days after the March 11 quake and tsunami, and created a radiation contamination map based on his surveys. He also toured various areas offering support to residents.

Kimura's efforts were featured three times in specials on NHK's education channel, eliciting a great response from the public, so his efforts are known in Japan to a certain degree. As an experienced researcher, Kimura understands how big the job of decontamination is.

"Decontamination is extremely difficult," he says. "Without special equipment, even if someone worked frantically for two days to decontaminate his or her home, the amount of radioactive materials would only be reduced by about half.

**"To decontaminate homes in hot areas (areas with localized high radiation levels), a space within a 100-meter radius of each home must also be decontaminated; otherwise radiation will not fall back down to 0.1 microsievert per hour (the level occurring naturally in the environment). In practical terms I think this is near impossible."**

In his policy speech after taking office, Prime Minister Yoshihiko Noda stated he would put a full effort into addressing the nuclear disaster, while the minister in charge of handling the nuclear disaster

stated that Japan would carry out measures without taking into account the economics involved. But it is Kimura's comments that reveal the reality of the situation.

**In order to understand the reality, radiation levels must first be measured.** When I went to the city of Fukushima the other day, my radiation dosage meter showed a level of 0 microsieverts at the time of my departure from Tokyo. After staying overnight in Fukushima and then returning to the capital, the reading was 2 microsieverts. Over the next three days in Tokyo, the total dosage rose to 6 microsieverts.

I approached an expert about this, commenting that the level in Tokyo was also high. I received the following response:

"The level of naturally occurring radiation is 0.05 microsieverts per hour, so that's nothing out of the ordinary. Two microsieverts for 24 hours spent in Fukushima is normal."

The device I was carrying showed the accumulated external radiation dosage. This type of device functions differently from measurement equipment that gauges the specific amount of radiation in the atmosphere at any given time. Hitachi-Aloka Medical, one of Japan's biggest producers of such devices, says that one popular dosimeter is priced at about 30,000 yen. Radiation measurement devices cost in the range of 245,000 yen. Both types are reportedly in short supply with **customers having to wait several months for radiation measurement devices.**

"Before the quake and tsunami disaster, we were only putting out a few hundred a year, but now we're selling 400 to 500 a month," a company representative says. The company has reportedly received inquiries from all over Japan, but predominantly from people in the Kanto region. This is understandable. Recently in the Tokyo metropolitan area there has been a lot of talk about spots with high levels of radiation and their decontamination.

Kimura has the following to say about the issue:

"There is no need to fret at every little thing. We should be cautious in an appropriate manner."

This summer pine wood contaminated with cesium from Rikuzentakata was barred from being used in a ritual in Kyoto. Kimura says that this was a typical example of unreasonable fear.

After the outbreak of the nuclear crisis triggered by the March 11 quake and tsunami, a thick radioactive cloud hung over the Japanese archipelago. **But even before that, Japan was already contaminated with radiation from past nuclear tests and the Chernobyl disaster.** Compared with this radiation, the level in the pine wood was several hundred thousandths of the amount.



Workers scrub the parking lot of the Minamisoma city hall in Fukushima Prefecture during radiation decontamination work on Sept. 30. (Mainichi)

Nevertheless, the fundamental concept that excessive exposure to radiation harms people's genes and could threaten preservation of the species remains unchanged. Restraining internal exposure to radiation from contaminated food remains an issue. What safeguards are appropriate and what is the correct method of decontamination?

Seeking such answers, Kimura is now in the Narodychi district of the Zhytomyr Oblast province of Ukraine, conducting his 15th survey on contamination from the Chernobyl disaster.

**Regardless of whether people support or are against nuclear power, they must live with radioactive materials that have already been scattered.**

We must understand that decontamination is a difficult task that cannot be solved by merely making declarations of determination or fixing budgets. (By Takao Yamada, Expert Senior Writer)

[!\[\]\(24bb11591668c60672ee5d36737914d9\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) October 17, 2011

## **Gov't and TEPCO to aim for 'cold shutdown' of Fukushima reactors by year-end**

The government and the Tokyo Electric Power Co. (TEPCO) are expected to announce that they will aim for a stable condition called "cold shutdown" of the nuclear reactors at the crippled Fukushima No. 1 Nuclear Power Plant by the end of this year, slightly earlier than the originally planned deadline of mid-January.

The government will hold a meeting of its nuclear disaster taskforce as early as December to decide on whether they can call the "step 2" phase of the roadmap to bring the nuclear power plant under control finished. This "step 2" phase aims for "having the release of radioactive material under control and a sharp curb in radiation levels." The target period for achieving step 2 was set for "between mid-October and mid-January next year."

One condition for achieving a cold shutdown was having the temperature at the bottom of each reactor pressure vessel of the No. 1 to 3 nuclear reactors at the Fukushima plant under 100 degrees Celsius

from the beginning of this month -- a condition currently being met. Furthermore, according to TEPCO, the amount of radioactive substances being released from the nuclear reactor buildings from Sept. 1 to Sept. 15 was about 200 million becquerels per hour, about one four-millionth of what was measured immediately after the outbreak of the nuclear crisis, and the amount of radiation on the outer premises of the nuclear plant's grounds is estimated to be at most 0.4 millisieverts per year, below the legal limit.

For these reasons, senior officials of the Ministry of Economy, Trade and Industry judged that "it is fully possible to achieve (a cold shutdown) ahead of schedule."

With respect to the possibility of achieving a cold shutdown by the end of this year, nuclear disaster minister Goshi Hosono said at an annual conference of the International Atomic Energy Agency (IAEA) in Vienna on Sept. 19, "We will do our best to achieve it by the end of this year." But when the government and TEPCO revised the nuclear disaster response roadmap on Sept. 20, they avoided making any promises, with Cabinet Office Parliamentary Secretary Yasuhiro Sonoda saying a cold shut down this year was "a nonbinding target because there are risks of torrential rains and aftershocks."

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 17, 2011

The report said the utility prompted employees and residents backing its so-called "pluthermal" project to express opinions in support at symposiums and other events organized by the central and Hokkaido governments over the contentious project.

Plutonium-thermal power generation uses plutonium-uranium mixed oxide fuel, which contains plutonium extracted from spent fuel, in existing reactors and is an important pillar of Japan's nuclear fuel recycling program.

(Mainichi Japan) October 18, 2011

## **TEPCO reports measures to ensure cold shutdown**

Tokyo Electric Power Company has submitted a report to the government on the steps it will take to ensure a state of cold shutdown at its crippled Fukushima Daiichi nuclear power plant.

Japan's Nuclear and Industrial Safety Agency had asked TEPCO to outline its nuclear safety measures over the coming 3 years.

The utility aims to bring temperatures at all its reactors to below 100 degrees Celsius over the next few months.

It said on Monday that additional pumps to inject water into the nuclear reactors would be set up inside turbine buildings, and existing hoses replaced with stronger ones.

The utility maintains that even if an earthquake and tsunami were to halt the water-injection systems, they could be resumed within 12 hours to prevent major accidents.

Monday, October 17, 2011 20:02 +0900 (JST)

## **Hokkaido Electric freezes plutonium-thermal generation project**

SAPPORO (Kyodo) -- Hokkaido Electric Power Co. will freeze a plutonium-thermal power generation project at the No. 3 reactor of its Tomari nuclear plant due to a scandal involving the misrepresentation of local opinion regarding the project, its president Yoshitaka Sato said Monday.

Sato also told a press conference at the company's head office in Sapporo that the utility has decided to impose 30 percent salary cuts on him, Chairman Tatsuo Kondo and two executive vice presidents, and 20 percent salary cuts on two managing directors, all for three months.

Sato said he would accept the findings of a report filed by a third-party panel set up by the company to look into the scandal and the utility has submitted the report to the Ministry of Economy, Trade and Industry.

The report said the utility prompted employees and residents backing its so-called "pluthermal" project to express opinions in support at symposiums and other events organized by the central and Hokkaido governments over the contentious project.

Plutonium-thermal power generation uses plutonium-uranium mixed oxide fuel, which contains plutonium extracted from spent fuel, in existing reactors and is an important pillar of Japan's nuclear fuel recycling program.

(Mainichi Japan) October 18, 2011

## **Fukushima nuclear evacuees to undergo mental health checks**

FUKUSHIMA (Kyodo) -- The Fukushima prefectural government will conduct mental health checks from next month on about 200,000 residents who had to evacuate in the wake of the Fukushima nuclear crisis, its health committee said Monday.

It will also start conducting checkups on about 20,000 pregnant women within this year, the panel of experts said.

After the 1986 nuclear disaster in Chernobyl, the number of people suffering from mental illness is believed to have increased due to radiation fears and changes in their living circumstances.

Residents subject to Fukushima's survey will be divided into four groups -- children up to age 6, elementary school students, junior high school students, and senior high school age and older people.

As for children up to junior high school age, their parents will be required to check whether any changes in their children's behavior have been observed, such as whether they tend to be scared or get angry suddenly.

Older people will be required to answer questions regarding stress and posttraumatic stress disorder, as well as whether they have experienced any changes in their lifestyles including sleep and diet after the nuclear disaster.

The prefectural government will offer telephone consultations or introduce medical institutions to those who may need treatment, the committee said.

All pregnant women who have been given maternity health record books in the prefecture from August 2010 to July 2011, including those who have evacuated outside Fukushima after the accident, are subject to the checkups, it said.

(Mainichi Japan) October 18, 2011

## **Fukushima City begins decontamination work**

Fukushima City has launched a massive campaign to clean up radioactive materials, with the ultimate goal of decontaminating all homes and public facilities.

The city is located about 60 kilometers from the disaster-stricken Daiichi nuclear power plant.

Decontamination work began on Tuesday morning in the Onami district, where radiation levels are relatively high.

Prime Minister Yoshihiko Noda was on hand for about 20 minutes to inspect the work in Onami.

A team of **professional workers** [who are they ?] used water jet cleaners to clean roofs and ditches. They also cut away vegetation in gardens and removed a layer of top soil.

**Fukushima City's ultimate goal is to decontaminate 110,000 households, public facilities, and roads near schools by the end of fiscal 2012.**

The city plans to ask residents and volunteers to help clean up areas where radiation levels are not too high.

**Securing the necessary manpower and space to store radioactive waste** are among the key challenges.

Tuesday, October 18, 2011 12:16 +0900 (JST)

## **TEPCO identifies risks that could cause meltdown**

The operator of the damaged Fukushima Daiichi nuclear plant says the water-injection system, which has external pipes, is the area that's most likely to cause possible problems in future.

The external system was built as an emergency response to the meltdown that occurred after the March 11 disaster.

Tokyo Electric Power Company has calculated the risks to the water-injection system which could lead

to the cooling water supply being stopped, resulting in another meltdown.

TEPCO analyzed 7 scenarios where the state of a reactor in cold shutdown is undermined due the water supply stopping for more than 18 hours.

Cold shutdown means the temperature of the reactors is below 100 degrees Celsius, and stable.

The cases include damage to the water-injection system and external power outages.

TEPCO found that the highest risk involves a case where the water-injection system is swept away by a massive tsunami and the water supply to the reactors stops.

The second most dangerous scenario is where the water-injection system is destroyed and the resumption of the system fails.

The company found that outside pumps and pipes that were built as an emergency solution after the nuclear accident are 10-times more likely to sustain damage than conventional ones inside the building.

TEPCO plans to reinforce the emergency facilities to maintain the water supply in case of a huge tsunami.

Tuesday, October 18, 2011 08:50 +0900 (JST)

## **Decontamination work underway in Fukushima, but many choosing not to return**



A worker, front, uses heavy machinery to remove vegetation from Yoshiharu Suda's yard, while another man at the back works to decontaminate the roof of his house in the Onami district in the city of Fukushima, on Oct. 18. (Mainichi)

FUKUSHIMA -- District-wide radiation decontamination work got underway on Oct. 18 in the Onami district of Fukushima city, but regardless, many families are choosing to have their children live elsewhere to avoid exposure to radiation.

One such family is that of Yoshiharu Suda, 61, whose house in the Onami district was the first to have decontamination work carried out on it. After the disaster at the Fukushima No. 1 Nuclear Power Plant, his only son, Takahiro, who is 18 and soon to leave the house for university, said he will not live in Fukushima Prefecture.

The Onami district has high radiation levels, thought to have come from the heavily damaged nuclear plant. Located in the eastern part of Fukushima city, Onami is a hilly area around 60 kilometers removed from the nuclear plant, a farming landscape where the people have lived self-sufficiently.

Suda also holds farmland, and he grew vegetables throughout all four seasons, sending a portion of his crops to market. After the nuclear plant disaster, however, his crops started fetching only about a tenth of their former prices, no longer even covering the cost of growing and harvesting them. He threw out his onions and gave up on planting rice, cucumbers and eggplant.

"There's no point in growing contaminated crops," he said. "A supplemental income of around 400,000 yen a year gone, just like that."

Another blow to Suda was Takahiro's difficult decision to leave the prefecture. Takahiro is a senior at high school, where a teacher had expressed confidence that Takahiro could find work at one of the prefecture's major corporations.

However, in addition to unfavorable job-seeking conditions caused by the nuclear disaster, the area around his home was contaminated enough that it could be officially recommended for evacuation.

"I'm worried about how much radiation exposure I've had," says Takahiro. "When I'm married and have kids, raising them in Fukushima will be a problem. The Tokyo Electric Power Co. should pay us proper compensation for destroying our lives."

The city government is aiming for a reduction of atmospheric radiation levels in the district to below one microsievert per hour within the next two years, and it will conduct decontamination work on all 367 homes in the Onami district by the end of this year. Sixty-two homes that have 2.5 microsieverts per hour or more of radiation (two microsieverts per hour or more if there are pregnant women or people under 19 in the house) have been identified for emergency decontamination work, all of which is to be handled by private businesses. Decontamination of the remaining 305 homes and surroundings like roads used by children going to school will be divided between businesses and residents.

The highest radiation at Suda's home was near a rain gutter, at 34 microsieverts per hour. When private sector workers hired by the city came to get measurements on Oct. 17, a measuring device that the city had prepared couldn't measure high enough, and one of the private sector workers' measuring devices had to be used.

On Oct. 18, private sector workers wearing rain jackets, helmets and goggles used a pressure washer to clean from high places to low, starting with the roof and rain gutters. Garden trees that Suda's 88-year-

old mother Satai had tended for half a century were all removed. There was still worry about how much the radiation levels would actually fall after the work was all done.

Takahiro is scheduled to attend a university in Tokyo in spring of 2012. Suda says, "I'd like for him to take on this home, but considering the health risks, I can't force him."

He added, "Even if the radiation levels fall, our old lives will not come back," and with leaden eyes, watched the decontamination work.

(Mainichi Japan) October 18, 2011

## **PM hints at approval for some nuclear reactors under construction**

Prime Minister Yoshihiko Noda has suggested that he will give the green light to operations of some nuclear reactors under construction.

"The construction of some nuclear power plants has progressed to a great extent. I'll make a final decision on each of them while considering the opinions of the local communities," Noda said in an interview with the Mainichi Shimbun and other media organizations at his office on Oct. 17.

He apparently made the remarks while keeping in mind the No. 3 reactor at the Shimane Nuclear Power Plant, 90 percent of whose construction work has been finished.

Noda had told a news conference when he took office that it would be difficult to install new nuclear reactors.

The prime minister for the first time pointed to the possibility that a housing complex for government workers, which had been under construction in the Saitama Prefecture city of Asaka, will be cancelled altogether. "We'll leave a final decision, including whether to scrap the project, to the discretion of a Finance Ministry study panel deliberating on it."

The government has decided to freeze the construction of the apartment complex for the next five years.

Prime Minister Noda also emphasized that Japan will benefit from participating in the Trans-Pacific Partnership (TPP) agreement. "The Asia-Pacific region will definitely be the driving force behind economic growth from now on. Pursuing a close economic alliance will bring benefits to Japan."

He said he will decide on the timing of joining in TPP negotiations at an early date.

However, he pointed to the need to clearly explain Japan's plan to participate in the TPP accord to agricultural bodies, medical associations and other skeptical industries. "There are some industrial sectors that are worried about it."

Noda stopped short of clarifying the timing of making a decision on the sticky issue of relocating the U.S. Marine Corps Air Station Futenma in Okinawa Prefecture while maintaining that he respects the

bilateral agreement to relocate it to the Henoko district of Nago, Okinawa Prefecture. "I can't say when, but will draw a conclusion as early as possible."

The prime minister said he cannot comply with the largest opposition Liberal Democratic Party's demand that the period of redemption of special bonds that the government will issue to cover disaster recovery efforts be largely extended.

"If we agreed to extend it to 60 years, it'd be equal to construction bonds. It's impossible to comply," he said, adding that he will consider how far the government can compromise with the opposition request.

He also reiterated that he cannot accept any unofficial interviews with the media while walking around the Prime Minister's Office.

"My basic position is I don't comply. However, it's important to provide an explanation to the public through news conferences and official interviews, which I'd like to do," he said.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 18, 2011

## **Year-end 'cold shutdown' target for Fukushima plant cited in road map**



In this June 30, 2011 photo released on July 5, 2011, by Tokyo Electric Power Co., sliding concrete slabs, seen above orange floats, have been set in the upper part of a sluice screen for the Unit 2 reactor at the tsunami-crippled Fukushima No. 1 Nuclear Power Plant in Okuma, Fukushima Prefecture, as part of TEPCO's efforts to reduce the leaking of radiation contaminated water into the ocean. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- The government and Tokyo Electric Power Co. stipulated on Monday in the latest work schedule to contain the nuclear crisis at the Fukushima Daiichi power plant that they will seek to achieve a stable condition called "cold shutdown" by the end of this year, as earlier stated by government officials.

Adding to signs that restoration efforts are proceeding steadily, they also said in the road map, which is updated every month, that they have reduced the massive amount of highly radioactive water

accumulating at the plant and that the amounts of radioactive substances leaking from the crippled reactors have further declined.

Realizing a cold shutdown and reducing the amount of contaminated water are part of the key goals of the so-called "step 2" phase of the road map, and the government and the plant operator known as TEPCO had initially aimed to end the step by January at the latest.

The government has defined that a cold shutdown condition means that the bottom part of a reactor's pressure vessel at the plant is kept below about 100 C, and that radiation exposure caused by the release of radioactive substances is being "significantly" held down.

The temperature of the pressure vessels of all of the crippled Nos. 1 to 3 reactors was between 73 C and 83 C as of Saturday, while radioactive substances currently leaking from the reactors have further declined to a maximum 100 million becquerels per hour, or about one eight-millionth of the level seen in the early days of the crisis in March.

The estimate is half the amount announced a month earlier and means that a person could be exposed to up to 0.2 millisievert when standing around the plant for one year, below the government-set target limit of 1 millisievert per year.

But an official of the government's nuclear regulatory body said it needs more assessment on the radioactive emissions from the No. 3 reactor and has to check whether the plant's safety can be ensured in the medium-term before declaring the end of the step 2 phase.

Nuclear disaster minister Goshi Hosono told reporters in Fukushima Prefecture that it would be difficult to scale back the 20-kilometer no-go zone around the plant immediately after the step 2 stage is completed, because there is still work to do, such as land decontamination.

Hit by a magnitude-9.0 earthquake and tsunami on March 11, the Fukushima nuclear plant lost nearly all its power sources and consequently the ability to cool the reactors and spent fuel pools at the Nos. 1 to 4 units. The buildup of heat and gas inside has led to a series of explosions, and the Nos. 1 to 3 reactors have been badly damaged.

As injection of water to cool the reactors creates radiation-polluted water, TEPCO has created a system that removes radioactive substances from the water and recycles the water to be used as a coolant.

TEPCO said contaminated water accumulating at the reactor turbine buildings have declined to around the target level so that it would not overflow even in cases of heavy rain or when the operation of the water processing facility is suspended for a lengthy period.

The utility separately announced an estimate that, among the Nos. 1 to 3 reactors, the probability of another reactor core being further damaged would be once in 5,000 years, compared with once in 1 million to 10 million years in the case of normal reactors.

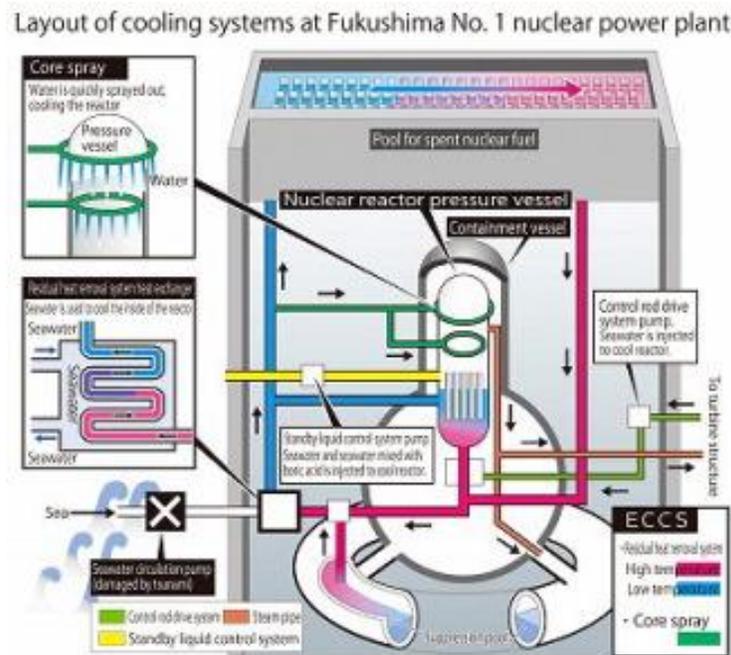
Among factors that may lead to a rise in the temperature of a reactor core to above 1,200 C, and thus damaging the core, the utility said that massive tsunami waves and loss of water injection functions have far higher possibilities of resulting in such a phenomenon than others.

A TEPCO official said the probability is large because numerous makeshift facilities currently exist at the plant, explaining that the figure does not suggest increasing danger.

"We will consider taking further measures in areas that have been found to be weak points," the official said.

(Mainichi Japan) October 18, 2011

## Criteria for 'cold shutdown' of Fukushima nuclear plant remain vague and ambiguous



Layout of cooling systems at the Fukushima No. 1 Nuclear Power Plant. (Mainichi)

The government and Tokyo Electric Power Co. (TEPCO) unveiled a revised roadmap to contain the crippled nuclear reactors at the Fukushima No. 1 Nuclear Power Plant on Oct. 17, clearly stipulating that they would aim for a stable condition called a "cold shutdown" of the reactors by the end of this year, but the criteria used to thrash out the work schedule are vague and ambiguous.

It is still not clear whether they can judge that they have achieved a cold shutdown only by checking the temperatures of the bottoms of reactor pressure vessels. On the assessment of the amounts of radioactive substances being released from the nuclear reactors, the government and TEPCO, the operator of the troubled Fukushima nuclear complex, must come up with more detailed data than "provisional figures" in order to say definitely that they have "achieved" a cold shutdown. Furthermore, the government and TEPCO failed to show any direction on the timing of lifting of evacuation

advisories -- the final goal of the nuclear disaster response roadmap, let alone prospects for measures that should be taken after a cold shutdown is achieved.

According to the government's statements to the Diet, the definition of a cold shutdown of the Fukushima nuclear plant consists of 1) the temperatures of the bottoms of the reactor pressure vessels being held down below 100 degrees Celsius, 2) radioactive substances from the reactors being managed and controlled, and 3) stable maintenance of "circular cooling systems" designed to recycle radioactive water from the reactors as coolant.

The temperatures of the bottoms of the No. 1, 2 and 3 reactors, which suffered core meltdowns, have stayed below 100 degrees Celsius since Oct. 1, and these conditions served as the reason to decide to bring forward the target deadline to achieve a cold shutdown. **But melted fuels are believed to have dropped to the floors of containment vessels from the pressure vessels, and therefore it is difficult to assess the conditions inside reactor cores by measuring the temperatures of the bottoms of the pressure vessels alone.**

According to the work schedule to stabilize the nuclear reactors released by TEPCO on Oct. 17, the temperature of the melted fuel that was dropped to the containment vessels is estimated to be about 150 degrees Celsius.

TEPCO official Junichi Matsumoto said, "There is no problem because the melted fuel is sufficiently cooled down by water injection from above." But Hiroshi Yamagata, an official of the government's Nuclear and Industrial Safety Agency (NISA), only said, "We will discuss its validity from now on."

According to the revised roadmap, the amounts of radioactive substances being released from the nuclear reactors are 40 million becquerels per hour at the No. 1 reactor, 10 million becquerels per hour at the No. 2 reactor, and 40 million becquerels per hour at the No. 3 reactor. The combined total amount of radioactive substances being released from the reactors stands at about 100 million becquerels per hour, about one eight-millionth of what was measured on March 15, four days after the outbreak of the nuclear crisis.

But on the amount of radioactive substances being released from the No. 3 reactor, which has yet to be fully measured, NISA said, "It is nothing but a provisional figure." They plan to measure the amount of radioactive substances again by the end of this year and see if the annual dose of radiation at the outer premises of the nuclear plant is held down below the legally acceptable level of less than one millisievert per year.

On the lifting of evacuation advisories, Cabinet Office Parliamentary Secretary Yasuhiro Sonoda said, "Depending on progress in the work schedule, I believe it will be discussed little by little." But he stopped short of giving a specific timeframe for such discussions.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 18, 2011

## **High levels of radiation detected near elementary school pool in Tokyo**

High levels of radiation were detected near a pool at an elementary school in Tokyo, prompting officials to cordon off the area.

The Adachi Ward Office announced on Oct. 17 that 3.99 microsieverts of radiation per hour were detected near a machine house for a pool at the Higashifuchie Elementary School in the ward.

According to the ward office, the high levels of radiation were observed five centimeters above the ground below a gutter attached to the machine house. Since there is no drainage, it is easy for water to accumulate in the area, ward officials said. Officials have taken such emergency measures as roping off the area to prevent people from entering.

"We believe the levels detected are localized and would not affect human health, but we will look into our response as soon as possible," said a ward official in charge of crisis management.

The radiation scare emerged after local residents voluntarily measured radiation and detected 1 microsievert or more per hour of radiation at five locations in the ward including the elementary school. The residents' move prompted the ward to conduct its own measurement, which has detected levels of radiation ranging from 0.43 to 0.95 microsieverts per hour at the four remaining locations including a park.

Adachi Ward has set its own safety limit, at 0.25 microsieverts per hour, and is supposed to decontaminate an area if higher levels of radiation than the limit are detected. The radiation levels detected in the five locations all exceeded the ward's safety standards.

(Mainichi Japan) October 18, 2011

## High radiation detected at Tokyo school

The Yomiuri Shimbun - <http://www.yomiuri.co.jp/dy/national/T111018004800.htm>

Radiation of nearly 4 microsieverts per hour--a level that slightly exceeds the government-set benchmark for designating evacuation zones--was detected Monday at a primary school in Adachi Ward, Tokyo, ward officials said.

The reading was recorded under the drainpipe attached to a gutter of a machinery room next to a swimming pool at Higashi-Fuchie Primary School. Tests conducted Monday found radiation of 3.99 microsieverts per hour at five centimeters above the ground. At the same point, 0.41 microsieverts per hour was measured at a height of 50 centimeters, and 0.24 microsieverts per hour at one meter.

Ward officials have made the area around the "hot spot" off-limits to students. The area will be decontaminated and the topsoil removed, the officials said.

**A radiation reading of 3.99 microsieverts per hour equates to a cumulative dose of about 21 millisieverts a year, surpassing the 20-millisieverts-a-year standard the government used to designate expanded evacuation zones after the crisis erupted at the Fukushima No. 1 nuclear power plant, according to the officials.**

"The high reading possibly was caused by the accumulation of rainwater that contained radioactive material released at the outbreak of the nuclear accident," a ward official said.

The ward office measured radiation levels at the school Monday after being tipped off by residents who had detected high readings at 20 locations in the ward. The office chose five of the 20 points--including Higashi-Fuchie Primary School--where residents had found radiation levels of more than 1 microsievert per hour.

(Oct. 19, 2011)

## Tokyo ward decontaminates areas near elementary school



Workers bury bags containing contaminated soil and measure their depth near Higashifuchie Elementary School in Adachi Ward, Tokyo, on Oct. 18. (Mainichi)

Officials from Tokyo's Adachi Ward, where high radiation levels were detected near an elementary school, announced Oct. 18 that radiation levels decreased significantly after they took immediate measures to decontaminate the affected areas.

The Adachi Ward Office on Oct. 18 removed about 10 centimeters of tainted topsoil found below the gutter of a pool machinery room at the Higashifuchie Elementary School in the ward on Oct. 17.

Ward officials announced that after carrying out the soil decontamination, radiation levels decreased to 0.15 microsieverts per hour from the 3.99 microsieverts initially detected at the school.

**The removed soil was placed in bags and buried in the ground approximately 4.5 meters away from the elementary school.**

Meanwhile, Higashifuchie Elementary School has suspended all physical education classes and has instructed students to stay away from the school's yard during class breaks.

"They say that there is no health threat, but it's not easy to trust what they say right away. I want authorities to appropriately explain the measures they have taken," said a mother whose son is in the first grade at the school.

According to officials, the school had received approximately 10 inquiries from parents in relation to the radiation.

(Mainichi Japan) October 19, 2011

## **Japan asks Turkey to proceed with talks on nuclear plant deal**

TOKYO (Kyodo) -- Japan asked Turkey on Tuesday to continue with talks on a nuclear power plant deal in the latter country, while confirming with the United States plans to strengthen technical cooperation on nuclear power between the two countries.

The move came during talks between Japan's industry and trade minister, Yukio Edano, and his counterparts from Turkey and the United States in Paris on the sidelines of a ministerial meeting of the International Energy Agency.

The latest overtures signal Tokyo's willingness to pursue the export of nuclear power technology, as a way to shore up Japan's fragile economy, while seeking to reduce its nuclear dependence domestically in the aftermath of its worst nuclear disaster in March.

Since last December, Ankara has given two Japanese companies -- Toshiba Corp. and Tokyo Electric Power Co. -- priority rights to negotiate a deal to build a nuclear power plant in Turkey.

But following the devastating accident at its Fukushima Daiichi nuclear plant, Tokyo Electric Power signaled in July its intention to withdraw from the talks. The focus is thus on whether Turkey would continue with the talks.

At the meeting on Tuesday, Edano asked Turkey's energy minister, Taner Yildiz, to move the talks forward. "I would like you to continue (to positively) evaluate Japan's technology, according to Japanese officials," he said.

Yildiz indicated that he would consider the matter in a forward-looking manner, the officials said.

During another meeting, U.S. Energy Secretary Steven Chu pressed Edano to explain Tokyo's stance on its atomic energy policy in the wake of the nuclear disaster.

Edano told his U.S. counterpart that Japan intends to make use of its technology and knowledge of nuclear power in the international arena, while reducing its dependence on nuclear power plants for electricity generation at home.

To do so, the government will further promote Japan-U.S. cooperation, the economy, trade and industry minister was quoted by officials as saying at the meeting.

At a separate meeting, Edano reached a basic agreement with Guenther Oettinger, the European Union's energy commissioner, to hold a ministerial dialogue on energy between the two sides next spring.

(Mainichi Japan) October 19, 2011

## **Fukushima city begins full-scale decontamination efforts**

The Yomiuri Shimbun

FUKUSHIMA--The Fukushima municipal government on Tuesday began the first phase of decontamination for the entire city, beginning with the Onami district, where high radiation has been detected.

Prime Minister Yoshihiko Noda visited the district to witness the start of decontamination work, which is expected to be completed by the end of the year.

Located about 60 kilometers away from the Fukushima No. 1 nuclear power plant, it is calculated that a person in Onami would receive a cumulative radiation dose of more than 5 millisieverts a year.

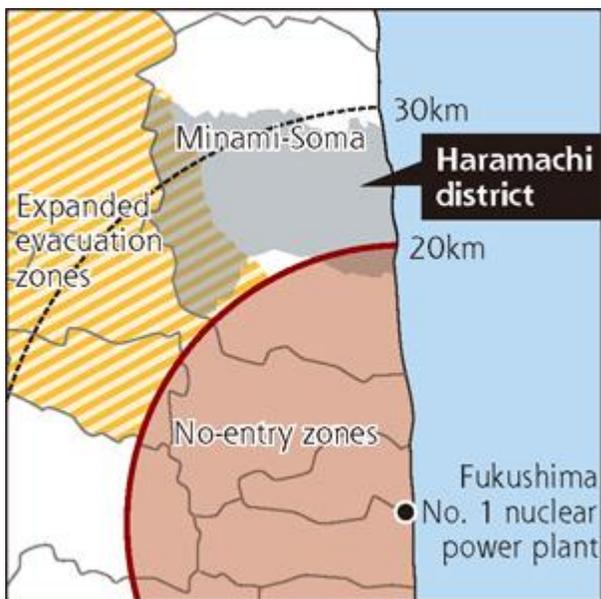
The decontamination work is being conducted in line with basic central government guidelines and is regarded as a test case to study the effects of intensive cleaning in an entire district for a limited period of time.

The municipal government will soon expand areas subject to decontamination, and will eventually clean 110,000 households throughout the city. It faces several challenges, such as how many volunteers will be willing to help the cleanup in addition to companies, as well as securing temporary storage facilities for radiation-contaminated topsoil and other matter removed from the houses.

(Oct. 19, 2011)

## **Sending kids to school becomes heartwrenching decision**

Naoki Taruta / Yomiuri Shimbun Staff Writer



MINAMI-SOMA, Fukushima--It was back to school Monday for five primary and middle schools for the first time since emergency evacuation preparation zones were opened for parts of Minami-Soma, Fukushima Prefecture, and Hisae Suzuki had a special request. "Could you drive the kids to school?" she asked her 65-year-old mother.

A nurse at a hospital in Minami-Soma, Suzuki, 36, worked the night shift the previous day. She plans to drive her three sons to and from Haramachi Daiichi Primary School except for six or seven times a month when she has to work night shifts.

Although emergency evacuation preparation zones created in the wake of the crisis at the Fukushima No. 1 nuclear power plant have been opened, parents like Suzuki remain worried about their children's exposure to excessive radiation.

All five schools are located in Minami-Soma's Haramachi district, which was inside the emergency evacuation preparation zone that covered all or part of five municipalities in the prefecture.

The Suzukis, however, still live at emergency rental housing in Soma available to evacuees after the March 11 disaster, even though the emergency evacuation preparation zone in Minami-Soma was dissolved on Sept. 30.

"Due to concerns over radiation exposure, we won't return to our house unless we can confirm it's safe," Suzuki said.

She is considering sending her eldest son, sixth-grader Shigeyuki, 12, to a middle school in Soma--instead of a school near their original house--in April next year after he graduates from primary school.

Whether or not her children can play their favorite sport, baseball, in Haramachi, will factor into the decision.

However, her two younger sons--fourth-grader Yusuke, 9, and second-grader Kiyonori, 8--have been urging Suzuki to return to Haramachi, saying, "All our friends are there."

"I'd like my sons to have more freedom to do the things they like," Suzuki said. "I know we shouldn't stay at the [Soma] shelter for too long."

Meanwhile, Reiko Sato, 41, whose family evacuated from Minami-Soma to Yonezawa, Yamagata Prefecture, decided not to allow two of her children to return to Haramachi Daiichi Primary School when it reopened.

She said she would decide on the timing "after taking [the district's] decontamination efforts into account." Her youngest child, Hiromu, is only 4 years old, and Sato's main priority is to avoid any future health risks to her children posed by excessive radiation.

Her husband, Hidemasa, 41, spends five days a week in Minami-Soma working at his used car sales and real-estate rental businesses.

The couple's children--eldest son Taiko, 12, and daughter Haru, 9--are adjusting to primary school in Yonezawa, but sometimes become homesick.

Sato therefore takes the children to play baseball in the Soma district on weekends when other children from Haramachi are there.

"Of course I'm worried about radiation exposure," Taiko said, "but I want to attend middle school in Haramachi."

Yet the sixth-grader's mother had a more immediate concern: "I'm wondering where his primary school graduation ceremony [in March] will take place--Minami-Soma or Yonezawa."

(Oct. 19, 2011)

## **Japan still considering total nuclear power pullout**

By Marie Maitre - [http://www.washingtonpost.com/business/economy/update-1-japan-still-considering-total-nuclear-power-pullout/2011/10/18/gIQAwqHhuL\\_story.html](http://www.washingtonpost.com/business/economy/update-1-japan-still-considering-total-nuclear-power-pullout/2011/10/18/gIQAwqHhuL_story.html)

PARIS, Oct 18 (Reuters) - Japan has not ruled out the possibility of complete closure of its nuclear power stations as one option for the country's future energy policy after the world's worst nuclear accident in 25 years, economy minister Yukio Edano said.

"I am certain that we are going to reduce nuclear power generation but whether we are going to reduce it to zero is a separate issue," Edano, the economy, trade and industry minister told Reuters on the sidelines of a ministerial meeting hosted by the International Energy Agency in Paris.

Asked whether pulling out of nuclear was being considered, Edano said: "Yes, it is still under consideration."

Earlier Edano told a press briefing that Japan was working on improving its energy efficiency and would promote the development of renewable energy sources and of gas powered generation plants to make up for lost nuclear output.

Japan's former prime minister Naoto Kan concluded in March that nuclear power was no longer worth the risk after an earthquake and tsunami crippled the Fukushima power plant.

But his successor Yoshihiko Noda has signalled that nuclear power could play a role for decades and pro-nuclear interests are quietly campaigning for their sector.

The government has let a panel of experts begin a debate on Japan's energy policy.

Public concern about safety leapt after the Fukushima accident, which forced 80,000 people from their homes and sparked fears about food and water supply. Some 70 percent of voters polled in July backed Kan's call to phase out nuclear plants.

A series of scandals in which regulators and power companies tried to sway hearings on reactors has also dented public trust.

Noda has acknowledged that public safety concerns will make it tough to build new reactors, but has stopped short of saying atomic power would play no role at all by 2050.

He said decisions on reactors already under construction would have to be made "case-by-case".

## **Discovery of radiation 'hot spots' in Tokyo sparks calls for decontamination standards**

Officials have called for government standards on radiation decontamination measures following a spate of discoveries of radiation "hot spots" in the Tokyo metropolitan area.

On Oct. 2, a high radiation level of 3 microsieverts per hour was detected on a road in Tokyo's Setagaya Ward by a member of the "Setagaya Kodomo Mamoru Kai" (Setagaya Children's Protection Association), which was founded in June in the wake of the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant. The member took measurements based on information on social media site Twitter. As it turned out, the radiation was coming from radium stored underneath the floor of a home in the ward.

At the time, Setagaya Mayor Nobuto Hosaka spoke of the difficulty in pinpointing hotspots, saying, "It's impossible for administrative officials to search everywhere. We want people to actively provide information to us in the future."

Tokyo's Adachi Ward detected a level of radiation of 3.99 microsieverts per hour next to the machinery room of an elementary school pool on Oct. 17, following measurements taken independently by a resident. However, the government has not yet provided any clear guidelines relating to decontamination work.

Based on the International Commission on Radiological Protection's limit of one millisievert of artificial radiation per year under normal circumstances, some local bodies have used a level of 0.25 microsieverts per hour as a guideline to determine whether or not to decontaminate areas, but the response varies between local bodies.

Tokyo's Arakawa Ward is the only one of Tokyo's 23 wards that has not taken its own radiation measurements. It has received reports from residents that there are hotspots with radiation measurements of up to 1 microsievert per hour, but ward officials have merely commented, "Safety was confirmed in measurements taken by the Tokyo Metropolitan Government in June."

Noriko Chikumoto, representative of "Arakawa-ku no Kodomo no Mirai o Kangaeru Kai" (Association to Protect the Future of Children of Arakawa Ward), said, "We're worried, and we want the government and local bodies to set clear decontamination guidelines."

Eiichi Yamamoto, head of the Arakawa Ward Government's environment section, said "(Radiation) measurements are a sensitive issue, possibly affecting the lives of residents and their properties. We want the government to establish unified standards."

The Ministry of Education, Culture, Sports, Science and Technology is currently working on guidelines for radiation measurement and decontamination.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 19, 2011

## **Environmental associations detect high radiation in Tokyo's Katsushika Ward**

Two environmental associations in Tokyo's Katsushika Ward met the ward's mayor, Katsunori Aoki, on Oct. 18, seeking radiation tests and decontamination measures after they detected radiation of up to 5.47 microsieverts per hour in the ward.

The Katsushika Aozora no Kai, an association that has tackled the issue of atmospheric pollution in Katsushika Ward, and the Katsushika branch of the Tokyo Kogai Kanja to Kazoku no Kai, which represents victims of pollution and their families, made the request after conducting their own radiation tests at 314 locations starting in July.

The association representing victims of pollution also detected radiation measuring up to 6.7 microsieverts per hour in Edogawa Ward and 3.62 microsieverts per hour in Adachi Ward. It plans to make similar requests for testing and decontamination efforts in those wards.

Both associations took their measurements below gutters, where it is easy for radioactive materials to collect, using simple radiation measurement devices. At 65 locations, they found the radiation level one to two centimeters above the ground was 1 microsievert per hour or greater, and at least 5 microsieverts per hour in two of those locations.

Officials in Katsushika Ward have been taking weekly measurements at 7 parks in the ward since the end of May, and in August, they conducted radiation tests at all 436 sandpits at kindergartens, schools and other educational facilities. The highest level that had been detected during those tests was 0.57 microsieverts per hour, recorded on Aug. 12 at an elementary school sandpit.

The Katsushika Ward Government has decided to take measurements on roads and other areas near where the two associations detected high levels of radiation, and decide whether or not to go ahead with decontamination measures based on those results.

"This is a level that has not been detected before so we're surprised," a ward official commented. "We can't enter private land, but we want to conduct measurements on public land in the vicinity."

Katsushika Aozora no Kai head Noriaki Yoshikawa commented, "The situation surrounding Katsushika is extremely serious. The ward should proceed to ascertain the state of contamination and proactively decontaminate these areas."

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 19, 2011

## **Radiation monitoring by drone begins in Fukushima**

A city near the troubled Fukushima Daiichi nuclear power plant has begun monitoring radiation levels of farmlands and forests with a small unmanned helicopter.

The move comes after the central government lifted an evacuation advisory for parts of Tamura City and 4 other municipalities outside the 20-kilometer no-entry zone around the Fukushima Daiichi nuclear plant at the end of last month.

On Wednesday, the Japan Atomic Energy Agency began monitoring radiation using the drone at the request of the city. The agency tested a 300-meter-long, 150-meter-wide area of a rice field from a helicopter equipped with a measuring instrument about 20 meters above the ground. It also carried out tests on forests.

Data transmitted by the helicopter is reportedly translated into radiation levels 1 meter above the ground and indicated by instruments at ground level.

Aircraft are suitable for measuring radiation levels of large areas and other locations that are difficult for people to access.

In the areas of Fukushima Prefecture where the evacuation advisory has been lifted, residents had previously been advised to stay indoors and prepare for emergency evacuation. But many residents decided to evacuate their homes.

The tasks facing Tamura and the 4 other municipalities are decontamination and radiation monitoring for both residents and evacuees.

Wednesday, October 19, 2011 18:28 +0900 (JST)

## Radioactive cesium detected in Tokyo tea leaves

Radioactive cesium in levels above the government standard has been detected in tea leaves produced in Tokyo and Saitama, north of the capital. The contamination is believed to have been caused by the Fukushima Daiichi nuclear plant accident.

The Tokyo Metropolitan Government says 3 brands of tea leaves grown in northwestern Tokyo have been found to contain 550 to 690 becquerels of radioactive cesium per kilogram. The government limit is 500 becquerels.

The Saitama prefectural government says it found 504 to 2,063 becquerels per kilogram in locally-grown leaves of 97 brands.

The samples tested by the prefecture were not early-picked leaves, which are said to be more likely to contain radioactive material. The prefecture had already found that such leaves of 14 brands contained radioactive cesium above the limit.

The authorities have asked the producers to dispose of their tea leaf stocks.

Wednesday, October 19, 2011 20:45 +0900 (JST)

## Municipalities decline nuclear power subsidies

Four Japanese municipalities have demonstrated their opposition to nuclear power by declining government subsidies for hosting nuclear plants.

The government this week began receiving yearly applications for subsidies from municipalities where nuclear-related facilities are located.

About 12 billion dollars have been allocated since the program started in 1974.

NHK has learnt that, in a rare move of opposition, 4 out of the 44 municipalities that host nuclear facilities around the country plan to skip the application this year.

One of them, **Minamisoma City** in Fukushima Prefecture, has demonstrated its anti-nuclear stance by refusing to accept subsidies for the planned Namie-Odaka power plant to be operated by the Tohoku Electric Power Company. In addition, Minamisoma City has decided to decline subsidies allocated for cities surrounding the Fukushima Daiichi plant.

City Mayor Katsunobu Sakurai said the city has made clear its rejection of nuclear power as part of its recovery plan.

Sakurai added the city will demand that the central government subsidize renewable energies.

Neighboring **Namie Town** has also declined subsidies related to the Namie-Odaka plant. The town said

building new nuclear power facilities is not reasonable when Fukushima Prefecture and others are working to remove existing plants.

Wednesday, October 19, 2011 19:43 +0900 (JST)

## Journalists' responsibilities heavy in face of unprecedented crisis (Part 1)



The front page of the March 13 morning issue of the Mainichi, reporting on an explosion at the Fukushima No. 1 Nuclear Power Plant. (Mainichi)

The unprecedented disaster at the Fukushima No. 1 Nuclear Power Plant, in which fuel meltdowns were found to have taken place simultaneously at three reactors, poses a massive challenge to the media. Looking back, did we promptly deliver accurate information that could save the lives of the public? Reflecting upon our experiences gathering information from the disaster areas, as well as from the Prime Minister's Office, plant operator Tokyo Electric Power Co. (TEPCO), the Ministry of Economy, Trade and Industry's Nuclear and Industrial Safety Agency (NISA), and other groups and individuals, what can we say about our coverage of the ongoing crisis?

-----

Press conferences were held intermittently by TEPCO and NISA beginning March 11, when the nuclear disaster was triggered by the Great East Japan Earthquake and tsunami. As the safeguards meant to guarantee the safety of the nuclear power plant failed one after another, it was our task as reporters to discern the state of the plant with the limited information we had, motivated by a sense of impending danger to residents living in close proximity to the power plant. At the mercy of backtracking government and TEPCO officials, however, we were often at a loss as to how to confirm

the legitimacy of the information we were given and how the information should be relayed to the public.

A little after 3:30 p.m. on March 12, images of the Fukushima No. 1 Nuclear Power Plant appeared on the screen of a television at TEPCO's head office in Tokyo's Uchisaiwaicho district. It appeared as though just the steel frame of the upper part of the No. 1 reactor building remained. The reporters grew alarmed. "Something's not right," one said.

However, even after seeing the footage, TEPCO's public relations officer stubbornly insisted: "We don't know what's going on. We're trying to confirm with those on the scene." Finally, at a press conference held four hours later, TEPCO admitted that there had been a hydrogen explosion at the plant's No. 1 reactor.

By that afternoon, radioactive cesium and iodine were detected in the power plant's surrounding areas. Koichiro Nakamura, then deputy director-general of NISA and the press officer for the agency, explained that it was possible that a reactor meltdown had taken place. Soon thereafter, Nakamura stopped appearing in press conferences. The new press officer refused to offer any further information, sticking to the line: "We can't discuss anything until the Prime Minister's Office has made an announcement." Subsequently, NISA avoided using the phrase "core meltdown," replacing it with either "fuel damage" or "core damage."

However, several months later, it emerged that NISA had previously asked power companies to fake support for nuclear power at a symposium, and on Aug. 10, approximately five months after the onset of the nuclear crisis, then NISA director Nobuaki Terasaka announced: "We recognized the possibility of a core meltdown soon after the incident began."

On March 12, NISA designated the Fukushima disaster a level 4 on the International Nuclear and Radiological Event Scale (INES), but a month later upgraded it to level 7, the worst level on the scale, which had until then been given only to Chernobyl. An understated announcement would be made, followed later by a revision. Statements concerning the nuclear disaster simply repeated this pattern.

So did TEPCO and the government respond appropriately to the crisis? I cannot shake the feeling that the damage could have been reined in far more than it has been. And slowly, through the efforts of the "Investigation Committee on the Accidents at the Fukushima Nuclear Power Station of Tokyo Electric Power Company" set up by the government, it's become clear what prevented officials from being more effective.

In preparation for a midterm report to be submitted by the end of the year, the committee has been conducting interviews with TEPCO and government officials. These interviews have revealed that it occurred to neither NISA nor to the Ministry of Education, Culture, Sports, Science and Technology (MEXT) to use a computer system called the System for Prediction of Environmental Emergency Dose Information (SPEEDI), in coming up with an evacuation plan. Furthermore, no one in NISA had even recognized the necessity of contacting neighboring countries, let alone raising the issue, before low-level radioactive water was dumped into the Pacific Ocean on April 4.

What I've gathered from my experiences trying to understand the disaster is that both TEPCO and the government have failed to look at the crisis from the point of view of the victims.

Norio Kanno, the mayor of the Fukushima Prefecture village of Iitate, lamented that he did not receive any information from the central government for a month or two after the nuclear disaster began, and suggested that it was because "hearts (of government officials) lacked concern for the disaster areas." There is anger directed toward media, too, which we as journalists must accept and learn from.

The basic mission of newspapers is to collect information in the field and deliver it accurately to the public. At the beginning of the nuclear crisis, however, we had no idea whether the information we had to work off of was accurate. In addition, many experts were divided on what they believed. Requests for permission to go on-site to the power plant to report were denied by TEPCO. When reporters haven't looked at the scene themselves, how are they to communicate the very limited information that they do have?

Settling of the ongoing crisis, including decontamination beyond the plant's borders, is expected to take many years. The investigation into the disaster's cause has just begun. The responsibility to stand on the side of those who receive the news, and write articles that will contribute to reconstruction and to shed light on the cause of the disaster weighs squarely on our shoulders. (By Junko Adachi, Science and Environment News Department)

(This is part one of a six-part series on coverage of the Fukushima nuclear crisis.)

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 20, 2011

## Panel proposes widening nuclear disaster planning zone to 30 km



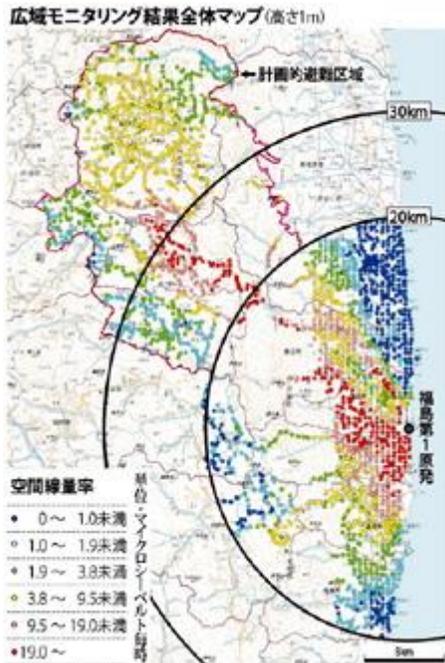
Residents dressed in clothing to protect them from radiation prepare to board a bus on Aug. 26 ahead of temporary visits to their homes within three kilometers of the crisis-hit Fukushima No. 1 Nuclear Power Plant. (Mainichi)

TOKYO (Kyodo) -- The secretariat of the Nuclear Safety Commission of Japan proposed on Thursday expanding the zone where intensive disaster countermeasures are to be taken to a 30-kilometer radius of a nuclear power plant from the current 8-10 km in the event of a future nuclear accident.

The secretariat also proposed newly designating a 5-km radius around a nuclear plant in its guidelines as a zone from which people should immediately be evacuated following a plant accident.

It sought the establishment of a 50 km-perimeter around a disaster-struck plant within which preparations would be made for distributing potassium iodide tablets to mitigate the impact of exposure to radiation.

The proposal was presented to the commission's working group reexamining evacuation rules for nuclear accidents in the wake of the disaster at the Fukushima Daiichi nuclear power plant in Fukushima Prefecture.



A government map displaying radiation levels in the area around the Fukushima No. 1 Nuclear Power Plant.

In the accident, which was triggered by the massive earthquake and tsunami in March, the government set a no-go zone in areas within 20 km of the crippled power plant, far wider than the maximum 10-km radius under the existing guidelines.

The government also designated some vicinities of the no-go zone as so-called emergency evacuation preparation zones, prompting many of those residing in such areas to evacuate.

The commission has been reviewing the existing guidelines after the disaster revealed their insufficiencies.

(Mainichi Japan) October 20, 2011

## **Nuke committee drafts disaster-response revisions**

Japan's Nuclear Safety Commission has drafted a plan for expanding areas that should be fully prepared against nuclear accidents to within 30 kilometers of nuclear power plants, from the current 10 kilometers.

A working group at the commission drew up the draft plan, following the March accident at the Fukushima Daiichi nuclear power plant when the government had ordered residents living within 30 kilometers of the plant to evacuate or to stay indoors.

The plan calls for designating areas within a radius of about 30 kilometers of nuclear plants as Urgent Protective Action Planning Zones, or UPZ. The definition of the UPZ is in line with the emergency-response requirements proposed by the International Atomic Energy Agency.

The working group calls for designating areas within 5 kilometers of plants as precautionary action zones, where residents need to immediately evacuate in the event of an accident.

The group also wants residents within a radius of about 50 kilometers to be prepared to take action to prevent internal exposure to the thyroids, for example by taking iodine tablets.

The committee plans to further study the revision plan, together with experts and municipalities.

If implemented, major reviews of anti-nuclear disaster programs by local governments will be required, as the number of municipalities involved will be around 130, about 3 times more than the current figure.

Thursday, October 20, 2011 16:14 +0900 (JST)

## **Fukushima crisis could have been avoided: French nuclear commission**



In this March 15, 2011 photo released by Tokyo Electric Power Co., smoke rises from the badly damaged Unit 3 reactor, left, next to the Unit 4 reactor covered by an outer wall at the Fukushima No. 1 nuclear complex in Okuma, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- The chief of the French atomic energy commission said Wednesday that Japan may have been able to avoid a nuclear disaster at the Fukushima Daiichi power plant if it acted more quickly to pour seawater to cool the reactors after they lost their cooling functions in the wake of the March 11 earthquake and tsunami.

"There was a need to inject seawater from outside within six to 12 hours...and I think it was physically possible to avoid (the accident), although I can say this only now," Bernard Bigot said during a question and answer session after delivering a speech in Tokyo.

The chairman of the French Alternative Energies and Atomic Energy Commission also emphasized the need to make preparations on the assumption that an extreme situation may happen, and vowed his country would never allow an accident involving the release of radiation outside its nuclear power plants.

Hit by a magnitude 9.0 earthquake and tsunami on March 11, the Fukushima nuclear plant in northeastern Japan lost nearly all its power sources and consequently the ability to cool the reactors and spent fuel pools. The government acknowledged that the Nos. 1 to 3 reactors suffered meltdowns.

Seawater injection to cool the reactor cores as an emergency step started with one of the reactors on March 12.

(Mainichi Japan) October 20, 2011

## Hot spot decontaminated at Tokyo primary school

The Yomiuri Shimbun



Workers remove soil during decontamination work at Higashi-Fuchie Primary School in Adachi Ward, Tokyo, on Tuesday.

Soil around a small "hot spot" detected at a primary school in Tokyo was removed Tuesday, as the local ward office started measuring radiation levels at hundreds of other facilities it operates.

A radiation level of 3.99 microsieverts per hour was detected under a drainpipe at Higashi-Fuchie Primary School in Adachi Ward on Monday, but this figure dropped to 0.15 microsieverts per hour after the soil was removed, according to ward officials.

Soil to a depth of 10 centimeters in a one-square-meter area around the drainpipe was removed, put in a bag and buried in a hole 1.2 meters deep at a different location at the school.

Tests conducted under the drainpipe after the soil was removed detected 0.15 microsieverts per hour at a depth of five centimeters, and 0.13 microsieverts per hour at depths of 50 centimeters and one meter.

Ward officials said these radiation levels do not pose any health risks to humans. The area, which was next to the school's swimming pool, is no longer off-limits.

Meanwhile, the Adachi Ward Office on Tuesday began measuring radiation at about 800 facilities it operates, including nurseries as well as primary and middle schools. These tests will focus on gutters and areas under drainpipes where contaminated rainwater could accumulate and cause high radiation levels.

If a radiation level of 0.25 microsieverts per hour is detected at a height of 50 centimeters, the ward will remove soil around the spot or wash it with high-pressure water, ward officials said.

(Oct. 20, 2011)

---

*They are scared !*

From: The Hindu (<http://tinyurl.com/3q92qtg>)

PARIS/NEW DELHI, October 20, 2011

## **Alliance Francaise cancels lectures on nuclear energy by French journalist**

by Vaiju Naravane, Priscilla Jebaraj

In the wake of India's postponement of French reactor purchase decision

French journalist Naïke Desquesnes was preparing for a month-long trip to India to present a lecture series on “Covering Nuclear Energy Post-Fukushima” at six Alliance Française centres when she received a surprise phone call on September 23.

Philippe Gasparini, Director of Alliance Française Bangalore, where her first lecture was scheduled to be delivered on October 10, was calling to say that the subject of her talk had been turned down.

“He said he had perhaps not ‘been diplomatic enough’, but the **French embassy and Areva did not want such a ‘delicate subject’ to be discussed,**” Ms. Desquesnes told The Hindu. He seemed to have been hauled up by the French embassy in Delhi, she felt.

Mr. Gasparini asked her if she had seen The Hindu's September 20 report that India would postpone its final decision on the purchase of the EPR type of nuclear reactors from France until post-Fukushima nuclear safety tests were completed satisfactorily. In the wake of recent uncertainty over nuclear energy and the possible impact on the French reactor manufacturer Areva, **Ms. Desquesnes felt that French authorities were afraid of a debate on the subject.**

Areva has an agreement to build the first of six EPR reactors at Jaitapur in Maharashtra with an option of four more reactors to follow, but nuclear deals around the world have been hit by the March 2011 Fukushima nuclear disaster.

Mr. Gasparini confirms that he and his fellow Alliance Française directors decided to reject the topic of Ms. Desquesnes' lecture at short notice, but refused to discuss why her subject matter was not acceptable.

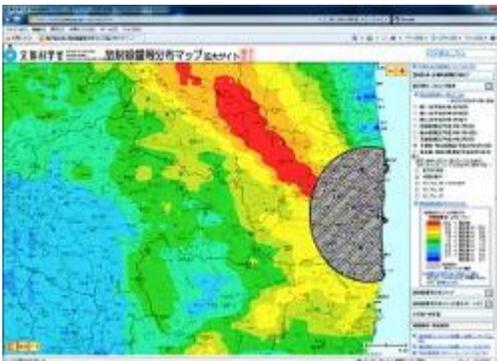
“It was her proposal, it was not really approved by us anyway,” he claimed. “We gave her other topic options, but she was not willing to be prepared for anything else.” He listed India-China relations as a possible alternative, but Ms. Desquesnes, who had spent a month gathering news clippings to present a detailed analysis of the press in France, Japan and India in the wake of Fukushima, declined to research a new subject.

“There was a logistics problem and a misunderstanding with the journalist, so we had to cancel,” said Mr. Gasparini. Asked about his statement to French news outlet Mediapart that it was not a good time to discuss this “very sensitive” subject, Mr. Gasparini told The Hindu: “All subjects are sensitive... Sometimes, if we cannot do it, we simply cannot do it. We need to be flexible.”

The Alliance Francaise is a non-governmental institution promoting French language and culture, which nonetheless works closely with the Cultural Action Office of the French Embassy in New Delhi, and also receives some support from the French Foreign Ministry in Paris.

Ms. Desquesnes' employer, the *Courrier Internationale* is a monitor of the world press, and has a partnership with the Alliance Francaise around the world to organise talks and seminars on the role of the press and the media.

## **Most detailed radioactive contamination maps yet published online**



The government's new radiation contamination map site is seen in this screen capture taken on Oct. 18. (Mainichi)

The most detailed government maps yet of cesium concentrations and radiation levels stemming from the crisis-stricken Fukushima No. 1 nuclear plant are now available online.

The Ministry of Education, Culture, Sports, Science and Technology site (link below) went live on Oct. 18 with both web-based and PDF versions of the maps, providing not only information by municipality as had been the case previously, but measurements by district.

The maps, intended to help residents who had called for better information on contamination levels between areas of the same municipalities, use soil and air sample data already released. Users are presented with a grid laid over a map of most of eastern Japan. Selecting a square in the grid zooms in on that area, at which point users can choose more detailed maps displaying airborne contamination levels, cesium 134 or 137 levels, or total cesium levels.

 [Click here for the original Japanese story](#)

## Related links

MEXT radiation maps  
<http://ramap.jaea.go.jp>

## Only 3 companies to make quick return to industrial area near nuclear plant



A police checkpoint is seen near a highway in Naraha, Fukushima Prefecture, on Sept. 30. An industrial area of Naraha is seen in the background. (Photo courtesy of the Naraha Municipal Government)

Only three of 19 companies surveyed by the town of Naraha, near the disaster-stricken Fukushima No. 1 nuclear complex, have said they will quickly return to the town's industrial zone -- despite the lifting of an evacuation preparation advisory over part of the town.

Even adding in those companies that would like to return "in the near future," the number only climbs to seven, the town says.

"Lifting the advisory before radioactive decontamination has been done is an example of doing things in the wrong order. Temporary storage places for waste haven't even been decided," said a town official.

Most of the town, including the northern part of the industrial area, is within a 20-kilometers radius of the plant and is still under an evacuation order. However, a government advisory for several other areas including the southern part of the town's industrial area was lifted on Sept. 30.

A town government request to permit operations within the 20-km radius zone was granted, but workers will still have to pass through a police check when entering the zone. Before the disasters, the industrial area employed 600 to 700 people.

A food package maker that is headquartered elsewhere but has a facility in the industrial area continued production after the March 11 disasters using a factory in Niigata Prefecture. To reassure clients about

its inventory of products that had already been produced in Naraha, it had screening tests for radioactive material done, but at least one client still refused to buy those products. Although damage at the company's factory in Naraha was relatively light, the company does not yet have a plan for when it might resume operations there.

"The radiation levels there are low, but we still don't know when or where during the manufacturing process radioactive materials might attach themselves to products. Even if we restarted production, without an announcement of safety by authorities we would have to conduct screening tests for radioactive material, and costs would outstrip our income."

Another problem is securing the necessary employees. Of the six employees of a bolt and screw processing company in Naraha, two with elementary-school age children have fled elsewhere. Schools around the industrial area have not resumed operations, so even if the company restarted operations, it isn't clear that its evacuated employees would soon return.

"We plan to go back to the industrial area, but without enough people, our production ability will be lowered. We also need to secure homes for our employees. I want authorities to quickly get the area decontaminated so that our employees can work without worry," says company president Osamu Fukao.

Meanwhile, a Fukushima city-based dry-cleaning company, Dojinsha, says it cannot resume business in the area because its regular customers who lived nearby have evacuated, and a local electronics manufacturer says it cannot return to the industrial area because it has not yet been paid compensation by the Tokyo Electric Power Co. for equipment moving costs.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 20, 2011

## **Fukushima assembly OKs reactor decommission**

The assembly of Fukushima prefecture has adopted a petition calling for the scrapping of all 10 nuclear reactors in the prefecture. The prefecture hosts two Tokyo Electric Power Company-run nuclear stations, one of them severely damaged by the March disaster.

The petition adopted by a majority vote on Thursday was submitted by a civic group in June, following the nuclear accident at the Fukushima Daiichi power plant.

The petition urges the decommissioning of all reactors run by Tokyo Electric Power in the prefecture -- six at the Daiichi plant and four at the Daini plant.

This is the first time in Japan that a prefecture hosting nuclear plants has voted to adopt such a petition.

Tokyo Electric has concluded it will decommission four reactors at the Fukushima Daiichi plant that suffered severe damage in the March disaster. But the utility has yet to come up with detailed plans for the remaining six reactors.

Thursday, October 20, 2011 19:35 +0900 (JST)

## **Journalists strived to get truth about nuclear fallout to public (Part 2)**

The question of how much and where radioactive materials were dispersed by the hydrogen explosions at the Fukushima No. 1 nuclear plant have been of the utmost importance to residents of both Fukushima Prefecture and beyond, and one we began to pursue soon after the nuclear disaster started to unfold.

The government initially designated the area within a 20-kilometer radius of the power plant an evacuation zone, while those living between 20 kilometers and 30 kilometers from the plant were instructed to remain indoors. However, high levels of radiation were being detected even beyond those areas. A long-term advisory to stay indoors had not been a part of the government's disaster preparedness guidelines, and would pose too great a burden on residents. It seemed to us that a designation of evacuation zones based on actual radiation measurements was necessary.

That was when we came up with the idea of calculating cumulative radiation levels at various locations. At the time, radiation monitoring results released by the Ministry of Education, Culture, Sports, Science and Technology (MEXT) and municipal governments were limited to the amount of radiation detected in the atmosphere per hour (dosage rate). But since local residents would continue to be exposed to radiation, we felt it far more important to provide information on cumulative radiation levels.

When we appealed to MEXT to provide this information, we were told it was not something they could do right away. It was decided then that the Mainichi would crunch the cumulative radiation level numbers by adding together dosage rates released by public sources.

Between March 14 and March 21, the cumulative radiation level in the city of Fukushima reached 1770.7 microsieverts. The figure was 299.7 microsieverts for the Fukushima prefectural city of Iwaki and 34.1 microsieverts for the Tochigi Prefecture capital of Utsunomiya for the same period, and 33.2 microsieverts in the Ibaraki Prefecture capital city of Mito between March 15 and March 21. Having found the cumulative radiation in the city of Fukushima to exceed the average 1500 microsieverts of natural background radiation that we are normally exposed to annually, the Mainichi's Science and Environment News Department debated what to do with the information, concerned about the public response the information could spark.

Ultimately, we decided to release the information along with the explanation that cumulative radiation levels indicate how much radiation one would be exposed to if they stayed outdoors all day, and that radiation levels in general were trending downwards. We also added commentary from multiple experts that the radiation levels posed no health risks for people "stepping out to shop" for groceries, and published the information in the March 23 morning issue of the Mainichi's Japanese edition.

Following publication, we received inquiries from various municipal governments in Fukushima Prefecture, and were criticized by some readers for "causing panic among Fukushima city residents." We maintain, however, that by contributing information on cumulative radiation levels -- which until then had been largely ignored -- we helped residents come to their own conclusions on what to do next.

On March 25, MEXT began releasing cumulative radiation figures. Since then, it has gone on to conduct detailed monitoring of radiation levels, and has posted predicted cumulative radiation levels through March 2012.

We still regret not having been able to predict that radioactive contamination would spread to the extent that it has. We keep asking ourselves if there was any way we could've sounded a more precise alarm when large volumes of radioactive materials were released on March 14 and March 15, as we continue working toward protecting the public from unnecessary exposure. (By Taku Nishikawa, Science and Environment News Department)

(This is part two of a six-part series on coverage of the Fukushima nuclear crisis.)

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 21, 2011

## **Fukushima salmon fishermen look ahead to uncertain future**



Tomiaki Nihei, a salmon fisherman for over 43 years, catches salmon in Fukushima's Abukuma River. (Mainichi)

FUKUSHIMA -- If this was a regular year, the nets of salmon fishermen in this prefecture would be heavy with thrashing fish caught on their way up-stream to spawn. A great many of the fish would also be set aside to let nature take its course under the fishermen's supervision, millions of their progeny released into the local rivers in the spring with hopes of their return as adults in four years.

With two of the prefecture's main rivers winding through the 20-kilometer no-go zone around the crippled Fukushima No. 1 nuclear plant, however, this year is anything but regular.

"What will happen four years from now?" is the question many fishermen are asking as the annual salmon season, which flourishes in the towns of Namie and Naraha along the prefecture's Ukedo and Kido rivers between the end of September and mid-November, began.

Fishermen from the Izumitagawa and Kidogawa fisheries cooperatives in the towns each normally release some 15 million young salmon into the rivers every spring, part of their efforts to boost fishing stocks.

The salmon business near the prefecture's Pacific coast was not only profitable, with annual revenues reaching as high as 200 million yen, but it also attracted hundreds of tourists to see the fish return to the rivers fully-grown.

This year, however, as a consequence of the nuclear disaster at the Fukushima plant, both Namie and Naraha were designated no-go or emergency evacuation preparation zones. Moreover, much of the towns' salmon hatchery was destroyed by the March 11 quake and tsunami.

Unable to open the fishing season, fishermen from these towns are now looking at hatching and releasing only about one-fifth the numbers they would in a normal year. Their anxieties, however, also reach four years into the future, when they will welcome an autumn with very little to catch.

Fishermen from the Abukuma Fisheries Cooperatives on the Abukuma River -- in the west of the prefecture and relatively far from the damaged nuclear plant -- discussed suspending fishing this season due to radiation fears. Considering the consequences four years from now, however, they decided to open fishing on Oct. 14, though only until the end of the month. They have estimated they will release no more than 100,000 young salmon next spring -- half that of a regular season.

"If we are afraid all the time we can't do anything. This is part of my life -- this is where I've lived all my life," says 60-year-old salmon fisherman Tomiaki Nihei, adding that he cannot welcome the winter unless he catches salmon. As of Oct. 20 he had caught only about 100.

According to Fukushima Prefecture-led monitoring, while radiation has been found in some kinds of fish -- including sweetfish, char and landlocked masu salmon -- at present salmon is not among them. It is believed that they have not become contaminated because they eat almost nothing from just before they return to the river all the way to their spawning grounds.

As the percentage of salmon to return to Fukushima Prefecture is not high in general, fishermen are worried that the fishing season four years from now will be an especially lean one.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 21, 2011

## **Local gov'ts facing widened evacuation perimeter against nuclear reactor restarts**

As the government moves to expand emergency evacuation zones around the nation's nuclear plants to 30 kilometers, all the municipalities affected are now against unconditional reactor restarts at their local plants, a Mainichi survey released Oct. 20 has found.

The Mainichi polled 84 cities, towns and villages in 20 prefectures in response to a Nuclear Safety Commission of Japan proposal to expand the maximum evacuation perimeter around the plants from a 10- to a 30-kilometer radius in the event of a nuclear accident. Seventy-nine of the 84 local governments around 15 nuclear plants responded. Fukushima Prefecture, which has declared it will give up nuclear energy due to the ongoing crisis at the Fukushima No. 1 nuclear plant, was not surveyed.

Asked about approving the restart of idled reactors, 51 local governments replied they couldn't say one way or the other, 17 said they would give approval with safety preconditions attached, two were against any restarts, and nine did not respond. None of the 79 municipalities supported unconditional restarts.

Furthermore, less than half of the municipalities expressed intentions to sign a nuclear power safety agreement with utilities concerned. Such a pact requires approval by a mayor or local assembly if an electric power firm tries to build a new nuclear power plant or expand an existing one. The poll found that 36 local governments signaled readiness to conclude such an accord, 41 were undecided and two had no such plans.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 21, 2011

## **City assembly members find radiation hotspot in Chiba, call for better monitoring**

MATSUDO, Chiba -- City assembly members checking local radiation levels have revealed they discovered a hotspot emitting 7.0 microsieverts per hour near a greenhouse here.

The assembly members from the Japanese Communist Party (JCP) added, however, that they will not reveal the exact location of the 7.0 microsievert hotspot or how the city has dealt with it for fear of harmful rumors.

The group furthermore said on Oct. 20 that they recorded hourly radiation levels of more than 1 microsievert at 37 out of 144 locations they checked, including parks, private houses and day-care centers. The group said it monitored radiation levels at a maximum of 25 points per location from Sept. 7 through Oct. 17. About 1,830 people joined the JCP group in monitoring radiation levels 5 centimeters above ground.

"We were surprised to find extremely high radiation levels at places which were considered relatively safe. More detailed radiation checks are necessary," the JCP group stated.

Among parks checked by the group, a sandbox in the city's Nishinoshita Park registered a radiation level of about 3.42 microsieverts per hour, prompting city officials to conduct decontamination work to reduce the level to 0.3 microsieverts. The city has double-checked locations which were initially monitored only by residents, and carried out emergency decontamination measures at about 10 locations.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 21, 2011

## Perspectives

### **Journalists keep close eye on Fukushima nuclear worker radiation exposure (Part 3)**

The wide perception gap that has surfaced between Tokyo Electric Power Co., the operator of the tsunami-hit Fukushima No. 1 nuclear plant, the government and other parties has raised serious questions about the management of plant workers' radiation exposure.

Shortly after the plant was stricken with meltdowns and hydrogen explosions in March, Mainichi reporters, mainly those with the Tokyo City News Department, began interviewing workers struggling to bring the crippled facility under control.

Most of the workers are from Fukushima Prefecture, and many of them commute to the plant from shelters or dorms where they were taking refuge after their homes were badly damaged in March 11's natural disasters.

A 30-year-old worker for a sub-subcontractor said he had been told by an employee of the subcontractor, "We won't write down the amount of radiation you were exposed to during the latest work on your radiation management record. You don't have to worry about it."

Radiation exposure amounts and the results of regular medical exams are supposed to be stated clearly on each worker's radiation management record. If workers suffer from cancer in the future, there will be no proof of the causal relationship between their radiation exposure and the disease unless such data is included in their radiation management records, making them ineligible for workers' accident compensation benefits.

Further interviews with the utility, the government organizations concerned including the Health, Labor and Welfare Ministry, and other parties have revealed there was a wide perception gap among them over maximum exposure limits for workers.

Health ministry regulations stipulate that nuclear power station workers can be exposed to a maximum of 100 millisieverts over five years, and 50 millisieverts in a single year. However, in the case of an emergency such as a nuclear accident, they can be exposed to up to 100 millisieverts during work to bring the plant under control. In the Fukushima nuclear crisis, the ministry raised the upper limit to 250 millisieverts.

The ministry concluded that workers who are exposed to 100 to 250 millisieverts during efforts to tame the Fukushima nuclear crisis must be withdrawn from further work for five years on the grounds that the conventional regulations apply to the Fukushima crisis.

However, TEPCO was of the view that the conventional regulations do not apply to the work at the Fukushima plant, arguing that workers should not be deprived of employment for long periods. Because of this, the subcontractor omitted the levels of radiation workers were exposed to from their radiation management records.

"In the end, we are the ones who are going to be left holding the bag," a 28-year-old worker lamented in an interview with the Mainichi.

The Mainichi published an article about the omission of exposure data from the 30-year-old worker's radiation management record on the front page of its April 21 morning edition.

It was subsequently learned that at least one TEPCO employee had been exposed to more than 250 millisieverts, prompting the ministry to step up its radiation management instructions to the utility.

There have been some cases of plant workers being exposed to excessive levels of radiation during their work because of sloppy management. We are determined to continue to shed light on how workers' radiation exposure is being handled in an effort to improve their working environment. (By Satoshi Kusakabe, Takayuki Hakamada and Akiyo Ichikawa, Mainichi Shimbun)

## **2 boys in Fukushima Pref. internally exposed to radiation**

TOKYO (Kyodo) -- Two boys in Fukushima Prefecture were found to have been internally exposed to the highest levels of radiation detected during checks conducted on nearly 4,500 local residents in the wake of the nuclear crisis at the Fukushima Daiichi power plant in the northeastern prefecture, the prefectural government said Thursday.

The level of exposure is estimated to be equivalent to 3 millisieverts during their lifetime, which would not have harmful effects on their health, according to government officials. The local government has not disclosed the boys' exact ages, saying only that they are between 4 and 7 years old.

The boys, who are from the town of Futaba, which partly hosts the plant that was severely damaged by explosions after the March 11 earthquake and tsunami, showed the highest levels of internal exposure among 4,463 residents of 13 high-risk municipalities tested between June 27 and Sept. 30, the officials said.

Among others tested, eight people measured 2 millisieverts, six 1 millisievert and the remaining 4,447 below 1 millisievert, they said.

They were tested using whole body counters either at the National Institute of Radiological Sciences in Chiba city or the Japan Atomic Energy Agency in Tokaimura, Ibaraki Prefecture. Estimates for adults were calculated to measure accumulated radiation exposure in the coming 50 years, and for children until they reach the age of 70.

In a related development, Japan Atomic Power Co. said Thursday that a 21-year-old male worker was internally exposed to radiation at the Tsuruga nuclear plant's No. 2 unit after possibly wiping his face with a cloth contaminated with radioactive substances.

The level of exposure was estimated at 1.7 millisieverts for the next 50 years, far below the government-set maximum allowable radiation exposure limit of 50 millisieverts per year for workers at

nuclear-related facilities, and is not expected to have harmful effects on the man's health, company officials said.

The worker, who was in charge of checking the valves of the unit's primary coolant system, threw an uncontaminated cloth into a garbage bag in his work area inside the reactor building, but later stuck his hand into another garbage bag that contained low-level radioactive waste, including a contaminated cloth which he is believed to have used to wipe his face, the officials said.

As radioactive substances were detected on his face and chest area as he was leaving the facility, radioactive substances were found inside his abdomen in a test conducted after he was decontaminated on the surface, they said.

The garbage bag with the contaminated cloth was from another building, and workers are supposed to seal such bags when transporting them outside each work area. Japan Atomic Power plans to make sure workers manage waste properly, the officials said.

(Mainichi Japan) October 21, 2011

## **Chiba Pref. city finds major radioactive hot spot on public land**



Kashiwa Municipal Government workers take radiation measurements at a site on city land where emissions of 57.5 microsieverts per hour have been detected. (Mainichi)

KASHIWA, Chiba -- Officials here announced Oct. 21 the city government has discovered a hot spot emitting extremely high radiation of 57.5 microsieverts per hour on a plot of public land in a residential district.

The new hot spot was found within a radius of just one meter. Radiation levels in Kashiwa and its vicinity are relatively high because of the effects of the ongoing Fukushima nuclear crisis, but the latest discovery of such an intense hot spot in the city's Nedokoyadai district came as a surprise. City radiation task force chief Seiichi Someya speculates, "It's hard to imagine that it is due to effects" of the Fukushima crisis.

The city purchased land in the district from the Finance Ministry in around 1957 and built 30 houses, before gradually demolishing them and clearing the land. At one time, the local community borrowed it and used it as a public square.

A resident strolling in the area carrying a dosimeter found the hot spot and notified the city on Oct. 18. City officials checked it with a Geiger counter capable of measuring up to only 10 microsieverts. Chiba Prefecture's environment foundation took its own measurements and recorded the startling 57.5 microsieverts per hour.

On Oct. 21, the city sealed off roads around the hot spot, banned entry within 3 meters and covered the hot spot with sandbags and blue tarps. The city will work with the Education, Culture, Sports, Science and Technology Ministry to conduct a full-scale check on Oct. 24.

A 44-year-old male, who was born and grew up the area, says he has never heard of anything pertaining to nuclear power in Kashiwa. He says he is worried about his mother, who frequents the area.

Radiation of 3.35 microsieverts per hour was recorded recently in an area of Tokyo's Setagaya Ward, but the culprit turned out to be radium kept in several dozen bottles under the floor of a local house.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 22, 2011

## **New algae a better radioactive absorber than currently used mineral, researchers say**

CHUO, Yamanashi -- A new type of algae is better at absorbing radioactive strontium and iodine than a mineral currently being used to treat radioactively contaminated water, say scientists.

According to a research group, the new algae, called "Parachlorella sp. binos" or "binos" for short, is better at absorbing some radioactive materials than is zeolite, which is being used at the Fukushima No. 1 Nuclear Power Plant to treat radioactively contaminated water.

Binos has already been commercialized by Japan Biomass Corp., a University of Tsukuba-affiliated startup, for the cleaning of sewage, and the corporation conducted joint research with the Kitasato Institute and other groups to explore applying binos to cleaning radioactively-contaminated water as well.

Researcher Hiroki Shimura of the University of Yamanashi's medical department agreed to help with the research and conducted tests with the algae on radioactively contaminated water collected from ditches in Namie, Fukushima Prefecture, from April through July.

He put 100 grams of binos each into one-liter samples of contaminated water, one with two megabecquerels of radioactive cesium-137, one with two megabecquerels of radioactive strontium, and one with three megabecquerels of radioactive iodine. After 10 minutes, the strontium was around 80

percent removed and the cesium-137 was around 40 percent removed. After 24 hours, the iodine was about 40 percent removed.



Biospheres that have been processed into jelly-like spheres is seen at left, and biospheres that have been dried are seen at right at the University of Yamanashi, Chuo, Yamanashi Prefecture. (Mainichi)

By contrast, zeolite did not absorb iodine at all. After about one hour, zeolite absorbed only around 60 percent of the strontium in its mixture, compared with 95 percent absorbed by the biosphere algae.

Because biosphere is an alga, it can be easily grown where there is light and carbon dioxide. Researchers say that if dried, the weight of biospheres shrinks to 1/20, which could help simplify dealing with it after it has been used to absorb radioactive materials.

The researchers are talking with power plant equipment makers over introducing the algae to work at the Fukushima plant, and a demonstration of using the algae to treat radioactively contaminated soil and then storing the algae is planned in the city of Date, Fukushima Prefecture, at the end of October. The demonstration will be conducted by multiple corporations including Japan Biomass Corp.

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 23, 2011

## Japan, France agree to boost cooperation on nuclear safety

TOKYO (Kyodo) -- Japanese Prime Minister Yoshihiko Noda and his French counterpart Francois Fillon agreed Sunday that the two countries will bolster cooperation on nuclear safety, following the nuclear crisis at the Fukushima Daiichi power plant crippled by the March 11 earthquake and tsunami.

The leaders also agreed to work together in dealing with the eurozone sovereign debt crisis, which is posing a threat to global economic growth and financial market stability, ahead of the Group of 20 meeting in Cannes, France, early next month.

Noda and Fillon said at a joint press conference after their talks in Tokyo that Japan and France have compiled a statement on nuclear safety, pledging that they will act together to promote the strengthening of international nuclear safety standards.

During their meeting, the two leaders also agreed to cooperate toward the start of free trade negotiations between Japan and the European Union, and signed a treaty aimed at protecting bilaterally exchanged classified diplomatic information, they said.

Noda will meet German President Christian Wulff on Monday and British Prime Minister David Cameron on Tuesday, government officials said.

(Mainichi Japan) October 23, 2011

## **Japan, France to cooperate on nuclear safety**

The prime ministers of Japan and France have agreed to cooperate in improving the safety of nuclear power plants.

Japanese Prime Minister Yoshihiko Noda met French Prime Minister Francois Fillon in Tokyo on Sunday.

They agreed on the importance of strengthening the safety of nuclear power plants to the highest level, and confirmed that the 2 countries will cooperate in cleaning up radioactive substances.

In a joint statement, the 2 countries agreed to study the possibility of setting up an international emergency response team that would be swiftly dispatched to deal with nuclear accidents.

The statement also calls for the creation of a committee to strengthen bilateral cooperation in the nuclear energy field.

Referring to credit worries in Europe triggered by the financial crisis in Greece, Noda said the sovereign debt problem is a pressing issue, and Japan will help to resolve it.

Fillon responded that decisive measures are being prepared to support Greece.

They agreed to cooperate on this issue ahead of the G20 meeting that will be held in France next month.

The 2 leaders also agreed to work together for the signing of an Economic Partnership Agreement between Japan and the European Union.

Sunday, October 23, 2011 16:34 +0900 (JST)

## **Japan, France to propose nuclear efforts**

Japan and France plan to announce a joint communique on nuclear safety, which will include the creation of an international response team for nuclear emergencies.

Visiting French Prime Minister Francois Fillon will meet Japanese Prime Minister Yoshihiko Noda on Sunday.

Government sources say the communique will confirm the 2 countries' resolve to work together in making their nuclear power plants among the safest in the world.

The communique will also refer to plans to create an international response team, which will be dispatched to countries hit by nuclear accidents to provide assistance.

Japan and France are also studying **ways to establish an institution to nurture personnel with expertise in the area of nuclear power risk management.**

The 2 sides are also expected to announce joint efforts in the area of decontamination, and the establishment of a committee aimed at strengthening nuclear cooperation.

Noda expressed his hope that release of such a communique will deepen Japan's ties with France, which has an edge in nuclear power technology.

The French Prime Minister arrived in Japan on Saturday, and first visited the disaster-hit city of Ishinomaki in Miyagi Prefecture. He said France is ready to help with recovery efforts in both emotional and economic ways.

Sunday, October 23, 2011 09:01 +0900 (JST)

## **High-level radioactive cesium detected in soil in Kashiwa**

CHIBA (Kyodo) -- The municipal government of Kashiwa in Chiba Prefecture said Saturday it found a high level of radioactive cesium in soil of city-owned land.

Up to 276,000 becquerels of cesium per kilogram of soil was detected 30 centimeters below the surface on Friday after an abnormal level of airborne radiation was found earlier in the week, the municipality said.

It said it will seek to identify the cause of the contamination jointly with the science ministry.

When the municipal government first received a report of airborne radiation of 57.7 microsieverts per hour at the site, it said the radiation was unlikely to be related to the nuclear accident at the Fukushima Daiichi power plant since the high radiation level was detected in a small area.

Science ministry officials said they cannot deny the possibility that the wrecked nuclear power plant is the source of the radiation.

(Mainichi Japan) October 23, 2011

## Forests to be used to store radioactive soil / Agency to let local govts open temporary sites

The Yomiuri Shimbun

The Forestry Agency has decided to allow local governments to use plots of land in state-owned forests to temporarily store soil and rice straw contaminated with radioactive substances from the crippled Fukushima No. 1 nuclear power plant.

Local governments will be responsible for preparing the land for the temporary storage sites, while the central government will shoulder the cost using its reserve fund for reconstruction.

Many local governments affected by the March 11 disaster are having difficulty securing storage sites for contaminated soil and other matter.

Providing land in the state-owned forests may help resolve this problem.

The sites will store soil removed in the process of decontamination and rice straw contaminated with radioactive materials.

Local governments may ask to be allowed to store sludge from the water supply and sewage systems, as well as ash produced by incinerating it.

In principle, the temporary storage sites will be built in forests within the jurisdictions of local governments that have collected contaminated soil.

If there are no state-owned forests with the jurisdiction of a local government, it will decide what to do in consultation with other local governments.

The sites will be located tens or even hundreds of meters from residential areas.

If a forest is near a water source, local governments will be required to consult with governments downstream before building temporary storage sites.

Contaminated soil and other matter will be encased in waterproof materials. If the quantity to be stored is large, the contaminated material will be placed inside concrete containers or surrounded by concrete walls.

As the sites are defined as temporary storage facilities, contaminated matter will not be buried.

According to an Environment Ministry estimate, up to 28 million cubic meters of contaminated soil in Fukushima Prefecture should be removed as it is assumed to have a radiation dosage of 5 millisieverts or higher per year.

If the soil is evenly piled up one meter high, the total area would be about 65 square kilometers, equivalent to half the area inside Tokyo's Yamanote loop railway line.

The central government has asked municipal governments to secure temporary storage sites until proper storage facilities have been completed.

After local residents strongly opposed plans to store contaminated soil in school yards or playgrounds, Iitatemura and Nihonmatsu, both in Fukushima Prefecture, asked the Forestry Agency to come up with other methods.

The Agriculture, Forestry and Fisheries Ministry has found that about 7,200 tons of rice straw have been stored in farmers' warehouses and other places in eight prefectures, including Hokkaido, Miyagi and Fukushima, as it could not be disposed of.

The sludge from the water supply and sewage systems and the ash, which cannot be disposed of due to radiation contamination, totaled about 130,000 tons as of September in Tokyo and 14 other prefectures.

It has yet to be decided how to secure sites to store the sludge.

(Oct. 24, 2011)

## **Govt to check Fukushima pollen / Cedar pollen may carry cesium on the wind, but at 'harmless' levels**

The Yomiuri Shimbun

The Forestry Agency will start checking for radioactive substances in cedar pollen in Fukushima Prefecture as early as next month in response to the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant, the agency said.

There is very little data in Japan or elsewhere in the world about pollen from plants grown in areas with high levels of radiation. If high levels of pollen-borne radiation are found, the Environment Ministry plans to release the data at the end of this year together with its forecast of the expected amount of cedar pollen to be dispersed in the air next spring.

The agency plans to pick male cedar flowers in the no-entry zone and check them for radioactive cesium, it said.

"As it will be the first such survey, we honestly don't know how much we will find. We'd like to obtain objective figures by making an accurate survey," an official of the agency said.

According to the agency and the Fukushima prefectural government, the prefecture has about 184,500 hectares of national and private cedar forests, accounting for about 20 percent of the total forests in the prefecture.

The agency has yet to decide the size of the areas to be surveyed, it said.

According to the Social Welfare and Public Health Bureau of the Tokyo metropolitan government, the wind sometimes carries cedar pollen more than 200 kilometers.

"It depends on the velocity and direction of the wind. Pollen is said to fly from dozens to hundreds of kilometers. When a survey was conducted by helicopter, pollen was found as high as 5,000 meters in the air. It is highly likely that pollen from Fukushima Prefecture reaches the Tokyo metropolitan area," said Norio Sahashi, a visiting science professor at Toho University and an authority on pollen.

But specialists say people do not have to worry too much about the effect of the pollen on human bodies.

"Even if pollen from radiation-contaminated areas does contain radioactive cesium, the amount people will take in is expected to be very limited. From the standpoint of radiation exposure, the amount is at a level that can be ignored," said Satoshi Yoshida, an expert on radiation ecology and a senior researcher at the Research Center for Radiation Protection of the National Institute of Radiological Sciences.

Yoichiro Omomo, special advisor at the Institute for Environmental Sciences, said, "Those who are allergic to cedar pollen do not need to worry too much as long as they take ordinary measures."

In late March, many inquiries were received by the Meteorological Agency and local governments about a yellowish residue found in gardens and elsewhere in the Kanto region.

Many residents apparently feared the residue was a radioactive substance from the crippled nuclear power plant, but it turned out to be pollen from the Kanto region.

The Environment Ministry began receiving inquiries from some local governments about whether radioactive substances will be contained in next spring's pollen, prompted by local residents' concerns on the subject.

(Oct. 24, 2011)

## **New levee prevents total power loss at nuclear plant in Ibaraki**

TOKYO (Kyodo) -- A nuclear power plant in Ibaraki Prefecture run by Japan Atomic Power Co. managed to avoid a total power loss during the March 11 earthquake and tsunami thanks to a levee the company was reconstructing voluntarily, sources familiar with the matter said Sunday.

A government panel investigating the nuclear crisis at the Fukushima Daiichi power plant is analyzing measures taken by the company at the Tokai Daini atomic power plant on the assumption that the absence of such steps would have led to a similar serious accident, a source close to the panel said.

Japan Atomic Power concluded in 2002 that in preparing measures to deal with tsunami at the Tokai plant in Tokai, Ibaraki Prefecture, waves as high as 4.86 meters should be anticipated, based on an evaluation technology adopted by the Japan Society of Civil Engineers, the company said.

But the Ibaraki prefectural government requested that the company reevaluate the estimate after its own projection of flooding from tsunami, made public in October 2007, showed that tsunami waves in nearby areas could be as high as 6 to 7 meters, the company said.

Japan Atomic Power then changed its wave level assumption to 5.7 meters and started the reconstruction work in July 2009 to raise the height of the 4.9-meter levee at the plant to 6.1 meters to protect seawater pumps designed to cool an emergency diesel generator.

The reconstruction work was almost completed by September last year, but the remaining work to fully cover cable holes on the levee was scheduled to take place before around May this year, the company said.

The tsunami that hit the Tokai plant in March was 5.3 to 5.4 meters in height, exceeding the company's earlier estimate but around 30 to 40 centimeters lower than the later assumption.

Hit by the tsunami, the Tokai plant suffered a loss of external power as experienced by the Fukushima Daiichi complex.

The levee was overrun, causing one of three seawater pumps to fail, but the power plant succeeded in achieving a stable reactor condition known as cold shutdown with an emergency diesel generator cooled by the two remaining seawater pumps.

Meanwhile, Tokyo Electric Power Co., which projected in 2002 a maximum tsunami height of 5.7 meters for the Fukushima Daiichi plant, failed to take measures despite further in-house research in 2006 and later.

Though the utility calculated in 2008 that a tsunami higher than 10 meters could hit the nuclear power plant, which was close to the actual level seen in the March disaster, it reported the calculation to the Nuclear Industrial Safety Agency on March 7 this year, just days before the massive quake hit northeastern Japan on March 11.

The government panel investigating the Fukushima Daiichi crisis is also probing measures implemented at the Fukushima Daini plant, both operated by Tokyo Electric, and the Onagawa nuclear power plant in Miyagi Prefecture run by Tohoku Electric Power Co., the source close to the panel said. The panel is scheduled to compile an interim report on its findings in December.

(Mainichi Japan) October 24, 2011

## **Hotspot hotline**

Japan's science ministry has launched a telephone hotline to deal with public concerns about radiation exposure in areas outside Fukushima Prefecture. The prefecture hosts the damaged nuclear complex.

The ministry set up the hotline after radiation monitoring by local governments and citizens' groups found a number of locations within the Tokyo Metropolitan Area with levels exceeding government limits.

The ministry is asking local governments and citizens' groups to tell it if they find sites where the hourly radiation dose at one meter above the ground is more than one microsievert higher than nearby areas.

One microsievert per hour is the government-set limit for determining whether topsoil at school playgrounds should be removed, using state subsidies.

The ministry is also asking the local governments to carry out simple decontamination work, such as clearing mud from ditches if necessary.

The ministry says the central government will support decontamination efforts if radiation levels remain more than one microsievert higher than nearby areas even after the cleaning.

The ministry has posted a guideline on its website on how to properly measure radiation levels, such as the right way to hold the dosimeter and the time needed for a reading.

Monday, October 24, 2011 11:48 +0900 (JST)

*An other NPP in a high seismicity area...*

## **Energy ministry: fate of Armenian nuclear power plant workers unhappy about their wages unclear so far**

<http://www.arka.am/eng/energy/2011/10/24/28624.html>

YEREVAN, October 24. /ARKA/. Negotiations between Armenian Nuclear Power Plant workers unhappy about their wages and Energy Minister Armen Movsisyan are under way now, and results will be reported later, Lusine Harutyunyan, press secretary of the ministry, said on Monday.

“The matter was discussed today morning,” she said. “Certain proposals were put forward, but no final decision was made.”

Some 158 workers and engineers unhappy about their salaries submitted their resignations to the plant’s administration on September 20.

Reports in Armenian media in late September said the re-launch of the plant was under threat after 158 workers submitted resignation applications demanding an increase in their wages. The plant is scheduled to resume operating on October 27 upon completion of a regular repair.

The Armenian Nuclear Power Plant, the only nuclear power plant in the South Caucasus, which accounts for about 40 percent of Armenia's electricity, is located in Metsamor, some 30 kilometers west of Yerevan.

The plant was launched in 1997. Now only the second, 107.5-megawatt unit of the plant operates. It generates about 50% of the country’s electricity.

The plant’s financial flows have been managed since 2003 by Russian Inter RAO UES, owned by Russian Rosatom. -0—

24/10/2011 17:48

## **Nuclear plant accidents threaten relations between food producers and consumers**



A cow is fed straw at a cattle farm on July 15 in Asakawa, Fukushima Prefecture, which was found to have fed cows radioactive cesium-contaminated straw. (Mainichi)

Nuclear accidents could threaten not only the livelihoods and health of people living nearby but also relations between food producers and consumers.

Victims of the ongoing Fukushima nuclear crisis are not only residents near the crippled nuclear plant who have been forced to evacuate from their affected neighborhoods. My news coverage of the contamination of foods with radioactive substances leaking from the tsunami-hit Fukushima No. 1 Nuclear Power Plant has uncovered that the crisis has fundamentally damaged mutual trust between local food producers including farmers and consumers.

It came to light on July 8 that some beef was contaminated with radioactive cesium. The Tokyo Metropolitan Government examined beef from cows shipped from Minamisoma, Fukushima Prefecture, and detected cesium in excess of the permissible level.

The number of beef cows confirmed to have been tainted with the radioactive material sharply increased. Furthermore, it was learned that some meat from these cows had already been shipped to various areas across the country and even consumed.

The source of the cesium has turned out to be rice straw that had been given to the animals as feed. A notice that the national government had sent to livestock farmers following the nuclear accident made no mention to the possibility that rice straw could be contaminated with radioactive materials from the plant.

In late September, I visited a farmer that had shipped the rice straw, only to be turned back just as I expected. A neighbor said the farmer used an in-house power generator to maintain his barn and constantly look after the cattle, while most local residents had fled the neighborhood and the delivery of daily necessities and supplies necessary for farming had been suspended. Nonetheless, he was criticized by some news organizations for being primarily responsible for the contamination of beef.

While banners and stickers saying, "Hang in there, Fukushima!" are spotted across the country, numerous harmful rumors on Fukushima products can be found online. There are many rumors that are discriminatory to Fukushima and other messages slandering Fukushima people on the Internet. However, Minamisoma farmers should definitely not be blamed for the contamination. Rather, they are victims of the nuclear crisis, just like consumers who are sensitive about invisible radiation.

I have still been unable to find the right answer on what and how I should report to help restore the mutual trust between producers and consumers. (By Eisuke Inoue, Tokyo City News Department)

(Mainichi Japan) October 25, 2011

## **Radiation research suggested as way to keep released livestock near nuclear plant alive**



Masami Yoshizawa looks after one of his cows at his farm in Fukushima Prefecture. (Photo courtesy of the Kibo-no-Bokujo -- Fukushima Project)

KORIYAMA, Fukushima -- Pursuing research on radiation's effects on animals has been suggested as a way to keep livestock animals roaming the no-entry zone near the disaster-hit Fukushima No. 1 Nuclear Power Plant from being killed or starving in the harsh winter.

Nearly 2,000 cows and other livestock are estimated to still be in the 20-kilometer radius no-entry zone around the crippled power plant.

The plan is being pushed by members of the citizens' group "Kibo-no-Bokujo -- Fukushima Project" (ranch of hope -- Fukushima project). On Oct. 21, around 30 people including local livestock farmers, government legislators and veterinarians met in Koriyama, Fukushima Prefecture, to discuss the issue.

Masami Yoshizawa, 57, who has about 330 high-quality beef cow at his livestock farm situated in the no-entry zone, said he cannot bear to abandon the animals.

"I know the cows have lost their economic value since they've been exposed to radiation. But I think there must be a way to allow them to live. As a cattle breeder, I cannot leave them to die," he said. "We have to catch them by winter."

Yoshizawa has gotten permission from the government to regularly return to his livestock farm to feed his animals. He says that every time, livestock other than his own also come seeking food.

Meanwhile, a 54-year-old woman who had beef cattle in the no-entry zone said tearfully, "I freed 30 of my cows before evacuating. I believe they're still alive."

There have also, however, been reports of cows and pigs that are now living wild making their way into residents' left-behind homes.

To keep the animals alive while preventing damage to resident's property, the Kibo-no-Bokujo -- Fukushima Project is working on a **plan to enclose the animals on Yoshizawa's farm, where researchers will use them to observe the effects of radiation on large mammals**. They are planning to get help from universities and other research institutes.

Earlier, in May of this year, university researchers asked the central government to let livestock exposed to radiation in Fukushima Prefecture live for use in research. Senior Vice Minister of Agriculture, Forestry and Fisheries Nobutaka Tsutsui expressed support for the idea, but almost no concrete measures have been mapped out.

**According to the Kibo-no-Bokujo -- Fukushima Project, there were approximately 3,500 cows, 30,000 pigs and 680,000 chickens remaining in the 20-kilometer radius no-entry zone, which got that designation on April 22. On May 12, the government decided to slaughter all livestock in the zone, and it has so far killed about 300 cows. Most of the pigs and chickens are believed to have died from lack of water and food without people to look after them. Not counting any remaining chicken, there are estimated to be somewhat less than 2,000 animals left, mostly cows.**

(Mainichi Japan) October 25, 2011

## **Unedited Fukushima accident manual released, loss of power sources not envisioned**

The government's Nuclear and Industrial Safety Agency (NISA) released part of an unedited severe accident manual for the Fukushima No. 1 Nuclear Power Plant on Oct. 24, revealing that Tokyo Electric Power Co. (TEPCO) had not envisioned the possibility of all power sources at the nuclear complex being lost.

TEPCO, the operator of the crippled nuclear power plant, had earlier submitted to a special House of Representatives committee largely blacked-out emergency operation manuals for the Fukushima nuclear facility. The manuals were in fact used when the Great East Japan Earthquake and ensuing tsunami struck the nuclear complex. On Oct. 24, NISA released part of an unedited manual after submitting it to the same lower house panel. The manual revealed the fact that there was no operational manual that envisioned a loss of all power sources needed to activate emergency condensers and back-

up water injection devices to cool down nuclear reactors. The revelation highlights flaws in TEPCO's contingency plan in the event of a loss of power sources.

What was released on Oct. 24 is part of an emergency operation manual for the No. 1 reactor at the Fukushima nuclear power plant. It shows methods of cooling down nuclear fuels as well as ways of "venting" in order to hold down pressure in the containment vessel. NISA also released documents prepared by TEPCO that compare the operation manual and what was actually done when the crisis broke out.

According to the documents, all power sources were lost due to the effects of tsunami at 3:37 p.m. on March 11. As a result, whether valves for emergency condensers were operating properly could not be confirmed. Because the manual did not envision possibilities of all power sources, including batteries, being lost in the event that emergency generators and external power sources were lost, the manual itself was in fact useless when all power sources were actually lost on that day.

In September, TEPCO submitted to the lower house committee largely blacked-out manuals on the pretext of the need to protect nuclear security as part of anti-terrorism measures and intellectual property rights. NISA then ordered TEPCO to resubmit the manuals.

On Oct. 22, TEPCO said at a news conference, "After comparing the manuals, there was no problem with actual operations."

(Mainichi Japan) October 25, 2011

## **Kim urges simultaneous action on nuclear standoff**

North Korean leader Kim Jong Il has reportedly insisted that the six parties involved in the talks on his country's nuclear program should implement their 2005 agreement based on the principle of simultaneous action.

State-run China Central Television reported on Tuesday that Kim met Vice Premier Li Keqiang in Pyongyang on Monday.

According to the report, Kim said the six-party talks should be restarted as soon as possible. He is said to have referred to the September 19, 2005 joint statement of the six-party talks, and added that all the parties should implement the agreement on the principle of simultaneous action.

The agreement says North Korea is committed to abandoning all nuclear weapons and existing nuclear programs and that the other countries stated their willingness to provide energy assistance to the country.

The talks have been suspended since December 2008. The United States, South Korea and Japan say North Korea should first act toward denuclearization before the six-party talks can be resumed.

In US-North Korea direct talks in Geneva, the United States demanded that North Korea immediately halt its uranium enrichment activity.

Vice Premier Li told Kim that China will continue to play a constructive role in improving inter-Korean relations and maintaining peace and stability on the Korean Peninsula. His remarks are seen as indicating that China will step up efforts to restart the talks.

Kim's son and designated heir Kim Jong Un was seen greeting the Chinese vice premier in a move apparently aimed at showing closeness between the 2 countries.

Tuesday, October 25, 2011 18:04 +0900 (JST)

## **US, N.Korea end 1st day of nuclear talks**

The US special envoy to North Korea says the 2 countries still need to overcome differences concerning the North's nuclear program.

Stephen Bosworth made the remarks after the first of 2 days of direct talks between the countries at the United States' UN mission in Geneva on Monday.

It was their first direct talks since July. The 2 sides presented their positions on a resumption of the six-party nuclear talks that have been stalled for nearly 3 years.

The details of Monday's discussions, which lasted about 3-and-a-half hours, were not disclosed. But the US delegation is believed to have urged North Korea to immediately end its uranium enrichment program and accept inspectors from the International Atomic Energy Agency.

North Korea reportedly reiterated its demand that the six-party talks should be resumed without conditions.

Speaking to reporters, Bosworth said that the 2 sides have narrowed some differences, but they still have issues to resolve.

North Korea's First Vice Foreign Minister, Kim Kye Gwan, did not take questions from reporters.

The US and North Korean officials will meet again at the North's UN mission on Tuesday.

## **Vietnam to stick with plan to introduce Japanese nuclear technology: deputy PM**

Vietnamese Deputy Prime Minister Nguyen Xuan Phuc told the Mainichi on Oct. 25 that Vietnam is set to form an agreement with the Japanese government over the construction of nuclear power facilities in Vietnam's Ninh Thuan province using Japanese technology -- effectively giving the project the go-ahead.

The deputy prime minister revealed the plans during an interview in Hanoi with Atsushi Narita, general managing editor of The Mainichi Newspapers' Editorial Division. However, the unpredictable situation

amid the ongoing nuclear crisis at the Fukushima No. 1 Nuclear Power Plant, which has resulted in widespread radiation contamination, has created resistance in Japan to resuming exports of nuclear power.

Vietnamese Prime Minister Nguyen Tan Dung is set to visit Japan on Oct. 30, and conclude an agreement with Japan at that time. When former Japanese Prime Minister Naoto Kan visited Vietnam in October last year, he confirmed that Vietnam would partner with Japan in the construction of two reactors. After the outbreak of the nuclear crisis at the Fukushima plant, Vietnam maintained that it would apply Japanese technology in the project, but there had been no formal agreement between the governments of the two countries.

During negotiations, Vietnam presented six conditions to the Japanese government, including the introduction of safety-verified, cutting-edge technology, and provisions pertaining to the disposal of nuclear waste. Japan has consecutively met these conditions.

The final outstanding issue was low-interest loans to the Vietnamese government that would provide capital for construction. Both countries are believed to have reached an agreement on this, meaning that all of the hurdles for construction have been cleared.

In his interview with the Mainichi, Phuc said that Japan and Vietnam had formed a "strategic partnership." He said that Fukushima was an unexpected accident, but stressed that there had been no change in the relationship between the two countries in terms of nuclear-power cooperation.

Phuc was appointed deputy prime minister in August this year after having served as minister and chairman of the Government Office of Vietnam, and is in the head position among Vietnam's four deputy prime ministers. He responded to the interview at the request of a Mainichi group visiting Vietnam, headed by Mainichi Newspapers President Yutaka Asahina.

(Mainichi Japan) October 26, 2011

## **High levels of radiation detected at 2 schools in Chiba Prefecture**

ABIKO, Chiba -- High levels of radiation have been detected on the premises of two elementary schools here, local education authorities have revealed.

According to the Abiko Municipal Board of Education, 11.3 microsieverts of radiation per hour was detected just above the surface of the ground near a ditch in the compounds of the Abiko Municipal Daiichi Elementary School on Sept. 15. The amount was 1.7 microsieverts in the air 50 centimeters above the ground.

Soil had piled up in the ditch, which had been damaged by growing tree roots, a situation similar to a residential area of the Chiba Prefecture city of Kashiwa where 57.5 microsieverts per hour was detected.

Radioactive cesium amounting to 60,768 becquerels per 1 kilogram of soil was found in the ditch.

The amount of radiation 50 centimeters above the ground had declined to 0.6 microsieverts per hour by Oct. 7 after the soil was removed.

The Education, Culture, Sports, Science and Technology Ministry pointed to the possibility that rain water contaminated with radioactive cesium overflowed from the ditch, soaked the nearby soil and accumulated in it.

At the Abiko Municipal Namiki Elementary School, **10.1 microsieverts per hour of radiation was detected near the surface of the ground where sludge removed from its swimming pool had been buried.**

The school covered the area with a waterproof tarp and piled up dirt on the tarp to decrease the radiation emissions, after which 0.6 microsieverts per hour was detected 50 centimeters above the ground.

The two schools have sealed off the areas where high levels of radiation were detected.

(Mainichi Japan) October 26, 2011

## **Journalist determined to get story of nuke disaster victims to the world (Part 6)**

At just past 3:30 p.m. on March 12, I was interviewing people in Minamisoma, Fukushima Prefecture, who had lost their homes in the previous day's disasters when a sudden "boom" echoed across the landscape. It was the sound of a hydrogen explosion ripping apart the No. 1 reactor building at the Fukushima No. 1 nuclear plant, some 20 kilometers to the south.

In the six months between that massive explosion and my transfer to the Tokyo Science and Environment News Department in October, I reported constantly from the exclusion zones in Minamisoma, the village of Iitate and surrounding areas, speaking to many victims of the March disasters.

Right after the meltdowns at the Fukushima No. 1 plant, trucks carrying supplies refused to come near the coast of the prefecture over fears of radioactive contamination, and a serious fuel shortage set in. With no gas for my car, I borrowed a motorcycle from a local Mainichi newsagent to go out and get my stories. In coastal Minamisoma, where the tsunami had claimed many lives, crematoriums ran low on the heavy oil needed for their furnaces. The dead were forced to wait their turns, though there was not even a sufficient supply of dry ice to keep the bodies cold.

"I can't leave their bodies here like this," said one man who had lost his family to the waves. "Please, write an article that will bring people here to help us," he added with tears welling in his eyes.

The nuclear disaster, meanwhile, took its own share of victims, such as the 93-year-old Minamisoma woman who wrote "I'm evacuating to the grave" before taking her own life.

Afterwards, her family asked me to "truly convey the meaning of her death." They told me that right after the beginning of the nuclear crisis, the woman had come with them when they evacuated to a relative's house. After a while, however, most of the family moved on to a refugee shelter outside the prefecture, leaving only the woman and her grandchild behind. She and the child returned home, but the woman ended up spending most of the day alone. Her family still regrets leaving her so isolated.

I must admit that I couldn't truly understand the emotional scars left by the disasters on their victims, and I often felt impatient.

Once, when I was with residents of Namie during visits to their homes in the exclusion zone, I saw one woman standing in front of the ruins of her tsunami-wrecked house. She was statue-still, her mouth open in a silent wail, tears rolling down her cheeks. The woman's eldest son had gone missing in the disaster. His body had been found amongst tsunami debris nearby.

"I'm sorry I couldn't come and search for you. I'm so sorry," she murmured as she faced the debris pile, her hands pressed together.

Later she said to me, "I want to rebuild my house here, but I can't. As a reporter, do you understand how that feels?" I had no answer for her. All I could do was stare at her as she walked away. It had taken all the strength I had just to take in her sadness, her loss.

There were about 78,000 people living in what is now the exclusion zone around the Fukushima No. 1 plant, and so there are 78,000 different kinds of fear of radiation, 78,000 different shades of frustration at being unable to return to their home, their birthplace. Even so, listening to the victims of the March 11 disasters, eating the same food and harboring the same anxieties, I feel strongly that I want to share the full range of human emotion with them.

There is no sign yet of when the crisis at the Fukushima plant will be resolved or when the evacuees will be able to return home, if ever. As long as the people of the nuclear disaster zone continue their struggle with radiation, I hope to stick close to them, and keep getting their stories to the world. (By Keisaku Jinbo, Science and Environment News Department)

(This is the final installment of a six-part series on coverage of the Fukushima nuclear crisis.)

(Mainichi Japan) October 27, 2011

## **Nuclear plant suspension may lift CO2 output by 170 mil. tons: gov't**

TOKYO (Kyodo) -- Emissions of carbon dioxide are estimated to rise by 150 million to 170 million tons a year if suspended nuclear power plants remain offline, Environment Minister Goshi Hosono said Thursday.

At the House of Councillors Environment Committee, Hosono said the estimate is based on the assumption that thermal plants will make up the entire power shortfall from all 44 suspended nuclear reactors, out of a total 54 in Japan.

The estimate also assumes that the 44 reactors, if operational, would be running at 66 to 75 percent capacity.

Hosono indicated that **as nuclear plants will be suspended gradually, the annual estimations do not necessarily represent the actual and future conditions.**

(Mainichi Japan) October 27, 2011

## **Tokyo to accept rubble from quake-hit Iwate Pref. from Nov. 2**



Rubble piles up at a temporary disposal site in Iwaki, Fukushima Prefecture. (Mainichi)

TOKYO (Kyodo) -- The Tokyo Metropolitan Government said Wednesday it will accept from Nov. 2 rubble resulting from the March 11 earthquake and tsunami in Miyako, Iwate Prefecture, one of the hardest-hit prefectures.

The rubble will be **transported by Japan Freight Railway Co.** to Tokyo's Koto and Ota wards where it will be crushed. **It will then be incinerated in Koto and the remnants used as landfill in Tokyo Bay,** the metropolitan government said.

The rubble will be checked for possible radioactive contamination from the Fukushima Daiichi nuclear power plant when it is loaded onto freight trains and another radiation check will be performed before it gets crushed.

Tokyo plans to dispose of some 500,000 tons of debris from Iwate and Miyagi, another prefecture seriously affected by the disaster, by March 2014 although many residents in the capital area are opposed to the idea because of radiation fears.

(Mainichi Japan) October 27, 2011

## Gov't expects more than 30 years to decommission Fukushima nuclear reactors

Japan is expected to take more than 30 years to fully decommission crippled nuclear reactors at the Fukushima No. 1 nuclear plant, according to a draft report compiled by the Nuclear Safety Commission of Japan obtained by the Mainichi on Oct. 26.

It is the first time for the government's body to officially state that it is expected to take "more than 30 years" to decommission the troubled No. 1 to 4 nuclear reactors. According to the draft report, the work to remove spent nuclear fuel from nuclear fuel pools would begin sometime after 2015, while the work to remove melted nuclear fuel from the reactors would start sometime after 2022. The draft report is expected to be endorsed at a study meeting on Oct. 28 of experts on medium- and long-term measures.

At the Fukushima No. 1 Nuclear Power Plant, there are a total of 1,496 spent nuclear fuel rods in the No. 1 to 3 reactors, while there are 3,108 fuel rods in the spent nuclear fuel pools of the No. 1 to 4 reactors. In order to actually decommission the reactors, those fuel rods must be recovered, cooled down and stored under stable conditions for a long time.

According to the draft report, the work to decommission the reactors is expected to start as early as next year after a "cold shutdown" is achieved by the end of this year. In order to recover melted nuclear fuel from the reactors, robots and other means would be used to decontaminate the interior of the reactor buildings before repairing damaged parts of the containment vessels. Furthermore, in order to block radiation, the entire containment vessels would be filled with water so that the work to recover melted nuclear fuel could be started sometime after 2022.

Meanwhile, damage to the fuel in the spent nuclear fuel pools is relatively minor, but the existing cranes cannot be used because the reactor buildings, except for the one for the No. 2 reactor, were badly destroyed by hydrogen explosions. Therefore, new cranes have to be brought in to start to recover the fuels sometime after 2015 after fitting out the temporary storage facility installed near the No. 4 reactor.

In light of the fact that it took about 20 years to recover all fuels at the Three Mile Island nuclear complex, the draft report said it was estimated to take "at least more than 30 years to complete the measures to decommission" the reactors at the Fukushima No. 1 Nuclear Power Plant. In order to decommission the reactors as early as possible, it is necessary to 1) positively accept opinions from experts abroad, 2) respond flexibly if the plans do not work properly, 3) put priority on research and development essential for the actual work to be done on the spot, and 4) cultivate engineers at home, the draft report says.

At the Fukushima plant, the decommissioning work has to be carried out on the four reactors simultaneously, and therefore it is likely to be an extremely difficult mission. For this reason, the draft report says, "it is necessary for both public and private sectors to join forces as 'all Japan' to proceed" with the project. Along with the "Nuclear Safety Agency" to be set up next spring, the draft report for the first time stressed the need to form a third-party organization tasked with checking the progress in the decommissioning work.

(Mainichi Japan) October 27, 2011

## **Kashiwa city warns citizens of radioactive decontamination fraud**

KASHIWA, Chiba -- Local authorities here are warning residents not to be deceived by anyone passing his or herself off as a local government official and offering to measure and remove radioactive substances for money.

According to the Kashiwa Municipal Government, in and around Kashiwa's Nedo district, where an abnormally high radiation level of 57.5 microsieverts has been detected, a man has been putting flyers into mailboxes and telling residents he is from the municipal government. He reportedly offered to measure radiation for 5,000 yen and remove radioactive substances for 10,000 yen.

A city government official said, "The city has not designated or recommended any specific contractors." There have been no reports of people paying for such services, but the city authorities do not rule out that they could appear in the future. The municipal government has tried to alert local citizens through e-mail and Twitter.

A 57-year-old business manager of an Iwaki, Fukushima Prefecture radiation measuring company that is now operating in Kashiwa said, "You can't do decontamination work for that kind of (cheap) price." He added, "We don't want to be lumped in with the fraudsters."

Many residents in Kashiwa are worried about high levels of radiation in the city. "Bekumiru", a privately-owned self-service radiation measuring facility which started business in Kashiwa this October, kept its facility open on the night of Oct. 26 for those residents who wanted to check well water for radiation. Because customers do the measuring themselves, the facility is far cheaper than the services of other radiation screening companies. Four citizens brought well water this night, but none of them found radiation in the water. A 32-year-old housewife said, "I feel relieved after hearing the result."

(Mainichi Japan) October 27, 2011

## **TEPCO won't build retaining wall to stop radioactive water seeping into ground water**

Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima No. 1 nuclear power plant, has given up a plan to install a land-side retaining wall aimed at preventing radioactive water from permeating into the ground water, the utility has announced.

The utility, however, will **construct an ocean-side retaining wall to prevent contaminated water from leaking into the sea, starting on Oct. 28.**

TEPCO had initially planned to build a land-side retaining wall (an underground dam) as well, thereby surrounding all four sides of the reactor buildings and turbine buildings of the No. 1 through No. 4 reactors at the plant, in order to prevent highly radioactive water from coming into contact with the ground water.

However, the utility concluded that such a plan would be "ineffective" on the grounds that the ground water in the area flows only downward into the ocean as the area's terrain is seaward-dipping and building a U-shaped retaining wall on the land side would make no point in preventing contaminated water from leaking into the ocean. The utility also said a land-side retaining wall would lower the ground water level around the reactor and turbine buildings, raising the risk of contaminated water leaking from those buildings. In addition, the utility said, the construction of such a wall would require the removal or relocation of existing facilities surrounding the buildings.

TEPCO will start a drilling survey to assess the depths of the ground water ahead of the construction of the ocean-side retaining wall, which will take two years to complete. Some 700 piles of sheets, each measuring 22 to 24 meters long, will be driven in over an approximately 800-meter-long stretch, the utility said.

(Mainichi Japan) October 27, 2011

## **Journalist determined to get story of nuke disaster victims to the world (Part 6)**

At just past 3:30 p.m. on March 12, I was interviewing people in Minamisoma, Fukushima Prefecture, who had lost their homes in the previous day's disasters when a sudden "boom" echoed across the landscape. It was the sound of a hydrogen explosion ripping apart the No. 1 reactor building at the Fukushima No. 1 nuclear plant, some 20 kilometers to the south.

In the six months between that massive explosion and my transfer to the Tokyo Science and Environment News Department in October, I reported constantly from the exclusion zones in Minamisoma, the village of Iitate and surrounding areas, speaking to many victims of the March disasters.

Right after the meltdowns at the Fukushima No. 1 plant, trucks carrying supplies refused to come near the coast of the prefecture over fears of radioactive contamination, and a serious fuel shortage set in. With no gas for my car, I borrowed a motorcycle from a local Mainichi newsagent to go out and get my stories. In coastal Minamisoma, where the tsunami had claimed many lives, crematoriums ran low on the heavy oil needed for their furnaces. The dead were forced to wait their turns, though there was not even a sufficient supply of dry ice to keep the bodies cold.

"I can't leave their bodies here like this," said one man who had lost his family to the waves. "Please, write an article that will bring people here to help us," he added with tears welling in his eyes.

The nuclear disaster, meanwhile, took its own share of victims, such as the 93-year-old Minamisoma woman who wrote "I'm evacuating to the grave" before taking her own life.

Afterwards, her family asked me to "truly convey the meaning of her death." They told me that right after the beginning of the nuclear crisis, the woman had come with them when they evacuated to a relative's house. After a while, however, most of the family moved on to a refugee shelter outside the prefecture, leaving only the woman and her grandchild behind. She and the child returned home, but the woman ended up spending most of the day alone. Her family still regrets leaving her so isolated.

I must admit that I couldn't truly understand the emotional scars left by the disasters on their victims, and I often felt impatient.

Once, when I was with residents of Namie during visits to their homes in the exclusion zone, I saw one woman standing in front of the ruins of her tsunami-wrecked house. She was statue-still, her mouth open in a silent wail, tears rolling down her cheeks. The woman's eldest son had gone missing in the disaster. His body had been found amongst tsunami debris nearby.

"I'm sorry I couldn't come and search for you. I'm so sorry," she murmured as she faced the debris pile, her hands pressed together.

Later she said to me, "I want to rebuild my house here, but I can't. As a reporter, do you understand how that feels?" I had no answer for her. All I could do was stare at her as she walked away. It had taken all the strength I had just to take in her sadness, her loss.

There were about 78,000 people living in what is now the exclusion zone around the Fukushima No. 1 plant, and so there are 78,000 different kinds of fear of radiation, 78,000 different shades of frustration at being unable to return to their home, their birthplace. Even so, listening to the victims of the March 11 disasters, eating the same food and harboring the same anxieties, I feel strongly that I want to share the full range of human emotion with them.

There is no sign yet of when the crisis at the Fukushima plant will be resolved or when the evacuees will be able to return home, if ever. As long as the people of the nuclear disaster zone continue their struggle with radiation, I hope to stick close to them, and keep getting their stories to the world. (By Keisaku Jinbo, Science and Environment News Department)

(This is the final installment of a six-part series on coverage of the Fukushima nuclear crisis.)

(Mainichi Japan) October 27, 2011

**Nuclear plant suspension may lift CO2 output by 170 mil. tons: gov't**

TOKYO (Kyodo) -- Emissions of carbon dioxide are estimated to rise by 150 million to 170 million tons a year if suspended nuclear power plants remain offline, Environment Minister Goshi Hosono said Thursday.

At the House of Councillors Environment Committee, Hosono said the estimate is based on the assumption that thermal plants will make up the entire power shortfall from all 44 suspended nuclear reactors, out of a total 54 in Japan.

The estimate also assumes that the 44 reactors, if operational, would be running at 66 to 75 percent capacity.

Hosono indicated that **as nuclear plants will be suspended gradually, the annual estimations do not necessarily represent the actual and future conditions.**

(Mainichi Japan) October 27, 2011

## Tokyo to accept rubble from quake-hit Iwate Pref. from Nov. 2



Rubble piles up at a temporary disposal site in Iwaki, Fukushima Prefecture. (Mainichi)

TOKYO (Kyodo) -- The Tokyo Metropolitan Government said Wednesday it will accept from Nov. 2 rubble resulting from the March 11 earthquake and tsunami in Miyako, Iwate Prefecture, one of the hardest-hit prefectures.

The rubble will be **transported by Japan Freight Railway Co.** to Tokyo's Koto and Ota wards where it will be crushed. **It will then be incinerated in Koto and the remnants used as landfill in Tokyo Bay,** the metropolitan government said.

The rubble will be checked for possible radioactive contamination from the Fukushima Daiichi nuclear power plant when it is loaded onto freight trains and another radiation check will be performed before it gets crushed.

Tokyo plans to dispose of some 500,000 tons of debris from Iwate and Miyagi, another prefecture seriously affected by the disaster, by March 2014 although many residents in the capital area are opposed to the idea because of radiation fears.

(Mainichi Japan) October 27, 2011

## Gov't expects more than 30 years to decommission Fukushima nuclear reactors

Japan is expected to take more than 30 years to fully decommission crippled nuclear reactors at the Fukushima No. 1 nuclear plant, according to a draft report compiled by the Nuclear Safety Commission of Japan obtained by the Mainichi on Oct. 26.

It is the first time for the government's body to officially state that it is expected to take "more than 30 years" to decommission the troubled No. 1 to 4 nuclear reactors. According to the draft report, the work to remove spent nuclear fuel from nuclear fuel pools would begin sometime after 2015, while the work to remove melted nuclear fuel from the reactors would start sometime after 2022. The draft report is expected to be endorsed at a study meeting on Oct. 28 of experts on medium- and long-term measures.

At the Fukushima No. 1 Nuclear Power Plant, there are a total of 1,496 spent nuclear fuel rods in the No. 1 to 3 reactors, while there are 3,108 fuel rods in the spent nuclear fuel pools of the No. 1 to 4 reactors. In order to actually decommission the reactors, those fuel rods must be recovered, cooled down and stored under stable conditions for a long time.

According to the draft report, the work to decommission the reactors is expected to start as early as next year after a "cold shutdown" is achieved by the end of this year. In order to recover melted nuclear fuel from the reactors, robots and other means would be used to decontaminate the interior of the reactor buildings before repairing damaged parts of the containment vessels. Furthermore, in order to block radiation, the entire containment vessels would be filled with water so that the work to recover melted nuclear fuel could be started sometime after 2022.

Meanwhile, damage to the fuel in the spent nuclear fuel pools is relatively minor, but the existing cranes cannot be used because the reactor buildings, except for the one for the No. 2 reactor, were badly destroyed by hydrogen explosions. Therefore, new cranes have to be brought in to start to recover the fuels sometime after 2015 after fitting out the temporary storage facility installed near the No. 4 reactor.

In light of the fact that it took about 20 years to recover all fuels at the Three Mile Island nuclear complex, the draft report said it was estimated to take "at least more than 30 years to complete the measures to decommission" the reactors at the Fukushima No. 1 Nuclear Power Plant. In order to decommission the reactors as early as possible, it is necessary to 1) positively accept opinions from experts abroad, 2) respond flexibly if the plans do not work properly, 3) put priority on research and development essential for the actual work to be done on the spot, and 4) cultivate engineers at home, the draft report says.

At the Fukushima plant, **the decommissioning work has to be carried out on the four reactors simultaneously**, and therefore it is likely to be an extremely difficult mission. For this reason, the draft report says, "it is necessary for both public and private sectors to join forces as 'all Japan' to proceed" with the project. Along with the "Nuclear Safety Agency" to be set up next spring, the draft report for the first time stressed the need to form a third-party organization tasked with checking the progress in the decommissioning work.

(Mainichi Japan) October 27, 2011

## **Kashiwa city warns citizens of radioactive decontamination fraud**

KASHIWA, Chiba -- Local authorities here are warning residents not to be deceived by anyone passing his or herself off as a local government official and offering to measure and remove radioactive substances for money.

According to the Kashiwa Municipal Government, in and around Kashiwa's Nedo district, where an abnormally high radiation level of 57.5 microsieverts has been detected, a man has been putting flyers into mailboxes and telling residents he is from the municipal government. He reportedly offered to measure radiation for 5,000 yen and remove radioactive substances for 10,000 yen.

A city government official said, "The city has not designated or recommended any specific contractors." There have been no reports of people paying for such services, but the city authorities do not rule out that they could appear in the future. The municipal government has tried to alert local citizens through e-mail and Twitter.

A 57-year-old business manager of an Iwaki, Fukushima Prefecture radiation measuring company that is now operating in Kashiwa said, "You can't do decontamination work for that kind of (cheap) price." He added, "We don't want to be lumped in with the fraudsters."

Many residents in Kashiwa are worried about high levels of radiation in the city. "Bekumiru", a privately-owned self-service radiation measuring facility which started business in Kashiwa this October, kept its facility open on the night of Oct. 26 for those residents who wanted to check well water for radiation. Because customers do the measuring themselves, the facility is far cheaper than the services of other radiation screening companies. Four citizens brought well water this night, but none of them found radiation in the water. A 32-year-old housewife said, "I feel relieved after hearing the result."

 [Click here for the original Japanese story](#)

(Mainichi Japan) October 27, 2011

## **TEPCO won't build retaining wall to stop radioactive water seeping into ground water**

Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima No. 1 nuclear power plant, has given up a plan to install a land-side retaining wall aimed at preventing radioactive water from permeating into the ground water, the utility has announced.

The utility, however, will **construct an ocean-side retaining wall to prevent contaminated water from leaking into the sea, starting on Oct. 28.**

TEPCO had initially planned to build a land-side retaining wall (an underground dam) as well, thereby surrounding all four sides of the reactor buildings and turbine buildings of the No. 1 through No. 4 reactors at the plant, in order to prevent highly radioactive water from coming into contact with the ground water.

However, the utility concluded that such a plan would be "ineffective" on the grounds that the ground water in the area flows only downward into the ocean as the area's terrain is seaward-dipping and building a U-shaped retaining wall on the land side would make no point in preventing contaminated water from leaking into the ocean. The utility also said a land-side retaining wall would lower the ground water level around the reactor and turbine buildings, raising the risk of contaminated water leaking from those buildings. In addition, the utility said, the construction of such a wall would require the removal or relocation of existing facilities surrounding the buildings.

**TEPCO will start a drilling survey to assess the depths of the ground water ahead of the construction of the ocean-side retaining wall, which will take two years to complete. Some 700 piles of sheets, each measuring 22 to 24 meters long, will be driven in over an approximately 800-meter-long stretch, the utility said.**

(Mainichi Japan) October 27, 2011

## **Kashiwa govt wants help with hotspot**

Tadao Baba and Eiji Noyori / Yomiuri Shimbun Staff Writers

**KASHIWA, Chiba--**A radiation hotspot in Kashiwa has still not been decontaminated a week after radiation of 57.5 microsieverts per hour was recorded on a city-owned plot of land.

The city insists such a high level of radiation is beyond the level a local government can handle on its own, though it decided to conduct surveys to find other hotspots after many residents expressed anxiety over the issue.

The Kashiwa municipal government said last Friday that radiation of 57.5 microsieverts per hour had been detected about 30 centimeters below the surface of the plot of land. Its subsequent examination of soil at the location detected radioactive cesium of up to 276,000 becquerels per kilogram.

Airborne radiation of 2 microsieverts per hour was recorded one meter above the ground--the same level detected in Iitatemura, Fukushima Prefecture, which was designated part of the expanded evacuation zone after the beginning of the crisis at the Fukushima No. 1 nuclear power plant.

On Sunday, the Education, Culture, Sports, Science and Technology Ministry said Kashiwa's hotspot was likely caused by the Fukushima crisis.

Since Monday, the municipal government has been receiving more than 200 calls every day, mainly from local residents asking officials to measure radiation at their houses or conduct decontamination as soon as possible.

The plot of land in question used to be the site of a city-run housing complex. Recently residents had used it for recreational activities. The plot was flattened by leveling a slope in a hilly area. It comprises a field, a paved pedestrian walkway and a street gutter that is 30 centimeters wide and 30 centimeters deep.

The high level of radiation was detected in the soil near an L-shaped corner in the gutter, of which a nearby 50-centimeter-long section was found to be damaged.

Takao Nakaya, head of the ministry's Office of Radiation Regulations, said it was highly possible the high level of radiation was caused by water containing radioactive cesium seeping into the soil over a long period.

After the outbreak of the nuclear crisis, clouds containing cesium spread over a widespread area, causing relatively high levels of radiation at many locations in the Tokyo metropolitan area. Kashiwa is just north of Tokyo.

"If the damage to the gutter caused [the hotspot in Kashiwa], it won't be surprising if similar levels of radiation are detected in other places," said Tsutomu Tohei, professor emeritus at Tohoku University.

If radioactive cesium adheres to the surface of soil or a leaf, it tends to remain there, Tohei said. However, rainwater may bring cesium that was previously scattered over various places to a particular spot, such as a gutter. If such cesium accumulates for a long time, the radiation level would become higher than in surrounding areas.

The Kashiwa municipal government has decided to examine all other plots of land owned by the city. In addition, the city will implement similar measures for private properties beginning next month, examining the premises of residents who make such requests or lending residents measuring devices.

However, the municipal government has yet to establish a framework to systematically find other hotspots. It has only covered the recently discovered spot with uncontaminated soil and blue tarpaulin sheets.

"It's difficult to find a company to decontaminate [the site] given the extremely high level of radiation," a city government official said. "The situation is more than we can handle as a local government."

The municipality has started discussions with the Environmental Ministry and Cabinet Office, asking the central government to take responsibility for determining the cause of the hotspot and the exact amount of contaminated soil, as well as decontaminating the location.

The hotspot was first discovered by a man living in the neighborhood who always carries a dosimeter.

Frustrated by the slow response of local governments to the radiation problem, many citizens and organizations are checking radiation levels in their neighborhoods on their own. These efforts will likely lead to the discovery of many more hotspots.

However, people may get different figures at the same spot depending on their examination methods or specific dosimeters.

Kiyoshi Nomura, associate professor at the University of Tokyo, said people do not have to worry too much about localized radiation.

(Oct. 28, 2011)

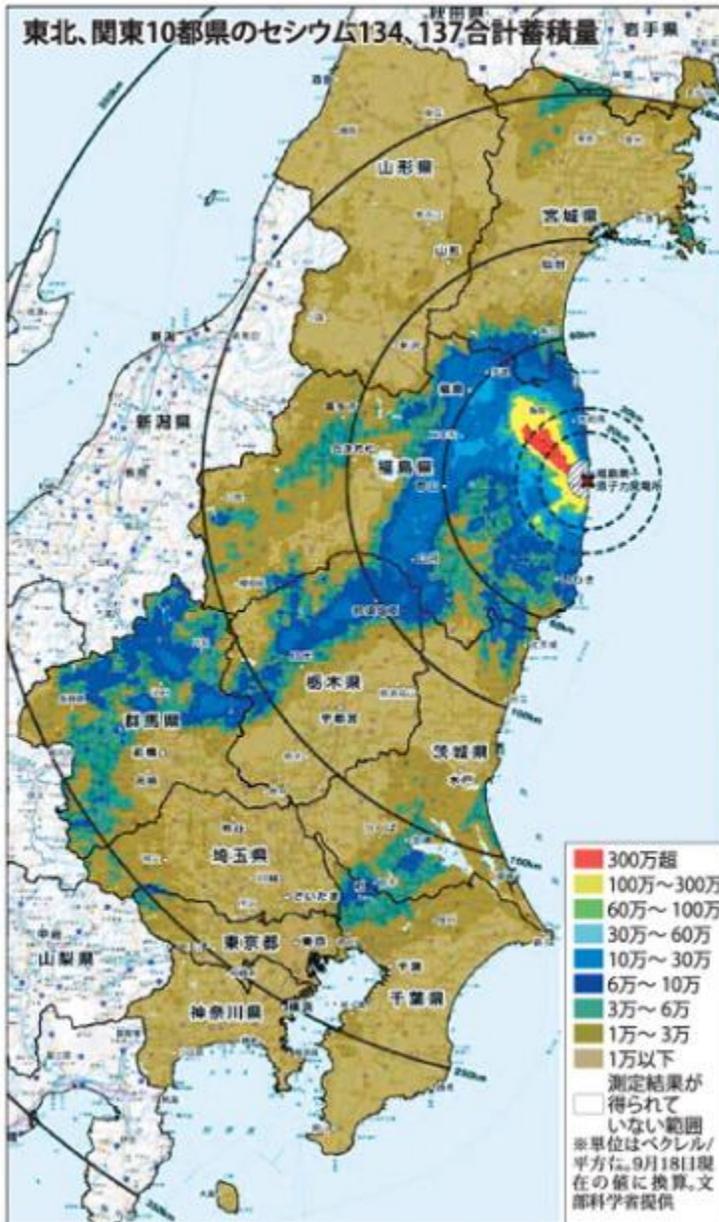
## **Gov't to slash upper limit on internal radiation exposure from food**

The government will tighten the provisional safety limit for annual internal radioactive cesium exposure through food intake from the current 5 millisieverts to 1 millisievert by around April 2012.

"The current provisional safety limit, which was set in response to emergencies, is safe enough, but it will be tightened in order to ensure increased food safety and security," Health, Welfare and Labor Minister Yoko Komiyama said during a press conference following a Cabinet meeting on Oct. 28.

The ministry's move comes after the Food Safety Commission of the Cabinet Office reported on Oct. 27 that over 100 millisieverts of lifetime internal exposure to radiation would affect human health. The ministry is further set to review food classification, which is currently divided into five groups, and consider introducing safety standards for baby food at its council meeting convening on Oct. 31.

In elaborating on the reasons for the tighter cesium limit, Komiyama cited a [guideline set by the Codex Alimentarius Commission that limits cesium intake to no more than 1 millisievert a year](#), as well as the fact that cesium concentrations in most food items have dropped substantially in recent tests. The minister said the opinions of many experts were also taken into account.



A government map displaying radiation levels in 10 prefectures relatively close to the Fukushima No. 1 Nuclear Power Plant. Areas in red show over 3 million becquerels of cesium per square meter, whereas those in light brown show less than 10,000. (Data as of Sept. 18. Image courtesy of the Ministry of Education, Culture, Sports, Science and Technology)

The new food safety regulations for cesium will be applied to agricultural products to be shipped sometime after April next year. The ministry will take transitional measures for newly cropped rice and other products that have already been distributed after clearing the current provisional safety limit, until next season's new rice is shipped. The ministry council will also review the types of radioactive materials subject to safety regulations, as no radioactive iodine has been detected in recent testing.

The Food Safety Commission's report on the 100-millisievert lifetime internal exposure limit -- filed with the health minister on Oct. 27 -- translates into 1.25 millisieverts of cesium per year if a person is

presumed to live for 80 years. A senior Health Ministry official said, "We have decided on the new (1 millisievert) standard in greater consideration of the safety, in light of the latest monitoring test results."

The current provisional safety limit was drawn up by the Health Ministry with advice from the Nuclear Safety Commission immediately after the nuclear crisis at the Fukushima No. 1 nuclear plant broke out in March.

A Health Ministry report released in July has revealed that each person in the country was estimated to have been internally exposed to an average of about 0.1 millisievert per year of radiation through food intake since the onset of the nuclear crisis.

"Under the current provisional safety limit, consumers are experiencing increased anxiety as they watch radiation measurements. Tightening the safety limit will reassure many people," said Hisa Anan, secretary-general of the National Liaison Committee of Consumers' Organizations.

(Mainichi Japan) October 28, 2011

## **Govt to lower radioactive intake limits**

Japan's health ministry is set to lower its radiation limits for food to one millisievert per year as early as April. The figure is one-fifth the current level.

The ministry set provisional radioactivity safety limits on foodstuffs at 5 millisieverts per year after the nuclear accident at the Fukushima Daiichi plant in March.

This would translate into 500 becquerels of radioactive cesium per kilogram in meat, fish, vegetables and cereals such as rice.

The tentative limits were based on the levels which are said to have no health effects even when a person consumes foods with radioactive materials for one year.

The ministry decided to lower the limits to match international standards as radioactive substances detected in foodstuffs have been falling since the accident.

On Thursday, Japan's Food Safety Commission recommended that cumulative internal radioactive exposure from food during a person's lifetime be limited to no more than 100 millisieverts.

The new safety limits would result in stricter standards for each food item, and are likely to fall within the levels recommended by the commission.

The ministry's panel is to start deliberating the issue next week to set standards for each food item.

Friday, October 28, 2011

## **Study: Japan nuke radiation higher than estimated**

NEW YORK (AP) -- **The Fukushima nuclear disaster released twice as much of a radioactive substance into the atmosphere as Japanese authorities estimated, reaching 40 percent of the total from Chernobyl, a preliminary report says.**

The estimate of much higher levels of radioactive cesium-137 comes from a worldwide network of sensors. Study author Andreas Stohl of the Norwegian Institute for Air Research says the Japanese government estimate came only from data in Japan, and that would have **missed emissions blown out to sea.**

The study did not consider health implications of the radiation. Cesium-137 is dangerous because it can last for decades in the environment, releasing cancer-causing radiation.

The long-term effects of the nuclear accident are unclear because of the difficulty of measuring radiation amounts people received.

In a telephone interview, Stohl said emission estimates are **so imprecise** that finding twice the amount of cesium isn't considered a major difference. He said some previous estimates had been higher than his.

The journal Atmospheric Chemistry and Physics posted the report online for comment, but the study has not yet completed a formal review by experts in the field or been accepted for publication.

Last summer, the Japanese government estimated that the March 11 Fukushima accident released 15,000 terabecquerels of cesium. Terabecquerels are a radiation measurement. The new report from Stohl and co-authors estimates about 36,000 terabecquerels through April 20. That's about 42 percent of the estimated release from Chernobyl, the report says.

An official at the Nuclear and Industrial Safety Agency, the Japanese government branch overseeing such findings, said the agency could not offer any comment on the study because it had not reviewed its contents.

It also says **about a fifth of the cesium fell on land in Japan, while most of the rest fell into the Pacific Ocean.** Only about 2 percent of the fallout came down on land outside Japan, the report concluded.

Experts have no firm projections about how many cancers could result because they're still trying to find out what doses people received. Some radiation from the accident has also been detected in Tokyo and in the United States, but experts say they expect no significant health consequences there.

Still, concern about radiation is strong in Japan. Many parents of small children in Tokyo worry about the discovery of radiation hotspots even though government officials say they don't pose a health risk. And former prime minister Naoto Kan has said the most contaminated areas inside the evacuation zone could be uninhabitable for decades.

**Stohl also noted that his study found cesium-137 emissions dropped suddenly at the time workers started spraying water on the spent fuel pool from one of the reactors. That challenges previous thinking that the pool wasn't emitting cesium, he said.**

Online:

New study: <http://bit.ly/tFURSr>

(Mainichi Japan) October 28, 2011

## **Fuel retrieval at Fukushima to start in 10 years**

Japan's Atomic Energy Commission says it aims to start retrieving melted nuclear fuel rods from the Fukushima Daiichi power plant within 10 years.

The Commission's expert panel on Friday presented a draft report on the timetable for scrapping the plant.

The report says decommissioning will start with repairing the containment vessels of the No.1 to No.3 reactors, where meltdowns occurred.

The vessels will then be filled with water to block radiation released from the melted fuel.

The commission also plans to start moving spent fuel rods from pools at the No.1 to No.4 reactors to another pool in the plant within 3 years. This will take place after the reactors achieve a state of cold shutdown.

The report projects that the decommissioning will take more than 30 years to complete.

The timetable is longer than that for the Three Mile Island nuclear plant in the United States, because the containment vessels were damaged at Fukushima along with the pressure vessels that house fuel rods.

In the 1979 Three Mile Island accident, about 70 percent of the reactor's fuel rods melted. Fuel retrieval began 6 years after the accident and lasted for 5 years.

The work at Fukushima is expected to be longer and more difficult, because the extent of the damage is more severe and workers will have to repair 4 reactors simultaneously.

Friday, October 28, 2011 18:39 +0900 (JST)

## **Over 80% of Japan's reactors offline**

Forty-four of Japan's 55 nuclear reactors are currently idle, mainly for safety inspections.

Eighteen of them are undergoing stress tests mandated by the government. But none are expected to resume operations soon because the nuclear plant accident in Fukushima has raised safety concerns among local authorities hosting nuclear plants.

Of the 10 reactors still running, 4 will be shut down for routine inspections by year-end. The rest are scheduled to go offline by early next year.

If none of the reactors restart, Japan will have no active nuclear power plants within several months.

Friday, October 28, 2011 16:39 +0900 (JST)

## Japanese group develops handheld decontaminator

A group of Japanese researchers says it has developed a handheld device capable of removing radioactive substances using laser beams.

The machine was created by researchers from the Wakasa Wan Energy Research Center in Fukui Prefecture, central Japan.

The device uses laser beams moving at a high speed to scrape off radioactive substances attached to the surface of pipes and other objects at nuclear power plants. The dust is then collected inside the machine.

The researchers say that, since only the surface is scraped off, the machine generates one thousand times less radioactive waste than conventional methods.

The device is about 30 centimeters high and wide, and 40 centimeters long. The team says it is the world's first portable radiation decontaminator.

When the researchers began developing the machine 7 years ago, they meant it to be used to reduce radioactive waste from nuclear plants, and also in the decommissioning of a prototype test reactor in Fukui Prefecture, known as Fugen.

The device is expected to be used in the operations to remove radioactive substances from the Fukushima Daiichi nuclear plant, which was badly damaged in the March 11th tsunami.

Friday, October 28, 2011 10:51 +0900 (JST)

## EDF Delays Construction Of 4 Nuclear Reactors In UK

By Inti Landauro

Published October 28, 2011

| Dow Jones Newswires

PARIS -([Dow Jones](#))- French power company Electricite de France SA, or EDF, (EDF.FR), Friday decided to delay the construction of four planned nuclear reactors in the U.K., a company spokeswoman said, confirming a report from Les Echos newspaper.

EDF is taking time to evaluate the consequences of delays at a reactor under construction in Flamanville, northern France and the Fukushima Daiichi nuclear disaster in Japan, the spokeswoman said.

EDF will release a new calendar for the project during the fall, she said.

Les Echos said the company is evaluating whether conditions for the EUR20 billion investment are met in the U.K.

EDF was planning to start building the first of the planned nuclear reactors in 2013, the newspaper said.

Read more: <http://www.foxbusiness.com/industries/2011/10/28/edf-delays-construction-4-nuclear-reactors-in-uk/#ixzz1c4Fc1qA6>

## **Japan's leaders must face country's 'latent' possession of nuclear weapons**

I've made four visits to the Rokkasho Nuclear Reprocessing Plant in Aomori Prefecture which, since 1993, has cost the government over 2 trillion yen to build and run on a trial basis.

The reason for the multiple visits was the plant's significance in the country's energy security scheme. It was important that we probe and monitor not just the safety of the plant, but the trends in local residents' attitudes and their tactics in dealing with politicians, the speed of construction, and any "interference" by other countries.

The cold and wet northeasterly "yamase" winds -- also known as "gashifu," literally "starvation winds" -- were blowing every time I visited the village of Rokkasho, enveloping everything in a thick fog. The conditions in region were not conducive to growing crops; it was not a "rich" area.

So perhaps these winds had something to do with why the village gave up the land that had belonged to it for generations to nuclear power.

But it was the presentation of the plant as a national project that would fulfill government policy and goals that ultimately won the villagers' "cooperation." "Of a nuclear power plant's spent nuclear fuel, only 5 percent or less should be disposed of," the government had explained. "Uranium and plutonium can be recycled. We want to reprocess the fuel and pave the way to energy self-sufficiency."

In the **27 years since the application for the construction of a reprocessing plant** was lodged with Rokkasho, the village has undergone tremendous change. Massive cranes have been brought in, and hefty structures have gone up one after another. Nuclear money has brought wealth to the village, making its per capita income the highest of any municipality in Aomori Prefecture. Despite some twists and turns, the national project was getting closer to becoming a reality.

There's a little "secret" to the reprocessing plant, however.

On July 17, 1988, Japan implemented revisions to the Japan-U.S. Nuclear Agreement that would allow Japan to construct nuclear fuel reprocessing plants, despite strong opposition from the U.S. Congress. Using its own enrichment technology, it was now possible for Japan, in theory, to produce the raw materials necessary to build nuclear bombs.

By 2005, the year I last visited Rokkasho, the facility had been subject to 11 routine inspections and 14 unannounced inspections from the International Atomic Energy Agency (IAEA), whose aim was to ensure that the plant was not producing any such materials. Despite being a nonnuclear weapons state, Japan was now a "latent" nuclear weapons state. Japan claims it is protected against threats from other countries by the U.S. nuclear umbrella, but the rest of the world sees Japan as a state that would not hesitate to possess nuclear arms, if the circumstances called for it.

The call to eliminate our dependence on nuclear power has become widespread since the crisis at the Fukushima No. 1 nuclear plant began. And yet, our leaders have failed to make any mention of the country's latent nuclear weapons capacity.

The true elimination of our dependence on nuclear power, however, must include our abandonment of nuclear weapons possession. The decisions we face now hold the key to the security of our country.  
(By Taro Maki, Expert Senior Writer)

(Mainichi Japan) October 28, 2011

## **Kashiwa govt wants help with hotspot**

Tadao Baba and Eiji Noyori / Yomiuri Shimbun Staff Writers

**KASHIWA, Chiba**--A radiation hotspot in Kashiwa has still not been decontaminated a week after radiation of 57.5 microsieverts per hour was recorded on a city-owned plot of land.

The city insists such a high level of radiation is beyond the level a local government can handle on its own, though it decided to conduct surveys to find other hotspots after many residents expressed anxiety over the issue.

The Kashiwa municipal government said last Friday that radiation of 57.5 microsieverts per hour had been detected about 30 centimeters below the surface of the plot of land. Its subsequent examination of soil at the location detected radioactive cesium of up to 276,000 becquerels per kilogram.

Airborne radiation of 2 microsieverts per hour was recorded one meter above the ground--the same level detected in Iitatemura, Fukushima Prefecture, which was designated part of the expanded evacuation zone after the beginning of the crisis at the Fukushima No. 1 nuclear power plant.

On Sunday, the Education, Culture, Sports, Science and Technology Ministry said Kashiwa's hotspot was likely caused by the Fukushima crisis.

Since Monday, the municipal government has been receiving more than 200 calls every day, mainly from local residents asking officials to measure radiation at their houses or conduct decontamination as soon as possible.

The plot of land in question used to be the site of a city-run housing complex. Recently residents had used it for recreational activities. The plot was flattened by leveling a slope in a hilly area. It comprises a field, a paved pedestrian walkway and a street gutter that is 30 centimeters wide and 30 centimeters deep.

The high level of radiation was detected in the soil near an L-shaped corner in the gutter, of which a nearby 50-centimeter-long section was found to be damaged.

Takao Nakaya, head of the ministry's Office of Radiation Regulations, said it was highly possible the high level of radiation was caused by water containing radioactive cesium seeping into the soil over a long period.

After the outbreak of the nuclear crisis, clouds containing cesium spread over a widespread area, causing relatively high levels of radiation at many locations in the Tokyo metropolitan area. Kashiwa is just north of Tokyo.

"If the damage to the gutter caused [the hotspot in Kashiwa], it won't be surprising if similar levels of radiation are detected in other places," said Tsutomu Tohei, professor emeritus at Tohoku University.

If radioactive cesium adheres to the surface of soil or a leaf, it tends to remain there, Tohei said. However, rainwater may bring cesium that was previously scattered over various places to a particular spot, such as a gutter. If such cesium accumulates for a long time, the radiation level would become higher than in surrounding areas.

The Kashiwa municipal government has decided to examine all other plots of land owned by the city. In addition, the city will implement similar measures for private properties beginning next month, examining the premises of residents who make such requests or lending residents measuring devices.

However, the municipal government has yet to establish a framework to systematically find other hotspots. It has only covered the recently discovered spot with uncontaminated soil and blue tarpaulin sheets.

**"It's difficult to find a company to decontaminate [the site] given the extremely high level of radiation," a city government official said. "The situation is more than we can handle as a local government."**

The municipality has started discussions with the Environmental Ministry and Cabinet Office, asking the central government to take responsibility for determining the cause of the hotspot and the exact amount of contaminated soil, as well as decontaminating the location.

The hotspot was first discovered by a man living in the neighborhood who always carries a dosimeter.

Frustrated by the slow response of local governments to the radiation problem, many citizens and organizations are checking radiation levels in their neighborhoods on their own. These efforts will likely lead to the discovery of many more hotspots.

However, people may get different figures at the same spot depending on their examination methods or specific dosimeters.

Kiyoshi Nomura, associate professor at the University of Tokyo, said people do not have to worry too much about localized radiation.

(Oct. 28, 2011)

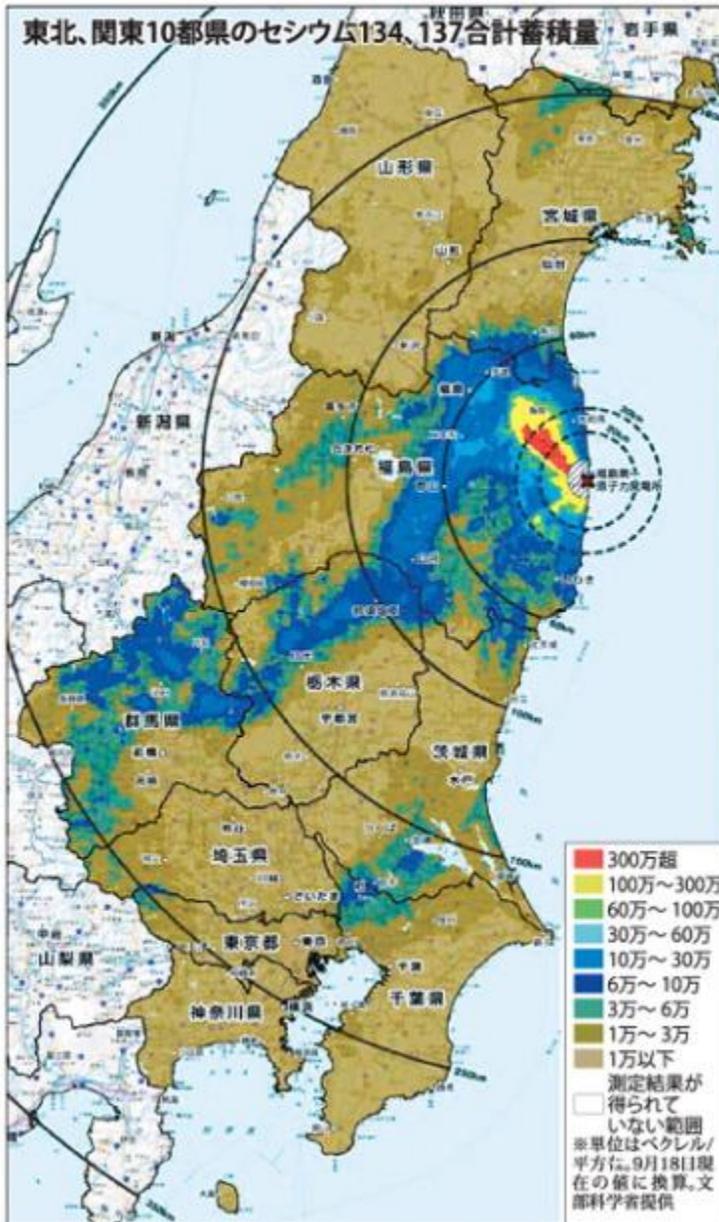
## **Gov't to slash upper limit on internal radiation exposure from food**

The government will tighten the provisional safety limit for annual internal radioactive cesium exposure through food intake from the current 5 millisieverts to 1 millisievert by around April 2012.

"The current provisional safety limit, which was set in response to emergencies, is safe enough, but it will be tightened in order to ensure increased food safety and security," Health, Welfare and Labor Minister Yoko Komiyama said during a press conference following a Cabinet meeting on Oct. 28.

The ministry's move comes after the Food Safety Commission of the Cabinet Office reported on Oct. 27 that over 100 millisieverts of lifetime internal exposure to radiation would affect human health. The ministry is further set to review food classification, which is currently divided into five groups, and consider introducing safety standards for baby food at its council meeting convening on Oct. 31.

In elaborating on the reasons for the tighter cesium limit, Komiyama cited a [guideline set by the Codex Alimentarius Commission that limits cesium intake to no more than 1 millisievert a year](#), as well as the fact that cesium concentrations in most food items have dropped substantially in recent tests. The minister said the opinions of many experts were also taken into account.



A government map displaying radiation levels in 10 prefectures relatively close to the Fukushima No. 1 Nuclear Power Plant. Areas in red show over 3 million becquerels of cesium per square meter, whereas those in light brown show less than 10,000. (Data as of Sept. 18. Image courtesy of the Ministry of Education, Culture, Sports, Science and Technology)

The new food safety regulations for cesium will be applied to agricultural products to be shipped sometime after April next year. The ministry will take transitional measures for newly cropped rice and other products that have already been distributed after clearing the current provisional safety limit, until next season's new rice is shipped. The ministry council will also review the types of radioactive materials subject to safety regulations, as no radioactive iodine has been detected in recent testing.

The Food Safety Commission's report on the 100-millisievert lifetime internal exposure limit -- filed with the health minister on Oct. 27 -- translates into 1.25 millisieverts of cesium per year if a person is

presumed to live for 80 years. A senior Health Ministry official said, "We have decided on the new (1 millisievert) standard in greater consideration of the safety, in light of the latest monitoring test results."

The current provisional safety limit was drawn up by the Health Ministry with advice from the Nuclear Safety Commission immediately after the nuclear crisis at the Fukushima No. 1 nuclear plant broke out in March.

A Health Ministry report released in July has revealed that each person in the country was estimated to have been internally exposed to an average of about 0.1 millisievert per year of radiation through food intake since the onset of the nuclear crisis.

"Under the current provisional safety limit, consumers are experiencing increased anxiety as they watch radiation measurements. Tightening the safety limit will reassure many people," said Hisa Anan, secretary-general of the National Liaison Committee of Consumers' Organizations.

(Mainichi Japan) October 28, 2011

## **Govt to lower radioactive intake limits**

Japan's health ministry is set to lower its radiation limits for food to one millisievert per year as early as April. The figure is one-fifth the current level.

The ministry set provisional radioactivity safety limits on foodstuffs at 5 millisieverts per year after the nuclear accident at the Fukushima Daiichi plant in March.

This would translate into 500 becquerels of radioactive cesium per kilogram in meat, fish, vegetables and cereals such as rice.

The tentative limits were based on the levels which are said to have no health effects even when a person consumes foods with radioactive materials for one year.

The ministry decided to lower the limits to match international standards as radioactive substances detected in foodstuffs have been falling since the accident.

On Thursday, Japan's Food Safety Commission recommended that cumulative internal radioactive exposure from food during a person's lifetime be limited to no more than 100 millisieverts.

The new safety limits would result in stricter standards for each food item, and are likely to fall within the levels recommended by the commission.

The ministry's panel is to start deliberating the issue next week to set standards for each food item.

Friday, October 28, 2011 08:09 +0900 (JST)

## **Study: Japan nuke radiation higher than estimated**

NEW YORK (AP) -- **The Fukushima nuclear disaster released twice as much of a radioactive substance into the atmosphere as Japanese authorities estimated, reaching 40 percent of the total from Chernobyl, a preliminary report says.**

The estimate of much higher levels of radioactive cesium-137 comes from a worldwide network of sensors. Study author Andreas Stohl of the Norwegian Institute for Air Research says the Japanese government estimate came only from data in Japan, and that would have **missed emissions blown out to sea.**

The study did not consider health implications of the radiation. Cesium-137 is dangerous because it can last for decades in the environment, releasing cancer-causing radiation.

The long-term effects of the nuclear accident are unclear because of the difficulty of measuring radiation amounts people received.

In a telephone interview, Stohl said emission estimates are **so imprecise** that finding twice the amount of cesium isn't considered a major difference. He said some previous estimates had been higher than his.

The journal Atmospheric Chemistry and Physics posted the report online for comment, but the study has not yet completed a formal review by experts in the field or been accepted for publication.

Last summer, the Japanese government estimated that the March 11 Fukushima accident released 15,000 terabecquerels of cesium. Terabecquerels are a radiation measurement. The new report from Stohl and co-authors estimates about 36,000 terabecquerels through April 20. That's about 42 percent of the estimated release from Chernobyl, the report says.

An official at the Nuclear and Industrial Safety Agency, the Japanese government branch overseeing such findings, said the agency could not offer any comment on the study because it had not reviewed its contents.

It also says **about a fifth of the cesium fell on land in Japan, while most of the rest fell into the Pacific Ocean.** Only about 2 percent of the fallout came down on land outside Japan, the report concluded.

Experts have no firm projections about how many cancers could result because they're still trying to find out what doses people received. Some radiation from the accident has also been detected in Tokyo and in the United States, but experts say they expect no significant health consequences there.

Still, concern about radiation is strong in Japan. Many parents of small children in Tokyo worry about the discovery of radiation hotspots even though government officials say they don't pose a health risk. And former prime minister Naoto Kan has said the most contaminated areas inside the evacuation zone could be uninhabitable for decades.

**Stohl also noted that his study found cesium-137 emissions dropped suddenly at the time workers started spraying water on the spent fuel pool from one of the reactors. That challenges previous thinking that the pool wasn't emitting cesium, he said.**

Online:

New study: <http://bit.ly/tFURSr>

(Mainichi Japan) October 28, 2011

## **Fuel retrieval at Fukushima to start in 10 years**

Japan's Atomic Energy Commission says it aims to start retrieving melted nuclear fuel rods from the Fukushima Daiichi power plant within 10 years.

The Commission's expert panel on Friday presented a draft report on the timetable for scrapping the plant.

The report says decommissioning will start with repairing the containment vessels of the No.1 to No.3 reactors, where meltdowns occurred.

The vessels will then be filled with water to block radiation released from the melted fuel.

The commission also plans to start moving spent fuel rods from pools at the No.1 to No.4 reactors to another pool in the plant within 3 years. This will take place after the reactors achieve a state of cold shutdown.

The report projects that the decommissioning will take more than 30 years to complete.

The timetable is longer than that for the Three Mile Island nuclear plant in the United States, because the containment vessels were damaged at Fukushima along with the pressure vessels that house fuel rods.

In the 1979 Three Mile Island accident, about 70 percent of the reactor's fuel rods melted. Fuel retrieval began 6 years after the accident and lasted for 5 years.

The work at Fukushima is expected to be longer and more difficult, because the extent of the damage is more severe and workers will have to repair 4 reactors simultaneously.

Friday, October 28, 2011 18:39 +0900 (JST)

## **Over 80% of Japan's reactors offline**

Forty-four of Japan's 55 nuclear reactors are currently idle, mainly for safety inspections.

Eighteen of them are undergoing stress tests mandated by the government. But none are expected to resume operations soon because the nuclear plant accident in Fukushima has raised safety concerns among local authorities hosting nuclear plants.

Of the 10 reactors still running, 4 will be shut down for routine inspections by year-end. The rest are scheduled to go offline by early next year.

If none of the reactors restart, Japan will have no active nuclear power plants within several months.

Friday, October 28, 2011 16:39 +0900 (JST)

## Japanese group develops handheld decontaminator

A group of Japanese researchers says it has developed a handheld device capable of removing radioactive substances using laser beams.

The machine was created by researchers from the Wakasa Wan Energy Research Center in Fukui Prefecture, central Japan.

The device uses laser beams moving at a high speed to scrape off radioactive substances attached to the surface of pipes and other objects at nuclear power plants. The dust is then collected inside the machine.

The researchers say that, since only the surface is scraped off, the machine generates one thousand times less radioactive waste than conventional methods.

The device is about 30 centimeters high and wide, and 40 centimeters long. The team says it is the world's first portable radiation decontaminator.

When the researchers began developing the machine 7 years ago, they meant it to be used to reduce radioactive waste from nuclear plants, and also in the decommissioning of a prototype test reactor in Fukui Prefecture, known as Fugen.

The device is expected to be used in the operations to remove radioactive substances from the Fukushima Daiichi nuclear plant, which was badly damaged in the March 11th tsunami.

Friday, October 28, 2011 10:51 +0900 (JST)

## EDF Delays Construction Of 4 Nuclear Reactors In UK

By Inti Landauro

Published October 28, 2011

| Dow Jones Newswires

PARIS -([Dow Jones](#))- French power company Electricite de France SA, or EDF, (EDF.FR), Friday decided to delay the construction of four planned nuclear reactors in the U.K., a company spokeswoman said, confirming a report from Les Echos newspaper.

EDF is taking time to evaluate the consequences of delays at a reactor under construction in Flamanville, northern France and the Fukushima Daiichi nuclear disaster in Japan, the spokeswoman said.

EDF will release a new calendar for the project during the fall, she said.

Les Echos said the company is evaluating whether conditions for the EUR20 billion investment are met in the U.K.

EDF was planning to start building the first of the planned nuclear reactors in 2013, the newspaper said.

Read more: <http://www.foxbusiness.com/industries/2011/10/28/edf-delays-construction-4-nuclear-reactors-in-uk/#ixzz1c4Fc1qA6>

## **Japan's leaders must face country's 'latent' possession of nuclear weapons**

I've made four visits to the Rokkasho Nuclear Reprocessing Plant in Aomori Prefecture which, since 1993, has cost the government over 2 trillion yen to build and run on a trial basis.

The reason for the multiple visits was the plant's significance in the country's energy security scheme. It was important that we probe and monitor not just the safety of the plant, but the trends in local residents' attitudes and their tactics in dealing with politicians, the speed of construction, and any "interference" by other countries.

The cold and wet northeasterly "yamase" winds -- also known as "gashifu," literally "starvation winds" -- were blowing every time I visited the village of Rokkasho, enveloping everything in a thick fog. The conditions in region were not conducive to growing crops; it was not a "rich" area.

So perhaps these winds had something to do with why the village gave up the land that had belonged to it for generations to nuclear power.

But it was the presentation of the plant as a national project that would fulfill government policy and goals that ultimately won the villagers' "cooperation." "Of a nuclear power plant's spent nuclear fuel, only 5 percent or less should be disposed of," the government had explained. "Uranium and plutonium can be recycled. We want to reprocess the fuel and pave the way to energy self-sufficiency."

In the **27 years since the application for the construction of a reprocessing plant** was lodged with Rokkasho, the village has undergone tremendous change. Massive cranes have been brought in, and hefty structures have gone up one after another. Nuclear money has brought wealth to the village, making its per capita income the highest of any municipality in Aomori Prefecture. Despite some twists and turns, the national project was getting closer to becoming a reality.

There's a little "secret" to the reprocessing plant, however.

On July 17, 1988, Japan implemented revisions to the Japan-U.S. Nuclear Agreement that would allow Japan to construct nuclear fuel reprocessing plants, despite strong opposition from the U.S. Congress. Using its own enrichment technology, it was now possible for Japan, in theory, to produce the raw materials necessary to build nuclear bombs.

By 2005, the year I last visited Rokkasho, the facility had been subject to 11 routine inspections and 14 unannounced inspections from the International Atomic Energy Agency (IAEA), whose aim was to ensure that the plant was not producing any such materials. Despite being a nonnuclear weapons state, Japan was now a "latent" nuclear weapons state. Japan claims it is protected against threats from other countries by the U.S. nuclear umbrella, but the rest of the world sees Japan as a state that would not hesitate to possess nuclear arms, if the circumstances called for it.

The call to eliminate our dependence on nuclear power has become widespread since the crisis at the Fukushima No. 1 nuclear plant began. And yet, our leaders have failed to make any mention of the country's latent nuclear weapons capacity.

The true elimination of our dependence on nuclear power, however, must include our abandonment of nuclear weapons possession. The decisions we face now hold the key to the security of our country.  
(By Taro Maki, Expert Senior Writer)

(Mainichi Japan) October 28, 2011

**NOVEMBRE 2011**

*A pro nuclear point of view, but interesting insights on nuclear diplomacy.*

## Challenges ahead for India's nuclear diplomacy

Siddharth Varadarajan

<http://www.thehindu.com/opinion/op-ed/article2586304.ece>

Nullifying the effect of the Nuclear Suppliers Group's ban on enrichment and reprocessing exports will require diplomatic finesse and commercial hardball.

After the diplomatic successes of 2008, when the Nuclear Suppliers Group (NSG) exempted India from the cartel's ban on atomic sales to countries that have not signed the Non-Proliferation Treaty (NPT) or placed all their nuclear facilities under international safeguards, 2011 has not been a very good year at all.

Negotiations with the Japanese on a nuclear agreement have run aground, **India's liability law is being unfairly attacked by its potential partners** and, of course, the 46-nation **NSG adopted new guidelines for the export of sensitive nuclear technology this June** — Including enrichment and reprocessing (ENR) equipment and technology — that made the sale of these items conditional on the recipient state fulfilling a number of “objective” and “subjective” conditions. The first of these conditions, namely NPT membership and full-scope safeguards, were specifically designed to dilute the 2008 waiver India received and were not needed to ban ENR sales to any of the other three countries outside the NPT (Pakistan, Israel and North Korea) since the NSG's original guidelines — with their catch-all NPT conditionality for the export of any kind of nuclear equipment — continue to apply to them.

Though Washington denies targeting New Delhi and says it has been working to restrict the sale of ENR equipment and technology for many years now, the new guidelines' redundant reference to the NPT was introduced in order to fulfil an assurance that Condoleezza Rice, who was U.S. Secretary of State at the time, gave Capitol Hill in 2008. Some Congressmen feared other nuclear suppliers would steal a march on the United States by offering India technologies the U.S. wouldn't. To allay their concerns, the U.S. administration said it would ensure an NSG-level ban on sensitive nuclear technology exports to India. A draft was circulated in November that year and finally approved in June 2011.

### *The Hindu's report*

The fact that India failed to prevent the adoption of the new guidelines despite knowing they were in the pipeline for more than two years suggests a certain complacency on the Manmohan Singh government's part. We know from WikiLeaks cables that the issue was dutifully raised by Indian diplomats in many of their meetings with U.S. officials. But never was the proposed ENR ban projected by the government as an attempt by Washington to unilaterally rewrite the terms of the nuclear bargain it had struck with India.

When *The Hindu* broke the story about the G-8 deciding to implement such a ban in 2009 pending its adoption by the full NSG, senior Indian ministers took the view that this did not matter. It was only

when the Nuclear Suppliers Group finally adopted the new guidelines this June that South Block decided to put on its punching gloves.

The fact is that the **NSG's 2008 decision to lift its embargo on India was not some kind of unilateral concession**. It was part of a complex bargain involving reciprocal commitments by both sides. If the supplier nations agreed to drop their insistence on the NPT and full-scope safeguards and open the door to full civil nuclear cooperation with India, India committed itself to fulfilling several onerous steps, including the difficult and costly separation of its civilian and military nuclear programmes, the placing of its civilian facilities under International Atomic Energy Agency (IAEA) safeguards, the signing of an Additional Protocol, as well as extending support to a number of nonproliferation and disarmament-related initiatives at the global level. At a fundamental level, the logic of this bargain hinged on two components. First, the NSG was making a judgment about India's status as a responsible country with advanced nuclear capabilities. Second, the NSG and India were acting on the basis of reciprocity.

### India's expectations

Though Indian officials made their anger known almost immediately in off the record briefings, External Affairs Minister S.M. Krishna finally provided the government's formal response to the new NSG guidelines in a *suo moto* statement to Parliament in August. Noting the concerns that had been raised by MPs, he made the following “clarifications”: (1) The basis of India's international civil nuclear cooperation remains the special exemption from the NSG guidelines given on September 6, 2008 “which contain reciprocal commitments and actions by both sides.” (2) That exemption accorded “a special status to India” and “was granted knowing full well that India is not a signatory to the Nuclear Non-Proliferation Treaty.” Pursuant to the “clean” exemption, “NSG members had agreed to transfer all technologies which are consistent with their national law” including technologies connected with the nuclear fuel cycle.

Mr. Krishna said the only outstanding issue is the “full implementation” of the September 2008 understanding. “This is what we expect and our major partners are committed to.” This understanding contained commitments on both sides. “We expect all NSG members to honour their commitments as reflected in the 2008 NSG Statement and our bilateral cooperation agreements.”

The Minister then noted the statements made by the U.S., France and Russia following the NSG's June 2011 meeting in which each country tried to assure India that the new guidelines would not “detract” from or “affect” the original waiver granted in September 2008. Stating that not every NSG member has the ability to transfer ENR items to other countries, Mr. Krishna added: “We expect that those that do and have committed to do so in bilateral agreements with India, will live up to their legal commitments.” He also held out a carrot — the huge expansion planned for India's civil nuclear industry — and repeated once again in that context that “we expect that our international partners will fully honour their commitments in this regard.”

### French example

While the three big nuclear suppliers have all said the new guidelines do not “detract” from the grand bargain of 2008, South Block should not set much store by these assurances. The fact is that there has been a setback and a diplomatic effort is needed to recover lost ground and ensure that India is excluded from the purview of the new ENR restrictions imposed by the NSG.

**The one supplier that has been the most forthcoming so far is France.** Indian officials will have taken heart from French Foreign Minister Alain Juppe's public articulation in an interview in Delhi last month that France did not consider itself bound by the new guidelines when it came to nuclear commerce with India. The Minister confirmed that notwithstanding the NSG rules, Paris remained free to sell ENR items and technology in a manner consistent with its national law and its bilateral agreement. French diplomatic sources also told this writer that the French delegation at the NSG meeting in June had entered a verbal reservation to the new ENR guidelines questioning their applicability to India. The French intervention was not challenged and was duly recorded in the minutes, the sources said.

Of course, the challenge for India will be to hold the French to their word, as and when the requirement for cooperation in the ENR field is required. Though India has its own capabilities in these fields, there is no reason why it should not seek access to the best international components and equipment for the new reprocessing plant it has committed to build. With both France and Russia, India must make it clear that the multibillion dollar contracts which are on the anvil for the purchase of new reactors will also depend on Paris and Moscow's willingness to follow through on their promises and commitments on full civil nuclear cooperation. The U.S. has not so far committed itself to sell ENR equipment to India. New Delhi can live with that. But not with American efforts to block others from cooperating with it.

(Mainichi Japan) November 1, 2011

## **PM Noda looks set to back down from pursuit of less reliance of nuclear power**

Speculation is growing that Prime Minister Yoshihiko Noda has backed down from his position for Japan to seek to rely less on nuclear power.

In their summit talks on Oct. 31, Noda told Vietnamese Prime Minister Nguyen Tan Dung that Japan will continue to export nuclear reactors. In an earlier interview with The Financial Times, Noda expressed hope that a certain number of nuclear reactors, which have been stopped for regular maintenance work, can be reactivated.

Following the accident at the tsunami-hit Fukushima No. 1 Nuclear Power Plant, the government suspended its talks with other countries over exports of nuclear power complexes.

However, the Cabinet decided in August to resume talks with Vietnam **for fear that confidence will be lost in Japan in the international market** unless it allows a contract for a project that a Japanese

company has already won from the country to go ahead. The final round of talks with Vietnam was actually resumed in September.

Still, Prime Minister Noda remains prudent in giving the green light to future exports of nuclear reactors and technology. "The exports to Vietnam will not lead to fresh talks with other countries on nuclear power accords or exports of nuclear reactors," he said.

Economy, Trade and Industry Minister Yukio Edano also said the government will "take some more time" before deciding whether to permit fresh exports of nuclear power complexes and technology.

However, Foreign Minister Koichiro Genba and his Indian counterpart Shri S. M. Krishna agreed on Oct. 29 that the two governments will press forward with talks on a bilateral nuclear power agreement, which is indispensable for Japan's exports of nuclear reactors and technology to India. The move could be interpreted as an indication that Tokyo is considering fresh exports of nuclear power despite the prime minister's cautious approach.

The Democratic Party of Japan (DPJ)-led government had initially promoted exports of nuclear power complexes. In its new growth strategy released in June 2010, the administration called for exports of various forms of infrastructure including nuclear reactors in packages. It then signed a nuclear power accord with Jordan in September last year, with South Korea in December and with Vietnam in January. Four such agreements, including one that the Liberal Democratic Party-led previous administration had signed with Russia, have been submitted to the Diet for approval.

## **Editorial: Safety must be guaranteed as precondition for nuke reactor export to Vietnam**

Safety must be guaranteed as a precondition for the government giving the green light to the export of nuclear reactors to Vietnam.

Prime Minister Yoshihiko Noda and his Vietnamese counterpart Nguyen Tan Dung have reached an agreement under which Japan will be granted a contract to build two nuclear reactors, each with an output of 1 million kilowatts, as part of the second phase of the construction of a nuclear power station in Ninh Thuan, southern Vietnam. Operations at these reactors are scheduled to begin in 2021 and 2022.

The government will go ahead with Japan's exports of reactors to Vietnam after the Diet approves the bilateral nuclear power agreement.

In a speech to the U.N. in September, Prime Minister Noda said he would ensure the world's top level of safety as a precondition for exporting nuclear power complexes. Japan must not export danger and concern by placing priority on profit over safety. Maximum caution should be exercised in ensuring safety before giving the green light to exports.

At a bilateral summit in October 2010, Japan agreed to be a partner in the development of nuclear power plants in Vietnam. Vietnam had asked Japan to extend low-interest loans for the project, provide

the most advanced technology, help develop a skilled nuclear power workforce, process radioactive waste and extend other forms of cooperation as a condition for granting Japan the contract.

One cannot help but wonder why the government, which is pursuing reduced reliance on nuclear power, has chosen to give the green light to exports of nuclear reactors. As the reasons for exporting nuclear technology, the government has explained that it will help stabilize the global energy supply, reduce greenhouse gas emissions, maintain and improve technology and skills in Japan, and contribute to Japan's economic growth.

True, the construction of a single nuclear reactor is reportedly a 500-billion-yen project. The government, which has been worried that domestic demand is shrinking, declared in its new growth strategy in June that it will promote the sale of infrastructure packages including nuclear power plants abroad.

Still, the government has failed to bring the crisis at the Fukushima No. 1 nuclear plant under control and is still trying to get to the bottom of the disaster's cause. The crisis has uncovered various problems with the management of nuclear power plants, including plant operator Tokyo Electric Power Co.'s failure to assume that all external power sources could be lost for such a long period in case of a disaster. If Japan chooses to unconditionally export nuclear reactors in pursuit of profits at this stage, it will never win international confidence.

Vietnam, for its part, is aiming to secure stable power sources to help attract foreign investment and sustain its economic growth. The country has already placed an order with Russia for the construction of two nuclear reactors, but reportedly intends to avoid excessive reliance on a single major provider. In that sense, it places high expectations on Japan's nuclear power technology. It is only natural that Japan, which has been in negotiation with Vietnam over nuclear reactor exports, feels obliged to respond to the country's request.

Still, if Japan -- which has witnessed a stunning collapse of the myth of nuclear power's safety -- moves to export nuclear reactors, it needs to keep in mind that it must ensure their safety.

It is a matter of course that Tokyo must upgrade the safety of nuclear power plants while paying close attention to the results of investigations by the government's accident investigative panel and a similar panel to be set up in the Diet.

Japan may enter negotiations with other countries on exports of nuclear reactors and technology. The executive and legislative branches of the government should hold substantive discussions on the issue to prevent the government from permitting exports to numerous countries without restraint.

(Mainichi Japan) November 1, 2011

## **Xenon suggests possible nuclear fission**

A nuclear energy expert says the presence of xenon in the No.2 reactor leaves open the possibility that localized and temporary fission could still occur.

Professor Koji Okamoto of the University of Tokyo Graduate School says substances from melted fuel

that could undergo fission are probably scattered around, but are unlikely to react.

He says, however, that neutrons from radioactive materials could react with the uranium fuel and other substances.

Okamoto says a self-sustaining chain reaction that creates criticality is unlikely to happen because huge amounts of boric acid have been poured into the reactor.

He adds that these neutrons must be closely monitored to make sure fission does not take place.

The professor also referred to a plan by the government and TEPCO to achieve a state of cold shutdown by the end of the year. He says that if fission reactions are not under control, it would not be a cold shutdown.

Okamoto says TEPCO must locate the melted fuel inside and outside the reactor in order to prevent further reactions.

Wednesday, November 02, 2011 10:24 +0900 (JST)

## **Nuke watchdog says fresh meltdown unlikely**

Japan's nuclear watchdog says it believes another meltdown at the Fukushima Daiichi nuclear power plant is unlikely, but will continue to monitor the situation closely.

The Nuclear and Industrial Safety Agency held a news conference on Wednesday, after radioactive xenon was detected in the containment vessel of the No.2 reactor. The presence of the substance indicates that nuclear fission may have briefly resumed.

The safety agency says it is unlikely that nuclear fuel has begun melting again, as the density of xenon is low and there has been no change in the reactor's temperatures.

The agency also says it will closely monitor if xenon continues to be detected after Tokyo Electric Power Company poured boric acid solution into the reactor to suppress nuclear fission.

It added that it cannot yet say how the latest development will affect the government's plan to achieve a cold shutdown of the disabled reactors by the end of the year.

Senior official Yoshinori Moriyama said it is difficult to determine the amount of nuclear fuel remaining in the containment vessel of the No.2 reactor. He said his agency will assess the situation and judge if it is still possible to stably lower temperatures in the reactor and containment vessel.

Wednesday, November 02, 2011 15:10 +0900 (JST)

## **TEPCO finds sign of fresh nuclear fission at Fukushima reactor**



In this April 10 2011 file photo taken by T-Hawk drone aircraft and released by Tokyo Electric Power Co. (TEPCO), the reactor building of Unit 2, center, of the Fukushima Dai-ichi nuclear power plant is seen in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that it has detected signs of a recent nuclear fission in the No. 2 reactor at the crippled Fukushima Daiichi power plant, but ruled out the possibility that a major criticality accident had occurred.

The plant operator injected early Wednesday water containing boric acid to control a possible nuclear reaction at the reactor, where nuclear fuel is believed to have melted when the cooling system failed following the devastating March 11 earthquake and tsunami. The company said the reactor's temperature and pressure were stable.

As for the possibility of criticality, in which nuclear fuel sustains a fission chain reaction, the utility's spokesman said such a phenomenon may have happened "temporarily or partially," but he does not think enough energy has been generated to raise the reactor's temperature and pressure.

The latest incident suggests that the plant's seemingly stable situation could be fragile, even almost eight months after the crisis erupted. The world's worst nuclear crisis in 25 years resulted in the meltdown of nuclear fuel in the Nos. 1 to 3 reactors at the Fukushima complex.

It may also affect the government and TEPCO's plans to achieve a state of cold shutdown by the end of the year, although TEPCO spokesman Junichi Matsumoto said his company does not expect a major impact on the progress so far.

Possible evidence of a recent nuclear fission was found when gas was extracted from the No. 2 reactor's primary containment vessel to check the radiation level on Tuesday.

TEPCO said it has found two types of radioactive xenon that are typically generated by nuclear fission and have relatively short so-called half-lives.

The two are xenon-133 and xenon-135, and as their radioactivity is reduced to about half in about five days and nine hours, respectively, their existence suggests that a nuclear fission took place recently, according to Matsumoto.

But TEPCO added that it needs confirmation and has asked the Japan Atomic Energy Agency for further analysis.

Even if the substances are confirmed, TEPCO believes that their density levels are quite low.

Water injection to keep the No. 2 reactor cool is continuing, and the government's Nuclear and Industrial Safety Agency said the overall situation is "stable."

(Mainichi n) November 2, 2011

## **TEPCO: Reactor may have gone critical**

The operator of the crippled Fukushima Daiichi nuclear power plant says it found in the facility's No.2 reactor radioactive substances that could have resulted from continuous nuclear fission.

The Tokyo Electric Power Company, or TEPCO, said on Wednesday that it detected xenon-133 and xenon-135 in gas taken from the reactor's containment vessel on the previous day. The substances were reportedly in concentrations of 6 to more than 10 parts per million becquerels per cubic centimeter.

Xenon-135 was also detected in gas samples collected on Wednesday.

Radioactive xenon is produced during nuclear fission.  
The half-life of xenon-133 is 5 days, and that of xenon-135 is 9 hours.

TEPCO says the findings suggest that nuclear fission may have occurred recently, not just after the March 11th accident, and that a state of criticality could have occurred temporarily in some areas.

TEPCO workers poured a boric acid solution into the reactor on Wednesday to suppress nuclear fission.

The utility says it has not found any significant change in temperature and pressure of the reactor, and that large-scale criticality did not occur.

TEPCO says the reactor's cooling process is continuing and that the firm expects to achieve cold shutdown at the plant this year as planned. But the utility also says it wants to take a close look at the situation of the plant's No.1 and 3 reactors.

Wednesday, November 02, 2011 20:37 +0900 (JST)

Nuke watchdog says fresh meltdown unlikely

Japan's nuclear watchdog says it believes another meltdown at the Fukushima Daiichi nuclear power plant is unlikely, but will continue to monitor the situation closely.

The Nuclear and Industrial Safety Agency held a news conference on Wednesday, after radioactive xenon was detected in the containment vessel of the No.2 reactor. The presence of the substance indicates that nuclear fission may have briefly resumed.

The safety agency says it is unlikely that nuclear fuel has begun melting again, as the density of xenon is low and there has been no change in the reactor's temperatures.

The agency also says it will closely monitor if xenon continues to be detected after Tokyo Electric Power Company poured boric acid solution into the reactor to suppress nuclear fission.

It added that it cannot yet say how the latest development will affect the government's plan to achieve a cold shutdown of the disabled reactors by the end of the year.

Senior official Yoshinori Moriyama said it is difficult to determine the amount of nuclear fuel remaining in the containment vessel of the No.2 reactor. He said his agency will assess the situation and judge if it is still possible to stably lower temperatures in the reactor and containment vessel.

Wednesday, November 02, 2011 15:10 +0900 (JST)

## **Genkai nuclear reactor restarts after 1 month hiatus**

SAGA (Kyodo) -- Kyushu Electric Power Co. resumed operation of a nuclear reactor at its Genkai power plant late Tuesday that came to a halt as a result of human error nearly a month ago, after securing approval from local municipal leaders, company officials said.

The Fukuoka-based utility reactivated the No. 4 reactor at the plant in the town of Genkai, Saga Prefecture, at around 11 p.m. Tuesday, despite opposition among some local residents, with an eye to resuming power generation Wednesday afternoon.

**It is the first time since the start of the nuclear crisis at the Fukushima Daiichi power plant in March that a utility has reactivated a nuclear reactor that went offline due to a technical problem.**

While public concern over nuclear safety remains heightened following the Fukushima crisis, Saga Gov. Yasushi Furukawa and Genkai Mayor Hideo Kishimoto approved the utility's plan to restart the reactor.

"If the state made the judgment after a full examination, we'll accept it," Furukawa told reporters.

Kishimoto also suggested he approved the restart after hearing an explanation from Kyushu Electric Executive Vice President Haruyoshi Yamamoto. Kishimoto said the nuclear safety agency's positive assessment had encouraged him to approve the move.

Kyushu Electric said Monday it would resume operation of the reactor within a few days as the Nuclear and Industrial Safety Agency rated the utility's report on the cause of the error and error-prevention measures as "basically appropriate."

But some local residents remain opposed to the utility restarting the reactor. Kyushu Electric had received around 200 phone calls expressing opposition by late afternoon Tuesday, with one person saying he has lost trust in the utility following its attempt to manipulate public opinion regarding nuclear power.

The No. 4 reactor automatically shut down on Oct. 4 as an abnormality in its steam condenser emerged after repairs had been carried out based on a faulty manual.

Industry minister Yukio Edano, who oversees the nuclear safety agency, said in Tokyo on Tuesday that the government would leave Kyushu Electric to decide whether to restart the reactor, while encouraging the utility to fully consult with local residents before making a final decision.

The government requires nuclear reactors halted for regular checks to pass so-called stress tests before they are allowed to resume operation. But Edano said the No. 4 reactor at the Genkai plant was halted due to human error and was not subject to the stress tests.

Kyushu Electric said Monday it planned to reactivate the No. 4 reactor once preparations were completed and that the reactor will be halted for regular checks in December as previously planned.

The utility's chairman Shingo Matsuo was eager to restart the reactor as soon as possible, saying in Miyazaki Prefecture, "We believe that we have obtained local understanding."

(Mainichi Japan) November 2, 2011

## **Areas to be well-prepared for nuclear accidents to be expanded**

TOKYO (Kyodo) -- A working group under the government's nuclear safety panel decided Tuesday to expand priority areas that should be prepared for possible nuclear accidents to a 30-kilometer radius of a nuclear power plant from the current 8 to 10 km.

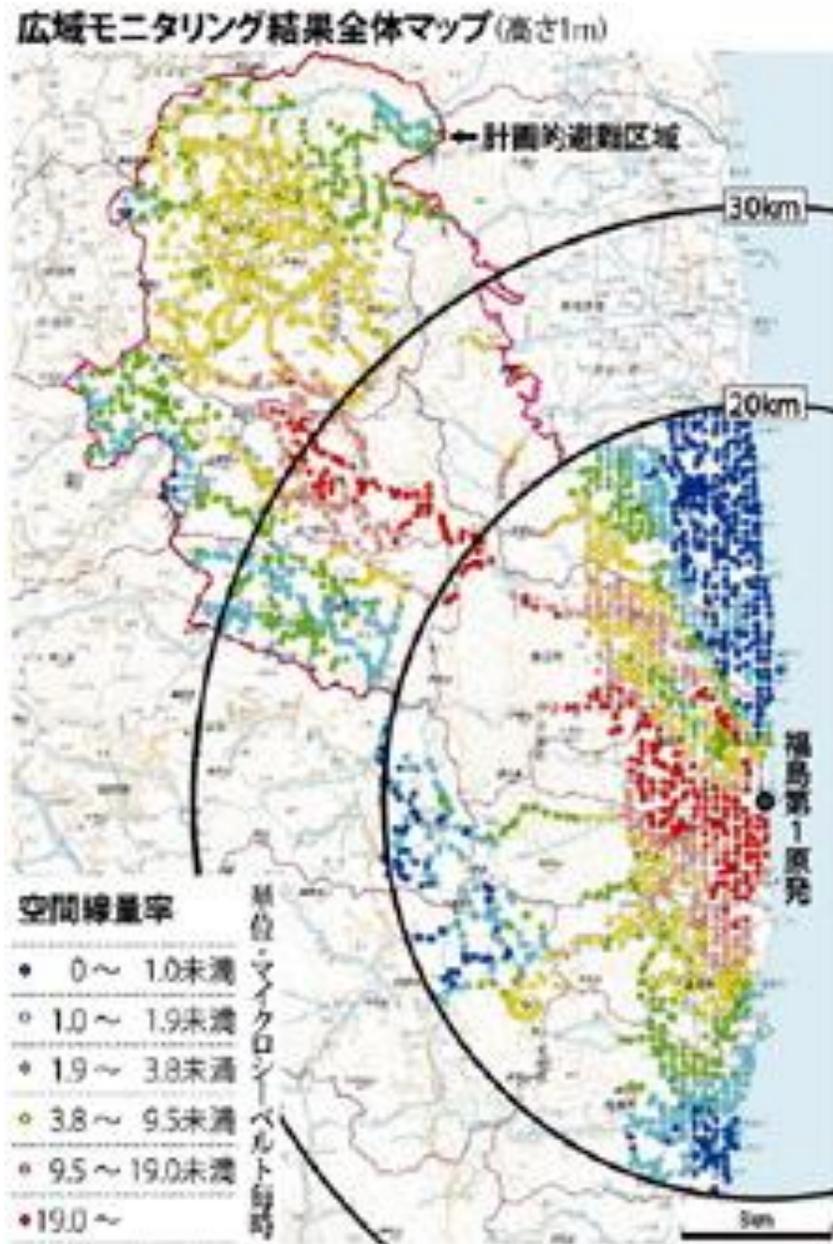
The group is reviewing areas where enhanced disaster-prevention measures should be taken, after the nuclear crisis at the Fukushima Daiichi nuclear power plant led the government to set a 20-km radius of the plant as a no-entry zone and advised people living in areas outside the zone where high radiation dose had been detected to evacuate.

But the move is expected to increase expenses to implement disaster-prevention measures nationwide, suggesting the heavy burden required to operate nuclear power plants in the country.

Under the plan, the government would replace the current Emergency Planning Zone with two types of zones, including one called a Precautionary Action Zone which would cover a 5-km radius of a nuclear power plant and would require residents to immediately evacuate in the event of a rapidly developing nuclear accident.

The other one is called an Urgent Protective Action Planning Zone, which would cover a 30-km radius and would be asked to be prepared for evacuation depending on the situation. The areas should also be prepared to check the radiation level swiftly by setting up monitoring posts.

As the Fukushima crisis resulted in the release of radioactive substances beyond the 30-km radius, the plan also cited the need to designate another area where people may be asked to stay indoors or ingest stable iodine to prevent radioactive iodine from accumulating in the thyroid and increasing the risk of thyroid cancer.



A government map displaying radiation levels in the area around the Fukushima No. 1 Nuclear Power Plant.

The zone is called a Plume Protection Planning Area and should cover a 50-km radius from the plant, the plan said.

The proposed expansion to a 30-km range means that heavily populated prefectural capitals such as Mito, Kyoto and Kagoshima would be included, while the total population of cities, towns and villages involved under the new guideline, including the plume protection area, would stand at nearly 20 million.

The nuclear crisis at the plant operated by Tokyo Electric Power Co. was triggered by the devastating March 11 earthquake and ensuing tsunami, and resulted in the nuclear fuel meltdown at the Nos. 1 to 3 reactors.

(Mainichi Japan) November 2, 2011

## **Nuclear safety body used inspection criteria drafted by nuclear fuel firm**

The only legally mandated, independent nuclear industry inspection body in Japan copied nuclear fuel inspection criteria directly from documents provided by the company making the fuel, the Mainichi has discovered.

The documents, obtained by the Mainichi through repeated official information requests, show that the Japan Nuclear Energy Safety Organization (JNES) copied an inspection manual verbatim from materials it ordered Global Nuclear Fuel Japan Co. to create. Global Nuclear Fuel is one of the firms subject to JNES checks.

The legally mandated JNES inspections are based on official manuals which include a list of inspection procedures and pass criteria. The Mainichi obtained the manual for a check of nuclear fuel scheduled for delivery to Higashidori nuclear plant in Aomori Prefecture. The Mainichi also obtained a draft inspection procedure document -- listing inspection goals, items, methods for sampling fuel lots, and fuel rod measurements -- created by the fuel shipment's maker, Global Nuclear Fuel.

Except for the cover and first page, the JNES manual and the Global Nuclear Fuel document were identical, even down to the page format and font.

JNES deputy head of inspections Masaharu Kudo had previously told the Mainichi that "we do receive data (from Global Nuclear Fuel), but of course we don't use it as-is. The JNES checks the data and produces its own manual as well."

After the Mainichi compared the JNES manual and the Global Nuclear Fuel document -- finally obtained after two official information requests -- Kudo admitted the documents were the same, but denied there was any problem with the practice, saying the JNES and the nuclear fuel firm "consult with each other in drawing up the inspection procedures, so of course the draft and the manual will be identical.

"The JNES would have no access to the necessary data without the nuclear fuel maker, so we ask them to cooperate," Kudo continued. "It wouldn't be impossible for the JNES to draw up the manuals independently, but if we tried we'd be at it all day."

According to the safety organization, it received the Global Nuclear Fuel draft inspection procedures in electronic form in September 2008, and on Dec. 18 the same year JNES staff inspected fuel that was to be shipped to the Higashidori nuclear plant using a manual copied directly from the Global Nuclear Fuel document.

Furthermore, JNES staff noticed later that the minimum fuel rod length already reported to the government was 3 to 5 centimeters longer than the value listed in both the inspection manual and the Global Nuclear Fuel draft procedures. JNES staff had not in fact looked at the manual, but compared the rods to another Global Nuclear Fuel document to confirm the rods were the proper length before issuing a passing grade for the shipment.

The error in the manual was found in February 2009, just before the JNES reported to the government that the fuel had passed inspection. After an internal investigation, the JNES discovered it had made the same mistake three times when checking Global Nuclear Fuel products. The organization had already certified all three shipments.

"The nuclear fuel firm also carries out internal checks, so there's no problem with asking them to draw up draft inspection procedures for their own products," Kudo said. "If we found any mistakes in the drafts, we corrected them."

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 2, 2011

## Shortcomings in nuclear safety assessment found

The organization in charge of assessing the safety of Japan's nuclear plants has **admitted it allowed nuclear fuel rods to pass quality checks using a faulty manual.** [\[read above!!\]](#)

The manual was borrowed from the Japanese manufacturer of the rods.

The Japan Nuclear Energy Safety Organization conducted the checks in 2008 on 4 sets of fuel rods for reactors.

The government-backed organization says it approved 3 of the 4 sets even though the manual said the rods were 3 to 5 centimeters shorter than the actual length of 4 meters.

It says the examiners failed to notice the mistakes as they did not closely check the manual beforehand.

Industry watchdog, the Nuclear and Industrial Safety Agency, says it will order the organization to correct these shortcomings and improve its screening procedures.

Thursday, November 03, 2011 02:44 +0900 (JST)

## **Sloppy inspection procedures threaten Japan's nuclear safety regulations**

The stunning revelations that the Japan Nuclear Energy Safety Organization (JNES) under the jurisdiction of the government's Nuclear and Industrial Safety Agency (NISA) prepared inspection procedures for nuclear facilities after copying everything off draft inspection procedures worked out by a nuclear fuel company have called into question the country's atomic safety regulations.

Sloppy inspection procedures worked out by the government-affiliated body were revealed at a time when Japan is struggling to ensure nuclear safety in the wake of the outbreak of a crisis at the Fukushima No. 1 Nuclear Power Plant and is trying to step up measures to check the safety of nuclear power plants. In line with strict inspections carried out in the United States, Japan needs to vastly improve its procedures to inspect nuclear power plants.

Yoshihiro Nishiwaki, a visiting professor at the graduate school of the University of Tokyo, was stunned by the revelations and said, "Inspections are carried out by the government itself, and therefore they should make painstaking efforts to determine the content of inspections on their own." While working for the then-Ministry of International Trade and Industry (MITI), he was assigned to the U.S. Nuclear Regulatory Commission (NRC) from September 1991 to June 1993. He spent about six months inspecting nuclear reactors in Atlanta, Georgia. There he realized differences between the two countries in terms of methods and ideas of inspecting nuclear reactors.

NRC inspectors decide on when and what they plan to inspect on their own and conduct inspections without advance notice in principle. Connecting their own computers with the local area network (LAN) at a nuclear facility, they even check e-mails exchanged between facility workers and subcontractors. If necessary, they bring in inspection equipment to check to see if devices at the facility have deteriorated. That's because nuclear plant operators could present only self-serving documents. "I was impressed with the attitudes taken by inspectors to check master inspection procedures on their own and try to uncover problems and illegal practices at nuclear facilities," Nishiwaki said.

Before compiling inspection reports, inspectors hold heated debate with plant operators on key points. In most cases, arguments presented by inspectors are accepted, but the details of such debate are released to the public and inspection reports are written in plain words.

In Japan, on the other hand, plant operators carry out inspections first and then inspectors check to see if the examinations are sound by using almost the same techniques as those used by the plant operators. Therefore, JNES says, "there is no problem even if we prepare inspection procedures in accordance with the draft steps prepared by the plant operator." The timing of inspections is notified to plant operators in advance, and on the first day of inspections, hordes of workers from power companies and plant makers come out and greet the inspectors.

Since 2003, Japanese inspectors have been conducting "snap" inspections. But they only inspect areas they had not notified of in advance during the inspection period.

In the United States, there are strict rules governing inspectors' dealings with plant operators. Inspectors are not allowed to eat with plant operators even if they pay for their own bill. In Japan,

however, it is not rare for inspectors to eat together with operators at the facility prior to inspections even though they pay for their own meals.

While working for MITI, Nishiwaki observed trouble in which some devices were not operating properly during inspections of a nuclear power plant. "When we asked them to show us maintenance records, a worker said to us, 'We will have them operational for sure. Please have sushi or something with our executives until then.' But I turned that down." Nishiwaki added, "The idea that inspectors simply check what operators have inspected leads to the creation of an atmosphere that 'it is sufficient just to have documents sorted out and ready and maintain equipment properly just during their visit.'"

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 2, 2011

## **Schoolgirl in Fukushima exposed to high level of radiation in September**

FUKUSHIMA -- A young girl was found to have been exposed to 1.7 millisieverts of radiation in September due to the ongoing nuclear crisis at the Fukushima No. 1 nuclear power plant, city authorities have revealed.

The Fukushima Municipal Government announced on Nov. 1 that a third-year elementary school girl in the city was exposed to the high level of radiation in September alone, with her three brothers also having been exposed to 1.4 to 1.6 millisieverts of radiation in the same month. Their residence was located close to a highly-radioactive spot, and the family has since moved outside Fukushima Prefecture.

"The radiation level would not affect their health," a city official said.

The result came after the city distributed personal dosimeters, called "glass badges," to 36,989 residents, including pregnant women and children.

The city has collected the individual dosimeters from 36,478 residents for analysis and found that 99 percent of them had been exposed to no more than 0.3 millisieverts of radiation in September. Apart from the four children, no other residents in the area were found to have been exposed to over 1 millisievert of radiation.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 2, 2011

## Editorial: Closer monitoring and more explanation of Fukushima reactors needed



This Sept. 29, 2011 photo released by Tokyo Electric Power Co. shows the No. 2 reactor building of the crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

The government and Tokyo Electric Power Co., the operator of the tsunami-hit Fukushima No. 1 Nuclear Power Plant, should step up their monitoring of the plant's reactors to check whether nuclear fission is occurring and provide good explanations of the situation in the reactors to the public.

Xenon was detected in the containment vessel of the plant's No. 2 reactor, and the finding was confirmed by the semi-governmental Japan Atomic Energy Agency.

Xenon is a radioactive substance with a short half-life generated in the process of nuclear fission of uranium, a nuclear plant fuel. The finding suggests that nuclear fission is occurring in the reactor, and it was initially feared that the reactor temporarily reached criticality -- a chain of nuclear fission reactions.

Small-scale criticality temporarily occurring in a reactor would not mean that the reactor is in a dangerous situation. Criticality can be sustained only if certain conditions, such as the right ratio of water and fuel inside the reactor, are met.

Still, we mustn't let down our guard. The government and TEPCO need to find out why the fission has occurred and take appropriate responses. TEPCO has injected boric acid into the No. 2 reactor to prevent it from reaching criticality, but more may need to be done.

Even if the reactor is not in a dangerous condition, the possibility that it might reach criticality has surely caused anxiety to the public. It is important for TEPCO and the government's Nuclear and Industrial Safety Agency (NISA) to clearly explain the condition of the reactors and the implications of the discovery of xenon.

The xenon was detected from gas inside the reactor's containment vessel using a containment vessel gas management system that began operations in late October. It was the first time that such a measurement was conducted, and at least one expert says it would be no surprise if nuclear fission has been occurring since well before these latest findings.

The gas inside the containment vessels of the Fukushima plant's No. 1 and 3 reactors has not yet been analyzed. The government and TEPCO should carry out similar examinations of the inside of their containment vessels as soon as possible to check for nuclear fission occurring in them.

More than these individual measurements, however, what is needed is a system that constantly monitors the conditions of all the nuclear reactors at the plant. Officials should consider equipment that can detect neutrons, as they can be used as a direct indicator of whether criticality has occurred.

The government and TEPCO have announced their intention to bring forward the timing of achieving a so-called "cold shutdown" of the crippled reactors in their roadmap to bringing the nuclear plant under control. They define a cold shutdown as a situation in which the temperature inside the pressure vessels of the reactors are kept sufficiently low and the emissions of radioactive substances are under control.

However, the discovery of xenon in the No. 2 reactor's containment vessel suggests nuclear fission is occurring even though the temperature at the bottom of the pressure vessel is thought to be below 100 degrees Celsius. It raises questions as to whether such a reactor can be considered stable, even if it is under that temperature threshold.

The conditions and locations of melted fuel in the plant's No. 1 to 3 reactors as well as the details of the damage to the reactors remain unclear, and after this most recent finding, the government and TEPCO must step up their monitoring.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 3, 2011

## **Xenon at Fukushima not result of 'critical' nuclear reactions: TEPCO**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Thursday the detection of radioactive xenon at its stricken Fukushima Daiichi power plant, indicating recent nuclear fission, was not the result of a sustained nuclear chain reaction known as a criticality, as feared, but a case of "spontaneous" fission.

"It is not leading to instability of the reactor or a rise of the radiation level outside," the utility known as TEPCO said, adding that it does not expect the incident to impact its goal of attaining a stable condition of the plant's troubled reactors called cold shutdown.

The plant operator said it has judged that spontaneous fission, which it says occurs at a constant rate, has generated xenon-133 and xenon-135 at its crisis-hit No. 2 reactor, as a criticality would have resulted in the recording of concentration levels 10,000 times higher.

The data at hand match estimated levels of xenon produced by sporadic fission of curium-242 and curium-244 inside melted fuel, it said.

It also cited as evidence supporting its view the detection of xenon even after it poured boric-acid solution to absorb neutrons necessary for a fission reaction, and a lack of abnormal rises in the reactor's temperature or pressure.

Xenon, which was found Tuesday from gas collected from the No. 2 reactor's primary containment vessel, is believed to have leaked out of the fuel's cladding tubes due to their meltdown, it said, adding that it plans to continuously monitor gas inside the furnace.

The nuclear crisis at the plant, the world's worst in 25 years, erupted in the wake of the March 11 earthquake and tsunami, and resulted in the meltdown of nuclear fuel in the six-reactor power complex's Nos. 1 to 3 reactors.

When it revealed Wednesday that it had detected xenon at the No. 2 reactor, it touched on the possibility that melted fuel inside the reactor may have temporarily gone critical.

(Mainichi Japan) November 3, 2011

## Forgotten radioactive materials cropping up in wake of Fukushima nuclear crisis



Workers examine soil near a supermarket in Setagaya, Tokyo, where a high level of radiation was detected, in this picture taken in on Nov. 1. (Mainichi)

Residents wary about radiation in the wake of the ongoing the crisis at the Fukushima No. 1 Nuclear Power Plant have been **uncovering abandoned radioactive substances, with repeated discoveries of radium-266 in Tokyo's Setagaya Ward.**

Radioactive materials were used widely in the past, including in medical products and luminous paints. After World War II, a law requiring people to obtain the government's permission when using such materials was put into effect, but the law was not always strictly abided by. Now, with many residents armed with dosimeters in the wake of the Fukushima crisis, it is possible that more radioactive materials may be uncovered.

On Oct. 3, a resident with a dosimeter in Tokyo's Setagaya Ward reported a high level of radiation in an area of the ward to ward officials. When the Ministry of Education, Culture, Sports, Science and Technology and other parties investigated, dozens of glass bottles containing radium-266 were found

under the floor of a home in the ward. In Tokyo's Shinjuku Ward, meanwhile, a former junior high school teacher told school officials that radioactive substances had probably been left at the school, and a small amount of uranyl sulfate was found.

Radium, which is found in nature, was the most widely used radioactive substance in Japan. From before the war, it was **used in luminous paint to make watches and measuring equipment glow, and it was also used in radium needles which were inserted into the body on the grounds that they could treat cancer.**

However, in 1958, after the harmful effects of radium were uncovered, regulations including the law on prevention of radiation hazards from radioisotopes required people to report the use of such substances to the government, or get permission to use them, depending on the condition of the radioactive material. However, there were repeated cases in which people continued to possess radioactive substances without getting permission, with the materials being left untouched when their owners died.

"In some cases people stored them away carefully, saying they were family treasures. It remained a fact that the law hadn't seeped in," said Yoshihide Nakamura, an official from the Japan Radioisotope Association.

Nakamura said the association launched a campaign around the period from 1965 to 1974 -- conducted at the request of the former Science and Technology Agency -- to have people report unused radioactive substances. This led to many discoveries of radium.

In spite of the campaign, however, not all radium could be collected. In 2000, illegally dumped radium needles were uncovered at a scrap-processing factory in Kobe.

Other radioactive substances have been used at universities and other research organizations without the government's permission. In 2004, more than 1,000 bottles of waste fluid containing tritium and other substances that were used in previous experiments at Tokushima University were uncovered. Several similar findings have been made over the past few years. In 2005 and between 2009 and 2010, the Ministry of Education, Culture, Sports, Science and Technology asked about 3,000 universities and organizations that handled radioactive substances to conduct inspections. In the second investigation, 60 institutions reported 201 discoveries of such substances.

"There are a lot of old substances, such as those that university professors purchased overseas and left behind when they retired without others realizing," said Takao Nakaya, head of the Radiation Regulation Office of the Ministry of Education, Culture, Sports, Science and Technology. The government now requires reports to be filed every year to prevent other cases of materials being left undetected.

Since gamma rays are easily released from radium, residents with dosimeters could find more abandoned radium. But Nakamura says people shouldn't overreact.

"If such substances are found, people shouldn't overreact. That could lead to the people who discover radioactive substances finding it more difficult to speak out about their discoveries," he said.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 3, 2011

## **Broken bottle of radium caused Tokyo supermarket hot spot: science ministry**



A broken glass bottle containing a lump of radium found buried near a supermarket in Tokyo's Setagaya Ward on Nov. 1. (Photo courtesy of the Ministry of Education, Culture, Sports, Science and Technology)

The mystery of where the radioactive material discovered by a supermarket in Tokyo's Setagaya Ward came from may have been cracked with the Nov. 2 discovery of a buried chemical reagent bottle.

Abnormally high levels of radiation were detected Oct. 28 on the property of a Power Larks supermarket during radiation checks spurred by a local resident's warning. It was determined that the hot spot was not connected to the Fukushima nuclear plant, as radium was not one of the elements released in the disaster.

Work by the Ministry of Education, Culture, Sports, Science and Technology and other authorities to clear the hot spot and determine its cause has been ongoing for several days, resulting in the Nov. 2 find of the broken 500-milliliter bottle containing a mass of dark red-brown material believed to be radium-226.

After digging out the soil around where the bottle had been, radiation at the site dropped from 40 millisieverts per hour to 25 microsieverts per hour, leading the science ministry to conclude that radium in the bottle was indeed behind the hot spot.

Even after the bottle and surrounding soil were removed, however, a sweep of the supermarket property found 12 places both in- and outside the building emitting relatively high radiation of between 0.2 and 12 microsieverts per hour. Furthermore, there were three spots on the roads bordering the property which registered radiation doses of 0.3 to 2 microsieverts per hour. Airborne radiation around the supermarket hovered around 0.1 microsieverts per hour.

The science ministry and other authorities have said they will continue their examination of the area.

[!\[\]\(e35e7a07b23548e3d4d37c578f6a6ea2\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) November 3, 2011

## Chiba gov't: Cement company discharged water far over radiation limit into Tokyo Bay

CHIBA -- Radioactive cesium far in excess of a provisional legal limit was found in drainage water that a cement company discharged into Tokyo Bay, the Chiba Prefectural Government has announced.

According to the prefectural government, water that Ichihara Eco Cement discharged into the bay contained 1,054 to 1,103 becquerels of cesium per kilogram of the water, 14 to 15 times the provisional upper limit that the central government has set.

The company discharged an average of 300 tons of water per day, making an estimated total of around 13,200 metric tons for September to October alone. It continued the discharging until stopping on Nov. 2.

The prefectural government has begun investigating the seawater to check contamination levels.

Businesses are not legally required to measure or report the amount of radioactive substances they discharge, but on Oct. 28, the cement company reported to the prefectural government that it had found 1,103 becquerels of radioactive cesium per kilogram of its waste water on Sept. 15 and 1,054 becquerels on Oct. 11, prefectural government officials said.

**Ichihara Eco Cement accepts more than 30,000 tons of refuse incineration ash generated in Chiba Prefecture a year and processes it into cement.** With operations offline for the foreseeable future, it is feared that the incident could adversely affect local bodies' garbage incineration work.

The prefectural government asked the company to stop discharging water into the bay on two occasions because the levels far exceeded the provisional upper limit.

As to why it continued to discharge the water into the bay even after finding high radiation levels, an Ichihara Eco Cement official said, "We could not judge whether to stop because there are no clear legal standards, and we could not refuse incinerated ash coming from local bodies because it had nowhere else to go. We will follow instructions from the authorities and do our best to respond to the situation."

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 3, 2011

## Minor criticality suspected at Fukushima plant's No. 2 reactor

The Yomiuri Shimbun

A small-scale criticality incident--in which nuclear fuel achieves a fission chain reaction--may have taken place at the No. 2 reactor of the crippled Fukushima No. 1 nuclear power plant, as small amounts of radioactive xenon were detected, the plant operator, Tokyo Electric Power Co., said Wednesday.

TEPCO injected boric acid into the reactor, as boric acid is effective in suspending nuclear fission reactions by absorbing neutrons.

There have been no significant temperature fluctuations in the reactor and radiation levels in and around the unit have not shown major changes, according to TEPCO.

Xenon 133 and xenon 135 are radioactive substances generated when nuclear fission reactions take place.

The substances were found Tuesday in gas from the reactor containment vessel, Junichi Matsumoto, acting director of TEPCO's Nuclear Power and Plant Siting Division, said at a press conference.

Xenon 133 has a half-life of about five days, while xenon 135's is about nine hours. Because the two substances have very short half-lives, a small-scale fission reaction is likely to have taken place within the reactor, he said.

"As the reactor's cooling is progressing, this finding will not have a major impact on the situation," Matsumoto said.

However, TEPCO and the government are likely to be forced to make careful decisions as they try to bring the reactors to a stable state of cold shutdown within the year, observers said.

"We don't believe criticality has been maintained," Matsumoto said.

TEPCO suspects a nuclear fission chain reaction took place caused by existing neutrons within the reactor or that very local criticality took place as the water temperature in the reactor decreased and water density increased, due to the recent increase of water injection.

At the No. 2 reactor, TEPCO activated in late October a gas management system to remove radioactive substances contained in the gas within the containment vessel with filters. The two types of xenon were detected in the gas.

The amounts detected were about one-100,000th becquerel per cubic centimeter for both types.

Since the amounts of the two substances are extremely small, TEPCO plans to ask the Japan Atomic Energy Agency for another round of checks.

Cooling of the No. 2 reactor had been delayed among the Nos. 1-3 reactors at the Fukushima No. 1 plant. The amount of water injected was increased on Sept. 14.

(Nov. 3, 2011)

## **TEPCO retracts criticality call**

The operator of the Fukushima nuclear power plant has retracted an earlier assessment that a continuous nuclear reaction, or a criticality, could have taken place in the damaged Number 2 reactor.

The Tokyo Electric Power Company, or TEPCO, said on Thursday that the small amount of xenon-135 it detected in gas taken from the reactor's containment vessel was the result of the spontaneous nuclear fission of radioactive curium-242 and -244. The two substances are contained in nuclear fuel.

The amount of xenon-135 detected almost matched the amount that would have been produced if the radioactive curium in the fuel had undergone spontaneous fission.

TEPCO says a criticality event would have resulted in higher levels of xenon concentration.

Spontaneous fission refers to the nuclear fission of radioactive materials other than uranium, and it does not lead to criticality. Such fission is said to occur constantly.

The earlier detection of small amounts of Xenon-135 had suggested the possibility of a criticality occurrence in the melted fuel in the damaged reactor.

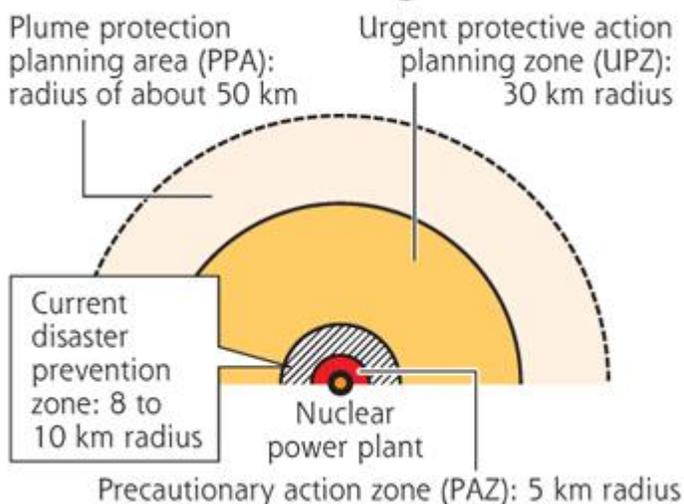
TEPCO says it will send the assessment to the Nuclear and Industrial Safety Agency for reevaluation.

Thursday, November 03, 2011 15:20 +0900 (JST)

## Emergency zones planned for future N-crises / Drawing on lessons of Fukushima Pref. disaster, preparations to be made up to 50 km from plants

The Yomiuri Shimbun

### New disaster management zones



A panel of the Cabinet Office's Nuclear Safety Commission has agreed to set up new nuclear disaster management zones by tripling the radius of the present standard emergency zone to 30 kilometers around the nation's nuclear power plants.

In a draft of its report, which the panel basically agreed upon, a key disaster management zone with a current radius of eight to 10 kilometers will be expanded to a zone with a 30-kilometer radius to be called the urgent protective action planning zone (UPZ).

In the UPZ, evacuation plans and other measures will be implemented if an accident occurs at a nuclear power plant.

Within the UPZ, a five-kilometer radius will be designated as the precautionary action zone (PAZ), from which residents should immediately evacuate in the event of a nuclear accident.

Outside the UPZ, a zone called the plume protection planning area (PPA) will be set up. In this zone, with a radius of about 50 kilometers, people will be instructed to stay indoors or will be provided with iodine pills in such an emergency.

Around the nation, the number of municipalities located partially or fully within the emergency zones will increase from the current 45 to 135 if the UPZs are established. Among prefectural capitals, the whole of Mito and part of Kyoto will be included.

The review is part of the commission's revisions of disaster management guidelines. The commission will compile an interim report about the guideline revisions by the end of this fiscal year.

A nuclear safety agency, which will take over the commission's duties next fiscal year, will implement the guideline revision. The municipal governments to be affected will include the new zoning in their respective disaster management plans under a basic law on disaster management.

Lessons from the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant in Fukushima Prefecture are behind the expansion of the disaster management zone.

In a previous version of the draft of the report, the area within a 50-kilometer radius was regarded as a single zone in which preparation for such an emergency would be necessary.

But the latest draft designates the area within a 30-kilometer radius as such a zone and considers areas beyond 30 kilometers as a separate zone, to indicate a difference in the seriousness of measures to be taken.

The new zone system will cover three times as many municipal governments and four times as large a population as the current system.

The local governments will also begin reviewing their respective disaster response plans for such purposes as securing evacuation places.

Drafting evacuation plans and other measures requires close collaboration with nearby local governments. Thus there will be many hurdles to clear.

Haruki Madarame, chairman of the Nuclear Safety Commission, said, "Though it isn't perfect, [the draft of the report] was compiled in a proper form," after he approved the the panel's decision to expand the emergency planning zone (EPZ) on Tuesday.

The planned expansion is based on developments of the Fukushima No. 1 plant crisis, in which the radius of the evacuation zone was expanded repeatedly--from three kilometers to 10 kilometers to 20 kilometers.

As a result, residents in the expanded zone were thrown into confusion.

The changes also include new guidelines over whether evacuation will be necessary.

Until the Fukushima crisis, the government designated evacuation areas with data from sources such as the System for Prediction of Environmental Emergency Dose Information (SPEEDI).

After the revision, the government will be able to order an evacuation if monitored radiation levels inside the UPZ reach a predesignated limit.

The zoning is in line with a 2002 proposal by the International Atomic Energy Agency. Though the commission once discussed a review of the nation's zoning in 2006, the revision was not made.

The current review plan took into account the fact that an airborne plume of radioactive substances reached points 50 kilometers from the Fukushima No. 1 nuclear plant.

Thus the panel initially planned to designate areas between 30 and 50 kilometers from nuclear power plants as a third category of disaster management zone in which local governments will distribute iodine pills to deal with internal exposure to radiation and compile plans to have people stay indoors.

But many members of the panel criticized the measure, saying that the difference between the third-category zones and the UPZ is unclear. Thus the commission decided to designate the places as "areas" instead of "zones" to help clarify the drawing of borders.

The commission will begin discussing radiation levels at which the guidelines will call for people to be evacuated or instructed to stay indoors.

The IAEA has presented standards calling for residents to evacuate within a week if the radiation level reaches 100 microsieverts per hour and within a few hours if the level reaches 1 millisievert per hour. The commission plans to use the figures as references.

The work to revise the guidelines, including the expansion of the EPZ to a 30-kilometer radius, will be finished in or after next fiscal year.

After that, the municipal governments will revise their respective disaster prevention plans.

The local governments will need to upgrade or acquire radiation monitoring devices, but it is uncertain how they will secure funds for this purpose.

(Nov. 3, 2011)

## **No room for administrative 'sectionalism' in dealing with nuclear disaster**

Internal exposure and external exposure to radiation are technically two different things, but to those who are under threat of radiation exposure, there's no significant difference; they're on the receiving end of both. There's no distinction between "internal" or "external" when it comes to fears for one's well-being.

Last week, the Food Safety Commission (FSC) submitted a recommendation to Health, Labor and Welfare Minister Yoko Komiyama suggesting a maximum 100-millisievert cumulative lifetime internal exposure to radiation through food.

Though the commission had initially incorporated both internal and external exposure in its calculations, it ultimately did an about-turn, merely addressing the risks from food -- its stated field of expertise -- in its final report. As for external exposure, the commission stated that "the issue should be dealt with by the appropriate agency."

The public, however, is urgently seeking a yardstick by which to measure the overall risks that we face.

I fully understand that it's a huge challenge to offer such information. But by now, no one believes that food issues should be tackled by the Ministry of Health, Labor and Welfare (MHLW) while the Ministry of Education, Culture, Sports, Science and Technology (MEXT) takes up the problem of external exposure.

Since the crisis at the Fukushima No. 1 Nuclear Power Plant began, the "vertical sectionalism" that has prevented collaboration among various agencies and ministries has been highly criticized. Needless to say, to bring together those various organizations and respond organically to the unfolding disaster takes political strength and fortitude.

When I think about this sort of sectionalism, I'm reminded of the Kanemi oil poisoning incident that wreaked havoc in western Japan. The death of a massive number of fowl in the spring of 1968 had prompted an official from the Ministry of Agriculture and Forestry -- which oversaw poultry farming -- to investigate the factory where the deaths originated. The official, however, failed to look into the cooking oil that the same factory produced, and made no attempts to advise the Ministry of Health and Welfare -- which oversaw food products -- to pursue the matter. That fall, countless people fell ill through dioxin-contaminated cooking oil that had been produced at the very factory.

Had the agriculture ministry official stuck their nose into the health ministry's "business" and worked together, it's likely that many of the deaths and negative health effects could have been prevented.

There's another case in Japan's past that makes the calls for swift measures in response to the current nuclear crisis all the more compelling.

Minamata disease, considered one of Japan's first pollution-related epidemics, was "officially" discovered in 1956. Three and a half years later, the Ministry of Health and Welfare's Food Poisoning Subcommittee released a report pointing to "some kind of organic mercurial compound" as the culprit. The Ministry of International Trade and Industry (MITI), however, argued that it was "too soon to conclude that the chemicals came from the factory."

In 1968, when environmental and health problems across Japan were making headlines, Minamata disease was finally recognized as a pollution-caused illness. It was not until 1971 that it was determined that vertical sectionalism rampant at the time would not lead to a resolution and the Environment Agency was established, comprising officials from various government agencies and ministries. By then, over 15 years had passed since the disease was first identified.

In the film "Ikiru" (To Live), directed by Akira Kurosawa, residents petitioning the city to build a park for their children are bounced around by various public agencies that all claim to lack the authority to handle the matter. It's a portrayal of Japanese bureaucracy in the 1950s, and I want to believe that our country will not take the same tack today. (By Kenji Tamaki, Expert Senior Writer)

[!\[\]\(e52a4c49411b9c65b17ebda8bcfc13ce\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) November 4, 2011

## Halt of crop farming in Fukushima forces manure to accumulate on cattle farms



At his cattle farm, Kazunori Mizunoya looks at a cow knee deep in its own excrement in the Fukushima Prefecture village of Nakajima on Oct. 20. (Mainichi)

FUKUSHIMA -- Two months after a government ban on beef was lifted, cattle farmers here are growing increasingly desperate as nearby vegetable farmers have halted production due to the ongoing nuclear disaster, **leaving nowhere to take the accumulating manure that was previously used as fertilizer.**

"When vegetable farmers are pushed into a dead end, there's a domino effect that puts us into dire straits, too," says 51-year-old Kazunori Mizunoya, a cattle farmer raising some 600 cows in Nakajima, a village located 70 kilometers from the troubled nuclear power station.

**Not only is the fertilizer shed overflowing with manure, the cows in the barn stand in their own excrement nearly 70 centimeters deep.** They sometimes shake their massive bodies as if they're trying to wiggle free.

**Cows like to be clean, and suffer high stress levels and illness when kept in unhygienic conditions. Indeed, almost half the cows in Mizunoya's barn are experiencing deteriorating health.**

The area where Mizunoya raises his cattle is home to farms that raised broccoli, tomato and cucumber. Cattle farmers provided vegetable farmers with manure to be used as fertilizer, and in return, vegetable farmers provided cattle farmers with rice straw to be used as cow feed. Mizunoya had built such reciprocal relationships with 10 vegetable farms nearby, supplying them with 1,500 tons of fertilizer ever year, which was used on a total of 30 hectares of farmland every year in March and July.

The nuclear disaster triggered by the March 11 earthquake and tsunami interrupted that cycle, however. **Many vegetable farms were forced to forgo planting in the spring, and continued radiation fears prevented many of the farmers from planting summer vegetables as well.** This year, none of the farms used fertilizer from Mizunoya's farm in the spring, and only two of the 10 farms did so in the summer.

The Ministry of Agriculture, Forestry and Fisheries (MAFF) has set the maximum allowable radiation levels for fertilizer at 400 becquerels per kilogram. Since September, the Fukushima Prefecture Government has been running tests at the approximately 3,400 farms in the prefecture raising beef cattle and dairy cows, and advising them to supply fertilizer to crop farmers if radiation levels are below the limit. Mizunoya has not fed any radiation-tainted rice straw to his cattle, and tests show that there are no problems with the fertilizer produced at his farm. He says, however, that there's been an **emerging trend of crop farmers avoiding local fertilizer.**

The prefectural government has advised that cattle farmers remove excrement from the cow barns and store it in a separate location. Mizunoya however, has not done so because of the **many residences in the vicinity and a fear of causing environmental pollution.** According to prefectural officials, many cattle farmers are facing similar conundrums.

The ban that was placed on Fukushima cattle after the discovery of radiation-tainted meat was lifted on Aug. 25. Mizunoya began shipping his cows after they were tested in early September and found to be safe. **Fukushima beef cattle attract few customers, however, and prices are half of what they were prior to the nuclear crisis.** As a result, Mizunoya ran out of operating funds, and has taken out a loan of over 100 million yen.

"When the mad-cow epidemic took place, I had to borrow money but was able to survive," Mizunoya says. "This time, though, radiation fears just keep on escalating, and there's no telling when and how much (the operator of the troubled nuclear power plant) Tokyo Electric Power Co. will compensate us."

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 4, 2011

## **Gov to study ways to confirm lack of criticality**

Japan's government plans to study ways to confirm that sustained nuclear fission has not resumed at the Fukushima Daiichi power plant.

The minister in charge of the nuclear crisis, Goshi Hosono, told this to reporters on Friday after radioactive xenon was found at the plant's No. 2 reactor this week.

The presence of xenon indicates that nuclear fission occurred recently.

Hosono said xenon was detected not because of new developments, but due to detailed radiation monitoring by the Tokyo Electric Power Company.

He also said he supports the utility's view that xenon was produced through spontaneous fission, not sustained fission, or criticality.

Hosono said a precondition for putting the plant's reactors into a cold shutdown is ensuring that the accident will no longer escalate. He added that an absence of criticality is one way to achieve such a state.

He suggested that the government hopes to present related measures this month to coincide with a monthly review of the timetable for bringing the plant under control.

Friday, November 04, 2011 16:48 +0900 (JST)

## **70 percent in Japan want end to nuclear power**

An NHK poll shows that nearly 70 percent of Japanese people want to reduce or abolish nuclear power in the future.

NHK polled about 2,600 randomly selected adults nationwide over 3 days through October 30th. 1,775 people responded.

24 percent of respondents said all nuclear power plants should be shut down and 42 percent said the number should be reduced.

23 percent said the existing facilities should be maintained and 2 percent said they want more nuclear plants.

49 percent of respondents said they are very afraid of another nuclear accident and 37 percent are worried to a certain extent.

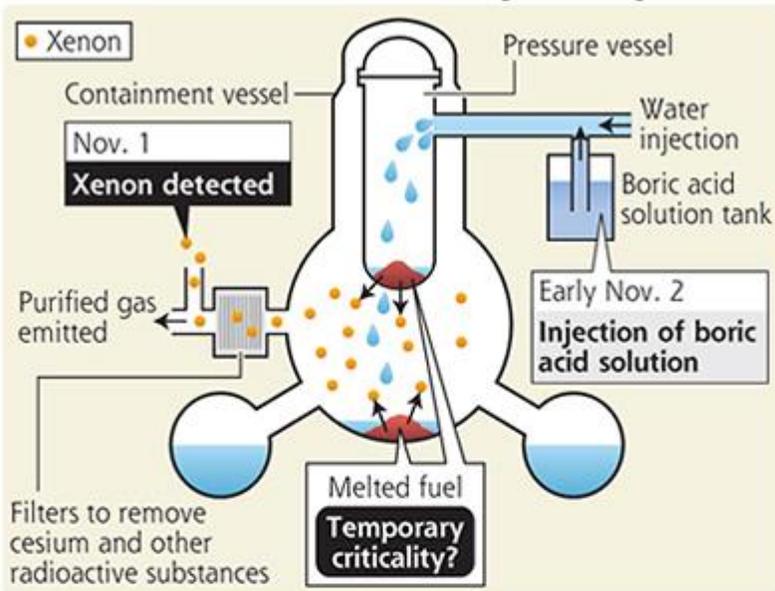
When asked if nuclear power generation will become safe in the future, 46 percent said yes and 48 percent said no.

Friday, November 04, 2011 06:53 +0900 (JST)

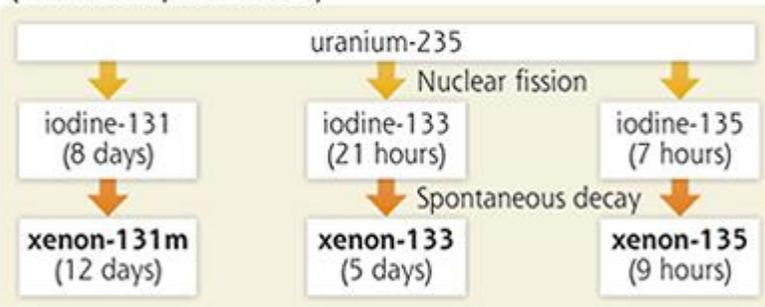
## **TEPCO: N-plant xenon not result of criticality**

The Yomiuri Shimbun

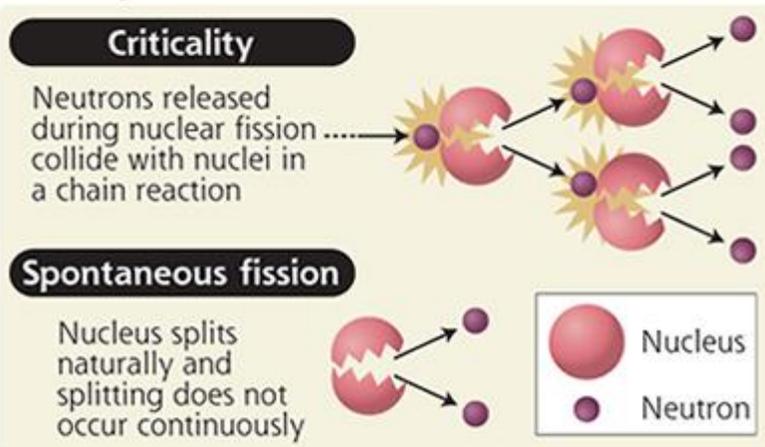
## Situation at No. 2 reactor at Fukushima No. 1 nuclear power plant



## How radioactive xenon is created (half-life in parentheses)



## Difference between criticality and spontaneous fission



Tokyo Electric Power Co. said Thursday radioactive xenon detected in the No. 2 reactor at its crippled Fukushima No. 1 nuclear power plant was the result of spontaneous fission, not a nuclear chain reaction known as criticality as had been feared.

TEPCO said **spontaneous fission, in which radioactive curium produced during the operation of a reactor splits on its own, is occurring sporadically inside the reactor.**

The recent detection of minute amounts of xenon can be explained by the splitting of curium, it said.

Xenon was detected Tuesday in gas from the No. 2 reactor's containment vessel.

Although the amounts were minute--about one-100,000th becquerel per cubic centimeter--TEPCO said a small-scale criticality incident could have taken place temporarily, given the short half-lives of the two types of xenon detected--five days for xenon-133 and nine hours for xenon-135.

However, after analyzing the data, TEPCO concluded criticality did not occur, explaining that **even a small-scale criticality incident should produce 10,000 times more xenon than the amount detected.**

TEPCO said the spontaneous fission of curium is a normal phenomenon in idled reactors and it would not hamper ongoing efforts to stabilize the reactor.

"There will be no impact on the stabilization of the nuclear reactor and the surrounding environment," the utility said.

(Nov. 4, 2011)

## **Radiation fears behind debris refusals / Remaining refuse may cause secondary damage, hinder reconstruction efforts**

The Yomiuri Shimbun

The start Wednesday of shipments of debris from the Great East Japan Earthquake to Tokyo, the first destination for such refuse outside the Tohoku region, was a long-awaited first step toward wider disposal of the wreckage.

However, an Environment Ministry survey released Wednesday showed that only 54 local governments and garbage-disposal unions, less than 10 percent the figure in a previous survey, were considering accepting debris from disaster-hit areas.

A huge quantity of debris remains in the devastated areas almost eight months after the March 11 disaster, and secondary damage such as fires in piles of debris has occurred. People also have voiced concern that the slow pace of disposal may adversely affect reconstruction efforts.

In Miyako, Iwate Prefecture, on Wednesday, wood, plastic and other debris were thrown by heavy machinery into containers on trucks, which then headed to a JR cargo terminal in Morioka.

Miyako Mayor Masanori Yamamoto observed the work and said: "Today's achievement represents great progress for reconstruction. I'm grateful."

The Iwate prefectural government and the Tokyo metropolitan government signed an agreement that Tokyo will accept 11,000 tons of debris by the end of fiscal 2011 to dispose of it. Including this figure, the metropolitan government plans to accept about 500,000 tons of debris from Iwate and Miyagi prefectures by the end of fiscal 2013.

**So far, however, Tokyo is the only prefecture outside the Tohoku region that has accepted debris from the disaster-hit areas.** An official involved with the issue at the Kyoto city government said, "The Environment Ministry says the debris is safe, but we can't convince our residents."

The Kyoto city government once abandoned a plan to burn firewood made from pine trees in Rikuzen-Takata, Iwate Prefecture, during the Kyoto Gozan Okuribi fire festival.

The ministry conducted a similar survey in April, at which time the Kyoto city government said it could accept about 50,000 tons of debris annually.

In the latest survey, however, it said it could take none. The decision was made in light of Kyoto residents' concern about radioactive contamination from debris, according to officials.

The municipal governments of Akita and Tsu also said they could accept debris in the April survey but backed out in the latest survey.

Local governments that expressed their intention to consider accepting debris are also in a difficult position. The city government of Hachinohe, Aomori Prefecture, has decided to accept debris only from Iwate Prefecture because the city and Iwate Prefecture both belonged to the Nambu-han feudal clan during the Edo period (1603-1867).

However, the city said its acceptance would be conditional. "We know we have to cooperate with reconstruction, but we'll only accept debris from which there will be no effect from radiation," an official said.

An environmental affairs union in charge of garbage disposal in central and southern parts of Nagasaki Prefecture also said it would accept 6,500 tons a year on the condition that debris contaminated with radioactive substances would be excluded.

Nagasaki Prefecture received aid from across the nation when Fugendake peak in the Unzen mountain area erupted in 1991 and related volcanic disasters damaged the area. As a result, many people in the prefecture have expressed their willingness to help the disaster-hit areas.

At the same time, however, the prefecture is in a difficult position. "Nagasaki suffered an atomic bombing, so some people have strong fears about radiation pollution. It's difficult to explain this," a union official said.

The ministry plans to compile documents to explain how filters in garbage incinerators can remove more than 99.99 percent of radioactive cesium, among other information to relieve public concerns.

The ministry also aims to encourage local governments to accept debris from the disaster-hit areas through such efforts.

===

### Debris hinders recovery

Debris has hampered reconstruction efforts in areas affected by the March 11 disaster. In Rikuzen-Takata, which was devastated by the quake and tsunami, a city government official said: "We're securing sites to temporarily store debris, even borrowing land owned by private individuals. Our reconstruction work won't make progress if the debris remains. It will hinder urban planning."

In Ofunato, Iwate Prefecture, three temporary debris storage sites are in school yards. "If the debris can be removed quickly, the yards can be used for students," a city official said.

In Yamadamachi, Iwate Prefecture, a fire started in a 15-meter-high pile of debris on Oct. 12 and has still not been extinguished.

An official at a municipal fire station said, "In winter, when the air tends to be dry, the fire may grow bigger and spread to surrounding areas."

The fire station was carefully breaking the pile of debris apart with heavy machinery and spraying water on it.

According to Shinichi Sakai, a researcher of environmental engineering who heads Kyoto University's Environment Preservation Research Center: "The Tokyo metropolitan and Iwate prefectural governments made their decisions after carefully checking for radiation pollution through such means as analyzing the kinds of radioactive particles inside the waste and radiation emissions on the surface.

"Pollution levels differ from place to place. Radiation levels of incinerated ash on the northern part of the Sanriku coast are lower than those in Tokyo. I hope local governments will cooperate to dispose of debris over wider areas based on rational numerical data," he said.

(Nov. 4, 2011)

## **Nuclear safety body to form third-party committee to investigate inspection methods**

The Japan Nuclear Energy Safety Organization (JNES) said on Nov. 4 that it will form a third-party committee to investigate whether there are any problems with its nuclear facility inspection methods following revelations that the body copied its procedures directly from drafts provided by a nuclear fuel firm.

The nuclear inspection body, under the jurisdiction of the government's Nuclear and Industrial Safety Agency (NISA), made the decision in line with instructions from Economy, Trade and Industry Minister Yukio Edano. The third-party committee will consist of more than five members selected

from legal experts and those known for taking a cautious approach to nuclear policies. The committee is expected to compile and submit a report by the end of this year.

The Mainichi broke the news this week on the JNES's 2008 inspection of nuclear fuel rods using procedures copied verbatim from documents the body ordered the fuel maker itself to provide. Apart from that incident, the JNES has systematically carried out similar inspections on nuclear facilities before they went into operation.

The JNES had previously told the Mainichi, "The inspection methods are appropriate, and therefore we have no intention of changing them." However, Yasukazu Mochimaru, a senior JNES official, said at a news conference, "We cannot deny the possibility that we have relied excessively on (nuclear) firms, adding, "The general public has doubts about whether the JNES has the qualifications to inspect nuclear facilities. We want to listen to opinions from the committee and clear the problems."

The committee will also look into findings that the JNES failed to uncover the fact that Hitachi Zosen Corp. did not conduct necessary tests on a uranium enrichment facility run by Japan Nuclear Fuel Ltd. in Rokkasho, Aomori Prefecture, in 2009, and that the nuclear safety body failed to notice flaws in inspection documents on the Oi Nuclear Power Plant prepared by Kansai Electric Power Co., and therefore failed to conduct inspections on the plant properly in 2009 and 2010. The committee will examine the process for creating inspection procedures, relationships between the JNES and nuclear firms, the JNES' human resources development and training programs, and other areas.

 [Click here for the original Japanese story](#)

## **Areva, Kazatomprom Sign Deal To Produce Nuclear Fuel For Asia**

By Christopher Pala & contributing to Dow Jones Newswires; +7 701 707 9013; chrispala@gmail.com

Published November 04, 2011 - <http://www.foxbusiness.com/industries/2011/11/04/areva-kazatomprom-sign-deal-to-produce-nuclear-fuel-for-asia/>

| Dow Jones Newswires

ALMATY, Kazakhstan -([Dow Jones](#))- France's Areva SA (AREVA.FR, ARVCY) and Kazakhstan's Kazatomprom signed deals Friday in Kazakh capital Astana during a visit by the French industry minister to mine uranium and produce nuclear fuel for the Asian market, a statement issued by his press office said.

The agreement provided for the creation of a plant to produce nuclear fuel for the Asian market. Construction could start immediately after the conclusion of a feasibility study at the end of the first quarter of 2012, the statement said.

The deals were part of a strategic partnership the two companies signed in 2009 to operate a joint venture named KATKO to operate mines that will extract 4,000 tons of uranium a year between 2012 and 2039 and broaden their cooperation in the upstream-nuclear cycle, the statement said.

## **They included a contract committing Kazakhstan to buy French solar panels to power the KATKO mines, according to the French statement.**

They were signed in the presence of Eric Besson, the French minister of industry, energy and the digital economy, who was on a two-day official visit, and Asset Issikeshev, vice prime minister and industry minister of Kazakhstan.

After more than tripling its output in four years to become the world's largest producer of uranium, Kazakhstan stabilized its production this year to around 19,800 tons in order to avoid depressing prices. Kazatomprom, the state nuclear concern, is expected to produce about 11,000 tons, more than Canada or Australia.

Read more: <http://www.foxbusiness.com/industries/2011/11/04/areva-kazatomprom-sign-deal-to-produce-nuclear-fuel-for-asia/#ixzz1cr5H5qd8>

(Mainichi Japan) November 5, 2011

## **TEPCO to review criteria for determining 'criticality'**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Sunday it will review its criteria for determining a self-sustaining nuclear chain reaction, known as criticality, in the wake of recent confusion over a case of "spontaneous" fission, which occurs at a constant rate.

The operator of the crisis-hit Fukushima Daiichi nuclear power plant only reported the criteria last month to the government's Nuclear and Industrial Safety Agency but did not include cases of spontaneous fission, when a rare gas like xenon is detected at a reactor, as in the incident on Tuesday.

When it revealed Wednesday that it had detected radioactive xenon at the crippled plant's No. 2 reactor, the firm known as TEPCO said that melted fuel inside the reactor may have temporarily gone critical, but denied the possibility the next day, saying it was the result of spontaneous fission.

The criteria were included in TEPCO's medium-term safety measures for the Fukushima Daiichi plant reported to the government on Oct. 17, amid the ongoing nuclear crisis at the plant triggered by the March 11 earthquake and tsunami.

(Mainichi Japan) November 7, 2011

## **TEPCO begins removing cesium from spent fuel pool**

The operator of the Fukushima Daiichi nuclear power plant has begun removing radioactive cesium from water in the spent fuel pool of one of the damaged reactors.

Tokyo Electric Power Company installed a device to remove cesium inside the cooling water of the spent fuel pool at the No.2 reactor. The device became operational on Sunday.

The concentration of radioactive cesium remains high in the cooling water of the spent fuel pools following meltdowns at the No. 1, 2, and 3 reactors.

TEPCO has been removing radioactive material from the reactors' cooling water since July, but the No.2 reactor became the first where the procedure took place **in the spent fuel pool**. TEPCO aims to reduce the concentration of radioactive material in the water from one-hundredth to one- thousandth within about a month.

There are fears that the metal pipes and walls of the spent fuel pools will erode, as seawater was used after the accident to cool down the spent fuel pools of the No. 2, 3 and 4 reactors. TEPCO has already begun removing salt from the water in the pool at the No.4 reactor, and plans to do the same at the pool of the No.2 reactor.

The company said removal of radioactive material from the pool water is necessary as a step toward removing salt. The salt concentration of the pools is not particularly high -- about one-tenth of the seawater -- but erosion caused by salt may cause holes to form.

Monday, November 07, 2011 05:44 +0900 (JST)

## **Robot suits tested for Fukushima nuclear plant**

A high-tech body-brace machine called a "robot suit" may be used to help workers at the Fukushima Daiichi nuclear plant move around more easily while wearing heavy protective gear.

A venture in Ibaraki Prefecture, eastern Japan, originally developed the assistive device with University of Tsukuba researchers for people with disabilities and the elderly.

The device has sensors that move the brace based on nerve signals from the human brain.

The venture has now reinforced the robot suit's materials to strengthen its lifting power so that it can be used at the Fukushima nuclear plant.

Those entering the plant have to wear protective gear against radiation that weighs some 15 kilograms.

The venture says the device can help to assist the movement of up to 60 kilograms.

Last Tuesday, the venture team conducted tests to see how well the device can assist workers who are

removing rubble and conducting repairs.

University of Tsukuba Professor Yoshiyuki Sankai says **the robot suits will enable workers to do many more types of work and stay longer inside the reactor buildings.** He says it may be possible to put the nuclear plant under control earlier if the device is used.

Monday, November 07, 2011 10:24 +0900 (JST)

## **Fukushima-produced low-cost Geiger counters hit the market**



Sanwa Corporation's President Yuichiro Saito shows the newly developed Geiger counter models, "Geiger Fukushima," left, the iPhone-specific device, middle, and the still-under development Geiger-Muller tube. (Mainichi)

FUKUSHIMA -- A local manufacturer here has developed a new low-cost and high-performance Geiger counter to meet residents' increasing concerns over radiation leaking from the crippled Fukushima No.1 nuclear power plant.

"Geiger Fukushima," manufactured by Sanwa Corporation in Otama, Fukushima, will cost 18,800 yen -- a bargain price for the usually very expensive, and recently not easily available, radiation measuring instruments.

The new device will run on two AAA batteries and will be able to measure radiation over a range between 0.04 to approximately 440 microsieverts per hour. Based on the measured data, it will also be able to estimate the approximate amount of radiation a person will be exposed to in one year.

In addition to "Geiger Fukushima," the company has also manufactured an additional model that is to be specifically used on iPhones in combination with the radiation-measuring application "Geiger Bot." That model will cost 9,800 yen.

"I want 'Geiger Fukushima' to help residents protect themselves from hot-spot areas," says Yuichiro Saito, president of Sanwa Corp. The concerned father of two has been a direct witness to residents' growing anxieties since the beginning of the nuclear disaster in March.

Sanwa Corp. has already been receiving a number of inquires, including such from the Fukushima Prefecture village of Kawauchi, which is expecting some 1,000 households to return to their homes as the emergency evacuation preparation zone -- within which the village fell into -- was lifted at the end of September.

Meanwhile, Sanwa Corp. is also developing a self-manufactured Geiger-Muller tube (GM tube) -- the instruments' central radiation-detecting element -- which up to now had not been manufactured in Japan. If fully successful, Sanwa's future Geiger counters will be sold at even cheaper prices, in smaller sizes and with higher performance, company officials say.

The two new Geiger counter models will be sold online by the authorized non-profit organization "Eigyoshientai," which is currently accepting advanced orders. For more information see <http://eigyoshientai.shop-pro.jp/> (Japanese language only).

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 7, 2011

## **Low radiation areas should be used as bases for restoration work for Fukushima: expert**

Areas that are contaminated with relatively low radiation from the Fukushima No. 1 Nuclear Power Plant should be used as bases for prolonged work to restore the disaster-hit prefecture, a leading radiation expert says.

"Work to decontaminate and improve infrastructure (in Fukushima) should be carried out first in low radiation areas as bases," said Tatsuhiko Kodama, head of the Radioisotope Center at the University of Tokyo. After obtaining permission from local municipalities in the evacuation zone within 20 kilometers from the crippled Fukushima nuclear power station, Kodama, accompanied by journalists, measured radiation levels of areas in the region on Nov. 5. There were areas that measured less than 1 millisievert per year (0.23 microsieverts per hour) -- the lowest level of radiation which requires the central government to conduct decontamination work.

Kodama, wearing protective gear, a mask and plastic gloves, traveled north on National Route 6 from Hirono, Fukushima Prefecture, in a passenger car equipped with radiation measuring devices, and entered the 20-kilometer no-go zone.

Roads in many areas in the no-go zone remained caved in or cracked. In residential areas, many houses or walls remained collapsed or damaged. Very few people were seen in the areas and only a few

passenger cars, used apparently by nuclear plant workers or local residents who were making brief visits to their homes, were seen passing by.

When Kodama entered the zone, the level of radiation in the atmosphere near the border was 0.45 microsieverts per hour, but when he moved closer to the Fukushima nuclear plant that straddles the towns of Okuma and Futaba, the level of radiation was over 10 microsieverts per hour. The radiation level rose further to 22 microsieverts per hour in an area about two kilometers from the nuclear power plant.

Kodama moved further north into Minamisoma where the level of radiation was 0.36 microsieverts per hour. An area near the border within the no-go zone dropped to 0.1 microsieverts per hour. Kodama then moved away from National Route 6 to visit a fishing port in Namie, about six kilometers from the nuclear plant, where the level of radiation in the atmosphere above about one meter from the ground was about 0.08 microsieverts per hour.

"Rather than drawing lines uniformly by distance, the central government should examine radiation levels in detail and decide to allow people to enter the evacuation zone to do decontamination or construction work," Kodama said.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 7, 2011

## **Nuclear safety agency denies criticality at Fukushima reactor**

TOKYO (Kyodo) -- The government's nuclear safety agency said Monday that it supports Tokyo Electric Power Co.'s view that the recent detection of radioactive xenon at one of its crippled reactors at the Fukushima Daiichi nuclear power plant was not a result of a sustained nuclear chain reaction known as criticality, as earlier feared.

The Nuclear and Industrial Safety Agency said what is known as "spontaneous" fission created xenon-135 because it found that the density of the substance had not changed even after Tokyo Electric injected water containing boric acid, which should have lowered the density of xenon-135 if criticality had taken place.

"We judge Tokyo Electric's report (on the detection of xenon) to be basically appropriate," the agency said in a statement.

The plant operator known as TEPCO initially touched on the possibility that the melted fuel inside the stricken No. 2 reactor may have gone critical temporarily, but it concluded in a report submitted to the agency Friday that spontaneous fission had generated xenon-135.

The agency has been studying the content of the report.

With the Nos. 1 to 3 reactors suffering core meltdown and releasing massive radioactive substances in the wake of the devastating March 11 earthquake and tsunami, a criticality event could cause further damage to the fuel and worsen the situation at the plant.

Cabinet Office Parliamentary Secretary Yasuhiro Sonoda stressed Monday that the latest development is not expected to affect the target to achieve the stable state, known as cold shutdown, of the reactors at the plant by the end of the year.

(Mainichi Japan) November 8, 2011

## **No criticality in Fukushima**

Japan's nuclear agency has confirmed that sustained nuclear fission did not take place at the Fukushima nuclear power plant last week.

The Nuclear and Industrial Safety Agency disclosed the results of experts' studies on a report by Tokyo Electric Power Company, or TEPCO.

The utility detected a small amount of the radioactive material, xenon-135, in the reactor's containment vessel of the damaged No.2 reactor on Tuesday of last week.

TEPCO initially feared it may signal an ongoing nuclear reaction. But it determined that the substance was produced through spontaneous fission, a form of radioactive decay, and not from sustained fission or criticality.

The nuclear agency said the density of the xenon, which did not change when a boric acid solution was injected into the reactor, proved that criticality did not occur.

The agency ordered TEPCO to regularly check the density of nuclear substances inside the vessels and to report any changes.

Cabinet Office Parliamentary Secretary Yasuhiro Sonoda said on Monday that it is regrettable that TEPCO was slow to report the incident to local governments, calling on the utility to share information as quickly as possible.

Tuesday, November 08, 2011 02:48 +0900 (JST)

## **TEPCO to review CO2 emissions reduction target amid nuclear crisis**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Monday it will review its voluntary target to cut carbon dioxide emissions when generating electricity as the utility increases its reliance on thermal power generation amid the nuclear crisis at its Fukushima Daiichi power plant.

The company has sought to reduce its average annual CO2 emissions intensity over the five-year period through fiscal 2012 by 20 percent compared with fiscal 1990 through emissions trading, but it is now facing the difficulty of purchasing carbon credits through trading because its financial condition is deteriorating due to the crisis.

The move could affect other Japanese utilities as the industry as a whole has set the same target, while the situation may also weigh on Japan's efforts to tackle global warming.

Because the company, known as TEPCO, will review its CO2 emissions target, it has decided not to use carbon credits that were purchased in fiscal 2010 for about 5 billion yen.

TEPCO said its CO2 emissions in fiscal 2010 through March 2011 stood at 109.90 million tons, up 2 percent from fiscal 2009.

The fiscal 2010 figure increased because TEPCO boosted thermal power generation to meet rising electricity demand stemming from the heat wave in the summer.

Of the three nuclear power plants operated by TEPCO, the Fukushima Daiichi and Fukushima Daini complexes were hit by the devastating March 11 earthquake and tsunami. While the company is still struggling to fully stabilize the Fukushima Daiichi plant, the adjacent Fukushima Daini plant has already achieved a state of cold shutdown.

(Mainichi Japan) November 8, 2011

## **Gov't seeks to enhance transparency of nuclear stress tests**

TOKYO (Kyodo) -- The government will seek to enhance the transparency of its nuclear safety checks introduced in the wake of the crisis at the Fukushima Daiichi power plant, such as by disclosing all exchanges between nuclear regulators and plant operators, industry minister Yukio Edano said Tuesday.

Edano also said that the agency will accept questions and requests from the public through e-mails about the so-called "stress test" process.

Under Japan's stress tests, modeled on the nuclear safety reviews conducted in the European Union, utilities basically will study the extent to which key installations would be able to withstand the impact of extreme natural disasters occurring on unexpected scales.

After the first phase of the assessment, the government will decide whether to allow the restart of reactors that are idled for checkups. The second-stage assessment will determine whether nuclear power plants should remain in operation.

The first phase has already begun, with Kansai Electric Power Co. becoming the first utility to report the results of its stress tests on a nuclear reactor to the Nuclear and Industrial Safety Agency on Oct. 28.

Edano told reporters that the agency has questioned Kansai Electric on several issues in written form in relation to the report, and those exchanges will be disclosed on the agency's website.

"In principle, exchanges between the agency and plant operators will be made public," said the head of the Economy, Trade and Industry Ministry, which has the nuclear safety agency under its wing.

Kansai Electric submitted its assessment on the No. 3 reactor at its Oi nuclear power plant in Fukui Prefecture, which is currently undergoing regular checkups.

(Mainichi Japan) November 8, 2011

## **Iwate debris depot fire extinguished after one-month operation**

MORIOKA, Japan (Kyodo) -- A fire station in Yamada, Iwate Prefecture, said Monday it had completed extinguishing a fire after around a month that broke out at a depot for debris from the March 11 earthquake and tsunami.

The fire, which started Oct. 11, destroying a 2,871 square-meter area of the temporary debris depot, was confirmed to have been extinguished by the fire station.

Although flames could not be seen throughout the period, the 15-meter-high heaps of debris continued to smolder, giving off a stench.

Although local authorities reduced the size of the heaps using heavy machinery, firemen were unable to get water to reach the source of the fire, it said.

Even after the fire appeared to be almost extinguished on Oct. 22, the authorities continued to use heavy equipment to level the heaps until their height was lowered to around 5 meters, it said.

Since the heaps of debris nearly stopped emitting smoke after the start of this month, the station concluded Monday that there is no possibility that they will catch fire again, it added.

(Mainichi Japan) November 8, 2011

## **Survey to compile detailed radiation map in Fukushima begins**



An unmanned helicopter dispatched by the Ministry of the Environment and other institutions to monitor radiation is seen in Iitate, Fukushima Prefecture, on Nov. 7, 2011. (Mainichi)

FUKUSHIMA Japan (Kyodo) -- A detailed survey to compile a map of airborne radiation levels began Monday in Iitate village in Fukushima Prefecture, with the aim of collecting data for use when drawing up decontamination measures in the prefecture affected by the ongoing nuclear crisis, Environment Ministry officials said.

The ministry is expected to conduct monitoring work at about 3,000 locations in the prefecture in November, including about 400 spots in Iitate, covering mainly residential areas within a 20-kilometer radius of the radiation-leaking Fukushima Daiichi nuclear power plant, it said.

Measurements will be taken by unmanned helicopters around woodland and rivers, while monitoring vehicles will travel along roads in residential areas, it said.

The ministry will compile the distribution map using an area of 100 square meters as a base unit in the survey through February, as well as data already collected by the Ministry of Education, Culture, Sports, Science and Technology.

The survey is "the first step of decontamination work by the government," said Soichiro Seki, a senior Environment Ministry official. "We will try hard to restore normal conditions in Fukushima, keeping in mind that Fukushima cannot be revitalized without decontamination."

The survey will be conducted as the government steps up efforts to reconstruct Fukushima, one of the three prefectures hardest hit in the March 11 earthquake and tsunami, including cleaning up contaminated residential areas.

(Mainichi Japan) November 8, 2011

## **Minute radiation monitoring begins in no-go zone**

The environment ministry has launched a detailed survey of radiation levels in areas near the crippled Fukushima Daiichi nuclear power plant.

This information will enable the government to pinpoint which areas in the irradiated 20-kilometer zone of the plant need to be decontaminated first. Areas with radiation levels of about 20 millisieverts per year will also be included.

About 30 people, including ministry officials and Tokyo Electric Power Company staff gathered at a monitoring point in Iitate Village. The village is in a government-designated evacuation zone, from which all residents were ordered to leave.

Radiation levels for the survey will be measured at 100 meter intervals at an altitude of 50 meters, using unmanned helicopters and cars.

The ministry will provide an interim report on the results in December.

In the 12 designated municipalities, three corporations commissioned by the government have been selected to carry out the survey how to proceed the decontamination work effectively.

The ministry is set to begin full-scale cleanup efforts from next January according to the result of these surveys.

A ministry senior official said he hopes the survey and decontamination work will move forward quickly to allow some 100,000 evacuees to return to their homes.

Monday, November 07, 2011 19:42 +0900 (JST)

## **1/4 won't return to Fukushima restricted zone**

A survey in Fukushima Prefecture has revealed that one in 4 evacuees has no intention of returning to the restricted areas around the disaster-stricken nuclear power plant.

A group from Fukushima University sent questionnaires to all households from 8 municipalities in the district of Futaba, where the Fukushima Daiichi nuclear plant is located. Roughly half, or 13,500, responded.

26.9 percent of evacuees said they wouldn't be returning to their hometowns. Among people in their early 30s or younger, the figure rose to 52.3 percent.

More than 30 percent of evacuees from 3 towns in the no-entry zone said they won't return. The 20-kilometer zone is where radiation levels are particularly high.

Asked what troubles them most, nearly 60 percent cited a lack of prospects for ending their time in evacuation.

In the comment section of the survey, some evacuees wrote that they loved their hometowns and the people they know there, and that they would want to return home soon if it was possible.

The survey's leader, Associate Professor Fuminori Tanba, says the comments indicate that the evacuees do want to return home, despite the high number of those saying they will not. He also says the central and local governments should come up with steps to satisfy the wishes of the residents.

Tuesday, November 08, 2011 13:05 +0900 (JST)

## **Smaller increase in children's weight in Fukushima**

A survey shows that some children in Fukushima Prefecture have smaller average weight gains this year compared to the year before. A paediatrician says the results indicate the negative effects of the nuclear plant accident in March.

Doctor Shintaro Kikuchi tracked the weights of 245 children aged from 4 to 6 in 2 kindergartens in Koriyama City, Fukushima Prefecture. The results show an average weight increase of 0.81 kilograms over the past year through June. The increase for children in the same age group the previous year was 3.1 kilograms.

The average increase for children aged 5 to 6 in the survey was 0.84 kilograms. But a nationwide health ministry survey conducted last year for children of the same age group showed an average gain of 1.8 kilograms.

The Fukushima Daiichi nuclear accident has caused high levels of radioactivity in areas around the plant. Koriyama is located about 60 kilometers from the facility and many children in the city have been forced to play indoors to avoid contamination.

Kikuchi noted that the smaller weight increases could be related to reduced appetite resulting from less exercise as well as changes in the secretion of growth hormones due to stress. He said measures should be taken to restore normal hormone levels in the children.

Monday, November 07, 2011 20:09 +0900 (JST)

## **Nuclear power companies subject to cyber attacks**

The operators of nuclear power plants in Japan have become the latest victims of cyber criminals.

NHK asked 10 electric power companies that manage nuclear power plants if they have experienced attacks on their computer networks in the past year.

Tokyo Electric Power Company, Hokkaido Electric Power Company and Tohoku Electric Power Company said they had received targeted cyber attacks through emails disguised as business communications from government offices.

TEPCO says, however, that it has no evidence of an information leak.

Five other utilities reported that their computers were hit by viruses delivered through email, but they also said they have had no data leakage.

Noting past cyber attacks on nuclear facilities abroad, Keio University Professor Keiji Takeda says hackers may have sent viruses to try and collect data from plants in Japan.

He says not only electric power companies, but also gas and water suppliers, railway operators and other infrastructure operators should share information on viruses and check again to see if their computers have been infected.

Earlier, Japanese government institutions and defense contractors came under cyber attacks.

Monday, November 07, 2011 19:42 +0900 (JST)

Ci-dessus all files till file 70 incl

## **Researchers remove 90 percent of radioactive cesium from sludge with bacteria**

HIROSHIMA -- A research team here has succeeded in developing a method of removing radioactive cesium from sludge using bacteria.

Hiroshima International University professor Ken Sasaki, who studies the application of biotechnology in radiation decontamination, along with Ota Kohkan, a Hiroshima-based company selling waterworks-related materials and equipment, collected sludge from a swimming pool at a public school in the Fukushima Prefecture capital of Fukushima and ran experiments there in September.

The researchers mixed 90 grams of photosynthetic bacteria with alginic acid and other chemicals, forming the resulting granular material into marble-sized spheres. These were injected into 50 liters of concentrated sludge, whose radiation levels were monitored for three days.

Radiation levels ranging from 12.04 to 14.54 microsieverts per hour at the start of the experiment were found to have dropped to between 2.6 and 4.1 microsieverts per hour by the end of the third day. Subtracting the 1.2 microsieverts of radiation that was detected in the area around the pool during the experiment due to the Fukushima No. 1 Nuclear Power Plant disaster, the bacteria was found to have reduced radiation levels in the sludge by a maximum of 89.4 percent.

The negative charge of the surface of the bacteria used in the experiment has the property of attracting positively-charged materials, which it did with the positively-charged cesium. Moreover, the bacteria feed on potassium, and Sasaki says the bacteria likely absorbed the cesium because of its resemblance to potassium.

Through dehydration and incineration, the volume of the used bacteria mixture can be reduced to a seventy-fifth of its original volume, and weight to a hundredth. Cesium turns into gas and is dispersed at 640 degrees Celsius, which can be avoided if temperatures are kept at 500 degrees or lower.

Sasaki, who is planning to run demonstration experiments, is hopeful that the technology can be applied to the decontamination of radiation-tainted soil. "The strength of this technology is that it makes decontamination possible at regular temperatures and pressures," he said. "It is low cost as well, and we'd like to see it used in Fukushima's reconstruction efforts."

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 11, 2011

## Cabinet endorses decontamination plan

The Japanese Cabinet has endorsed a basic plan on cleaning up radioactive fallout from the accident at the Fukushima Daiichi nuclear power plant.

Under the Environment Ministry's plan, decontamination work will be carried out in areas where the annual radiation exposure reaches one millisievert or more.

The central government will be responsible for decontaminating the no-entry and evacuation zones around the troubled plant. Radiation levels are especially high in these areas.

In other affected areas, the clean-ups will be planned and performed by local municipalities, with the central government bearing the cost.

The plan also calls for cutting radiation levels approximately in half within two years in areas where the annual radiation is below 20 millisieverts. In schools and parks where children spend a lot of time, the reduction rate is raised to around 60 percent.

Environment Minister Goshi Hosono told reporters that he wants to hold thorough discussions with the relevant municipalities before designating areas subject to decontamination work.

Friday, November 11, 2011 13:43 +0900 (JST)

## Des traces de radioactivité détectées en République tchèque

LEMONDE.FR avec AFP | 11.11.11 | 17h36 • Mis à jour le 11.11.11 | 19h36

L'Agence internationale de l'énergie atomique (AIEA) a fait état, vendredi 11 novembre, de [traces d'un élément radioactif](#) dans l'atmosphère en République tchèque et dans certains pays européens, sans préciser de quels autres Etats il s'agissait.

Cela dit, l'agence onusienne estime que les niveaux relevés *"ne présentent pas de risque pour la santé publique"*. L'iode 131 est un élément radioactif dont la demi-vie (période durant laquelle il a perdu la moitié de sa radioactivité) est très courte, environ huit jours. L'origine de la présence de ce produit dans l'atmosphère reste à définir, mais n'est pas liée, selon l'AIEA, à l'accident de la centrale nucléaire japonaise de Fukushima en mars dernier.

Selon l'autorité de sûreté nucléaire tchèque, de l'iode 131 à très faible dose a été détecté dans l'air au cours des deux dernières semaines. *"Nous surveillons les évolutions de la situation en détail afin de localiser et d'identifier la source qui est probablement située hors du territoire tchèque"*, a-t-elle précisé dans un communiqué.

*"Nous n'avons détecté aucune augmentation dans la concentration d'autres radionucléides [éléments radioactifs], ce qui suggère que la cause ne serait pas liée à un accident dans une centrale nucléaire"*, selon l'autorité.

## Low levels of radioactive particles in Europe: IAEA

By [Sylvia Westall](#) and Fredrik Dahl - <http://www.reuters.com/article/2011/11/11/us-nuclear-iodine-iaea-idUSTRE7AA4U020111111>

VIENNA | Fri Nov 11, 2011 12:26pm EST

(Reuters) - Very low levels of radioactive iodine-131 have been detected in Europe but the particles are not believed to pose a public health risk, the U.N. nuclear agency said Friday, saying it was seeking to find the source.

The International Atomic Energy Agency (IAEA), the Vienna-based U.N. watchdog, said it did not believe the radioactive particles were from Japan's stricken Fukushima nuclear power plant after its emergency in March.

Experts said the origin of the radiation -- which has been spreading for about two weeks -- remained a mystery but could come from many possible sources ranging from medical laboratories or hospitals to nuclear submarines.

The Czech Republic's nuclear security watchdog said it had tipped off the IAEA after detecting the radiation it thought was coming from abroad but not from a nuclear power plant. It suggested **it may come from production of radiopharmaceuticals**.

Germany's Environment Ministry said slightly higher levels of radioactive iodine had been measured in the north of the country, ruling out that it came from a nuclear power plant.

Hungary, Slovakia, Austria and Sweden also reported traces at very low levels that did not pose a health risk.

Iodine-131, linked to cancer if found in high doses, can contaminate products such as milk and vegetables.

Paddy Regan, a professor of nuclear physics at Britain's University of Surrey, said the suggestion that it may have leaked from a radiopharmaceuticals maker "sounds very sensible and totally reasonable."

He said since iodine was used in the treatment of thyroid conditions it was also likely that hospitals in many European countries would have it in their stores.

"It would be very unlikely for it to have come from Fukushima since the accident was so many months ago and iodine-131 has a brief half-life," he said.

Iodine-131 is a short-lived radioisotope that has a radioactive decay half-life of about eight days, the IAEA said.

Massimo Sepielli, head of the nuclear fission unit of Italy's national alternative energy body ENEA said any number of sources could be to blame for the readings.

"It could be coming from the transporting of (nuclear) material, it could come from a hospital ... it could even come from a nuclear submarine, even if it's a more complicated possibility ... but you can't rule that out."

#### CAREFULLY CONTROLLED

Professor Malcolm Sperrin, director of medical physics at Britain's Royal Berkshire Hospital, said any link with Fukushima was extremely unlikely.

"It is far more likely that the iodine may be as a result of excretion by patients undergoing medical treatment. Whilst such patients are carefully controlled, some release of iodine into the environment may be inevitable but would certainly be well below any limits where health detriment would even begin to be an issue for concern," he said.

The IAEA said the Czech Republic's nuclear safety body had informed it that "very low levels" of iodine-131 had been measured in the atmosphere over the country in recent days.

"The IAEA has learned about similar measurements in other locations across Europe," the brief statement said.

"The IAEA is working with its counterparts to determine the cause and origin of the iodine-131."

The Czech watchdog said it had detected iodine-131 at a number of monitoring stations **since late October**. It said there was no health risk from the iodine.

"It was detected by our radiation monitoring network, with probability bordering on certainty the source is abroad. It is iodine-131 and we have asked the IAEA if they know what the source could be," Czech State Office for Nuclear Safety chief Dana Drabova told Reuters.

Officials in Spain, Russia, Ukraine, Finland, [France](#), Britain, Switzerland, Poland and Norway said they had not detected any abnormal radiation levels. Romania's watchdog said there had been no incident at the country's sole nuclear plant.

Austria's Environment Ministry said small levels were measured in the east and north of the Alpine country, saying the estimated dose level for the population was one 40,000th of the dose of radiation received in a transatlantic flight.

In the world's worst nuclear accident since Chernobyl in 1986, an earthquake followed by a massive tsunami overwhelmed the Fukushima plant in [Japan](#), causing a reactor meltdown and leakage of radiation, including of iodine.

In the days and weeks after the accident, tiny amounts of iodine-131 believed to have come from Fukushima were detected as far away as Iceland and other parts of Europe, as well as in the United States.

## **Explosion at Fukushima plant's No. 4 reactor caused by hydrogen backflow: TEPCO**



The fifth floor of the No. 4 reactor building at the Fukushima No. 1 nuclear plant is seen with its floor ballooned upward. (Photo courtesy of TEPCO)

The hydrogen explosion at the Fukushima No. 1 nuclear plant's No. 4 reactor building was caused by a backflow of the gas from the No. 3 reactor, according to a report released by plant operator Tokyo Electric Power Co. (TEPCO).

The TEPCO report states that the cause of the March 15 explosion was not hydrogen from the No. 4 reactor building's spent fuel pool, but rather a backflow of hydrogen from the No. 3 reactor. The No. 4 and 3 buildings share an exhaust pipe and their air conditioning ducts are connected.

TEPCO believes the explosion at the No. 4 reactor building occurred on the fourth floor, saying that when workers checked air ducts on the reactor building's badly damaged fourth and fifth floors in October and November, they found that metal netting over the intakes had been blown out by a serious blast. The duct itself had also been blown apart also apparently due to the force of an explosion.

When the March 11 earthquake hit, the No. 4 reactor was offline for regular maintenance and its fuel rods had been removed. The possibility that the explosion at the No. 4 reactor building was caused by a hydrogen backflow from the No. 3 reactor had already been raised after higher radiation levels were found in pipes connecting to the No. 3 reactor than other pipes in the No. 4 building.

(Mainichi Japan) November 12, 2011

## Gov't updates radiation maps with data on six new prefectures



A screen capture of a map released on Nov. 11 by the Ministry of Education, Culture, Sports, Science and Technology displaying accumulated radioactive cesium levels in eastern Japan. (Mainichi)

The government has released soil radiation maps covering a much broader swath of Japan than previous releases, covering six new prefectures.

The newly included prefectures are Iwate, Yamanashi, Nagano, Shizuoka, Gifu, and Toyama.

Areas contaminated with 30,000 to 100,000 becquerels of radioactive cesium per square meter were found in the municipalities of Ichinoseki and Oshu in Iwate Prefecture, Saku, Karuizawa, and Sakuho in Nagano Prefecture, Tabayama in Yamanashi Prefecture, and elsewhere.

The measurements were taken by helicopter and combine contamination with both cesium-134 and -137, which have half-lives of two and 30 years, respectively.

[Click here for the original Japanese story](#)

(Mainichi Japan) November 12, 2011

## 3,000 travel to Fukushima N-plant every day

---

Koichi Yasuda / Yomiuri Shimbun Staff Writer



Workers' identities are confirmed and they are given dosimeters before going to the Fukushima No. 1 nuclear power plant.

FUKUSHIMA--The base for workers at the crippled Fukushima No. 1 nuclear power plant in Fukushima Prefecture was opened to the press for the first time Friday, eight months after the March 11 disaster.

About 3,000 workers covered in head-to-toe protective gear travel to the nuclear power plant every day from J-Village, originally a sports training facility, in Hironomachi and Narahamachi, about 20 kilometers from the nuclear power plant.

Working day shifts at the plant, they change into protective clothes, medical masks and gloves at the center and receive a dosimeter from officials of companies related to plant operator Tokyo Electric Power Co. Getting on a bus to go to the plant, the workers do not talk much or smile at all.

Although eight months have passed since the crisis began and workers are close to achieving cold shutdown of the plant's reactors, the situation is still tense, as work must be done in some locations where radiation levels are still high at 100 millisieverts per hour or more.

Work at locations with high radiation levels is limited to about three to four hours a day. However, some workers return to the center covered in sweat.

The overall environment has improved remarkably in the past eight months. Just after the crisis began, workers had to sleep huddled together in hallways, but today two air-conditioned dormitory buildings that can accommodate about 1,600 people stand on what was a training ground for TEPCO's soccer team.

Initially, only simple emergency foods were available, but TEPCO has distributed boxed meals since May and a convenience store opened in August. In September, a restaurant in the center reopened.

A 37-year-old man from Aomori Prefecture said, "I'm grateful for the good working environment here."

Encouraging messages from children and others are displayed in the changing room and other places at the center, illustrating just how harsh and stressful the job is.

Problems remain. Waste including used protective gear and masks contaminated with low levels of radiation is being stored on a covered soccer practice ground. The pile has reached a volume of 4,000 cubic meters.

An official at the center said no measures for disposing of it have been decided.

TEPCO opened the center in 1997 with contributions of 13 billion yen. One of its practice grounds, one of the largest soccer facilities in the nation, has been converted from natural grass to gravel and is being used as a parking lot and heliport.

(Nov. 13, 2011)

## **Antinuclear-plant protesters rally in Fukuoka**

FUKUOKA (Kyodo) -- A series of large antinuclear rallies took place in Fukuoka on Sunday with the organizer saying more than 15,000 people, including from South Korea, took part calling for dismantlement of all nuclear power plants in Japan.

Yukinobu Aoyagi, a leading member of the events, told a gathering in a park in the southwestern city, "We'll work together so as not to see our soil contaminated with radiation."

Lee Dae Su, an antinuclear activist from South Korea, said, "An accident could affect South Korea, so we can't tolerate nuclear plants anymore."

Saeko Uno, 40, who evacuated to Fukuoka Prefecture from Fukushima Prefecture, told the event she hopes to see "a world free of nuclear plants" following the nuclear crisis at the Fukushima Daiichi plant crippled by the March 11 earthquake and tsunami.

The participants then took to the streets marching through downtown Fukuoka, holding placards and signs including those that read "We don't want nuclear plants" and "No nuclear plants."

(Mainichi Japan) November 14, 2011

## **Gov't aims for 'cold shutdown' of Fukushima reactors, but bemoans lack of data**



The wrecked reactor building at the No. 3 reactor at the Fukushima No. 1 Nuclear Power Plant is seen in this pool photo taken on Nov. 12. (Pool photo)

The government and Tokyo Electric Power Co. (TEPCO) are trying to achieve a stable condition called a "cold shutdown" of crippled reactors at the Fukushima No. 1 Nuclear Power Plant by the end of this year, but they have yet to come to grips with exactly what is happening inside the reactors crippled by the March 11 earthquake and ensuing tsunami.

In the latest roadmap to contain the Fukushima nuclear power plant, the government and TEPCO, the operator of the Fukushima nuclear power plant, aim for a "cold shutdown" of the reactors by the end of this year. Their definition of a cold shutdown of the Fukushima nuclear plant consists of 1) the temperatures of the bottoms of the reactor pressure vessels being held down below 100 degrees Celsius, 2) radioactive substances from the reactors being managed and controlled, and 3) stable maintenance of "circular cooling systems" designed to recycle radioactive water from the reactors as coolant.

On Oct. 14, TEPCO finished installing a covering over the No. 1 reactor in an effort to prevent radioactive substances from spreading. In addition, a ventilation system designed to remove radioactive substances from the reactor building through filters has been operating at the reactor, and the temperature of the bottom of the reactor pressure vessel has dropped below 40 degrees Celsius.



Crushed piping is observed from inside a bus at the crippled Fukushima Dai-ichi nuclear power station in Okuma, Fukushima Prefecture, Japan, Saturday, Nov. 12, 2011. (AP Photo/Ikuro Aiba, Pool)

At the No. 2 reactor, a "gas control system" designed to remove radioactive substances from the reactor building has begun to be operational. But an analysis of gas using the system suggested on Nov. 2 a possibility of a sustained nuclear chain reaction known as criticality following the detection of radioactive xenon. TEPCO and the government's Nuclear and Industrial Safety Agency (NISA) eventually concluded that it was not criticality but "spontaneous fission," revealing the very fact that they were not able to come to grips with the situation inside the reactor accurately. TEPCO plans to start operating gas control systems at the No. 1 and No. 3 reactors by the end of this year to step up its efforts to monitor radioactive substances at each nuclear reactor.

At the No. 3 reactor, which suffered a hydrogen explosion shortly after a similar blast at the No. 1 reactor, debris remains scattered in the reactor building. Furthermore, levels of radiation from the debris remain high, hampering efforts to contain the reactor. Therefore, TEPCO continues to use a crane to remove debris from the upper reactor building blown off by the hydrogen explosion.



The Unit 4 reactor building of the crippled Fukushima Dai-ichi nuclear power station is seen through a bus window in Okuma, Japan Saturday, Nov. 12, 2011. (AP Photo/David Guttenfelder, Pool)

At the No. 1, 2 and 3 reactors, melted nuclear fuel seems to be penetrating the pressure vessels and even leaking out from the reactor buildings. About 10 cubic meters per hour of water has been injected into the reactors to cool nuclear fuel. TEPCO unveiled an estimate that the probability of another reactor core being further damaged would be once in 5,000 years if the nuclear plant were to be hit by a major tsunami again and lose its entire functions to inject water. The utility submitted to NISA its plans to ensure safety at the plant over the next three years or so.

At the No. 4 reactor, which has no nuclear fuel in the reactor itself, about 1,535 fuel rods -- about three times the number of fuel rods at the No. 1, 2, and 3 reactors -- are kept in the spent nuclear fuel pool. For this reason, TEPCO completed the work to sustain the fuel pool with steel frames in late July.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 14, 2011

## **Power plant chief details Fukushima nuclear disaster**

OKUMA, Fukushima -- Masao Yoshida, head of the crippled Fukushima No. 1 Nuclear Power Plant, elaborated on the nuclear crisis triggered by the March 11 earthquake and tsunami, saying he and other plant workers thought at the outset of the disaster that they were going to die.

He also said in the first post-disaster interview with the media at the plant in Okuma, Fukushima Prefecture, on Nov. 12 that Tokyo Electric Power Co. plant staff did not know initially what was going on at the plant's reactors, including a hydrogen explosion at the No. 1 reactor on March 12.

The following was a summary of the question-and-answer session.

**Question:** This is the first time that you are speaking in front of the press corps. First of all, what do you want to say to the Japanese public?

**Answer:** I want to apologize from the bottom of my heart for the trouble and inconvenience that the power plant I am in charge of caused. We have received letters of support from all over Japan and around the world, and it's a great encouragement in particular to receive assuring words from the people of Fukushima Prefecture.

Q. What was the toughest situation you found yourself in throughout the crisis?

Naturally, it was the first week from March 11. I had no idea what was going to happen next, and we did everything imaginable. To put it in an extremely frank manner, we thought several times that we were going to die.

Q. Please tell us the circumstances surrounding the hydrogen explosion at the No. 1 reactor and how you felt?

A. First, we heard the sound of "boink" and wondered, what was that? We received information from people returning from the scene, "It looks like the No. 1 reactor has exploded." We heard (the explosion of) the No. 3 reactor and saw (TV) footage. We heard (the explosion of) No. 4 reactor at the plant's headquarters but we could not tell whether it was at the No. 2 reactor or the No. 4 reactor.

Q. When did you think you were going to die?

We at headquarters did not know details about the explosion at the No. 1 reactor. As injured workers were returning from the scene, we thought that if the containment vessel had exploded, massive amounts of radiation would spew out and the situation would be out of control. There was also an explosion at the No. 3 reactor and we could not pump water into the No. 2 reactor. A settlement (of the crisis) was nowhere in sight. In a worst case scenario, we thought the meltdowns would rapidly accelerate and become out of control, signaling the end of our world.

Q. When do you think you overcame the crisis?

A. After the explosions, a high concentration of contaminated water leaked in early April, and we worked hard to set up water-processing facilities. We really had a hard time through June. I think the overall system stabilized in July or August.

Q. How is the current status of the reactors?

A. As far as I can confirm from data, there is no doubt that that the reactors have been stabilized. But it does not mean they are super stable. Radiation levels are still extremely high and still pose a danger to daily work. They have been stabilized to a degree that makes residents around the plant feel at ease, but work (to bring the crisis under control) is tough going.

Q. Fuel at the No. 1 and No. 3 reactors has melted. Can you stabilize it?

A. As far as we see from changes in temperatures in each section of the fuel reactors, the entire reactors including not only the pressure vessels but also containment vessels have been cooled even if the fuel has melted, and we think the reactors have stabilized.



In this image released Saturday, April 16, 2011, by Tokyo Electric Power Co., top of the container of the nuclear reactor, painted in yellow, of Unit 4 at the Fukushima Dai-ichi Nuclear Plant is observed from its side with a T-Hawk drone Friday, April 15, 2011 in Okuma, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Q. Are there any other major troubles right now?

A. It's not a problem for today or tomorrow, but in the short term, workers' radiation exposure and how to rotate people are thorny issues.

Q. How much is your own accumulative radiation exposure level?

A. I won't comment on that because it's personal information but it's reached a certain level.

Q. How are you going to deal with the crisis from now on?

A. One objective is a successful conclusion of Step 2 (to bring the reactors to a cold shutdown under the road map). With local conditions in mind, we will advance proposals for the next step (of mid- and long-term measures) and carry out the task to meet the needs of the people of Fukushima Prefecture.

(Mainichi Japan) November 14, 2011

## **Questions remain over tsunami safety measures at Hamaoka nuclear plant**

The initial stages of construction of a coastal barrier are seen at the Hamaoka Nuclear Power Plant in Omaezaki, Shizuoka Prefecture, on Nov. 14. (Mainichi)

"I've never seen anything this solid," remarked Tomoya Shibayama, a specialist in coastal engineering at Waseda University as he surveyed a coastal barrier under construction at Chubu Electric Power Co.'s Hamaoka Nuclear Power Plant in Shizuoka Prefecture.

The barrier being built at the plant in the wake of the devastating March 11 earthquake and tsunami that crippled the Fukushima No. 1 nuclear complex has foundations reaching the bedrock as deep as 30 meters below ground. The design, based on steel frames filled with concrete, far surpasses the sturdiness of the barriers destroyed by the March 11 disaster.

Yet Shibayama has his reservations.

"I don't believe any coastal engineering specialists have been involved in the design. I can't see any sensible measures such as designing an offshore structure to reduce the force of a tsunami," he said.

Following the March 11 disaster that triggered the nuclear crisis at the Fukushima plant, it emerged the plant's operator, Tokyo Electric Power Co., had not listened to specialists who had warned about the possibility of a tsunami.

Is Chubu Electric Power Co. now heeding the advice of specialists to avoid a repeat of that disaster?

"We consulted the opinions of university researchers and other specialists, but we have not quoted any research papers," a company representative said. The company has been slow to release the names of the scholars it says it has consulted.

On July 22, Chubu Electric Power Co. announced that its new barrier would reach a height of 18 meters. A company official visited the Shizuoka Prefectural Government Headquarters and stated, "The biggest earthquake we can imagine at the Hamaoka Nuclear Power Plant is a magnitude-9 quake creating a tsunami 10 meters high. We've implement all possible measures."

Prefectural crisis management official Satoshi Kobayashi questioned the basis for the company's conclusions, but power company officials simply answered, "These are internal figures."

Kobayashi then said, "There is no clear basis for them. It would be better not to produce figures so hastily," sending the company a warning about the danger of acting on internal assumptions.

To independently check the reliability of Chubu Electric Power Co.'s tsunami countermeasures, the Shizuoka Prefectural Government formed a tsunami committee within its disaster prevention and nuclear power science council. Committee member Kenji Harada, an associate professor in coastal engineering at Shizuoka University, expressed concern that the wall to protect the water intake pump at the plant is just 1.5 meters high. Even if a tsunami was stopped by the barrier, a rise in the sea level would cause seawater to overflow from the intake chamber on the plant grounds, submerging the cooling water intake pump and possibly resulting in a malfunction.

Meanwhile, a more serious issue has emerged. At a meeting of the Seismological Society of Japan in Shizuoka in mid-October, Yoshinobu Tsuji, an associate professor in seismology at the University of Tokyo, spoke to the Mainichi about the possibility of a tsunami in the vicinity of the Hamaoka nuclear plant reaching an elevation of 15 to 20 meters -- far higher than the maximum level predicted by Chubu Electric.

Chubu Electric Power Co. appears to have adhered to "company decisions" so it can quickly move forward with its tsunami countermeasures. But to win the confidence of local residents and local

bodies, it must release information and carefully provide explanations that answer the safety issues raised by researchers.

(Mainichi Japan) November 16, 2011

## **IEA: Gas imports to jump with no new nuke plants**

The International Energy Agency says Japan is likely to face a sharp increase in spending on natural gas imports in 2035 if it halts construction of new nuclear power plants following the Fukushima nuclear accident.

IEA Executive Director Maria van der Hoeven provided estimated calculations in a news conference in Tokyo on Wednesday.

She said Japan will pay 66 billion dollars for imported natural gas in 2035, as energy demand from emerging economies increases and gas prices rise. That figure is nearly double the current level.

She added that if Japan were to stop building new nuclear reactors, the cost of gas imports would increase by about an additional 13 billion dollars.

Van der Hoeven warned that in 2035, Japan will be spending about 40 billion dollars more on natural gas annually than it is now. She added that this could have a substantial impact on Japan's trade balance.

Van der Hoeven also said that higher energy costs would cause a sharp rise in electricity prices, affecting Japanese industries.

She added that the Japanese government should find a solution to these issues if it chooses to reduce its reliance on nuclear power, as alternative measures, such as the use of renewable energy sources, and energy-saving efforts will have limited impact.

Wednesday, November 16, 2011 18:36 +0900 (JST)

<http://www.bloc.com/article/societe/sujets-d-actualite/iode-131-nuage-radioactif-europe-2011-11-16.html>

## **Iode 131 détecté partout en Europe**

Des traces d'iode radioactif sont détectées depuis quelques semaines partout en Europe. Le premier pays à avoir signalé publiquement la présence d'iode 131 dans l'air ambiant fut la République Tchèque. Mais d'autres pays avaient déjà alerté l'Agence Internationale de l'Energie Atomique (AIEA), notamment l'Autriche et la [Hongrie](#). Très vite, la Pologne, la Slovaquie, l'Allemagne, la Norvège, le Danemark et la Russie confirmèrent la présence d'iode radioactif sur leur territoire. Enfin, on sait depuis hier que la France est aussi concernée par ce [nuage radioactif](#) d'iode 131.

## **Un nuage radioactif sans risque pour la santé**

Si la présence d'iode 131 dans l'air ambiant amène de nombreuses questions, l'AIEA et l'IRSN (Institut de Radioprotection et de Sûreté Nucléaire) affirment qu'il n'y a pour l'instant aucun danger. En effet, les doses considérées sont tellement infimes qu'elles ne mettraient pas en danger la santé des personnes, même sur une longue période.

## **Iode 131, signe d'un événement nucléaire en cours**

Là où la présence d'iode 131 inquiète vraiment, c'est qu'elle signale un événement nucléaire récent et peut être encore en cours. En effet, la durée de vie des particules d'iode 131 est particulièrement brève : demi-vie de 8 jours (perte de la moitié de l'activité radioactive en 8 jours). Si on en trouve aujourd'hui, c'est donc forcément qu'un incident ou un accident nucléaire en a relâché très récemment. Et en relâche peut-être encore... Sans compter que cet événement s'inscrit dans la durée puisque, rien qu'en France, les traces d'iode 131 sont détectables depuis le 19 octobre...

## **Origine du nuage radioactif inconnue**

L'AIEA, pourtant chargée de contrôler l'utilisation des matières nucléaires, n'a toujours pas désigné le responsable de cette contamination. Elle déclare ne pas en connaître l'origine, ce qui est particulièrement inquiétant. Mais on peut légitimement douter de ce que dit l'AIEA et considérer que l'agence préfère se taire. Et ce silence inquiète aussi... De nombreuses pistes ont dès lors été évoquées. On parle d'un problème sur une usine de production de traitement médical (l'iode 131 est utilisé en médecine), sur un réacteur de recherche ou sur une centrale nucléaire. La mise en commun des données par les différents pays devrait permettre de reconstituer le mouvement du nuage d'iode 131 et de remonter à sa source.

## **La piste de Fukushima ne peut pas être écartée**

Mais la piste la plus sérieuse reste évidemment l'accident en cours à la centrale nucléaire de Fukushima, au [Japon](#). En effet, après les explosions de mars dernier, des particules radioactives ont survolé la planète et de l'iode 131 a été détecté en France. Aujourd'hui, cet iode a probablement entièrement disparu. Cependant, de nombreux témoignages évoquent une reprise de criticité (réaction de fission nucléaire incontrôlée) à Fukushima. Dans un premier temps, le réacteur 2 fut surveillé de près, mais il existe aujourd'hui des doutes sur le 3. Des sources japonaises ont aussi évoqué de sérieux problèmes sur les réacteurs 5 et 6, que l'on croyait jusque-là épargnés. Or, si les combustibles fondus (corium) sont en fort épisode de criticité, ils rejettent forcément de l'iode 131 dans l'[atmosphère](#). La promptitude des autorités à discréditer la piste de Fukushima pose évidemment question

Source Bloc.com : <http://www.bloc.com/article/societe/sujets-d-actualite/iode-131-nuage-radioactif-europe-2011-11-16.html#ixzz1dsSKZ3D5>

Vous pouvez suivre cette question sur <http://fukushima.over-blog.fr/article-le-mystere-de-l-iode-131-en-europe-mises-a-jour-88724738.html>

<http://fukushima.over-blog.fr/article-le-mystere-de-l-iode-131-en-europe-mises-a-jour-88724738.html>

<http://www.simplyinfo.org/>

...Et surprise à 11h55 – mais est-ce une surprise pour la France avec l'antécédent de 1986 ? – [le site du Monde](#) annonce que l'Hexagone est également touché par le nuage radioactif !

Il s'appuie pour cela sur la publication d'une [note de l'IRSN](#) toute fraîche sortie, qui fait le point sur des analyses faites la semaine dernière. Ce qui est très surprenant, c'est que cet organisme dit avoir été informé « de façon informelle à travers les réseaux scientifiques dont il est membre ». Ce qui signifie que l'AIEA, au courant de la pollution depuis plusieurs semaines, n'a pas estimé utile d'alerter les services nationaux compétents de tous les pays européens. Ce manque de réactivité est très grave, car il veut dire clairement que pour l'AIEA, un incident nucléaire, ce n'est pas si grave que cela, et que l'enquête qu'elle était censée faire de manière rapide dans un souci de protection des populations n'a pas été menée sérieusement. A vrai dire, ce n'est pas étonnant, car il faut bien savoir que cette structure internationale n'a pas vraiment pour objet le bien-être des populations mais principalement le développement de l'utilisation l'énergie nucléaire ([Article 3 de ses statuts](#)).

.....

## **Contaminated water still headache for Tepco**

Tuesday, Nov. 15, 2011 - <http://www.japantimes.co.jp/text/nn20111115f2.html>

By [KAZUAKI NAGATA](#)

Staff writer

Tokyo Electric Power Co. has fought an eight-month battle to decontaminate the massive amounts of radioactive water in the reactor basements of the Fukushima No. 1 plant, and the struggle is far from over.

Though it continues to process contaminated water currently flooding the basements of the reactor and turbine buildings for recycling to cool the reactors, the utility has yet to come up with a way to drain all the water from the buildings. With the trouble unlikely to be resolved anytime soon, the threat of further soil, groundwater and sea contamination near the power plant continues.

Tepco originally planned to process 200,000 tons of contaminated water and remove it all by the end of this year, but some 200 to 500 tons of groundwater flows into the buildings every day, rendering this option impossible.

The massive inflow of groundwater indicates the basement walls may be cracked, and thus there is a risk that the contamination can spread to the outside environment. Tepco does not know exactly where the groundwater is coming in from.

The amount of groundwater changes depending on the weather, and increases when it rains, Tepco spokesman Junichi Matsumoto said Friday.

Groundwater around the Fukushima plant flows from mountains in the west toward the Pacific.

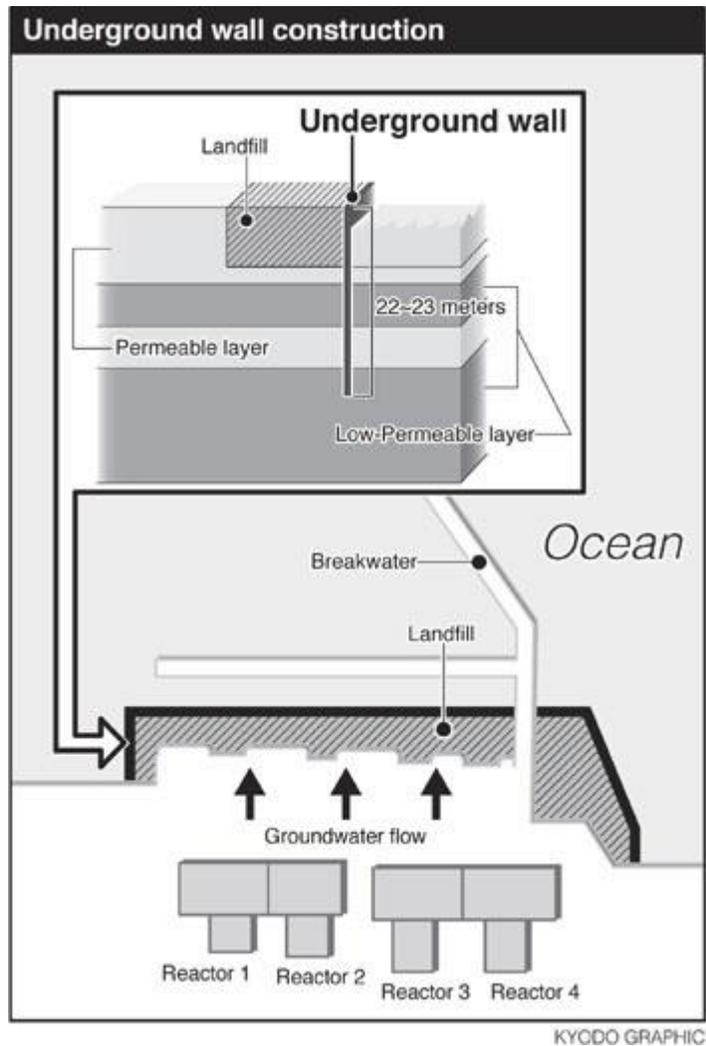
Tepco takes groundwater samples every day and has so far said the contamination has not spread below the water table or, during the current cleanup operations, to the sea, at least to any significant extent.

Matsumoto stressed the importance of keeping the current water levels both inside and outside the reactor and turbine buildings constant.

The water level inside the reactor and turbine buildings is about 3 meters above mean sea level, and lower than the groundwater, which is 5 to 6 meters above sea level.

As long as these water levels are kept in balance, the contaminated water will not leak into the ground, he said.

"We will maintain the current balance for a while," said Matsumoto, adding that the utility is not sure how long it will have to do so.



This means the water from inside the buildings will not leak out and contaminate the groundwater. But because groundwater continues to flow into the buildings, Tepco's water removal efforts are endless and until the problem is resolved, the plant won't be brought under control.

The reactor basements contained 77,000 tons of radioactive water as of Nov. 8. Until most is cleared out, it won't be possible to spot cracks or holes in the containment vessels.

In addition, the amount of radioactive waste, particularly sludge, created through processing tainted water keeps increasing. The amount of sludge was 581 cu. meters as of Nov. 8. Reactors 1, 2 and 3, which suffered meltdowns, are currently being cooled by circulating the contaminated water, which is being processed before it is pumped in.

To keep the radioactive water from draining into the sea, Tepco started constructing an underground wall between the shore and the reactor buildings late last month.

The wall, about 800 meters long and 22 to 23 meters deep, will take two years to complete.

Experts say, however, that building the containment wall just on the east side will not be effective.

"The groundwater keeps flowing in the direction of the sea. Even if the wall blocks a certain amount of it, the water will accumulate behind it, eventually build up and flow around the wall into the ocean," said Yoshikazu Suzuki, who heads Chiba-based Kimitsu System Co., which specializes in soil and water decontamination.

It would be more effective to build a wall around the west, north and south sides to keep the groundwater from reaching the reactor and turbine buildings rather than building a wall by the sea, said Suzuki, who surmises the contaminated water is already flowing into the groundwater and sea. He said Tepco should then dig wells at the plant complex to pump the contaminated water out of the ground.

Tepco considered the full enclosure option but decided against it for now because it entails further risk and would upset the current water level balance, posing the danger of the contaminated water inside the buildings escaping into the ground.

## **Excessive levels of radioactive cesium found in Fukushima rice**

FUKUSHIMA (Kyodo) -- Excessive levels of radioactive cesium have been found in rice harvested in the city of Fukushima, the Fukushima prefectural government said Wednesday, marking the first time such levels of the isotope have been detected in the national staple since the nuclear crisis erupted in March.

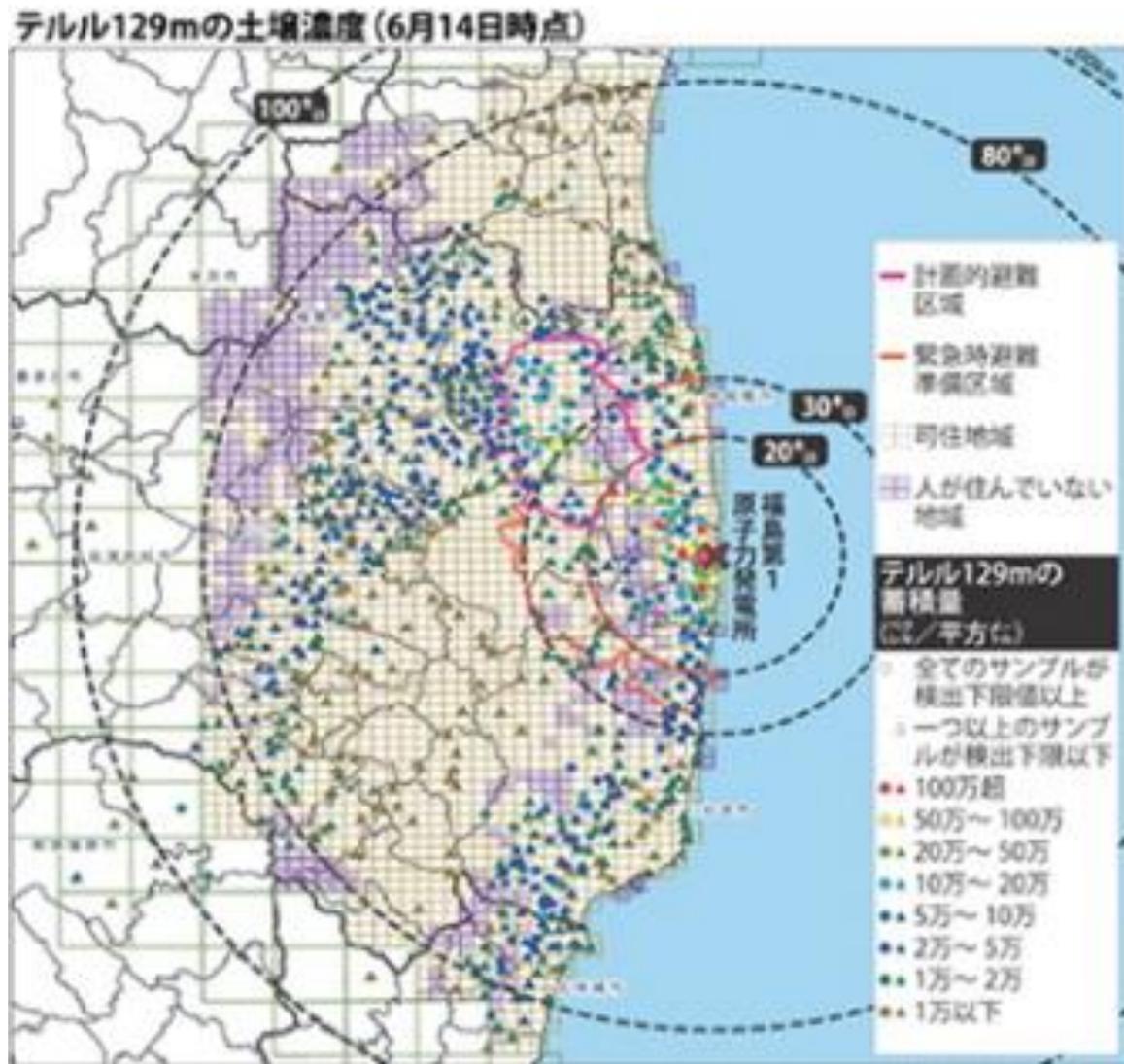
The cesium in the rice samples taken at a farm in the city measured 630 becquerels per kilogram, against the provisional 500-becquerel limit set by the government, according to the local government.

The central government has started considering banning rice shipments from the area, government sources said.

None of the 840 kg of rice produced at the farm this year has been shipped to markets, local officials said. The local government asked farms in the Onami area in the city where the rice was harvested to refrain from shipping their fresh produce, but one ton of rice has already been shipped to rice sellers, including at least one in the city.

The prefectural government said it will also inspect rice grown at the roughly 150 farms in the area for traces of radioactivity.

The prefectural government was testing rice samples from the farm in question after a farm cooperative found radioactive cesium exceeding the permitted level in the samples on Monday, according to the local government. The cooperative tested the samples at the farm's request.



A screen capture of a Ministry of Education, Culture, Sports, Science and Technology map displaying the diffusion of the radioactive element tellurium 129m around the Fukushima No. 1 nuclear plant. (Mainichi)

Alarming levels of cesium measuring 500 becquerels per kg were found in rice harvested in Nihonmatsu, Fukushima Prefecture, in a preliminary test in September, but those measured in the subsequent test were within the allowable limit.

After testing rice samples from all the 48 cities, towns and villages in the prefecture where rice has been grown this year, the Fukushima governor declared last month that the crop produced in the prefecture, which hosts the crippled Fukushima Daiichi power plant, was safe.

The Onami area is located in the mountains several kilometers to the east of the center of the prefectural capital.

(Mainichi Japan) November 17, 2011

## **Japan mulling banning cesium-tainted rice shipments from Fukushima**

TOKYO (Kyodo) -- The Japanese government is considering banning shipments of cesium-contaminated rice from the Onami area in the city of Fukushima that was affected by the accident at the Fukushima Daiichi nuclear power plant, Chief Cabinet Secretary Osamu Fujimura said Thursday.

"We're considering restricting shipments of rice harvested in the Onami area in the city of Fukushima...and we'll draw a conclusion swiftly," Fujimura, the government's top spokesman, said at a press conference.

Excessive levels of radioactive cesium were found Wednesday in rice harvested in the area, the first time such levels of the isotope have been detected in the national staple since the crisis erupted at the Fukushima nuclear power station, crippled by the devastating March 11 earthquake and tsunami.

But Fujimura also said that rice containing excessive levels of cesium has not been put on the market so far as it was found in tests conducted before being shipped.

"I've heard the problem will not become serious," he said, adding the government will continue to make efforts to prevent the spread of unfounded rumors about Japanese products being contaminated by radioactive substances.

(Mainichi Japan) November 17, 2011

## **Half of radioactive materials from Fukushima fallen into sea: study**

TOKYO (Kyodo) -- More than half of the radioactive materials that were emitted into the atmosphere in the days after the Fukushima nuclear disaster have since fallen into the ocean, according to a recent simulation by a team of researchers.

Between 70 and 80 percent of the radioactive cesium from the Fukushima Daiichi power plant in Fukushima Prefecture had fallen into the sea by April, with the rest having fallen on land, according to the simulation done by the Meteorological Research Institute in Tsukuba, Ibaraki Prefecture, and other researchers.

"The Fukushima nuclear power plant is located on the eastern edge of Japan, so only small amounts ended up falling on land because (such materials) get carried by the westerlies between March and April," said Yasumichi Tanaka, a senior researcher at the Japan Meteorological Agency institute and a member of the research team. However, it suggests **the fallout that did not make landfall polluted the ocean**, he added.

A simulation model applied in the study was developed by the institute and the agency, and was used to see how such radioactive isotopes as cesium-131, cesium-134 and cesium-137 got dispersed in the days after the disaster triggered by the March 11 earthquake and tsunami.

On the premise that the materials were dispersed with each particle being the size of less than 1 micrometer, the simulation showed they largely completed a trip around the globe in roughly 10 days after first crossing the Pacific.

Once released into the atmosphere, the materials were dispersed mostly northbound and reached the western coast of the mainland United States around March 17 after passing through eastern Russia and Alaska, according to the simulation. **They are likely to have largely completed a round-the Earth trip around March 24.**

Most of the radioactive materials fell with rain as they got carried through the atmosphere, the study showed, saying that about 65 percent of the cesium-131 released into the air in the disaster has since fallen into the sea.

The results of the study will be presented to an academic meeting in Nagoya that began Wednesday.

(Mainichi Japan) November 17, 2011

## **High radioactivity detected in some Fukushima rice**

An inspection of recently-harvested rice in Fukushima Prefecture has found levels of radiation higher than the government-allowed limit.

The Fukushima Prefectural government says tests have detected 630 becquerels per kilogram of radioactive cesium in rice from a field in the Oonami district in Fukushima City. The government's maximum allowable level is 500 becquerels per kilogram.

Oonami is about 50 kilometers from the disabled Fukushima Daiichi nuclear power plant.

The prefectural assessment followed tests conducted by a local agricultural cooperative on Monday, which pointed to higher dosages than the interim tolerable limit.

The prefecture says the farm in question produced about 840 kilograms of rice this year. It says the harvested rice is being kept in a warehouse and has not gone into circulation.

The prefecture says it has asked all farmers in the district to suspend rice shipments.

The central government says it has begun to assess whether to ban rice shipments from the district altogether.

This is the first time that radiation levels higher than the government limit have been found in rice crops since the nuclear accident.

Last month, the prefecture allowed shipments from the district after tests at 2 locations largely confirmed radioactive levels lower than the legal limit.

The prefecture says it will reexamine the crops from all 154 farms in the district.

A prefectural agriculture department official says the prefectural government is appalled by the test results. He says the prefecture will try to obtain information on distribution of rice from surrounding areas, and will investigate why the rice contained such high levels of radiation.

The head of the local agricultural cooperative says his cooperative takes the fact that radioactive cesium has been detected in the district seriously despite the contradictory results of earlier tests. He says his cooperative plans to conduct more detailed tests.

Thursday, November 17, 2011 06:07 +0900 (JST)

## **Fukushima Prefecture probes cesium-tainted rice**

Fukushima Prefecture is trying to track down all rice harvested in one district of Fukushima City after radioactive cesium higher than the government limit was found in some of the rice.

The prefectural government says 630 becquerels per kilogram of radioactive cesium has been detected in rice harvested in the Oonami district in Fukushima City. The maximum allowable level set by the central government is 500 becquerels per kilogram.

The prefecture says that rice harvested from the same rice paddies is stored at facilities including a local agricultural cooperative, and none of that rice has been released to the market. The prefecture has asked all 154 farmers in the district to suspend rice shipments.

Still, the prefectural government has asked all the farmers about their shipments. Based on the

interviews of 86 farmers, about one ton of rice was sold to local dealers from the district.

The government is trying to confirm whether any of the rice has reached consumers.

The Fukushima Prefectural government is investigating the cesium contamination while continuing the interviews. The prefecture will discuss its course of action with Fukushima City and local agricultural cooperatives on Thursday afternoon.

Thursday, November 17, 2011 13:44 +0900 (JST)

## **Accident manuals for No 2 & 3 reactors disclosed**

Accident manuals for reactors Number 2 and 3 at the Fukushima Daiichi nuclear plant have again disclosed a lack of proper procedures to deal with a nuclear accident.

The Nuclear and Industrial Safety Agency released Tokyo Electric Power Company's procedural manuals for the two reactors on Thursday. The portion of the manual for the No 1 reactor was disclosed in October.

The newly disclosed portions, about 180 pages each for reactors 2 and 3, describe procedures on water injection into the reactors and procedures to vent steam to reduce pressure within the reactor containment vessel.

But, the manuals had not made sufficient and specific preparations for an extended all-station blackout such as the one that occurred at the No 1 reactor.

The utility staff members followed the procedures in the manuals immediately after the March earthquake hit the power plant, but very few steps were followed after the tsunami.

The latest disclosure of the manuals came after the utility earlier submitted them to a Lower House panel with most of the contents blacked out.

TEPCO had insisted the information had to be kept secret in order to protect its intellectual property rights and because disclosure could open its facilities to terrorist attack.

Thursday, November 17, 2011 15:29 +0900 (JST)

## **L'iode radioactif baladeur viendrait de Hongrie**

LEMONDE.FR | 17.11.11 | 13h58 • Mis à jour le 17.11.11 | 16h24

Le mystère est sans doute résolu : une installation hongroise de production d'isotopes médicaux serait à l'origine des rejets atmosphériques d'iode radioactif détectés ces derniers jours, à l'état de traces, dans plusieurs pays d'Europe centrale ainsi qu'en Allemagne et en France.

L'Institut hongrois de recherche sur les isotopes a annoncé, jeudi 17 novembre, avoir enregistré, dans son laboratoire de Budapest, une augmentation de ses émissions d'iode 131. Selon le directeur de cet institut, ces rejets n'expliqueraient pas – ou du moins pas en totalité – la contamination observée jusqu'en France. Mais, d'après l'Agence internationale de l'énergie atomique (AIEA), qui n'a pas encore communiqué officiellement cette information, le laboratoire de Budapest serait bien l'origine principale de la **contamination, qui ne présenterait pas de danger sur le plan sanitaire.**

## **L'ACTIVITÉ DU LABORATOIRE A ÉTÉ INTERROMPUE**

Ce laboratoire avait déjà constaté une hausse de ses émissions d'iode 131 au cours du premier semestre 2011. Bien que les niveaux soient restés inférieurs, selon les dirigeants, au seuil toléré par les autorités sanitaires, la production d'isotopes avait été suspendue de juin à août, pour permettre une amélioration du système de filtrage. La production a repris en septembre, mais les émissions d'iode radioactif ne sont pas redescendues à leur niveau antérieur. L'activité du laboratoire serait à nouveau interrompue.

Le 11 novembre, l'AIEA avait indiqué avoir été informée, par les autorités de contrôle de la République tchèque, de la présence dans l'air ambiant de *"très faibles niveaux d'iode 131"*. Des traces de particules radioactives, présentes dans l'atmosphère sous forme d'aérosols, ont également été décelées en Pologne, en Slovaquie, en Autriche et en Allemagne. En France, les niveaux mesurés par l'Institut de radioprotection et de sûreté nucléaire (IRSN) étaient de quelques microbecquerels par mètre cube d'air. Des concentrations beaucoup trop faibles pour présenter un risque sanitaire.

Différentes hypothèses avaient été émises pour expliquer cette faible pollution à l'iode 131, dont celle de rejets accidentels provenant d'un réacteur nucléaire, industriel ou de recherche. Si la source de l'iode radioactif semble désormais identifiée, **l'incapacité des autorités nationales et internationales à la localiser rapidement reste préoccupante.**

Pierre Le Hir

## **Environment Ministry official under fire for dumping radioactive soil near home**



Environment Minister Goshi Hosono bows in apology over the dumping of radioactive soil by a ministry official, in this picture taken on Nov. 17. (Mainichi)

A Ministry of the Environment official has dumped radioactive soil on a vacant lot of land near his home in Saitama Prefecture after the soil was sent to the ministry by a Fukushima resident, it has been announced.

Environment Minister Goshi Hosono revealed during a press conference on Nov. 17 that an employee of his ministry had thrown away the soil containing radioactive materials near his home after the soil apparently collected in the city of Fukushima was sent to the ministry earlier this month. The ministry has so far received such soil twice, and the dumped soil was one of the two portions.

"It is something that should never have happened at the Environment Ministry, which is in charge of decontaminating radioactive materials. I deeply apologize to the general public," Hosono said.

According to the ministry, a cardboard box smaller than one containing A4 copy paper was sent to the ministry at around 9 a.m. on Nov. 8. Inside the box was a portion of soil wrapped in a plastic bag and a letter reading, "This soil was collected at my home in Fukushima city. I want the Environment Ministry to keep it and dispose of it," with the sender's name added. The letter also contained data on radiation dosages measured around the sender's home.

The levels of radiation emitted from the soil were 0.18 microsieverts per hour when measured 0.8 meters away and 0.6 microsieverts outside the plastic bag containing the soil. The radioactive concentration of the soil was estimated to be around 4,000 becquerels per kilogram.

When ministry officials were discussing how to dispose of the contaminated soil, the chief of the General Affairs Division of the Environment Minister's Secretariat reportedly said, "I understand the feeling of the resident who sent the soil. Since its radiation dosage is low, shall I throw it away in the garden of my house in Kashiwa, Chiba Prefecture?" Later, an employee of the same division took the soil to his home in Saitama Prefecture on Nov. 12 and dumped it on a nearby vacant land lot the following day.

After a smaller box with a content label reading "ash" was sent to the ministry apparently from the same sender on Nov. 16, the General Affairs Division reported the cases to Hosono and other high-ranking ministry officials, prompting the inappropriate soil disposal to surface. The ministry measured the radiation levels of the second box without opening it and found that the levels were about the same as those emitted from the soil in the first box.

Hosono said the ministry employee's action was extremely inappropriate and could violate a special measures law on the handling of radioactive contamination emanating from the disaster at the Fukushima No. 1 Nuclear Power Plant, which bans the dumping of contaminated soil without permission. The law will come into effect in January next year. The minister added that he is considering punishing the ministry employees concerned, including transferring the General Affairs Division chief to another section, as well as questioning his own supervisory responsibility.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 17, 2011

## **Most radioactive cesium piled up within 2 centimeters of soil surface**

Most of the radioactive cesium emitted by the crippled Fukushima No. 1 Nuclear Power Plant has piled up within two centimeters of the soil surface, the government has announced.

The Cabinet Office's Team in Charge of the Lives of Disaster Victims announced on Nov. 16 the detailed results of its survey on cesium dosage and accumulations in the soil, forests, buildings, rivers and other environments. Based on the results, the Cabinet Office has concluded that "most of the cesium can be removed if the top two centimeters of the soil is scraped away from its surface."

The survey, conducted between July and September, covered the Fukushima Prefecture town of Tomioka, which is designated as a no-go zone, and the town of Namie, which has both a no-go zone and an evacuation preparation zone. Officials said 80 to 97 percent of cesium detected in those areas' schools, parks, rice paddies and other locations was found within two centimeters of the soil surface.

In forests and orchards, cesium tended to penetrate deeper into the soil, but 68 to 88 percent of cesium still accumulated within two centimeters of the topsoil, according to the survey.

In the leaves of deciduous trees that have grown following the onset of the nuclear disaster in March, 60 to 26,000 becquerels of cesium per kilogram was detected, while the leaves of evergreen trees that have existed since before the March 11 disasters contained levels of cesium about 10 times higher than that, at 18,000 to 220,000 becquerels per kilogram. Meanwhile, fruits of trees that have grown in places with high cesium concentrations in the soil hardly bore cesium, the survey has found.

(Mainichi Japan) November 17, 2011

[http://www3.nhk.or.jp/nhkworld/english/movie/feature\\_nuclear.html](http://www3.nhk.or.jp/nhkworld/english/movie/feature_nuclear.html)

visite journalistes

## **Gov't not to permit restart of 2 reactors at Genkai plant: Edano**

TOKYO (Kyodo) -- Economy, Trade and Industry Minister Yukio Edano said Thursday the government will not allow Kyushu Electric Power Co. to restart two nuclear reactors at its Genkai power plant amid a scandal involving an attempt by the utility to misrepresent public opinion regarding the restart.

Kyushu Electric should not be allowed to resume operation of the No. 2 and 3 reactors, currently idled for regular checks, at its nuclear plant in the town of Genkai in Saga Prefecture "in view of its current governance," Edano told the Budget Committee of the House of Councillors.

Edano was referring to Kyushu Electric's campaign to mobilize employees to bombard a government-sponsored television program with e-mails in support of restarting the reactors.

A third-party panel set up by the utility to investigate the scandal concluded in late September that a remark by Saga Gov. Yasushi Furukawa prompted the utility to launch the e-mail campaign.

Kyushu Electric's Oct. 14 report to the industry ministry did not include the third-party panel's conclusion. With Edano angered by the report, the utility submitted a revised report on Wednesday that again omitted the panel's conclusion.

Kyushu Electric "has refused to accept a report it commissioned from the panel," Edano said.

(Mainichi Japan) November 18, 2011

## **Fukushima plant awaits gov't judgment over state of cold shutdown**

TOKYO (Kyodo) -- The government will declare that the crisis-hit Fukushima Daiichi nuclear power plant has achieved a cold shutdown **once it confirms that the complex can maintain stability over the next several years even if it is hit by an earthquake or suffers malfunctions**, nuclear disaster minister Goshi Hosono said Thursday.

Hosono also said he believes the melted nuclear fuel of the Nos. 1 to 3 reactors, including the portion believed to have melted through the base of the reactor pressure vessels, is being stably cooled and reiterated he believes a cold shutdown will be achieved by the end of the year as planned.

In the road map for the resolution of the crisis, which is updated every month, the government and plant operator Tokyo Electric Power Co. said not only that the temperature at the bottom of the pressure vessels of all three reactors is below 100 C, but that the temperature inside the primary containment vessels of the reactors, where part of the melted fuel may be accumulating, was between 39 C and 70 C as of Wednesday.

"There have been various discussions on whether the fuel remains inside the pressure vessels, or has dropped to the (outer) primary container...and our explanation is that we think we are able to stably cool the fuel including that inside the primary containers and the pressure vessels," Hosono said at a press conference also attended by officials from the utility known as TEPCO.

Adding to signs of further progress in restoration efforts, **the amount of radioactive substances currently leaking from the crippled reactors has further declined to a maximum of 60 million becquerels per hour**, or around a 13-millionth of the level seen in the early days of the crisis, which was triggered by the devastating March 11 earthquake and tsunami.

The estimate means a person would be exposed to up to 0.1 millisievert when standing around the plant for one year, far below the government-set target limit of 1 millisievert per year.

Realizing a cold shutdown is the key goal of the "step 2" phase of the road map, with the government defining it as a situation in which the bottom part of a reactor pressure vessel at the plant is kept below around 100 C and radiation exposure from the release of radioactive substances is significantly held down.

Hosono said the government is "cautiously" checking whether the current situation can be maintained over the medium term even if the plant experiences another earthquake, accident or malfunction.

"As there are still various risks, we're currently confirming whether appropriate measures are taken...and if we confirm that, it will be the completion of step 2," he said.

Other tasks included in the step 2 phase have almost been completed, with workers starting to build a wall along the coast to prevent water containing radioactive substances from leaking into the Pacific Ocean.

They also finished installing a covering over the No. 1 reactor on Oct. 28 as the building housing the reactor was badly damaged by a hydrogen explosion.

After the step 2 phase, the government and TEPCO aim to start removing nuclear fuel stored in the spent fuel pools of the Nos. 1 to 4 units within 2 years and the melted fuel from the Nos. 1 to 3 reactors within 10 years.

(Mainichi Japan) November 18, 2011

## **GSDF to usher radiation cleanup work in Fukushima next month**

TOKYO (Kyodo) -- Ground Self-Defense Force troops are set to be dispatched next month to clear up municipal buildings near the crisis-hit Fukushima Daiichi nuclear power plant, which will then serve as bases for a full-fledged decontamination operation from January, a government official said Friday.

Defense Minister Yasuo Ichikawa expressed his willingness for the dispatch during a morning ministerial meeting to discuss decontamination, Chief Cabinet Secretary Osamu Fujimura told a press conference, after hosting the first meeting of its kind.

The environment and defense ministries confirmed at the meeting that they will make a final arrangement on where the troops, envisioned to number about 300, will be engaged in the cleanup work after assessing data on radiation levels, he said.

The Environment Ministry has called on the GSDF to clean up the office buildings of the three towns of Namie, Tomioka and Naraha in Fukushima Prefecture, its officials said.

The decontaminated offices will serve as bases for private-sector workers who will engage from January in the removal of radioactive materials from areas affected by the country's worst nuclear disaster triggered by the March earthquake and tsunami.

The GSDF would aim to complete by the end of this year its decontamination work involving chemical corps with radiological capabilities, government officials said.

(Mainichi Japan) November 18, 2011

## **Anxieties grow about radiation costs / No clear criteria, answers from TEPCO have municipalities fearful for budgets**

Tomoaki Tomita and Tatsuya Nozaki / Yomiuri Shimbun Staff Writers

A growing number of municipalities are demanding that Tokyo Electric Power Co. compensate them for costs related to the ongoing nuclear crisis at the Fukushima No. 1 nuclear power plant.

TEPCO has specified the terms under which it will compensate companies and other entities, based on guidelines set by the government, but it has revealed no such terms for municipal governments.

On Wednesday afternoon, Mayor Yoshio Kusama of Takahagi, Ibaraki Prefecture, visited TEPCO's headquarters in Tokyo. Takahagi is about 80 kilometers from the plant.

Kusama asked the utility to pay 9.84 million yen for decontamination work conducted from June to October and the purchase of radiation dosimeters. It was the city's second such demand to TEPCO--in June, it became one of the first municipalities to seek compensation from the utility, demanding 2.05 million yen.

"I'll keep making demands until work to deal with the nuclear crisis ends. I mean until there are no more costs [for the work]," Kusama told TEPCO Managing Director Naomi Hirose, who is deputy head of a task force to support people affected by the nuclear crisis.

"I'm telling you this while repressing [my anger] to one-tenth, one-hundredth of its true level," Kusama said.

Hirose responded, "We apologize for causing difficulty," and bowed. However, he did not say whether TEPCO would pay the money.

**Municipal governments, particularly in the Tokyo metropolitan area, have increasingly requested compensation from TEPCO. As of Wednesday, at least 18 municipalities had demanded a total of 705.74 million yen.**

Hitachi-Ota, Ibaraki Prefecture, is home to the 375-meter-long Ryujin Big Suspension Bridge, the longest bridge on Honshu. About 250,000 tourists usually visit the bridge annually.

However, as bridge toll revenues from April to August declined to less than 30 percent compared with the same period last year, the city has called on TEPCO to pay 26.72 million yen in compensation.

The city of Nagareyama, Chiba Prefecture, has demanded 287.1 million yen, including 9.6 million yen to pay its employees for special work related to temporarily storing incinerated ash and other contaminated waste.

====

Costs may hit local finances

Mayor Shingo Fujii of Toride, Ibaraki Prefecture, expressed concern that the cost of handling the nuclear crisis would weigh on municipal governments' finances.

"Municipalities are implementing numerous fiscal reforms to tackle their fiscal shortage. To secure funds for measures against radiation, we have to spend reserve funds for adjusting public finances [as stipulated in the Local Finance Law]," Fujii said Tuesday when claiming compensation with three other neighboring cities.

"Unless we make up the shortfall in the reserve fund, we'll have trouble with our fiscal management from next fiscal year," Fujii said.

Despite growing demand for compensation from municipalities, however, TEPCO has yet to provide clear responses. The government's Dispute Reconciliation Committee for Nuclear Damage Compensation has drawn up compensation guidelines for the private sector, but no such moves have been made for municipal governments. Due to the lack of specific criteria, more and more municipalities have called for compensation from TEPCO.

Meanwhile, the Shizuoka city government announced in April it would allow TEPCO to use its megafloat, a floating barge, to store radiation-contaminated water from the Fukushima plant. Shizuoka is still negotiating with the company on how much it should pay for use of the barge.

The city government spent about 500 million yen to build a fishing park off Shimizu Port, using the megafloat as its base. The park drew 20,000 visitors a year but is now closed. The city is reportedly asking TEPCO to pay **hundreds of millions of yen for providing the megafloat.**

On Monday, the government of Yashio, Saitama Prefecture, appropriated about 40.98 million yen in its supplementary budget to cover the cost of such work as decontaminating school grounds and parks. The city is unlikely to be designated a contaminated area entitled to government aid, but Yashio Mayor Shigemi Tada said, "I want TEPCO to pay for everything."

====

Unclear picture

The Fukushima prefectural government also reportedly intends to demand TEPCO pay costs related to dealing with the nuclear crisis. The crisis has led the prefecture to conduct a broad array of work, from decontamination over a wide area to health checks. But the prefectural government has yet to figure out the total amount needed to handle the crisis, as well as how much government aid it could receive.

"We don't know to what extent we can seek compensation, so we have no clear prospects," said an official of the prefectural government section handling nuclear damage.

In early September, Kawamatamachi in the prefecture demanded TEPCO pay some of costs for decontaminating soil in school grounds. Part of Kawamatamachi has been designated as an expanded evacuation area.

"We made the demand to **express the fact that municipalities are also victims** [of the nuclear crisis]," a town government official said.

(Nov. 18, 2011)

## **News Navigator: How is the provisional radiation limit for food determined?**

The government on Nov. 17 ordered the Fukushima Prefectural Government to suspend shipments of rice harvested in the prefecture's Onami district after levels of radioactive cesium exceeding the provisional limit were detected. Below are questions and answers relating to the provisional limit and the safety of contaminated products.

Question: What exactly is the provisional limit?

Answer: It is a limit established by the Ministry of Health, Labor and Welfare to regulate the sale of food products contaminated by radioactive materials. In the case of radioactive iodine, food is divided into four categories when determining the limit, while for radioactive cesium, there are five categories.

Q: How is the limit determined?

A: Radioactive materials have half-lives -- the time it takes for half of the atoms in a radioactive substance to undergo decay. Assuming that a product has been contaminated at one stage, the fact that the radioactivity in food decreases over time is taken into consideration to work out the yearly intake from eating this food, and this is set below a certain limit. If a person continued to eat food on the verge of the provisional limit day after day, they would go over the intake limit.

When considering the effects on the human body, the unit of becquerels, which indicates the strength of the radioactive material, is converted into millisieverts, which measures the radioactive dose equivalent. **The yearly intake level for radioactive iodine is 50 millisieverts, while the limit for cesium is 5 millisieverts per year.**

文部科学省がこれまでに測定してきた各地のセシウム134, 137の注着量の合計



A screen capture of a map released on Nov. 11 by the Ministry of Education, Culture, Sports, Science and Technology displaying accumulated radioactive cesium levels in eastern Japan. (Mainichi)

Q: Is it safe to eat the rice from Fukushima that was found to exceed the provisional limit?

A: This time cesium with radioactivity of 630 becquerels per kilogram was detected in unpolished rice. The half-life of cesium is about 30 years. By polishing the rice, about 60 percent of the radioactive materials could be removed, thereby bringing the level of radioactivity under the provisional limit. The Ministry of Health, Labor and Welfare says a person's health would not immediately be affected even if they ate the rice every day. Radioactive iodine, which has a half-life of about eight days, would hardly be detected at all. In estimating the concentration of radioactive materials in food, the concentration of radioactive materials in the ground and animal feed is first multiplied by the coefficient for the transition of radioactive materials into particular foods. This figure is then multiplied by a conversion coefficient, which is highest for infants. For children aged between 3 and 7, who have highly active metabolisms, the figure is smaller than that for adults.

The Ministry of Health, Labor and Welfare **plans to set a strict yearly intake level for cesium of 1 millisievert per year by around April next year, and establish new limits.**

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 18, 2011

## **Fukushima begins model decontamination project in no-entry zones**

FUKUSHIMA -- A model decontamination project to work out specific methods for cleaning up areas tainted by radioactive materials from the Fukushima No. 1 nuclear power plant began here on Nov. 18.

Starting from Okuma, which is host to the damaged nuclear plant, the government began measuring the amount of radiation in one or two areas designated for the model project in a total of 12 municipalities near the plant.

The collected data will be used for decontamination operations in all affected areas in the prefecture, as well as to measure the decontamination effects after the clean-up operations are completed.

The first examined location for the project was a residential area near Okuma town hall. Approximately 30 workers measured radiation levels on the ground surface and at one centimeter and at one meter above the ground in each 10-meter-square section.

Radiation data was also gathered at approximately 100 other locations in the area considered as possible "hot spots," such as under trees and shrubs.

According to the Japan Atomic Energy Agency (JAEA), the highest radiation level measured within the area on that day was 43.4 microsieverts per hour.

The pre-decontamination monitoring will continue until around Nov. 20, followed by the first decontamination operations of the area planned to start within November, the JAEA said.

"We hope to begin using the data gathered from this project for decontamination operations as soon as possible so that people who lived within the no-entry zones can freely return to their homes," said Satoshi Takayama, Parliamentary Secretary of the Environment, who partially observed the project operations on Nov. 18.

 [Click here for the original Japanese story](#)

## **Arabs push nuke energy despite Fukushima**

Published: Nov. 18, 2011 at 1:29 PM - [http://www.upi.com/Business\\_News/Energy-Resources/2011/11/18/Arabs-push-nuke-energy-despite-Fukushima/UPI-90311321640943/](http://www.upi.com/Business_News/Energy-Resources/2011/11/18/Arabs-push-nuke-energy-despite-Fukushima/UPI-90311321640943/)

DUBAI, United Arab Emirates, Nov. 18 (UPI) -- Most Arab states have shrugged off the political and environmental fallout from the March 11 Fukushima disaster in Japan and are pushing ahead with nuclear energy programs.

Kuwait, Bahrain and Egypt have stalled their plans because of heightened safety concerns triggered by the Fukushima meltdown caused by a 9-magnitude earthquake and a 49-foot tsunami.

**But they have also been hit by the pro-democracy uprisings that have plunged the Arab world into political turmoil and an uncertain future.**

**It's not clear when, or even if, they might revive their nuclear plans.**

But Arab countries that had already launched their nuclear energy programs, such as Saudi Arabia and the United Arab Emirates, are pressing ahead.

Eight months after the Fukushima meltdown, "the impact of the crisis on nuclear power plans in the Middle East and North Africa region is becoming clear," the Middle East Economic Digest reported this month.

"Countries that had already begun to develop nuclear power plants have largely stayed on track ...

"In contrast, countries that rushed to announce new plans in 2010 have been forced to reassess due to the Fukushima disaster," MEED reported.

Leading the way is Saudi Arabia, the world's leading oil producer which fears that by 2020 its oil output will be entirely consumed domestically to fuel power generation.

Right now, the kingdom is producing more than 8 million barrels per day, two-thirds of its total capacity.

Some economists say that if the current energy consumption growth rate of 7 percent continues, within 20 years the kingdom will burn the equivalent of almost all of its recent daily output.

Others have lower projections which the Saudis consider to be more accurate, although the forecasts remain dire.

In 2010, Khalid al-Falih, CEO of the state-owned Saudi Arabian Oil Co., known as Aramco, warned that if left unchecked domestic energy consumption would drain 3 million bpd from crude oil available for export by 2028, cutting of the country's economic lifeline.

At present Saudi Arabia's spare production capacity, which accounts for most of the spare capacity by 12-member Organization of Petroleum Exporting Countries, is vital for countering disruptions to oil supplies around the globe.

Without that capability to keep down oil prices when necessary, the world could be battered by serious oil crises initiated by radical states like Iran and Venezuela.

Prince Turki Al-Faisal, Saudi Arabia's former intelligence chief and later ambassador to Washington, said in September the kingdom plans to spend more than \$100 billion to build 16 nuclear reactors to meet its growing domestic energy needs driven by rapid population growth and economic development.

"After 10 years, we'll have the first two reactors," said Abdul Ghaini bin Melaibari, coordinator of scientific collaboration at King Abdallah City for Atomic and Renewable Energy, known as Ka-Care, set up in 2010 to formulate nuclear policy.

"After that, every year we'll establish two, until we have 16 of them by 2030."

On Tuesday, Riyadh signed an accord with South Korea to cooperate in developing nuclear power.

It signed similar pacts with France and Argentina earlier this year and is currently negotiating with the United States, Britain, China and Russia.

Korea Electric Power Corp. won a \$20 billion contract in December 2009 to build four nuclear plants with a combined capacity of 5,600 megawatts in the United Arab Emirates, another major oil producer facing swelling domestic energy demands, to be ready in 2017-20.

That would make the emirates the first Arab state, like Saudi Arabia an important U.S ally, with atomic power.

Emirates authorities forecast that national peak electricity demand will rise to more than 40,000MW by 2020. Only 20,000-25,000MW can be generated using domestic reserves of natural gas.

All told, 13 countries across the Middle East have announced plans for nuclear power stations, or revived old plans, since 2006.

Despite the vast hydrocarbon reserves held by Saudi Arabia and the other Persian Gulf producers, virtually every Middle Eastern state faces gas shortages as their populations grow, economies expand and energy consumption soars.

Jordan, a desert kingdom with few resources, is also sticking to its plans to establish a nuclear power project.

Its Atomic Energy Commission has taken bids from several companies, most notably Areva of France and Mitsubishi of Japan, to build a nuclear plant.

Read more: [http://www.upi.com/Business\\_News/Energy-Resources/2011/11/18/Arabs-push-nuke-energy-despite-Fukushima/UPI-90311321640943/#ixzz1eAZTbVIM](http://www.upi.com/Business_News/Energy-Resources/2011/11/18/Arabs-push-nuke-energy-despite-Fukushima/UPI-90311321640943/#ixzz1eAZTbVIM)

(Mainichi Japan) November 19, 2011

## **Fukushima radiation meters fail gov't accuracy requirements**



A radiation meter made by Alpha Tsushin K.K. (Photo courtesy of the Ministry of Education, Culture, Sports, Science and Technology)

**Radiation meters installed at parks and primary schools across Fukushima Prefecture do not meet the central government's minimum accuracy requirements**, it was learned on Nov. 18.

The Ministry of Education, Culture, Sports, Science and Technology cancelled its contract with the meters' supplier the same day. The ministry will begin removing the 600 devices soon, **and reopen bidding on the radiation meter contract**. The meters were scheduled to start operating in October, but that has now been **pushed back to February next year at the earliest**.

According to the ministry, five firms bid on the meter supply contract in July, won by Tokyo-based telecommunications equipment firm **Alpha Tsushin K.K.** for some **370 million yen**. The contract requirements demanded that radiation measurements be accurate to within plus or minus 20 percent, but soon after they were installed in October the ministry discovered the meter readings were off by as much as 40 percent.

The science ministry intends to demand compensation from Alpha Tsushin for breach of contract.

A public relations official with the company told the Mainichi, "There are many points on which we cannot agree with the cancellation of the contract."

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 19, 2011

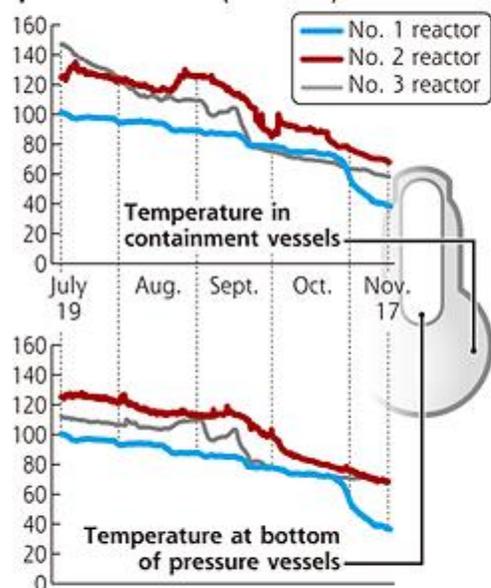
## **N-plant cold shutdown possible this year**

The Yomiuri Shimbun

<http://www.yomiuri.co.jp/dy/national/T111118006292.htm>

## Step 2 tasks and achievements

Temperature changes in containment, pressure vessels (in Celsius)



Tasks		Goals	Current situation
<b>Cooling fuel</b>	Reactors	Cold shutdown	Not achieved
	Storage pools for spent fuel	More stable cooling	Achieved in Oct.
<b>Containing discharge of radioactive substances</b>	Polluted water	Reduction of quantity	Achieved in Oct.
	Groundwater	Preventing spread of seawater pollution	Achieved in Nov.
	Air, soil	Containing dispersal	Achieved in Nov.
<b>Measurement, decontamination</b>	Measuring, reducing and announcing radioactive emissions	Reducing emissions to sufficiently low levels	Achieved in Nov.
<b>Protection against aftershocks</b>	Anti-tsunami measures, reinforcement of buildings	Prevention of further damage	Achieved in Oct.
<b>Improving workers' circumstances</b>	Living, workplace conditions	Improvement	Not achieved
	Radiation control, medical care	Improvement of health care	Not achieved
	Training, deploying workers	Organized training and deploying of workers to measure radioactive emissions and perform other key tasks	Not achieved

The government and Tokyo Electric Power Co. have released a revised timetable for containing the crisis at the Fukushima No. 1 nuclear power plant, saying cold shutdown of the reactors can be achieved by the end of the year.

The government and TEPCO on Thursday also made their first announcement of a confirmed annual radiation level at the perimeter of the plant grounds. The most recent data shows the radiation level at 0.1 millisievert per year.

Step 2 of the timetable set a target of 1 millisievert per year as a condition of cold shutdown, and this important figure has now been confirmed.

Though continual monitoring will be necessary to determine if cold reactor stability can be maintained, Goshi Hosono, state minister in charge of the nuclear crisis, said, "Achieving cold shutdown within the year is possible."

To achieve cold shutdown, two conditions need to be fulfilled: reduction of the quantity of radioactive material discharged by the reactors, and keeping the temperature at the bottom of the pressure vessels at 100 C or lower.

The quantity of discharged radioactive materials has fallen about 40 percent from last month to 60 million becquerels per hour.

This represents one-thirteen millionth of the about 800 trillion becquerels immediately following the accident.

Because measurement accuracy has improved, the most recent figures released are confirmed rather than interim.

The temperature target has also been reached, with Thursday's temperatures reading 37 C in the No. 1 reactor and 68 C in the Nos. 2 and 3 reactors.

Regarding the containment vessels containing melted fuel, TEPCO said the temperature of the vessels had steadily dropped. The temperatures of the Nos. 1, 2 and 3 containment vessels were 38 C, 70 C and 58 C, respectively.

TEPCO stressed the entire reactor system, including the containment vessels, has been cooled.

However the condition of the melted nuclear fuel in the pressure and containment vessels is still unknown. Checking the condition remains a key task.

As work progressed on Step 2, three task categories--groundwater radiation measurement, containing the dispersal of radioactive material into the air and soil, and measurement and reduction of radiation levels--were achieved. Of the 10 task categories, six have now been completed.

The remaining categories are achieving cold shutdown, improving health care for plant workers and other ongoing tasks.

TEPCO aims to begin full-scale work to decommission the reactors after Step 2 is completed. TEPCO plans to formulate a technical timetable in cooperation with the government by the end of this year.

(Nov. 19, 2011)

## **N-fuel conditions unclear**

Tatsuo Nakajima / Yomiuri Shimbun Staff Writer

The latest timetable for bringing a nuclear fuel meltdown at the Fukushima No. 1 nuclear power plant under control shows the situation is no longer in the critical condition it was immediately following the accident, but many issues remain unsolved.

The government and Tokyo Electric Power Co. have revised the timetable for the seventh time in the eight months since the crisis began. Data suggests the reactors and radioactive material are under control, and the power plant will achieve a cold shutdown once required conditions are confirmed.

However, **the status of the molten nuclear fuel is unclear. It is not known how the fuel, believed to have partially melted through pressure vessels of the reactors and into containment vessels, has dispersed and how much lies in water.**

It is questionable to assess the situation as nearly a cold shutdown. **Usually, to achieve a cold shutdown, all fuel rods should be cooled under water, and nuclear fuel, pressure and containment vessels should be intact and in good condition.**

The situation at the nuclear plant does not meet this definition. Is it appropriate for the government and TEPCO to call the current status nearly a cold shutdown?

On Nov. 2, TEPCO said a small-scale recriticality incident--in which nuclear fuel achieves a fission chain reaction--may have taken place at the No. 2 reactor of the power plant, creating a small panic. The company later said xenon discovered at the plant was the result of spontaneous fission, not a nuclear chain reaction known as recriticality as had been feared.

TEPCO should have been able to coolly handle the detection of xenon, but it failed to do so as it had not properly prepared necessary data. **These matters should not be dealt with in a hurried and sloppy manner as the end of the year, the target for achieving cold shutdown, approaches.**

There are many other unsolved issues, including **how to cope with contaminated water said to be accumulating at a rate of 200 to 500 tons a day in underground areas of the reactor buildings.** The government and TEPCO must thoroughly solve these issues without being bound by their timetable.

(Nov. 19, 2011)

## **Nuclear disaster drills held near Genkai plant**

Two prefectures have held major preparedness drills that assume an accident at the Genkai nuclear power plant in western Japan.

Sunday's exercises were the first comprehensive nuclear disaster drills held by prefectural governments since the accident at the Fukushima Daiichi plant in March.

In Saga Prefecture, the drill was based on the scenario that an earthquake caused an automatic shutdown of 2 reactors, triggering a total loss of power at the plant and possible leakage of radioactive substances.

Workers at the nuclear plant practiced restoring the supply of electricity using generator vehicles acquired after the Fukushima accident. A record-high number of people -- about 25,000 -- took part in the drill.

The other drill in the adjacent prefecture of Nagasaki simulated a scenario in which a quake caused a leakage of nuclear materials.

The prefecture expanded the evacuation zone to areas within 30 kilometers of the plant from 10 kilometers in previous drills.

On the small island of Takashima, which lies entirely within 30 kilometers of the plant, all of the more than 2,300 residents evacuated by bus, going over a bridge to the mainland, or by ship.

But the bridge could be blocked if evacuation orders are issued to areas within 10 kilometers of the plant. In such an event, the authorities would have to prepare many ships for the evacuation effort.

Sunday, November 20, 2011 14:49 +0900 (JST)

## No-entry zone cleanup begins / Many challenges loom in 1st decontamination efforts in area

The Yomiuri Shimbun



Workers in protective gear measure radiation levels in Okumamachi, Fukushima Prefecture, on Friday.

FUKUSHIMA--The government has begun a model decontamination project in Okumamachi, Fukushima Prefecture, located within the no-entry zone surrounding the crippled Fukushima No. 1 nuclear power plant.

Launched Friday, the project aims to establish effective decontamination and safety measures for workers. The operation is scheduled to be carried out in turn at 12 municipalities in the government-designated no-entry and expanded evacuation zones.

This is the first time that decontamination work has been carried out in the no-entry zone. **Based on the results of the model project, the government plans to start full-scale decontamination work in January.**

The model project is the first step toward realizing the return of residents of the no-entry zone to their homes. However, numerous tasks lie ahead in **decontaminating vast areas with unprecedentedly high levels of radiation.**

The operation began with measuring radiation levels in the area to be decontaminated. Workers in protective clothing, masks and goggles measured radiation levels in groups of four.

"It's 22.04 microsieverts at one centimeter above the ground," said a worker at the plaza in front of the town office of Okumamachi, about five kilometers southwest of the nuclear power plant. "It's 15.29 microsieverts at one meter above the ground," another said.

The radiation level in the area was about 20 microsieverts per hour. An official of the Japan Atomic Energy Agency, which was commissioned to do the work by the government, said, "[Radiation levels here] are one digit higher than in Fukushima and Date, where decontamination work has already started."

However, **the official believes the decontamination measures taken in Fukushima and Date will not be enough to lower radiation levels in these areas.**

Various methods are expected to be tried in the model project. One is using a circulation system: Areas are first cleaned by spraying warm water at high pressure, and the water is then collected, decontaminated and reused for a second round of high-pressure cleaning.

Another key problem is **how to keep down workers' radiation exposure.** The atomic energy agency is considering using gloves and aprons made with radiation-resistant lead.

**Securing temporary storage sites for the contaminated soil and chunks of asphalt** that will be produced during decontamination is also a difficult problem.

Atsuyuki Suzuki, the agency's head director, told reporters Friday: "If we use a lot of time and manpower, radiation levels will fall, but this will delay residents' return to their homes. As for temporary storage sites, all we can do is persistently seek people's cooperation."

(Nov. 20, 2011)

## **Future cancers from Fukushima plant may be hidden**



In this Nov. 12, 2011 file photo, workers in protective suits and masks wait to enter the emergency operation center at the crippled Fukushima No. 1 nuclear power station in Okuma, Japan. (AP Photo/David Guttenfelder)

FUKUSHIMA, Japan (AP) -- Even if the worst nuclear accident in 25 years leads to many people developing cancer, we may never find out.

Looking back on those early days of radiation horror, that may sound implausible.

But the ordinary rate of cancer is so high, and our understanding of the effects of radiation exposure so limited, that any increase in cases from the Fukushima nuclear plant disaster may be undetectable.

Several experts inside and outside Japan told The Associated Press that cancers caused by the radiation may be too few to show up in large population studies, like the long-term survey just getting under way in Fukushima.

That could mean thousands of cancers under the radar in a study of millions of people, or it could be virtually none. Some of the dozen experts the AP interviewed said they believe radiation doses most Japanese people have gotten fall in a "low-dose" range, where the effect on cancer remains unclear.

The cancer risk may be absent, or just too small to detect, said Dr. Fred Mettler, a radiologist who led an international study of health effects from the 1986 Chernobyl disaster.

That's partly because cancer is one of the top killers of people in industrialized nations. Odds are high that if you live long enough, you will die of cancer. The average lifetime cancer risk is about 40 percent.

In any case, the 2 million residents of Fukushima Prefecture, targeted in the new, 30-year survey, probably got too little radiation to have a noticeable effect on cancer rates, said Seiji Yasumura of the state-run Fukushima Medical University. Yasumura is helping run the project.

"I think he's right," as long as authorities limit children's future exposure to the radiation, said Richard Wakeford, a visiting epidemiology professor at the Dalton Nuclear Institute at the University of Manchester in England. Wakeford, who's also editor of the Journal of Radiological Protection, said he's assuming that the encouraging data he's seen on the risk for thyroid cancer is correct.

The idea that Fukushima-related cancers may go undetected gives no comfort to Edwin Lyman, a physicist and senior scientist with the Union of Concerned Scientists, a group that advocates for nuclear safety. He said that even if cancers don't turn up in population studies, that "doesn't mean the cancers aren't there, and it doesn't mean it doesn't matter."

"I think that a prediction of thousands of cancer deaths as a result of the radiation from Fukushima is not out of line," Lyman said. But he stressed that authorities can do a lot to limit the toll by reducing future exposure to the radiation. That could mean expensive decontamination projects, large areas of condemned land and people never returning home, he said. "There's some difficult choices ahead."

Japan's Cabinet this month endorsed a plan to cut contamination levels in half within the next two years. The government recently announced it plans to study the risk from long-term exposure to the low-dose radiation level used as a trigger for evacuations.

The plant was damaged March 11 by a tsunami triggered by a magnitude-9 earthquake. Japanese authorities estimate it leaked about one-sixth as much radiation as the Chernobyl accident. It spewed radioactive materials like iodine-131, cesium-137 and 29 others contaminating the water, soil, forests and crops for miles around. A recent study suggested that emissions of cesium-137, were in fact twice what the government has estimated.

So far, no radiation-linked death or sickness has been reported in either citizens or workers who are shutting down the plant.

And a preliminary survey of 3,373 evacuees from the 10 towns closest to the plant this summer showed their estimated internal exposure doses over the next several decades would be far below levels officials deem harmful.

But while the Fukushima disaster has faded from world headlines, many Japanese remain concerned about their long-term health. And many don't trust reassurances from government scientists like Yasumura, of the Fukushima survey.

Many consumers worry about the safety of food from Fukushima and surrounding prefectures, although produce and fish found to be above government-set limits for contamination have been barred from the market. For example, mushrooms harvested in and around Fukushima are frequently found to be contaminated and barred from market. Controversy has also erupted around the government's choice of a maximum allowed level for internal radiation exposure from food.

Fukushima has distributed radiation monitors to 280,000 children at its elementary and junior high schools. Many children are allowed to play outside only two or three hours a day. Schools have removed topsoil on the playgrounds to reduce the dose, and the Education Ministry provided radiation handbooks for teachers. Thousands of children have been moved out of Fukushima since the March disasters, mainly due to radiation fears.

Many parents and concerned citizens in and around Fukushima, some even as far as Tokyo, carry Geiger counters for daily measurement of radiation levels in their neighborhoods, especially near schools and kindergartens. The devices are probably one of the most popular electronics gadgets across Japan these days. People can rent them at DVD shops or drug stores in Fukushima, while many Internet rental businesses specializing in Geiger counters also have emerged.

Citizens groups are also setting up radiation measuring centers where people can submit vegetables, milk or other foods for tests. Some people are turning to traditional Japanese diet -- pickled plum, miso soup and brown rice -- based on a belief that it boosts the immune system.

"I try what I believe is the best, because I don't trust the government any more," says Chieko Shiina, who has turned to that diet. The 65-year-old Fukushima farmer had to close a small Japanese-style inn due to the nuclear crisis.

She thinks leaving Fukushima would be safer but says there is nowhere else to go.

"I know we continue to be irradiated, even right at this moment. I know it would be best just to leave Fukushima," she said.

Yuka Saito, a mother of four who lives in a Fukushima neighborhood where the evacuation order was recently lifted, said she and her three youngest children spent the summer in Hokkaido to get away from the radiation. She tells her children, ages 6 to 15, to wear medical masks, long-sleeved shirts and a hat whenever they go out, and not to play outside.

She still avoids drinking tap water and keeps a daily log of her own radiation monitoring around the house, kindergarten and schools her children attend.

"We Fukushima people are exposed to radiation more than anyone else outside the prefecture, but we just have to do our best to cope," she said. "We cannot stay inside the house forever."

Japanese officials say mental health problems caused by excessive fear of radiation are prevalent and posing a bigger problem than actual risk of cancer caused by radiation.

But what kind of cancer risks do the Japanese really face?

**Information on actual radiation exposures for individuals is scarce**, and some experts say they can't draw any conclusions yet about risk to the population.

But Michiaki Kai, professor of environmental health at Oita University of Nursing and Health Sciences, said that based on tests he's seen on people and their exposure levels, nobody in Fukushima except for some plant workers has been exposed to harmful levels of radiation.

Radiation generally raises cancer risk in proportion to its amount. At low-dose exposures, many experts and regulators embrace the idea that this still holds true. But other experts say direct evidence for that is lacking, and that it's not clear whether such small doses raise cancer risk at all.

"Nobody knows the answer to that question," says Mettler, an emeritus professor of radiology at the University of New Mexico and the U.S. representative to the United Nations Scientific Committee on the Effects of Atomic Radiation, or UNSCEAR. If such low doses do produce cancers, they'd be too few to be detected against the backdrop of normal cancer rates, he said.

To an individual the question may have little meaning, since it deals with the difference between no risk and small risk. For example, the general population was told to evacuate areas that would expose them to more than 20 millisieverts a year. A millisievert measures radiation dose and 20 mSv is about seven times the average dose of background radiation Americans get in a year. A child exposed to 20 mSv for a year would face a calculated risk of about 1 in 400 of getting cancer someday as a result, says David Brenner of Columbia University. So that would add 0.25 percent onto the typical lifetime cancer risk of about 40 percent, he said.

And the average dose among the 14,385 workers who worked on the plant through July was 8 mSv, according to the Japanese government. The average lifetime risk of cancer to an individual from that dose alone would be calculated at about 0.05 percent, or 1 in 2,000, Brenner said.

Brenner stresses that such calculations are uncertain because **scientists know so little about the effects of such small doses of radiation**.

But in assessing the Fukushima disaster's effect on populations, the low-dose question leads to another: If a lot of people are each exposed to a low dose, can you basically multiply their individual calculated risks to forecast a number of cancers in the population?

Brenner thinks so, which is why he believes some cancers might even appear in Tokyo although each resident's risk is "pretty minuscule."

But Wolfgang Weiss, who chairs the UNSCEAR radiation committee, said the committee considers it inappropriate to predict a certain number of cancer cases from a low-dose exposure, **because low-dose risk isn't proven.**[isn't it ?]

Nuclear accidents can cause cancer of the thyroid gland, which can absorb radioactive iodine and become cancerous. That disease is highly treatable and rarely fatal.

After the Chernobyl disaster, some 6,000 children exposed to radioactive fallout later developed thyroid cancer. Experts blame contaminated milk. But the thyroid threat was apparently reduced in Japan, where authorities closely monitored dairy radiation levels, and children are not big milk drinkers anyway.

Still, the new Fukushima survey will check the thyroids of some 360,000 young people under age 18, with follow-ups planned every five years throughout their lifetimes. It will also track women who were pregnant early in the crisis, do checkups focused on mental health and lifestyle-related illnesses for evacuees and others from around the evacuation zone, and ask residents to fill out a 12-page questionnaire to assess their radiation exposure during the first weeks of the crisis.

But the survey organizers are having trouble getting responses, partly because of address changes. As of mid-October, less than half the residents had responded to the health questionnaire.

Some residents are skeptical about the survey's objectivity because of **mistrust toward the government, which repeatedly delayed disclosing key data and which revised evacuation zones and safety standards after the accident. Also, the government's nuclear safety commission recommended use of iodine tablets but none of the residents received them just before or during evacuation, when the preventive medicine would have been most effective.**

Some wonder if the study is using them as human guinea pigs to examine the impact of radiation on humans.

Eisuke Matsui, a lung cancer specialist and a former associate professor at Gifu University School of Medicine, criticized the project. He said it appears to largely ignore potential radiation-induced health risks like diabetes, cataracts and heart problems that have been hinted at by some studies of Chernobyl.

"If thyroid cancer is virtually the only abnormality on which they are focusing, I must say there is a big question mark over the reliability of this survey," he said.

He also suggested sampling hair, clipped nails and fallen baby teeth to test for radioactive isotopes such as strontium that are undetectable by the survey's current approach.

"We should check as many potential problems as possible," Matsui said.

Yasumura acknowledges the main purpose of his study is "to relieve radiation fears." But Matsui says he has a problem with that.

"A health survey should be a start," Matsui says, "not a goal."

Tatsuhiko Kodama, head of the Radioisotope Center at the University of Tokyo, urged quick action to determine the cancer risks.

He said big population surveys and analysis will take so long that it would make more sense to run a careful simulation of radiation exposures and do anything possible to reduce the risks.

"Our responsibility is to tell the people now what possible risks may be to their health," he said.

(Mainichi Japan) November 20, 2011

## Les Japonaises unies contre les mensonges d'Etat

*Le Monde* | 22.11.11 | 13h30 • Mis à jour le 22.11.11 | 20h43

Elles sont en première ligne. Actives au sein d'associations et d'ONG oeuvrant pour la prise en charge des personnes âgées, pour l'éducation, pour la défense de l'environnement ou pour la sécurité alimentaire, les Japonaises animent une solidarité locale exprimée lors de la plus grande manifestation antinucléaire, le 19 septembre à Tokyo.

La majorité des participants était des femmes. Un millier d'entre elles, venues de Fukushima, manifestaient à nouveau le 29 octobre dans les rues de Tokyo pour demander des mesures de protection de leurs enfants, protester contre la collusion de l'administration et des intérêts privés pour minimiser un danger mal évalué, et rappeler les valeurs que l'Etat est censé défendre, à commencer par la protection de la population.

La diffusion de cartes des dépôts de matières radioactives, d'inquiétantes mesures de radiation réalisées plus ou moins officiellement, des informations comme la leucémie aiguë contractée par Norikazu Otsuka, présentateur de la télé qui consommait en direct des produits de la préfecture de Fukushima, alimentent la méfiance des mères japonaises qui n'ont souvent qu'un seul désir : déménager.

*"Je n'ai aucune confiance dans ce que dit le gouvernement, confie Kozue Nogami, dont la petite fille est à l'école primaire à Tokyo. Ni dans les médias qui ne font que reprendre le discours officiel."* Ce qui les retient : l'emploi du mari, le prêt pour la maison familiale.

Contraintes de se débrouiller, ces mères créent des blogs pour échanger les informations ou font leurs courses sur Internet, où elles trouvent des produits venant de l'ouest du Japon, présumés plus sûrs. M<sup>me</sup> Nogami, dont le budget alimentaire a augmenté de 15 000 yens (145 euros) par mois, oblige sa fille à apporter une gourde d'eau à l'école. Elle aimerait que cette dernière puisse aussi apporter son bento (plateau-repas) pour ne pas avoir à manger à la cantine, mais le proviseur n'y est pas favorable.

Ces gestes simples se heurtent souvent au mur des conventions sociales japonaises, très normatives. Le ministère de l'éducation véhicule l'idée que rien ne prouve l'impact direct des radiations sur la santé. *"Tout va bien, ne vous inquiétez pas"* est le discours martelé par les autorités et les médias, que les mères ne veulent pas entendre.

Leur mobilisation leur a permis d'obtenir des concessions, comme l'indication de l'origine des aliments - dont la plupart viennent de l'Est et du Nord - et des mesures de radiation dans les écoles.

Chez celles, majoritaires, qui suivent le discours officiel, il suffit de peu pour faire surgir la crainte. *"Nous n'avons aucune info*, dit une résidente de l'arrondissement de Nakano, proche de celui de Setagaya où de hauts niveaux de radiation ont été relevés. *Mes fils mangent à l'école mais je suis inquiète."*

Les initiatives des mères tokyoïtes prennent une autre dimension chez celles de la préfecture de Fukushima. Là, plusieurs font état de symptômes inquiétants chez les enfants : saignements de nez, diarrhées, inflammation de la thyroïde. Ecologiste pratiquant l'agriculture biologique à Kawamata, à 35 km de la centrale accidentée, Sachiko Sato, mère de quatre enfants et activiste du Réseau pour sauver les enfants des radiations, souligne le *"fossé entre ceux qui ont quitté la région et ceux qui sont restés"*. Ce qui est son cas : elle a envoyé ses enfants dans une autre ville, mais n'a pas quitté sa maison. *"La région de Fukushima est un champ de bataille entre ceux qui ont la folie de penser qu'ils peuvent dominer la nature et ceux qui la chérissent"*, dit-elle.

M<sup>me</sup> Sato juge insuffisantes les mesures de surveillance périodique des enfants par une échographie de la thyroïde. Comme beaucoup de Japonais, elle accuse l'Etat d'utiliser les 2 millions d'habitants du département de Fukushima comme cobayes pour collecter des données, tout en affirmant qu'il n'y a pas de danger. **Les dosimètres donnés aux enfants ne sont pas nominatifs. Les données rassemblées servent à établir des taux moyens pour la région.**

Les victimes de la catastrophe nucléaire se sentent dans la position de celles des victimes des bombardements d'Hiroshima et de Nagasaki en 1945, avance M<sup>me</sup> Mari Takenouchi, membre de l'Association des atomisés, qui rassemble des victimes du nucléaire depuis Hiroshima jusqu'à Fukushima.

Jusqu'au traité de San Francisco de 1952 qui rendit sa souveraineté au Japon et *"conformément aux ordres du général MacArthur, commandant des forces d'occupation"*, le sort des atomisés *"est resté un secret militaire"* et *"il était interdit aux médecins japonais de les examiner"*, rappelle le docteur Shuntaro Hida, 94 ans, qui était médecin à l'hôpital militaire d'Hiroshima et a miraculeusement survécu. *"A la suite de l'accident de Fukushima, ajoute-t-il, des centaines de parents sont venus me consulter, alarmés par les saignements de nez ou les gonflements de la thyroïde de leurs enfants. Je ne savais quoi leur dire."*

Au-delà du politique, les demandes des Japonaises portent le débat sur le terrain émotionnel plus fondamental du droit à la vie, analyse l'anthropologue David Slater de l'université Sophia à Tokyo. C'est sur ce terrain que se plaçait déjà Michiko Ishimure, institutrice à Minamata, victime dans les années 1950-1960 d'une intoxication au mercure déversé dans la mer, qui fit des milliers de morts et d'enfants handicapés. Par ses livres mêlant romanesque, poésie et journal intime, elle contribua à une lente prise de conscience de cette dramatique pollution industrielle. *"A Minamata se sont heurtés deux mondes : celui de pêcheurs qui vivaient en symbiose avec la nature et un autre pour lequel la nature n'était qu'un objet à asservir"*, disait-elle.

Un demi-siècle plus tard, avec l'image du *"champ de bataille"* qu'est devenue la belle région de Fukushima (probablement rayée de la carte pour des décennies), Sachiko Sato fait le même triste

constat. Aucune leçon n'a été tirée d'un drame révélateur des risques que la course à la rentabilité faisait courir à une population.

Philippe Pons et Philippe Mesmer

## **Emergency condenser at Fukushima plant may not have fully run after tsunami**

An emergency cooling condenser at the Fukushima No. 1 Nuclear Power Plant appears to have only partially run after the loss of all external power sources caused by the March 11 tsunami, the plant's operator said.

There are two systems comprising the "isolation condenser (IC)," which is meant to cool down steam in a nuclear reactor in time of emergency, according to plant operator Tokyo Electric Power Co. (TEPCO).

When employees examined the plant on Oct. 18, the levels of coolant in the two systems in the plant's No. 1 reactor were at 65 percent and 85 percent. The coolant evaporates in the process of heat exchange.

Noting that water has not been supplied to either of the systems since the disasters on March 11, TEPCO officials said they suspect that the IC in the No. 1 reactor functioned only at a limited level or over a short period.

As to the cause of the suspected malfunctioning, TEPCO suggested that hydrogen generated by damaged nuclear fuel may have gathered in the piping, causing the IC's heat removal efficiency to decline. During the inspection on Oct. 18, the workers found no damage to the IC in the No. 1 reactor.

A high-ranking official of TEPCO said the IC would not have prevented the damage in the reactor even if it had functioned properly.

"Even if the IC had been working, it could have only delayed the damage to the reactor core a little bit. It wouldn't have been a fundamental solution," said Junichi Matsumoto, head of TEPCO's nuclear power division.

It is believed that after the IC was automatically activated in response to the earthquake, a worker manually stopped it and then restarted it.

The government's accident investigation panel is investigating to see if the IC was properly operated and if it functioned properly.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 23, 2011

## **TEPCO gets 120 bil. yen as government insurance over nuclear crisis**

TOKYO (Kyodo) -- Tokyo Electric Power Co., operator of the crisis-stricken Fukushima Daiichi power plant, said Tuesday **it has received 120 billion yen from the government under an existing insurance program for nuclear accidents.**

The funds will be used by the company to pay massive compensation to people and companies affected by the world's worst nuclear accident in 25 years. The utility, known as **TEPCO, has separately received 558.7 billion yen from a state-backed funding entity.**

TEPCO submitted a request on Oct. 24 for the payment of 120 billion yen, the maximum compensation amount set by a contract between the government and TEPCO for an accident at one nuclear power plant.

"We will continue to do our best to ensure that the indemnification payment process is as convenient as possible for all applicants," the company said in a statement.

As for compensation to make up for the victims' emotional distress, sources familiar with the matter said the company plans to review the current guideline so that each of the residents around the plant who evacuated because of the crisis will be paid 100,000 yen per month beyond Sept. 1.

Under the guideline, the amount of compensation was expected to be halved to 50,000 yen per month from Sept. 1, based on the assumption that the living environment of many of the evacuees was to have improved six months after the nuclear crisis began in March.

But criticism has been growing from Fukushima Prefecture that mental distress will "rather increase if life as evacuees prolongs."

TEPCO is expected to announce the revision on Thursday, according to the sources.

(Mainichi Japan) November 23, 2011

## **New third-party council should check nuclear regulation: panel draft**

TOKYO (Kyodo) -- A government panel discussing ways to enhance Japan's nuclear safety regulation system said in a draft proposal unveiled Tuesday that **the overall handling of nuclear affairs should be checked constantly by a new third-party council consisting of people with the latest scientific knowledge.**

Membership of the council should require parliamentary approval, and, to ensure its independence, the council should not be involved in everyday matters dealt with by the new nuclear safety agency to be set up in the wake of the nuclear crisis at the Fukushima Daiichi power plant, the draft said.

"Instead...the council should stay a step away from the daily activities of the nuclear safety agency and have a function to oversee the agency's operation," it said.

During discussions held on the draft proposal, however, some members pointed out that the role, or character of the council appears to be unclear.

The proposal will be worked on in December and reflected in the country's ongoing process to launch the new nuclear safety agency under the Environment Ministry in April.

The decision to overhaul the country's nuclear regulatory system came as the government faced criticism over the Nuclear and Industrial Safety Agency, the primary nuclear regulatory body under the Economy, Trade and Industry Ministry, which promotes nuclear power.

The launch of the new agency is also aimed at rectifying the current situation in which various government organizations are involved in nuclear safety.

The new third-party council would replace the existing independent panel supervising nuclear safety regulation called the Nuclear Safety Commission.

(Mainichi Japan) November 23, 2011

## **Symposium on radiation exposure held in Hiroshima**

International nuclear experts are discussing ways to promote medical research and treatment for radiation exposure.

They opened a two-day symposium on Wednesday in Hiroshima. It is the first meeting of its kind jointly sponsored by Hiroshima Prefecture, medical organizations, and the International Atomic Energy Agency.

One of the speakers was Fukushima Medical University Professor Seiji Yasumura. He is in charge of conducting a survey on the health of residents in Fukushima Prefecture following the nuclear disaster there.

Professor Yasumura said the current budget for his study is not sufficient because of the time needed to do the work and the fact that few people fill out the surveys that help him estimate levels of radiation exposure.

IAEA Deputy Director General Daud Mohamad said the agency will provide all possible support to Fukushima Prefecture if requested.

Wednesday, November 23, 2011 22:18 +0900 (JST)

## Radioactive cesium blankets 8% of Japan's land area

November 21, 2011 - <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201111210014>

By HIROSHI ISHIZUKA / Staff Writer

Some 8 percent of Japan's land area, or **more than 30,000 square kilometers**, has been contaminated with radioactive cesium from the crippled Fukushima No. 1 nuclear power plant.

Spanning 13 prefectures, the affected area has accumulated **more than 10,000 becquerels of cesium 134 and 137 per square meter**, according to the science ministry.

The ministry has released the latest version of its cesium contamination map, covering 18 prefectures.

Radioactive plumes from the Fukushima No. 1 plant reached no farther than the border between Gunma and Nagano prefectures in the west and southern Iwate Prefecture in the north.

Ministry officials said the plumes flowed mainly via four routes between March 14 and 22 after the plant was damaged by the Great East Japan Earthquake and tsunami on March 11.

The first plume headed westward from late March 14 to early March 15, when huge amounts of radioactive materials were released following a meltdown at the No. 2 reactor.

It moved clockwise over a wide area in the Kanto region. Radioactive materials fell with rain and snow, particularly in the northern parts of Tochigi and Gunma prefectures.

A branch of the plume moved southward from Gunma Prefecture, passing through western Saitama Prefecture, eastern Nagano Prefecture and western Tokyo.

It stopped in western Kanagawa Prefecture, where the Tanzawa mountain range rises up.

The second plume headed northwest in the afternoon of March 15, heavily contaminating parts of Namie and other municipalities in Fukushima Prefecture.

The third plume headed northward, apparently in the afternoon of March 20.

Areas in northern Miyagi Prefecture and southern Iwate Prefecture were probably contaminated when it rained between the late afternoon of March 20 and early March 21.

The fourth plume headed southward from the night of March 21 and early March 22.

It passed through northern Chiba Prefecture but largely skirted central Tokyo due to a pressure pattern, limiting contamination in Tokyo and Kanagawa Prefecture.

It is believed that the amount of radioactive materials released from the Fukushima No. 1 plant increased between March 20 and 23, but the reasons are not yet known.

In Fukushima and seven other prefectures, **11,600 square kilometers, or 3 percent of Japan's land area, have annual additional radiation levels of at least 1 millisievert**, according to Environment Ministry estimates.

The government has said it will remove radioactive materials if annual additional radiation levels reach 1 millisievert or more.

The science ministry has been carrying out aerial monitoring of radioactive materials since April.

Helicopters fly at relatively low speeds, allowing monitoring of levels of radiation released from the ground at a height of 1 meter.

Cesium accumulations in soil and radiation levels are also measured separately at selected sites on the ground.

Officials estimate cesium accumulations at other locations using correlations between radiation levels 1 meter above the ground monitored from helicopters and the actual cesium accumulations at the selected sites.

Cesium 137 will have a long-term impact on the environment because it has a half-life of 30 years.

It was detected even before the Fukushima accident, apparently as a result of nuclear testing conducted by other nations.

Still, the maximum amount found in nationwide surveys since fiscal 1999 was 4,700 becquerels in Nagano Prefecture.

The science ministry's cesium contamination map excludes the effects of pre-disaster contamination.

The map will cover 22 prefectures when it is completed by the end of the year. Data for Aomori, Ishikawa, Fukui and Aichi prefectures will be added.

## **Editorial: Fundamental gov't review of Monju reactor and nuclear policy needed**

The central pillar of the Japanese government's nuclear energy policy has heretofore been the nuclear fuel cycle, which entails the extraction of plutonium from reprocessed spent nuclear fuel, and using it to fuel fast-breeder reactors.

On Nov. 20, a Government Revitalization Unit panel responsible for screening wasteful government spending submitted a recommendation that the Monju prototype fast-breeder reactor undergo a fundamental review that includes the possibility of its abandonment.

An energy and environment committee within the government's National Policy Unit is tasked with deciding a comprehensive nuclear policy by the summer of 2012.

While **the waste-cutting panel's recommendation is not legally binding**, it is significant that all of the panel members spoke out against the continued operation of the Monju project in the same manner it has been carried out in the past. The National Policy Unit's committee on energy and the environment must fully consider the problems that have been pointed out by the administrative reform panel, and **carry out a major overhaul of Japan's energy policy.**

Soon after it began running, the Monju reactor was shut down in 1995, due to a fire caused by a sodium leak. **Last year, the reactor was started up again for the first time in over 14 1/2 years, but was shut down soon thereafter due to equipment being dropped into the reactor vessel. It is still not running.**

**Thus far, more than one trillion yen have been spent on Monju, whose maintenance costs around 20 billion yen annually even when it is not running.** A demonstration reactor must be built before the fast-breeder reactor reaches commercial viability, but it is still unclear when that will happen.

**It should be clear even without the recommendation of the government panel that mindlessly continuing to pump taxpayers' money into the research and development of a project without any clear prospects is questionable.**

There's also the **issue of safety**. The sodium used as a coolant in fast-breeder reactors reacts strongly with water, causing powerful fires. This makes Monju more difficult to control than light-water reactors under normal conditions as well as when something goes awry.

Additional postponements have been seen in the construction of fuel reprocessing plants -- which comprise another cornerstone of the nuclear fuel cycle vision -- due to multiple problems. As a result, costs have continued to balloon.

Such problems had already been identified even before the disaster at the Fukushima No. 1 Nuclear Power Plant operated by Tokyo Electric Power Co. In light of the ongoing crisis, however, these are issues that need to be considered even more seriously than ever before.

And yet, the fiscal 2012 budget request for Monju-related expenses is the same amount as the budget for the current fiscal year. There is no way the public will accept such a prospect. The government waste-cutting panel has suggested that 2.2 billion yen of the budget requested for output testing be shelved, but there needs to be further investigation of the budget request for other possible wasteful expenses.

At the recent waste-cutting deliberations, panel members voiced **grave concerns over the opaque spending of public funds by the Japan Atomic Energy Agency (JAEA)**, an independent administrative agency that operates Monju. A fundamental review must be conducted.

Given that the Japanese government announced its intention to move toward reducing its dependence on nuclear power after the crisis in Fukushima emerged, it's time we consider bringing an end to the nuclear fuel cycle policy.

The government must promptly establish a path toward redirecting what we have heretofore invested into nuclear power into the revival of Fukushima and into the development of renewable energy and energy conservation.

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 22, 2011

## **Radioactive strontium in Yokohama apparently unrelated to Fukushima**

TOKYO (Kyodo) -- The science ministry said Thursday that radioactive strontium detected in sediment in Yokohama appears to be unconnected to the nuclear crisis at the Fukushima Daiichi power plant triggered by the March 11 earthquake and tsunami.

The ministry tested sediment collected at two locations in Yokohama's Kohoku Ward by the city office and soil in the neighborhood but did not detect strontium 89 with a half-life period of around 50 days, which would have been detected if the incident was related to the Fukushima nuclear crisis.

The test detected 0.82 to 1.1 becquerels per kilogram of strontium 90 with a half-life of around 29 years, within levels observed prior to the nuclear crisis.

The Ministry of Education, Culture, Sports, Science and Technology suspects the presence of the substance is attributable to past nuclear experiments conducted in the atmosphere.

In a test conducted by the Isotope Research Institute in Yokohama at the request of the city office, the private institute measured both strontium 89 and strontium 90, and detected 59 to 129 becquerels per kg of strontium.

Regarding the significant difference in figures detected by the ministry and the institute, the ministry said the institute's test may have also detected radium and other radioactive substances not related to a nuclear plant accident.

Meanwhile, radioactive strontium has been detected in soil samples taken from three locations in downtown Tokyo, a citizens' group said Thursday.

Soil collected from outside the Ministry of Economy, Trade and Industry, and the Tokyo International Forum, both in Chiyoda Ward, and the Kiyosumi-Shirakawa subway station in Koto Ward measured 48, 51 and 44 becquerels per kg, respectively, the group said, against 10 to 20 becquerels per kg seen prior to the Fukushima nuclear crisis at various places in Japan.

The same group discovered in October up to 195 becquerels of radioactive strontium in sediment from the top of an apartment building in Yokohama, south of Tokyo.

If inhaled or ingested, strontium tends to accumulate in bones just like calcium. It is believed to cause bone cancer and leukemia.

(Mainichi Japan) November 25, 2011

## **Japan plans to set special radiation limit for infant food**

TOKYO (Kyodo) -- Japan's health ministry on Thursday proposed categorizing food and drink products in four groups, including one for infant foods, in setting tougher radiation standard levels.

While the Ministry of Health, Labor and Welfare has been working to lower the upper limit on radioactive cesium exposure to 1 millisievert per year from the current provisional level of 5 millisieverts, it has decided to give special consideration to infants who are more vulnerable to radiation than older people.

The other three categories are ordinary food, milk and drinking water. Most foods will be categorized as ordinary food and be put under unified supervision, while milk, drinking water and infant foods, including powdered milk and baby foods, will be examined separately.

The ministry submitted the proposal to a subcommittee of the Pharmaceutical Affairs and Food Sanitation Council and obtained its approval.

It will present a new standard level proposal to the subcommittee by the end of the year.

(Mainichi Japan) November 25, 2011

## **abinet Office, Foreign Ministry led suppression of Russian proposal to store nuke fuel**

The Cabinet Office and the Foreign Ministry played a leading role in suppressing a Russian proposal to store and reprocess spent nuclear fuel from nuclear power plants in Japan even within the government, sources close to the case have told the Mainichi.

In diplomatic papers in 2002, Moscow proposed that spent nuclear fuel from Japan's nuclear plants be brought into Russian territory for temporary storage and reprocessing. The administration at the time, however, left the proposal unattended -- highly likely on purpose -- for fear that such a move could adversely affect Japan's nuclear energy policy.

Officials of the Cabinet Office, which serves as the secretariat for the Japan Atomic Energy Commission (JAEC), and the Ministry of Foreign Affairs, secretly met in September 2003 to discuss their response to the Russian proposal, according to the sources. The Agency for Natural Resources and Energy (ANRE), which is in charge of implementing the nation's nuclear power policy, had not received the Russian papers at that time.

The diplomatic papers, dated Oct. 25, 2002, were produced following a meeting between Koji Omi, then minister of state for science and technology policy, and then Russian Atomic Energy Minister Alexander Yurievich Romyantsev in September 2002. In the meeting both parties were positive about establishing bilateral ties in the nuclear power sector.

According to the sources, officials of the Cabinet Office and the Foreign Ministry held talks over their response to Moscow's proposal after Russia became ready to accept spent nuclear fuel from overseas in

July 2003. The ANRE, which did not take part in the talks, only later received the diplomatic papers via fax from the Japanese Embassy in Russia sometime around February 2004.

At that time, ANRE officials were reportedly notified that talks involving the Cabinet Office over the diplomatic documents were already over and that Tokyo had not yet replied to Moscow's proposal even though it was "a formal offer made as a result of the meeting between incumbent ministers."

Concerned sources further told the Mainichi: "If we had intended to positively consider (the Russian proposal), we would have called on the ANRE to join our discussions. However, since we hadn't meant to address the issue head-on, we didn't invite the ANRE into our talks."

 [Click here for the original Japanese story](#)

(Mainichi Japan) November 25, 2011

## **N-watchdog gets health role / New agency to handle residents' well-being, not just reactors**

The Yomiuri Shimbun

A new nuclear safety agency to be established in April will deal with health problems caused by radioactive materials released from the Fukushima No. 1 nuclear power plant, it has been learned.

The new watchdog was expected to focus on regulating nuclear reactors and responding to nuclear emergencies. However, the government apparently plans to strengthen the agency's responsibilities by expanding its portfolio.

The new agency--which will be an extraministerial bureau of the Environment Ministry--plans to tap the ministry's expertise in handling the Minamata mercury poisoning disease and other environmental disputes, government sources said.

The agency will collect data and conduct long-term research because it remains unknown what health risks radioactive materials leaked by the nuclear plant have caused or will cause to local residents. The entity also will handle any lawsuits filed against the government, the sources said.

The agency will take over functions of existing nuclear regulatory organizations, including the Nuclear and Industrial Safety Agency, which is under the Economy, Trade and Industry Ministry. Since the March 11 earthquake and tsunami triggered meltdowns at the Fukushima plant that required thousands of residents to be evacuated, many observers have criticized the fact that the industry ministry is in charge of both promoting and regulating nuclear power.

The Cabinet Office's Nuclear Safety Commission will be consolidated into the new agency, and the Education, Culture, Sports, Science and Technology Ministry will transfer the role of monitoring radioactive materials to the new body.

The new agency, which will have about 500 employees, is expected to be responsible for:

- Monitoring residents' radiation exposure levels over an extended period.
- Epidemiological studies that will be used to create a database.
- Research on the effect of radiation on humans.
- Establishing environmental standards for radiation protection.

The Fukushima prefectural government has started lifetime thyroid examinations on about 360,000 prefectural residents who were 18 or younger at the time of the accident at the nuclear plant. The new entity will advise and assist such programs, the sources said.

Officials who hold doctor's licenses will be placed in the agency's departments in charge of health damage issues. The government also has begun setting up an advisory research panel, the sources said.

A special government task force has been dealing with issues related to residents' health problems stemming from the nuclear disaster. However, the task force, which arranged for internal radiation exposure checkups, will be dissolved when the nuclear crisis is brought under control. The panel is chaired by Prime Minister Yoshihiko Noda.

The Environment Ministry has jurisdiction over government compensation for Minamata patients. Last year it compiled relief measures to help unrecognized patients with the disease, which helped the government reach out-of-court settlements with major groups of plaintiffs this year.

The envisaged nuclear safety agency is expected to use the ministry's expertise in handling the Minamata case, according to the sources.

No specific health damage arising from radiation leaks at the Fukushima nuclear plant has been confirmed. It remains unknown whether there will be such cases and, if there are, how serious they will be. Concrete steps will be taken only after actual health problems have come to light, and if such damage could be recognized as a pollution-caused disease like Minamata disease, the sources said.

(Nov. 25, 2011)

**Chance for big tsunami in eastern Japan within 30 yrs revised up to 30%**



A fire is seen in an area overcome by the tsunami in this photo taken from a Mainichi helicopter in Natori, Miyagi Prefecture, on March 11, 2011. (Mainichi)

TOKYO (Kyodo) -- The probability of a major earthquake occurring and triggering a massive tsunami in the Pacific Ocean off eastern and northeastern Japan within the next 30 years has been revised up to 30 percent from 20 percent, a government panel said Friday.

The Earthquake Research Committee has reexamined its long-term estimate of killer temblors after the March 11 quake and tsunami and found that a quake that triggers a tsunami as powerful as the one caused by the 1896 Meiji-Sanriku Earthquake, which killed more than 20,000 people, is more likely to happen in the sea zone stretching 800 kilometers north-south.

The panel stopped short of predicting the magnitude of the possible quake but said past records suggest it would be magnitude 8 or stronger.



A huge tsunami tears through a protective screen of trees and swallows homes in this photo taken from a Mainichi helicopter in Natori, Miyagi Prefecture, on March 11, 2011. (Mainichi)

The tsunami triggered by the 1896 quake reached as high as 38.2 meters, according to the records. The quake's estimated magnitude ranges from 6.8 to 8.5 among experts.

Meanwhile, the committee said the likelihood a quake with a magnitude of up to 9 occurs within the next 50 years in a sea area off Miyagi and Fukushima prefectures, which is closer to the shore than the 800-km zone, is almost zero percent.

(Mainichi Japan) November 26, 2011

## **Fukushima dairy farmer loses hope of returning as vegetation overruns farm**

Once every 10 days, Namio Kanno, 64, checks on his home and dairy farm in the Yamakiya district in Kawamata, Fukushima Prefecture. Eight months since the Great East Japan Earthquake, tsunami and nuclear disaster, there is nothing he can do as the farm he spent 38 years on becomes overrun with vegetation.

"The maximum limit is three years," Kanno said about his evacuation from Yamakiya, which has been designated as a "planned evacuation zone" by the national government. "Any longer than that, and I won't be able to return the pasture to the way it was."

Weeds have grown hip high in what was previously cow pasture, and the cattle shed is entangled in vines. The farmer quietly turned the pages of an album in his living room. One picture showed a youthful Kanno with his pregnant wife, standing alongside a dairy cow. "That was our first cow," he said.

Kanno was born as the third son of a farming family in Kawamata. After leaving for Tokyo to attend college, he decided that he wanted to lead an autonomous life surrounded by nature. He decided on dairy farming, left school without graduating and began training to become a farmer. When he married his wife in 1973, he started a dairy farm named Ayuri, meaning "life" in Sanskrit.

The couple's first home was the cattle shed. To turn the steep and depleted land into pasture, Kanno slashed and burned the weeds, and hauled fertilizer from a pig farm 30 kilometers away. Within several years, the farmer was raising nearly 30 cows, and had become financially secure; he was able to send all four of his daughters to college. Before the nuclear disaster, Kanno had whittled down the number of cattle he owned to just enough for self sufficiency. He derived the most joy from his grandchildren's visits, and had even built a tree house for them by the pasture.

There are no cows left at the farm now, because Kanno gave them up before he evacuated. "How much time and money is it going to take to decontaminate the area, including the forests?" Kanno asked. "Is it even possible to scrape away the surface of the ground when the ground surface consists mostly of rock?"

The air radiation level at the farm is approximately six microsieverts per hour. The Cabinet approved a basic policy on radiation decontamination on Nov. 11, but it is still uncertain when the actual decontamination will begin. All the work that Kanno put into making the land fertile means that if left to its own devices, it will probably take just three years for the land to turn completely into forest. Kanno no longer has the physical endurance or emotional drive to turn a forest back into pasture.

"The government is planning to return the residents once they finish decontamination, but there are people like me who can't come back," Kanno said. "Are they going to give people like me the alternative of relocating to a new place?"

(Mainichi Japan) November 27, 2011

# New system to dispose radioactive debris developed

A municipality in Fukushima Prefecture plans to use on a trial basis new disposal equipment for debris contaminated with radioactive substances.

The environmental equipment company based in Tokyo that developed the new system says it will reduce the volume of rubble from the earthquake and tsunami in March to about one-300th of the current size on average.

The company says the wreckage will be heat-treated in an oxygen-free environment and be broken down into gas, oil, and ceramic powder.

As the ceramic powder absorbs the radioactive material, the firm says the process is expected to create no contaminated ash.

Tests carried out in Hirono Town, Fukushima Prefecture, show that debris was reduced to one-268th of the current volume, and that almost all radioactive substances were absorbed by the ceramic powder.

The town plans to begin test-use of the equipment in December and consider full-scale introduction if it proves effective.

Other disaster-hit municipalities around the crippled Fukushima Daiichi nuclear plant are also interested in the new equipment.

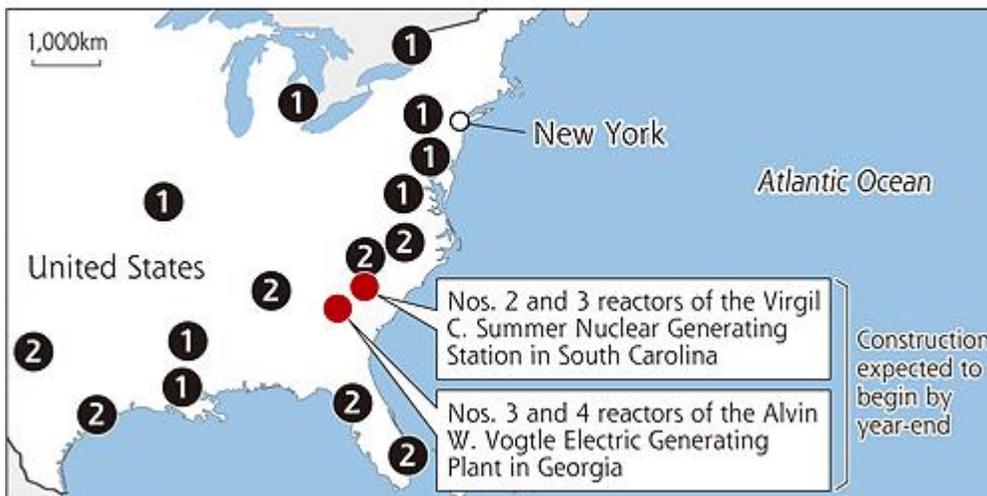
Sunday, November 27, 2011 10:46 +0900 (JST)

## U.S. to restart construction of N-reactors / Toshiba arm to deliver new model

The Yomiuri Shimbun

### Nuclear power plant projects being screened by U.S. NRC

(Figures denote number of reactors; there are 26 in total)



After 34 years, the United States is expected to resume construction of nuclear reactors by the end of the year, and Toshiba Corp. will export turbine equipment for the reactors to that country early next month, it was learned Saturday.

According to sources, **construction will begin by the year-end on the Nos. 3 and 4 reactors of the Alvin W. Vogtle Electric Generating Plant in Georgia and the Nos. 2 and 3 reactors of the Virgil C. Summer Nuclear Generating Station in South Carolina.**

The U.S. Nuclear Regulatory Commission is expected to shortly approve the construction and operation of the reactors, which have been designed by Westinghouse Electric Co., a subsidiary of Toshiba.

The U.S. decision to resume construction of reactors is expected to pave the way for Japan to export related equipment to the United States, observers said.

The reactors to be constructed are of the AP1000 type, an advanced 1,100-megawatt pressurized water reactor, and are targeted to **go into operation in 2016 at the earliest.**

**The AP1000 can better withstand disasters--the outer structure is so strong it can withstand the impact of a large airplane crashing into it[????]--and is designed to automatically cool down over a 72-hour period even after external power is lost. Four AP1000 reactors are currently being built in China.**

Toshiba will export to the United States core equipment for the reactors that helps convert steam back to water, the sources said.

Before the construction of a reactor can begin, it needs to receive a final safety assessment report from the NRC as well as NRC approval for its construction and operation.

The NRC issued final safety assessment reports for the four reactors in summer after the onset of the crisis at the Fukushima No. 1 nuclear power plant.

U.S. electric power companies, which plan to construct the four reactors, have already started procuring equipment and have entered the final stage in preparation for the construction of the four reactors, as the utilities are likely to receive NRC approval soon.

The United States has 104 reactors in operation, making the country the world's largest nuclear energy producer. However, after the Three Mile Island nuclear power plant meltdown in 1979, construction of new nuclear power plants was suspended.

Former U.S. President George W. Bush, who called for less dependence on Middle East oil, shifted policy toward resumption of construction of nuclear power plants. Since 2007, many electric power companies have applied to build new nuclear power plants. The NRC is currently screening 26 new reactors.

Following the meltdowns at the Fukushima No. 1 nuclear power plant, the NRC placed priority on safety assessments for existing nuclear power plants, delaying the screening of new projects.

No construction on reactors has been carried out in the United States since January 1978.

Capitalizing on the planned construction of the four reactors, the Toshiba-Westinghouse alliance will try to secure more orders for advanced reactors from other countries.

(Nov. 27, 2011)

## More cesium in Fukushima rice

The Yomiuri Shimbun

FUKUSHIMA--The Fukushima prefectural government has announced that radioactive cesium beyond the provisional regulatory limit was detected in unmilled rice harvested at five farms in the Onami district of Fukushima Prefecture.

Radioactive cesium exceeding the limit of 500 becquerels per kilogram was recently detected in harvested rice at another farm in the area, fueling concerns among consumers.

This time as much as 1,270 becquerels of radioactive cesium per kilogram was detected in unmilled rice, the prefecture said Friday. The rice has not been shipped to the market. Instead, it was stored in farmers' warehouses or a local agricultural cooperative, or was distributed to farmers' relatives.

The prefectural government is currently analyzing all the rice grown by the 154 rice farms in the district, or 4,752 bags containing 30 kilograms of rice each. It has finished inspecting 864 rice bags from 34 farms so far.

Apart from the first farm where rice was found to have been contaminated, excess radioactive cesium has been detected in 103 rice bags from five farms.

Excess cesium was detected in all 24 rice bags from the farm that produced rice in which radioactive cesium at 1,270 becquerels per kilogram was found. The minimum level of contamination at that farm was 970 becquerels per kilogram.

Radioactive cesium between 540 and 1,110 becquerels per kilogram was detected from unmilled rice from another farm, according to the prefectural government.

The five farms are located from one to 2.5 kilometers from the first farm in question. They have nothing in common with the first farm topographically, such as using the same freshwater from a mountain in their rice paddies.

In addition to the Onami district, the prefectural government is inspecting rice harvested in Date, which includes some hot spots recommended for evacuation, and in three other cities--Fukushima, Soma and Iwaki--which include areas with relatively high levels of radiation.

The local government plans to compile all results by mid-December.

(Nov. 27, 2011)

## **Nuclear insurance group won't renew Fukushima plant's liability insurance**

The **Japan Atomic Energy Insurance Pool** has decided not to renew the Fukushima No. 1 Nuclear Power Plant's insurance contract when it expires in January next year, it has been learned.

The pool, a group formed by 23 nonlife insurance companies to provide nuclear power plant-related liability insurance, judged that the risks from the plant are still high, even though the nuclear disaster triggered by the March 11 earthquake and tsunami is gradually being brought under control.

If the nuclear plant, which is operated by Tokyo Electric Power Co. (TEPCO), is left uninsured, then work to bring the crisis under control and decommission the plant's crippled reactors could be adversely affected. TEPCO and the Ministry of Education, Culture, Sports, Science and Technology, which oversees compensation, are now considering alternative measures such as setting aside an amount of money to match the amount of insurance.

Under the Atomic Energy Damage Compensation Law, nuclear power plant operators are required to take out two types of insurance. One is the government's nuclear power damage compensation insurance, which covers damage caused by disasters such as earthquakes and tsunamis. Under this coverage, TEPCO has received 120 billion yen. The other is the Japan Atomic Energy Insurance Pool's liability insurance, under which private insurers cover general accidents and operating errors.

Liability insurance contracts last for one year, and the Fukushima No. 1 plant's contract expires on Jan. 15. **Since the risks associated with the plant are high, a pool from countries with nuclear power plants had been used to form reinsurance contracts, in which insurance is purchased by other insurance companies to disperse the risk.**

However, the risks involved in the handling of the nuclear disaster and the work to decommission reactors is on a different level from those at ordinary nuclear power plants. In July foreign reinsurance companies told the Japan Atomic Energy Insurance Pool that it would be difficult for them to take on a renewed contract, and the pool explained this situation to the Science Ministry.

The Atomic Energy Damage Compensation Law **forbids the operation of uninsured reactors** and other related activities. Since the ministry judged that removing fuel rods would fall under the classification of "operation and other related activities," thereby hindering its handling of the accident, it began discussing countermeasures with TEPCO.

TEPCO says that it is still in negotiations to renew its insurance contract, but there are no prospects of it being extended. The compensation law states that 120 billion yen can be set aside in the form of cash and marketable securities at the Legal Affairs Bureau in place of the insurance, and officials are considering using this method. However, due to compensation claims and increased use of fuel at thermal power plants, TEPCO is short of funds, and it remains uncertain whether the full amount could be secured.

(Mainichi Japan) November 28, 2011

## **Kyushu Electric to idle reactor at Genkai nuclear plant Thurs.**



The Genkai Nuclear Power Plant in Genkai, Saga Prefecture, is pictured in this photo taken from a Mainichi helicopter on Aug. 31, 2011. (Mainichi)

SAGA, Japan (Kyodo) -- Kyushu Electric Power Co. said Monday it will idle the No. 1 reactor at its nuclear power plant in Genkai, Saga Prefecture, on Thursday for regular checks, leaving only one reactor in operation on the southwestern Japan island of Kyushu.

The only reactor to remain in operation -- the No. 4 unit at the Genkai plant -- is also scheduled to begin undergoing similar checks on Dec. 25. The utility will ask customers to reduce their maximum power usage by more than 5 percent between Dec. 26 and Feb. 3.

The four other reactors owned by the utility -- the Nos. 2 and 3 reactors at the Genkai plant and the Nos. 1 and 2 reactors at the Sendai nuclear power plant in Satsumasendai, Kagoshima Prefecture -- are already offline for regular checks.

On Monday, the utility also began first-stage work to assess the safety of the No. 1 reactor at the Genkai plant, a prerequisite for its restart after the checks are complete.

The safety of the reactor has been called into question because it began operation more than 35 years ago. But Kyushu Electric maintains that it knows of "no safety problems" related to the reactor.

During the upcoming checks, the operator will replace about a quarter of the 121 nuclear fuel assemblies inside the No. 1 reactor's core, hoping to resume power generation in early February and return to normal operation in early March.

It is not yet clear when the reactor will be restarted for power generation, however, because it remains uncertain when the safety assessment report for the reactor will be submitted to the government.

According to the Nuclear and Industrial Safety Agency, an arm of the industry ministry, 44 of the nation's 54 commercial reactors had stopped operating as of Monday. Once idled, the Genkai No. 1 reactor will leave just nine reactors in operation nationwide.

(Mainichi Japan) November 29, 2011

## **High cesium levels in Chiba likely related to Fukushima crisis**

TOKYO (Kyodo) -- High levels of radioactive cesium found in Kashiwa, Chiba Prefecture, last month were likely related to the crisis at the crippled Fukushima Daiichi nuclear power plant in Fukushima Prefecture, the Environment Ministry said in an interim report Monday.

The cesium is highly likely to have been concentrated in the soil on city-owned land after rainwater seeped from a ditch nearby, the ministry said, discounting the possibility that the contaminated soil had been brought in from elsewhere.

During monitoring at around 30 spots within a 4 square-meter area, radiation measured up to 4.11 microsieverts per hour 1 meter above ground, and up to 450,000 becquerels of radioactive cesium per kilogram of soil was detected in the soil between 5 to 10 centimeters below the surface near the ditch.

There were other spots near the area where high levels of cesium were detected below the surface. The ministry will therefore expand the area monitored, planning to produce a final report, possibly by the end of the year, it said.

(Mainichi Japan) November 29, 2011

## **Excessive cesium levels found in more Fukushima rice, 9 kg sold**

FUKUSHIMA, Japan (Kyodo) -- More rice harvested in Fukushima Prefecture has been found to contain excessive levels of radioactive cesium, and 9 kilograms of the rice was sold earlier this month, the prefectural government said Monday.

The cesium found in rice harvested at three farms in Date measured more than the provisional upper limit of 500 becquerels per kilogram set by the central government, with the maximum level detected standing at 1,050 becquerels, according to the local government.

The central government plans to ban shipments of rice from the area as early as Tuesday.

In mid-November, excessive levels of radioactive cesium were found in rice harvested at a farm in the city of Fukushima, marking the first detection of such high levels of the substance in rice since the nuclear crisis erupted in Fukushima Prefecture after the March 11 earthquake and tsunami, but none of the rice produced at the farm this year has been shipped to markets.

A total of 9 kilograms of rice from one of the farms in Date, however, was sold in six bags at farm stands in the city from early to mid-November, with prefectural government officials saying it was the

first time that rice contaminated with excessive levels of radioactive substances was confirmed to have been sold.

The prefectural government said it is checking who purchased the rice in question.

(Mainichi Japan) November 29, 2011

## **Farm households in 2 Fukushima cities to suspend rice shipments**

FUKUSHIMA, Japan (Kyodo) -- The Fukushima prefectural government has decided to ask 2,381 farming households in Nihonmatsu and Motomiya to suspend part of their rice shipments, after excessive levels of radioactive cesium were found in rice harvested in the neighboring cities of Fukushima and Date, local government officials said Tuesday.

The prefectural government has already requested 1,941 farming households in four municipalities, including Date, to suspend shipments, and the latest move will raise the number to 4,322 in total.

Fukushima Prefecture is home to the Fukushima Daiichi nuclear power plant, crippled by the March 11 earthquake and tsunami.

The cesium found in rice harvested in the cities of Fukushima and Date exceeded the provisional upper limit of 500 becquerels per kilogram set by the central government.

(Mainichi Japan) November 29, 2011

## **TEPCO says no explosion occurred at No.2 reactor**

The operator of the damaged Fukushima Daiichi nuclear power plant says there was no explosion at the No. 2 reactor, denying an earlier report that there was. But the company says it is still unable to determine how and why radioactive substances were released from the reactor.

NHK has obtained Tokyo Electric Power Company's interim report on the nuclear accident that was triggered by the earthquake and tsunami on March 11th.

The report includes findings from a study that the utility launched in June to analyze how the accident occurred and how workers responded to it.

The report says that almost all electricity sources for the reactors were lost at once following the tsunami.

As a result, multiple safety functions were also lost, causing meltdowns from the No. 1 to the No. 3 reactors.

TEPCO analyzed seismographic data recorded within the plant in the early morning of March 15th, 4 days after the disaster, when a large blast was reportedly heard near the containment vessel of the No. 2 reactor.

The company concluded in the report that there was no explosion at the No. 2 reactor, and that a blast at the No. 4 reactor was mistakenly believed to have occurred at the No. 2.

Later that day, pressure inside the No. 2 reactor vessel dropped sharply, and radiation levels near the plant's main gate rose above 10 millisieverts per hour, then the highest level so far.

The interim report fails to specify how the leakage occurred at the containment vessel, just saying that gas in the vessel was somehow released into the air.

Tuesday, November 29, 2011

## **Fukushima plant chief to go on sick leave**

The head of the Fukushima Daiichi nuclear power plant is stepping down for health reasons.

Masao Yoshida of Tokyo Electric Power Company has been in charge of dealing with the situation at the plant since the March earthquake and tsunami damaged the reactors.

The utility says Yoshida, who will be replaced on Thursday, is **resigning in order to receive medical treatments at a hospital**. The company says it cannot disclose his illness and level of radiation exposure as that is personal information.

In a statement issued on Monday, Yoshida expressed his regret over leaving the plant at a crucial time and apologized to all the people involved. He said he has to undergo treatment for a disease that was discovered in a health check-up.

Yoshida spoke to reporters on November 12th when the damaged plant was opened to media for the first time since the accident. He said that he had expected to die several times during the first week of the crisis.

He added that when he saw the hydrogen explosions at the Number 1 and 3 reactors, and when his team was unable to pump water into the Number 2 reactor, he thought it was the end.

The utility says Takeshi Takahashi, who is a manager at TEPCO headquarters, will succeed Yoshida.

Monday, November 28, 2011

## **Japanese Nuclear Accident Simulations Severely Underestimate Radiation Risks**

Press release - November 29, 2011 - <http://www.greenpeace.org/international/en/press/releases/Japanese-Nuclear-Accident-Simulations-Severely-Underestimate-Radiation-Risks/>

Tokyo, Japan, November 29, 2011 – Greenpeace today renewed its demand for the Japanese government to keep its nuclear reactors offline as simulation maps of potential accidents at Japan’s nuclear plants - used in the development of nuclear emergency response efforts - are completely inadequate, and have not been updated since the Fukushima disaster.

Following a Greenpeace freedom of information request on November 25, the Ministry of Education, Culture, Sports, Science and Technology (MEXT) released SPEEDI simulations of the radioactive contamination spread from all nuclear plants in Japan (1). These maps show only extremely low releases of radioactivity over a 10km area around the plants in the event of meltdown, making any emergency response plan based on them totally insufficient should another severe disaster like the Fukushima Daiichi crisis occur (2).

“The simulation of radioactive releases from the Ohi reactor for example, is scandalously inadequate. It foresees a radiation release in the order of 10,000 times less severe than what could happen during a major incident (3),” said Jan Vande Putte, Greenpeace International Nuclear Campaigner. “Similar over-optimistic scenarios have been used for reactors all over Japan. Hoping for the best is absolutely the wrong way to devise an emergency response plan.”

Greenpeace met with officials from MEXT and the SPEEDI programme today, and they confirmed that the current simulations are limited to low-level releases, and that the system needed upgrading to cover larger releases and wider areas beyond 10km from the plants.

“The Fukushima Daiichi emergency response effort was slow, chaotic and insufficient, and it appears the Government has learned nothing from it so far,” said Junichi Sato, Greenpeace Japan Executive Director. “These maps show that there is a strong risk of reactor restarts being pushed through without a proper, science-based assessment on the real risks being conducted, and without proper precautions being taken to protect the communities around the plants.”

Greenpeace is demanding that the Japanese government uses SPEEDI for what it was developed for, and run worst-case scenario simulations for all nuclear plants in Japan so there is a clear understand what effect a Fukushima Daiichi-type incident at other plants around Japan could have.

ENDS

*Greenpeace is an independent global campaigning organisation that acts to change attitudes and behaviour, to protect and conserve the environment, and to promote peace.*

Contacts:

Greg McNevin, Greenpeace International Communications, greg.mcnevin@greenpeace.org, +81 80 5416 6507

Yuki Sekimoto, Greenpeace Japan Communications, yuki.seikimoto@greenpeace.org, +81 80 5088 3048

Greenpeace International Press Desk Hotline, Amsterdam +31 20 7182470

Notes:

1) The simulations released under FOI to Greenpeace were made to support emergency preparedness drills of local and central government authorities. They calculate the concentration of radioactivity in the air, contamination on the ground and dose to the population within a range of 10km. Based on these maps, drills on evacuation or sheltering of the population, or distribution of iodine pills are organised.

Published maps (Japanese only): [http://www.bousai.ne.jp/vis/speedi\\_z/](http://www.bousai.ne.jp/vis/speedi_z/)

2) Greenpeace has measured contamination levels high enough to require evacuation under international standards at 60km distance from Fukushima Daiichi [www.greenpeace.org/fukushima-data](http://www.greenpeace.org/fukushima-data)

3) A major incident in this case is based on a 15% release of iodine from the core of the reactor, which is still not a worst-case scenario. Nuclear safety authorities from the United States (NRC, Nureg-1150, 1990) and Germany (SSK, Heft 37, 2003) have calculated that under the worst-case conditions, even a release between 50% and 90% of all iodine is possible, though with a lower probability.

## **Fundamental questions being avoided about Monju must be asked**

The following interaction took place Nov. 26 between reporters and Goshi Hosono, the state minister in charge of the nuclear crisis, after his visit to the Monju prototype fast-breeder reactor in Fukui Prefecture.

"What are your thoughts upon visiting Monju?" a reporter asked.

"I feel that we're coming to a turning point ..." Hosono responded.

"Do you think that decommissioning the plant should be among the options that are considered?" asked another reporter.

"I think there's a need for deliberation that includes that sort of option," Hosono answered.

This led to headlines regarding Hosono "contemplating the decommissioning of Monju." But did Hosono really say anything groundbreaking? I don't think he did.

On a superficial level, one gets the impression from media reports that those for decommissioning Monju are winning the fight against those for the reactor's survival. Decision-making at the political level is in the hands of pro-Monju advocates, however, and they haven't made much of a fuss about it. Their silence betrays a certain smugness that allowing the anti-Monju bloc to complain won't make a difference. It was under such nuanced circumstances that Hosono avoided making any clear-cut statements.

The Noda-sponsored non-legally-binding waste-cutting deliberations have failed to accomplish as much as it looks like. Government Revitalization Unit members gave up on Sunday to engage in fierce discussion, ultimately recommending that the Monju project undergo a "fundamental review."

The panel members recommended a cancellation of 2.2 billion yen of the 21.5 billion yen requested for the fiscal 2012 budget in Monju-related government spending. However, because the committee has avoided a basic discussion about whether it is necessary to continue with the Monju project at all, they haven't been able to address the remaining 19.3 billion yen. Its recommendation for a "fundamental review" is essentially the panel members unloading the problem on someone else who will hopefully take care of the rest.

Why, then, did the waste-cutting panel fail to engage in a fundamental debate on Monju's necessity? Most likely, the panel was holding back out of consideration for the Japan Atomic Energy Commission (JAEC), the organization responsible for deliberating the country's basic nuclear policy.

The Energy and Environment Commission -- the JAEC's umbrella organization -- probably warned the Government Revitalization Unit panel against venturing into the realm of nuclear controversy, and to refrain from causing any waves until next summer, when the government's new nuclear policy outline will be drafted.

Though media reports make it seem as though we are moving toward the direction of decommissioning Monju, unfortunately, that is not the case. After 44 years and a total 1 trillion yen in public funds, Monju is still not up and running. It doesn't even look like it will run, which is why immediately after the Great East Japan Earthquake, there were increased calls for the abandonment of Monju research and development. But now, a comeback is being staged by advocates for development that is "less wasteful."

Fast-breeder reactors like Monju run on plutonium extracted from spent nuclear fuel that's been produced by other reactors and reprocessed. Unless this nuclear fuel cycle is established, spent fuel will only continue to accumulate. Indeed, as of September 2010, the fuel storage pools in all of Japan, with a combined capacity of 20,420 tons, were filled with 13,530 tons of spent fuel, taking up 66 percent of storage capacity.

This data came to light in May when Liberal Democratic Party (LDP) lawmaker Taro Kono, who is staunchly against nuclear power and the nuclear fuel cycle, requested the information from the Ministry of Economy, Trade and Industry (METI). Kono has pointed out that even if we assume that the Fukushima No. 1 and No. 2 nuclear power plants and the Hamaoka Nuclear Power Plant in Shizuoka Prefecture remain shut down, calculations show that in less than six years, fuel storage pools will all be filled to the brim.

What are we going to do with the massive volume of nuclear trash that is about to overflow from our nuclear power plants? Avoiding reality is not an option available to us. We must wake up and pick up after the mess that economic prosperity has left behind. I can only hope that the prime minister and the nuclear crisis minister make the right turn at this turning point. (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) November 29, 2011

## **Only specialist firms should clean up areas with high radiation, say health experts**

Only businesses specializing in radiation should be allowed to be engaged in the decontamination of areas where annual external exposure to radiation is over 1 millisievert, experts recommend.

Moreover, such businesses should be required to strictly control workers' exposure to radiation, according to recommendations made by experts commissioned by the Health, Labor and Welfare Ministry in the wake of the accident at the tsunami-hit Fukushima No. 1 Nuclear Power Plant.

Based on the suggestions, the ministry is set to work out regulations and guidelines on decontamination as early as Jan. 1 under the Industrial Safety and Health Act.

The new regulations and guidelines will apply to decontamination work at facilities where the hourly air dose of radiation is 0.23 microsieverts, or 1 millisievert a year.

If workers perform decontamination work on dozens of occasions a year in areas where radiation levels are 0.23 to 2.5 microsieverts, the ministry estimates that their annual external exposure will be well below 1 millisievert and believes that they do not have to undergo radiation exposure screening by their employers. Based on this estimate, the regulations and guidelines will allow local residents and volunteers to participate in decontamination in such areas.

However, the proposal adds that businesses specializing in radiation must be commissioned to decontaminate areas if workers are required to be engaged in decontamination work for long periods and their external exposure to radiation exceeds 1 millisievert a year. Businesses engaged in such work will be obligated to strictly control workers' exposure to radiation.

In areas where the air dosage of radiation is not more than 2.5 microsieverts per hour, regulations and guidelines will allow their employers to conduct simple checkups on them, such as sample testing.

In areas where the air dosage of radiation is higher than that level and in areas designated as evacuation zones near the crippled Fukushima nuclear plant, however, businesses must ensure each worker carries a dosimeter during their work and strictly check each individual's exposure to radiation.

Workers must wear protective masks and suits and undergo checks on their internal exposure to radiation every three months if they work in areas where soil and waste are highly contaminated with radioactive substances and where workers are exposed to huge amounts of dust.

However, questions have been raised over whether businesses will strictly abide by the regulations and guidelines as many small- and medium-sized companies without expertise are expected to engage in decontamination work.

The ministry's Policy Planning Division said it will instruct companies concerned to strictly abide by the rules.

"We'll invoke punitive clauses in the Industrial Safety and Health Act if we confirm any company deviates from the rules. We'll step up our instructions to businesses through local labor standards' inspection offices," a division official said.

(Mainichi Japan) November 29, 2011

## **Fukushima Pref. to decommission all 10 local nuke reactors**

The Fukushima Prefectural Government has decided to decommission all 10 reactors in its jurisdiction, including those at the Fukushima No. 2 nuclear plant, in conjunction with its disaster recovery project, it has been learned.

A vision for restoration created by the prefectural government in August promoted the formation of a "society not relying on nuclear power," but made no actual reference to decommissioning reactors. Fukushima Gov. Yuhei Sato was expected to formally announce the measure in a news conference on Nov. 30.

Earlier, Sato stated that the No. 1 to 4 reactors at the damaged Fukushima No. 1 nuclear complex would be decommissioned, but when it came to the plant's No. 5 and No. 6 reactors and those at the Fukushima No. 2 plant, he had simply stated, "It is inconceivable to restart them."

In October the Fukushima Prefectural Assembly adopted a petition seeking decommissioning of all reactors in the prefecture.

In a meeting on the morning of Nov. 30, prefectural officials discussed how the decommissioning of reactors would affect employment and the finances of local bodies. Yoichi Nozaki, a prefectural official in charge of the restoration project, stressed that the prefecture's principles had not changed.

"The principle of moving away from nuclear power, which was put forward in our vision for restoration, has not changed," he said. "In the future we will have a Fukushima Prefecture without nuclear power."

(Mainichi Japan) November 30, 2011

## **Fukushima plant head told workers to disregard order on water injection**

TOKYO (Kyodo) -- The head of the troubled Fukushima Daiichi nuclear power plant, who will be relieved of his post effective Thursday for medical treatment, told workers to disregard the plant operator's order to stop injecting seawater into a reactor soon after the nuclear crisis erupted in March, government and other sources said Tuesday.

Masao Yoshida, who has since drawn media attention over his decision to continue the seawater injection despite Tokyo Electric Power Co.'s decision to suspend the measure, told workers not to obey his ensuing instruction before going on to order them to stop injecting the water, according to government and TEPCO sources.

While some people have criticized Yoshida's unilateral action, others have said his decision prevented the situation at the plant from deteriorating as workers scrambled to try to bring the crisis, triggered by the March 11 earthquake and tsunami, under control.

The disaster caused the plant's No. 1 reactor to lose power and thus its cooling functions. As the supply of fresh water to cool the reactor was running out, workers began injecting seawater from shortly after 7 p.m. on March 12.

But the utility's head office instructed Yoshida to stop the seawater injection after a TEPCO official, who was dispatched to then Prime Minister Naoto Kan's office, reported to the head office that there was "a feeling that seawater injection could not be implemented without the prime minister's decision."

Yoshida then told the workers, "I will order you to stop the water injection..., but do not listen to it," before instructing them to stop the seawater injection, according to the sources.

**The workers ignored the order and continued injecting seawater into the reactor,** they said.

Based on a report from Yoshida, TEPCO initially announced that seawater injection had been suspended from 7:25 p.m. to 7:55 p.m. Two months later, he revealed that the injection had not actually been suspended and he was reprimanded by TEPCO.

On Monday, TEPCO said Yoshida had been hospitalized and will be relieved of his post, while declining to provide details of his illness and his accumulated radiation exposure, citing privacy, only saying that doctors have not indicated a link to radiation.

Yoshida, who became the plant's chief in June 2010, has directed onsite operations to bring the radiation-leaking plant under control since the March 11 disaster triggered Japan's worst nuclear crisis.

(Mainichi Japan) November 30, 2011

## **Japan's nuclear accords with 4 countries due to clear parliament**

<http://mdn.mainichi.jp/mdnnews/news/20111130p2g00m0dm082000c.html>

TOKYO (Kyodo) -- Japan's bilateral civil nuclear cooperation accords with Jordan, Russia, South Korea and Vietnam could take effect in December, with Diet deliberations on them beginning Wednesday despite public concerns about exporting atomic technology in the wake of the Fukushima disaster.

The accords, which will lay the legal foundations for Japanese companies to supply nuclear equipment and technology to other countries, are expected to be approved by the House of Representatives on Dec. 2, lawmakers said.

If all goes smoothly, they will come into force next year after also being approved by the House of Councillors during the current parliament session, which ends Dec. 9 unless extended.

**On Wednesday the Liberal Democratic Party, which controls the House of Councillors with smaller opposition parties, basically agreed to support enactment of the pacts.**

Japan signed the pacts with the respective countries before the world's worst nuclear accident in 25 years occurred at the Fukushima Daiichi power plant, following the March 11 earthquake and tsunami.

Diet deliberations on the nuclear cooperation agreements had stalled after the accident. But the government and the LDP later decided to take the stance that such accords before the March disaster should become effective to prevent diplomatic relations from being damaged, and as long as other countries still wanted Japan's cooperation.

Necessary domestic procedures for the accords in the four countries have already been completed and they are only awaiting approval by the Japanese Diet, according to government officials.

Foreign Minister Koichiro Gamba told a House of Representatives committee that Japan will "do whatever is possible to ensure safety," when referring to the country's policy of not completely abandoning its nuclear exports.

Gamba told the lower house panel on foreign affairs he is also hoping to conclude a bilateral accord on cooperation in the peaceful use of nuclear energy with five countries -- Brazil, India, South Africa, Turkey and the United Arab Emirates -- on which Japan began negotiations prior to the Fukushima disaster.

In Jordan, a consortium of Mitsubishi Heavy Industries Ltd. and French nuclear power company Areva is competing with Russian and Canadian companies for nuclear power contracts.

**Jordan has urged Japan to ratify a bilateral nuclear cooperation accord by the year-end, cautioning that without it, the Japan-French consortium will lose its chance of winning a bid to build a nuclear power plant there, according to diplomatic sources.**

(Mainichi Japan) November 30, 2011

## **Fukui municipalities call on gov't to keep nuclear power plants**

TOKYO (Kyodo) -- Fukui Prefecture municipalities that host nuclear power plants urged the central government on Tuesday to maintain the plants at a time when it is mulling the best combination of energy sources following the nuclear crisis at the Fukushima Daiichi power plant.

"The host communities hope the need for nuclear power generation will be shown and such power will be used in the search for a better mix of power sources," a group representing the municipalities said in a statement.

Jitaro Yamaguchi, chairman of the group and also mayor of Mihama town that hosts a Kansai Electric Power Co. nuclear power plant, handed the statement to Economy, Trade and Industry Minister Yukio Edano at the ministry.

Yamaguchi also said the request is premised on ensuring the safety of residents in areas with nuclear power stations.

Edano responded, "Even if the nation's (nuclear power) policy changes, we intend to thoroughly fulfill our responsibility (to the municipalities)."

On the same day, Mitsuharu Kanazawa, mayor of Oma town in Aomori Prefecture, asked Tadahiro Matsushita, senior vice industry minister, to realize the early resumption of construction of Electric Power Development Co.'s Oma nuclear power plant.

(Mainichi Japan) November 30, 2011

## **Farmer who unknowingly shipped radioactive rice says prefecture's testing not enough**

DATE, Fukushima -- "I shipped my crops trusting Fukushima Prefecture's declaration about crop safety. It's really a shame that things turned out as they have," says farmer Ichiko Takahashi, whose rice was found to be over the government's radiation limit after part of it was sold to consumers.

"If the testing methods are not changed, the same problem (of crops over the government limit making it through) will happen again."

Even after the prefecture made its announcement that crops were safe in October, Takahashi had doubts that the radiation tests were sufficient and brought her crops in herself for testing. The results she

received on Nov. 18 were under the provisional government limit of 500, but not by much, at 476 becquerels of cesium.

She had already sent 18 kilograms of mochi rice for sale to customers. Afraid she would lose customers' confidence by selling the rice as it was, she asked for its sale to be halted and she took it to be tested at Fukushima University. A few days later she got news that it was over 700 becquerels. On Nov. 28, she also got news from the prefectural government that testing on her rice there had found it over the government limit.

Of the 18 kilograms of rice, 10.5 kilograms had already been sold. Nine of those kilograms were to unknown buyers, something that worries her.

Takahashi has a reputation in the area as a knowledgeable vegetable farmer and has taught elementary school students how to grow sweet potatoes and rice.

Says Takahashi: "I've farmed until now under the philosophy that you mustn't make anything dangerous. I tried to keep radiation out by not using water from the mountain rivers. What more could I have done?"

(Mainichi Japan) November 30, 2011

## **Gov't panel to discuss whether to decommission Genkai No. 1 nuclear reactor**

The government's Nuclear and Industrial Safety Agency (NISA) decided on Nov. 29 to set up a subcommittee to discuss whether to review its safety assessments of the No. 1 reactor at the Genkai Nuclear Power Plant in Saga Prefecture in what could be a step toward decommissioning the aging reactor.

NISA, an arm of the Ministry of Economy, Trade and Industry, made the decision after some experts said at its hearing on measures against the aging of nuclear reactors on Nov. 29 that the pressure vessel of the Genkai No. 1 reactor was deteriorating faster than generally assumed and that the reactor should be decommissioned. The No. 1 reactor, the oldest reactor operated by Kyushu Electric Power Co., became operational in 1975.

It has been revealed that a process called "embrittlement" by which the pressure vessel becomes fragile after being exposed to neutrons emitted from the reactor core has progressed much faster than previously thought. Therefore, some experts have pointed out that the vessel, if cooled down quickly, could break down easily.

The No. 1 reactor will go through regular inspections from Dec. 1, but NISA's subcommittee plans to come up with final safety assessments of the reactor by the end of March 2012, and therefore there is a possibility of the reactor remaining shut down at least until then. Moreover, depending on the subcommittee's conclusions, Kyushu Electric's explanation that there is "no safety problem" could be undermined and calls for decommissioning of the reactor would likely emerge stronger.

At the hearing held on Nov. 29, Hiromitsu Ino, professor emeritus at the University of Tokyo, said, "I think the Genkai No. 1 nuclear reactor, which has been deteriorating much faster than predicted, should be decommissioned." On whether to resume operations of the reactor after regular inspections, he said, "Clearing the arguments presented at the hearing is a prerequisite." Another expert said, "There is a need to review the traditional methods of assessing the safety of pressure vessels."

(Mainichi Japan) November 30, 2011

## **TEPCO: Melted fuel ate into containment vessel**

[http://www3.nhk.or.jp/daily/english/20111130\\_39.html](http://www3.nhk.or.jp/daily/english/20111130_39.html)

The operator of the damaged Fukushima Daiichi nuclear power plant has announced the results of an analysis on the state of melted fuel in the plant's Number 1 unit.

The Tokyo Electric Power Company, or TEPCO, and several research institutes made public their analyses on the melting of fuel rods at 3 of the plant's units at a government-sponsored study meeting on Wednesday. The analyses were based on temperatures, amounts of cooling water and other data.

TEPCO said that in the worse case, all fuel rods in the plant's Number 1 reactor may have melted and dropped through its bottom into a containment vessel. The bottom of the vessel is concrete covered with a steel plate.

**The utility said the fuel may have eroded the bottom to a depth of 65 centimeters. The thinnest part of the section is only 37 centimeters thick.**

TEPCO also said as much as 57 percent of the fuel in the plant's Number 2 reactor and 63 percent in the Number 3 reactor may have melted, and that **some of the melted fuel may have fallen through reactor vessels.**

Wednesday, November 30, 2011

## **Melted nuclear fuel eroded reactor container by up to 65 cm: TEPCO**

TOKYO (Kyodo) -- The operator of the crippled Fukushima Daiichi nuclear power plant said Wednesday that **the concrete base of the No. 1 reactor container had been eroded by up to 65 centimeters when the fuel inside melted,** although the steel container itself was left intact.

According to Tokyo Electric Power Co.'s analysis, all of the fuel inside the No. 1 reactor melted after cooling functions failed in the wake of the March 11 earthquake and tsunami, with a substantial amount of the fuel melting through the base of the reactor pressure vessel and dropping into the outer primary container.

If the erosion had expanded another 37 cm, the damage would have reached the steel wall, according to the utility known as TEPCO.

As for the Nos. 2 and 3 reactors, which also experienced meltdowns, the amount of fuel that dropped to the bottom of the pressure vessel is estimated to be around 60 percent.

The bottom of the two reactors' pressure vessels is unlikely to have been damaged on a large scale. But if the fuel had melted through the vessels, the primary container of the No. 2 reactor could have been eroded by 12 cm and that of the No. 3 reactor by 20 cm, TEPCO said.

Currently, the melted fuel inside the Nos. 1 to 3 reactors is believed to be cooled by water injection and no further erosion is occurring, it said.

(Mainichi Japan) November 30, 2011

## Activists challenge government on nuclear waste management policy

[http://www.taiwannews.com.tw/etn/news\\_content.php?id=1771961](http://www.taiwannews.com.tw/etn/news_content.php?id=1771961)

Taipei, Nov. 28 (CNA) Environmental groups charged Monday that Taiwan's government has not resolved how to deal with nuclear waste and proposed suspending operations at the country's three nuclear power plants until the issue was dealt with. The environmentalists made the appeal at an environmental assessment meeting held by the Cabinet-level Environmental Protection Administration (EPA) on the government's radioactive waste management policy.

During the meeting, officials from the Atomic Energy Council (AEC), the country's top nuclear regulatory body, presented a report on its proposed approach to dealing with nuclear waste that will become official policy if approved by the EPA assessment committee. One of the plan's centerpieces was to have nuclear waste recycled overseas before shipping it back to Taiwan for permanent storage.

But environmental activists, including Green Citizens' Action Alliance Deputy Secretary-General Hung Shen-han, were not convinced the solution was viable and advocated shutting down Taiwan's three nuclear power plants until the issue was clearly addressed. Hung contended that one way or another, radioactive waste had to be stored either at home or abroad, and no foreign country has so far been willing to lease Taiwan land for storage of the waste. He acknowledged that radioactive waste could be recycled overseas but said the leftover material was still unstable and would still have to be stored in Taiwan, which he saw as a bad option. **Hung compared nuclear waste to a ticking time-bomb that threatened the life and property of Taiwan's people because of the unstable geographic nature of the island, which is prone to earthquakes.**

Wang Chung-ming of the Green Party Taiwan suggested that the government include the proposal to suspend nuclear power plant operations in the report the AEC was presenting to the EPA committee for approval. The report, which the activists said had many other loopholes and problems, also outlined four principles on which waste management should be based -- securing residents' approval, ensuring safety, reducing waste production, and developing efficient recycling and storage technologies. Taiwan's low-level radioactive waste is currently stored on the outlying Orchid Island and in the three nuclear power plants in which it is being produced. The government has selected Wuchiu in Kinmen and Daren in Taitung to serve as permanent storage sites for the waste, but it has encountered strong opposition from people in the two townships. (By Hsu Chih-wei and Elizabeth Hsu)

## Japan's nuclear accords with 4 countries due to clear parliament

<http://mdn.mainichi.jp/mdnnews/news/20111130p2g00m0dm082000c.html>

TOKYO (Kyodo) -- Japan's bilateral civil nuclear cooperation accords with Jordan, Russia, South Korea and Vietnam could take effect in December, with Diet deliberations on them beginning Wednesday despite public concerns about exporting atomic technology in the wake of the Fukushima disaster.

The accords, which will lay the legal foundations for Japanese companies to supply nuclear equipment and technology to other countries, are expected to be approved by the House of Representatives on Dec. 2, lawmakers said.

If all goes smoothly, they will come into force next year after also being approved by the House of Councillors during the current parliament session, which ends Dec. 9 unless extended.

**On Wednesday the Liberal Democratic Party, which controls the House of Councillors with smaller opposition parties, basically agreed to support enactment of the pacts.**

Japan signed the pacts with the respective countries before the world's worst nuclear accident in 25 years occurred at the Fukushima Daiichi power plant, following the March 11 earthquake and tsunami.

Diet deliberations on the nuclear cooperation agreements had stalled after the accident. But the government and the LDP later decided to take the stance that such accords before the March disaster should become effective to prevent diplomatic relations from being damaged, and as long as other countries still wanted Japan's cooperation.

Necessary domestic procedures for the accords in the four countries have already been completed and they are only awaiting approval by the Japanese Diet, according to government officials.

Foreign Minister Koichiro Gamba told a House of Representatives committee that Japan will "do whatever is possible to ensure safety," when referring to the country's policy of not completely abandoning its nuclear exports.

Gemba told the lower house panel on foreign affairs he is also hoping to conclude a bilateral accord on cooperation in the peaceful use of nuclear energy with five countries -- Brazil, India, South Africa, Turkey and the United Arab Emirates -- on which Japan began negotiations prior to the Fukushima disaster.

In Jordan, a consortium of Mitsubishi Heavy Industries Ltd. and French nuclear power company Areva is competing with Russian and Canadian companies for nuclear power contracts.

**Jordan has urged Japan to ratify a bilateral nuclear cooperation accord by the year-end, cautioning that without it, the Japan-French consortium will lose its chance of winning a bid to build a nuclear power plant there, according to diplomatic sources.**

(Mainichi Japan) November 30, 2011

**DECEMBRE 2011**

(Mainichi Japan) December 1, 2011

## Gov't to aid infrastructure building in areas near Fukushima plant



A deserted field and buildings inside the contaminated exclusion zone around the crippled Fukushima Dai-ichi nuclear power station are seen through a bus window near Okuma, Japan, Saturday, Nov. 12, 2011. (AP Photo/David Guttenfelder, Pool)

TOKYO (Kyodo) -- The central government plans to carry out infrastructure projects, such as road and embankment improvement, on behalf of local governments in areas where voluntary evacuation advisories arising from the Fukushima nuclear crisis have been lifted, government sources said Wednesday.

According to an outline of planned legislation to facilitate reconstruction work after the nuclear accident, the national government would also provide the areas with reconstruction measures more favorable than those for other affected areas, such as free provision of land lots for industrial use and greater tax breaks.

The planned bill, which the government intends to present to the ordinary Diet session to be convened in January, is aimed at providing all-out government support for people gravely affected by radiation leaks from the Fukushima Daiichi nuclear plant crippled by the March 11 earthquake and tsunami.

Infrastructure improvements and other projects after the removal of evacuation directives would be carried out based on a rehabilitation plan to be worked out by the prime minister through consultations with Cabinet ministers and local government chiefs.

The Fukushima prefectural government would prepare a set of measures to promote local products, such as reduction or exemption of registration fees for products adopting Fukushima brand names.



The town of Minamisanriku is seen eight months after it was destroyed by the March 11 tsunami, in northeast Japan, Friday, Nov. 18, 2011. (AP Photo/Greg Baker)

To support the creation of environmental and other new businesses, the prefectural government would also prepare other programs, including simplified procedures for approving geothermal development projects.

Among other measures envisioned by the planned legislation, health surveys would be carried out throughout the prefecture, and the prefectural government would use basic resident registers, managed by municipal governments, to confirm information about residents.

## **Nobel winner, 9 others picked for nuclear crisis panel**

TOKYO (Kyodo) -- Nobel chemistry laureate Koichi Tanaka and nine others were selected Wednesday as members of a special parliamentary committee to investigate the causes behind the ongoing nuclear crisis at the Fukushima Daiichi power plant, lawmakers said.

In a unanimous decision, Kiyoshi Kurokawa, 75, former president of the Science Council of Japan, was picked to head the 10-member panel by senior members of the rules and administration committees of both houses at a meeting of their joint consultative panel on the matter.

Formal appointments by the heads of the House of Representatives and the House of Councillors are likely to be made next week at the earliest, after expected approval at plenary sessions of each chamber on Friday, they said.

The special investigative committee is likely to start work in earnest in mid-December or later, with plans to produce a report around next June.

The parliamentary panel will function separately from a panel of third-party experts set up by the government to determine the causes of the nuclear crisis.

(Mainichi Japan) December 1, 2011

## Nuclear cleanup volunteers' invisible enemy

Setsuko Kitaguchi / Yomiuri Shimbun Staff Writer

DATE, Fukushima--Some local governments in Fukushima Prefecture have started decontamination operations using volunteers to remove radioactive substances released after the accident at the Fukushima No. 1 nuclear power plant.

One work site in particular had a peculiar atmosphere, in which volunteers fought invisible, potentially hazardous radiation particles with simple equipment, **making them appear to be cleaning a garden.**

I participated in the decontamination volunteer work at a specific spot recommended for evacuation in Date, about 50 kilometers from the crippled nuclear plant.

At 9:30 a.m. Saturday, a bus carrying 33 participants arrived in the city's Tsukidate-Kitanosawayama district. Most of them were middle-aged or elderly men from other prefectures. There were six women including me.

In the basin in which rice paddies after the harvest could be seen in abundance, houses stood as if they were being supported by the mountain slopes.

**We were provided with body warmers, dust masks and dosimeters. The radiation level I measured above the ground was about three microsieverts per hour.**

Yearly exposure at this rate could exceed 20 millisieverts, which requires that the site be designated as a specific spot recommended for evacuation.

"We know there's radiation here," one participant said.

And yet the place was situated in such serene surroundings. We were surprised again.

We conducted the day's decontamination work at sites near two barns. We collected fallen leaves and put them into garbage bags, tying the top of the bags with adhesive tape.

We then scraped off topsoil with shovels and sickles. The bags were heavier than I expected as the contents contained a great deal of moisture. I carried the bags, shaky on my feet, to a temporary storage site on the premises.

**When a city government official measured radiation levels below the eaves troughs of the barns and greenhouses, the meter read more than 10 microsieverts.**

We were surprised again to see the wide range of radiation levels at different spots at the same location.

An hour after beginning the work, the mask made my face feel sweaty and itchy, but I could not remove it for fear of the radiation stirred up from the mud.

Just removing fallen leaves and scraping off the surface soil cut the radiation levels in half. Further digging up the soil to a depth of five centimeters brought the level down to less than two microsieverts.

In 2-1/2 hours we filled about 100 garbage bags.

A 45-year-old man from Ninohe, Iwate Prefecture, who also participated in the decontamination volunteer work in Fukushima, expressed his desire to help, despite the difficulties.

"Because there are people living here, I want to make the conditions better," he said.

Though it was not such hard physical labor, I felt mentally exhausted and my muscles ached, perhaps because I always kept an eye on my dosimeter as I worked.

On Monday, two days after the work, it was announced that radioactive cesium exceeding the government's interim limit had been detected in unpolished rice harvested in the Tsukidatemachi district of Date, where I had worked as a volunteer.

I cannot help but worry how much work will be required to make the town a place where residents can live with peace of mind.

In Fukushima Prefecture, only the city governments of Date and Fukushima are asking for volunteers to help with decontamination. Many other local governments have yet to compile decontamination plans.

**But some of the other local governments are doubtful about whether decontamination operations by volunteers are effective.**

"I'm not sure whether we are allowed to put volunteers in situations where they risk being exposed to radiation," one local government official said,

Next January, a law for special measures to decontaminate areas polluted with radiation, which will stipulate methods and the government's responsibility for the decontamination work, will be fully enacted.

Coinciding with the law coming into effect, the Environment Ministry and the Fukushima prefectural government will establish facilities staffed with decontamination experts.

The facilities will dispatch volunteers to local governments and instruct them on effective and safe decontamination methods.

(Dec. 1, 2011)

## **Wary of criticism, officials shelved withdrawal from nuclear reprocessing business**

Top officials from Tokyo Electric Power Co. (TEPCO) and the Ministry of Economy, Trade and Industry (METI) secretly met in 2002 to discuss withdrawing from a project to reprocess nuclear fuel at the Rokkasho Reprocessing Plant in Aomori Prefecture, it has been learned.

The very fact that officials met to discuss this issue is a sign that Japan's bid to reprocess all of its nuclear waste domestically was saddled with problems from the outset. At the same time, the continued support that the project has received in spite of the doubts that government and industry officials held about its safety and economic feasibility shows a diseased side of Japan's nuclear power policy.

Sources familiar with the project said that TEPCO executives and other parties had made frequent visits to METI and the ministry's Agency for Natural Resources and Energy until around February 2004, seeking to withdraw from the nuclear fuel reprocessing project. In addition to ballooning construction costs and a series of problems, it was calculated in January 2004 that operation of the reprocessing plant could cost approximately 19 trillion yen.

Yet, while prospects for the plant were becoming bleaker, METI and TEPCO withheld from producing any guidelines for withdrawing as pulling out would lead to questions of responsibility for wasted money.

Another factor was the strong resistance from Japan's "Nuclear Power Village," the name given to supporters of nuclear power in Japan. Officials from the Agency for Natural Resources and Energy and the Cabinet Office's Japan Atomic Energy Commission, for example, concealed diplomatic documents that arrived from Russia in October in 2002, proposing to accept Japan's spent nuclear fuel, on the grounds that this could hinder domestic factory operations.

One former senior METI official learned about the existence of the Russian proposal for the first time in a Nov. 24 report in the Mainichi Shimbun newspaper.

"If we had been aware of the proposal, we could have suggested transporting nuclear fuel to Russia, and a path for pulling out of the project may have opened," the official lamented.

As a result, the reprocessing project has continued, and the 19 trillion yen has been tacked on to industrial and home power bills. When considering that the money businesses are spending on electricity ends up being added to the prices of the products they produce, the financial burden on each person in Japan works out at about 150,000 yen.

The reprocessing factory that members of the public are being made to fund is still not operating -- a fact that further highlights the failed nature of the project.

(Mainichi Japan) December 2, 2011

## **Japan to export nuclear technology if wanted, Noda says**

TOKYO (Kyodo) -- Prime Minister Yoshihiko Noda said Friday that Japan will consider exporting its nuclear technology, in principle, as long as it is still wanted by other countries.

Noda said Japan will not provide its nuclear technology and expertise to any country without restriction, noting that peaceful use and other requirements must be ensured.

But Noda told a House of Representatives panel he believes it is "meaningful to provide things with high levels of safety" to other countries.

Noda's remarks came as Japan's bilateral civil nuclear cooperation accords with Jordan, Russia, South Korea and Vietnam are due to be approved by parliament this month, despite public concerns about the safety of atomic power in the wake of the Fukushima disaster.

The accords, which will lay the legal foundations for Japanese companies to supply nuclear equipment and technology to other countries, were approved by the committee on foreign affairs in the afternoon.

Japan signed the pacts with the four countries before the world's worst nuclear crisis since Chernobyl occurred at the Fukushima Daiichi power plant, following the March 11 earthquake and tsunami.

Before the crisis, the government led by the Democratic Party of Japan regarded exporting the country's nuclear technology, especially to fast-growing economies, as one of the most promising ways to generate economic growth.

Noda told the lower house panel that the government is seeking the parliamentary passage of the accords as necessary domestic procedures have already been completed in Jordan, Russia, South Korea and Vietnam. He said those countries are still hoping to have Japan's cooperation even after the nuclear crisis -- which has yet to be brought under control.

Noda said diplomatic relations must be taken into account with regard to the four accords as well as others Japan began negotiating prior to the crisis, including with Brazil, India and Turkey.

As for new agreements, Noda said the government must examine how Japan can cooperate for the peaceful use of nuclear energy taking into account the findings on the Fukushima accident.

To date, Japan has concluded bilateral nuclear accords with seven countries -- Australia, Britain, Canada, China, France, Kazakhstan and the United States -- and the European Atomic Energy Community.

A vote on the four nuclear accords in a lower house plenary session, which was initially due to take place on Friday, has been rescheduled for next week.

If all goes smoothly, they will come into force early next year after also being approved by the opposition-controlled House of Councillors during the current parliamentary session, which will end Dec. 9 unless extended.

In Jordan, a consortium of Mitsubishi Heavy Industries Ltd. and French nuclear power company Areva is competing with Russian and Canadian companies for contracts.

Jordan, which plans to conduct a bid to build a nuclear power plant by the end of this year, has urged Japan to approve their nuclear cooperation accord soon, according to diplomatic sources.

(Mainichi Japan) December 2, 2011

## **Diet panel approves civil nuclear pacts**

A committee of Japan's Lower House has approved civil nuclear cooperation treaties with 4 countries. The house is to vote on the agreements next week.

The foreign affairs committee gave majority support on Friday for the treaties with Jordan, Russia, Vietnam and South Korea.

The main governing Democratic Party and the largest opposition Liberal Democratic Party voted for the pacts.

The treaties would allow Japan to export nuclear power generation facilities and transfer related technology to the nations.

Japan and the 4 countries signed the accords before the March 11th disaster and Fukushima nuclear accident. Diet approval had been pending ever since.

Japan's Prime Minister Yoshihiko Noda told the committee that Japan has a duty to share the lessons learned from the accident.

Noda said it would be meaningful for Japan to offer safe nuclear technologies to countries that request them, while ensuring the peaceful use of nuclear power and monitoring conditions in recipient nations.

But he expressed caution about signing similar pacts with more countries, citing the need to review the accident at the Fukushima Daiichi nuclear plant.

Friday, December 02, 2011 16:16 +0900 (JST)

## **TEPCO, industry ministry secretly agreed to abandon nuclear reprocessing plant in 2002**

<http://mdn.mainichi.jp/mdnnews/news/20111202p2a00m0na015000c.html>

Senior officials at Tokyo Electric Power Co. (TEPCO) and the Ministry of Economy, Trade and Industry (METI) held a top secret discussion in 2002 about abandoning the Rokkasho Reprocessing Plant project, the Mainichi has learned.

The Mainichi obtained a memo written by a METI official with the names of the participants -- then TEPCO Chairman Hiroshi Araki, President Nobuya Minami, Vice President Tsunehisa Katsumata and METI

Administrative Vice Minister Katsusada Hirose -- the date, and the meeting's objective, as well as comments from those who were believed to have been involved. This marks the first time that such top-level deliberations between TEPCO and METI have come to light.

The pros and cons of the nuclear fuel cycle, including whether to continue with or abandon the Monju prototype fast-breeder reactor in Fukui Prefecture are set to undergo review, and **the revelation that TEPCO and METI officials were already suggesting abandonment of a nuclear reprocessing project -- a major pillar of the nuclear fuel cycle vision -- nine years ago is likely to affect the new national nuclear policy that the Japan Atomic Energy Commission of the Cabinet Office is slated to draw up by the summer of 2012.**

According to the memo and testimony from those involved, the meeting was held at the urging of METI, which cited "a lot of problems with the Rokkasho reprocessing plant" that could benefit from a discussion between leaders from the ministry and the utility. The meeting took place around May 2002 in a private room in a Tokyo hotel.

The participants agreed to "move in the direction of withdrawing" from the project in the Aomori Prefecture village of Rokkasho, and decided to meet again to discuss specifics of the withdrawal procedure. Later, the parties selected TEPCO board members who would explain the withdrawal to the Aomori Prefectural Government.

When the application for the Rokkasho project was filed in 1989, construction expenses were predicted to reach 760 billion yen. However, a series of problems including water leaks from a spent nuclear fuel storage pool assured that **the construction cost would end up being over 2 trillion yen.** If the plant reached full operation, **another 1 trillion yen would become necessary to cover future demolition costs.** TEPCO and other utilities began voicing concerns about the viability of the Rokkasho project, leading METI to set up the meeting in May 2002.

Three months later, however, when TEPCO's cover-up of cracked equipment and other damage was exposed, Araki and Minami resigned. As a result, a second meeting to negotiate the details of the Rokkasho withdrawal never took place.

Then TEPCO Chairman Araki, who is currently an advisor to the utility, refused to be interviewed about the case, saying that his "memories (about it) are vague." Former TEPCO President Minami said that he "has no recollection" of the 2002 meeting, but added, "We were talking with METI about whether to withdraw from the reprocessing project, and I discussed it with Araki and (then Vice President and current Chairman) Katsumata."

Katsumata also refrained from saying whether the meeting had taken place, but said, "We had about five management meetings within our company about whether or not to go forth with reprocessing." Meanwhile, former METI official Hirose said, "I absolutely have no recollection."

(Mainichi Japan) December 2, 2011

## **Xenon 400,000 times normal found in Chiba air immediately after Fukushima nuke accident**

CHIBA -- Radioactive xenon-133 some 400,000 times normal levels was detected in the atmosphere here immediately after the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant, a radiation survey organization said.

**It took three months before the volume of radioactive substances returned to normal levels.**

The Chiba-based Japan Chemical Analysis Center made the announcement during a radiation research session in Tokyo on Dec. 1, organized by the Education, Culture, Sports, Science and Technology Ministry.

**Keisuke Isogai from the center denied that the high concentration of radioactive substance posed a health hazard.**

"I think xenon-133 drifted from the Fukushima No. 1 nuclear plant to Chiba in the form of a plume. Since the detected amount translates into a cumulative external exposure to radiation of only 1.3 microsieverts over the three-month period, it won't cause a health hazard," he said.

The average amount of xenon-133 in the atmosphere was 1,300 becquerels per cubic meter of air in Chiba between March 14 and 22, as compared with zero to 3.4 millibecquerels before the crisis. The volume reached 400,000 times normal levels shortly after the nuclear crisis was triggered by the March 11 tsunami, according to the center.

Xenon-133 is generated in the process of nuclear fission of uranium and plutonium used as fuel at nuclear power stations. Since xenon-133 hardly reacts to any other substance, there is no fear of internal exposure to radiation even if inhaled, experts say.

(Mainichi Japan) December 2, 2011

## **TEPCO: Cooling stoppage info was not shared**

A miscommunication between workers at the Fukushima Daiichi nuclear plant could have delayed a response to the accident on March 11th.

The operator says the plant's chief did not know for several hours that the only backup cooling system for the Number 1 reactor was manually shut down on the day of the earthquake and tsunami.

NHK has obtained Tokyo Electric Power Company's interim report on the accident to be released on Friday.

The report says workers in the reactor's control room stopped an emergency cooling system shortly after 6 PM. It says the plant chief, Masao Yoshida, and others in the facility's office building were unaware of the manual shut-down.

TEPCO says it was not until around midnight that the plant chief noticed the system was not working. A rise in the radiation levels at the reactor building alerted him to the possibility of damaged fuel rods.

The emergency system uses steam to cool down a reactor when there is no electricity supply. It was the only workable cooling system at the reactor after the plant lost its major power sources.

The report says the misunderstanding occurred because a malfunctioning gauge failed to show that the water level had dropped, exposing the fuel rods.

TEPCO estimates that damage to the exposed fuel rods occurred about 4 hours after the quake. It says this generated large amounts of hydrogen that caused the first explosion at the plant on the following day.

Friday, December 02, 2011 10:20 +0900 (JST)

## **Fukushima Pref. to ask TEPCO to shut N-reactors**

The Yomiuri Shimbun

FUKUSHIMA--The Fukushima prefectural government will ask Tokyo Electric Power Co. to **decommission all 10 reactors of its nuclear power plants in the prefecture**, prefectural officials have said.

The prefecture has borne the brunt of the nuclear crisis resulting from accidents at the utility's Fukushima No. 1 nuclear power plant on March 11.

Nuclear safety agreements between TEPCO and prefectural and municipal governments hosting nuclear plants require TEPCO to seek prior consent from local governments before operations are resumed.

TEPCO has already decided to decommission the Nos. 1-4 reactors at the Fukushima No. 1 nuclear power plant.

The prefecture's decision is likely to force the utility firm to consider decommissioning the Nos. 5-6 reactors at the plant and Nos. 1-4 reactors of the Fukushima No. 2 nuclear power plant, observers said.

**Fukushima Gov. Yuhei Sato's decision to seek the shutdown of the reactors came after he studied the impact on the prefecture if they were decommissioned, such as the loss of nuclear-related local jobs and subsidies from the central government.**

He expressed his intention at a meeting of heads of prefectural government departments concerning the nuclear crisis on Wednesday morning.

The prefectural government plans to include the policy in the prefecture's reconstruction plan, in which key points toward rebuilding and restoration of the prefecture are presented.

Asked by the media at a press conference Wednesday morning on how the firm would respond if Fukushima Prefecture asks TEPCO to decommission the reactors, Junichi Matsumoto, acting head of TEPCO's headquarters regarding nuclear plant locations, said the firm would hold consultations with local residents.

**As of the end of September 2011, TEPCO had appropriated about 940 billion yen to control the nuclear crisis and decommission the Nos. 1-4 reactors of the No. 1 nuclear power plant.**

If TEPCO decommissions all reactors of the No. 1 and No. 2 plants, the firm will incur additional costs, which will significantly aggravate the company's financial position, observers said.

(Dec. 2, 2011)

## **U.K. plutonium plan likely to influence Japanese nuclear policy**

LONDON -- The United Kingdom came to have the world's largest plutonium stockpile because the development of fast-breeder reactors as well as facilities for reprocessing MOX fuel for use in light-water reactors hit a brick wall in both technological and economical developments, slowing down plutonium consumption to a much slower rate than had been planned.

Like the U.K., resource-poor Japan has viewed nuclear power, including fast-breeder reactors, as "quasi-domestic energy." It goes without saying that the U.K.'s anti-plutonium policy will influence how Japan -- which faces problems similar to the U.K. -- decides to deal with its nuclear fuel cycle.

The U.K. had always been at the forefront of nuclear energy development, building the West's first commercial reactor in 1956 and fast-breeder reactor in 1959. Concerns that the world would soon run out of oil and other fossil fuels emerged, and as development of nuclear weapons were stepped up from the early 1950s onwards, the country increasingly placed an emphasis on nuclear energy development.

However, with discoveries of an oil field in the North Sea and a massive uranium deposit in Canada in the 1970s, the relative economic appeal of plutonium began to wane. Like Japan's Monju fast-breeder project, the U.K. experienced sodium leaks and a host of other technical problems in its fast-breeder project, eventually withdrawing from it in 1994.

Fuel from Magnox, an old type of nuclear reactor that is still in use in the U.K., is extremely difficult to store long-term, and requires reprocessing. Because of this, the country's plutonium surplus continued to grow by 3 tons per year.

As a solution to this situation, the U.K. government decided on the use of MOX fuel in commercial thermal reactors. However, the Sellafield MOX fuel plant built in 2001 in northwestern England, which, while expected to produce 120 tons of fuel per year, produced only 15 tons in 10 years due to technical issues. It was forced to shut down this past August.

Asked about the current deliberations within the U.K. government regarding withdrawal from fuel reprocessing and the disposal of some of the country's surplus plutonium, Robert Pickard, the chair of the government's Committee on Radioactive Waste Management (CORWM) says: "Reprocessing has

heretofore taken the role of reducing nuclear waste, and promoting the reuse of nuclear materials. We have reached a crossroads, however, in that sort of thinking."

The U.K.'s journey through nuclear power overlaps with the history of Japan's nuclear development. Both countries pumped massive amounts of national funds into fast-breeder technology. In Japan, the construction of a nuclear fuel reprocessing plant was pushed forth in the Aomori Prefecture village of Rokkasho.

In a long-term nuclear energy strategy drawn up by the Japanese government in 1987, it was predicted that commercial viability of fast-breeder reactors would occur between the 2020s and 2030. The same report said that a reprocessing plant and a MOX fuel plant would be up and running by the mid 1990s.

Plans have subsequently been revised multiple times based on technical and other problems that emerged. Now, Japan is looking toward the commercial viability of its fast-breeder reactor by the year 2050, a reprocessing facility by 2012, and a MOX fuel plant by 2016.

## **Diet panel approves civil nuclear pacts**

A committee of Japan's Lower House has approved civil nuclear cooperation treaties with 4 countries. The house is to vote on the agreements next week.

The foreign affairs committee gave majority support on Friday for the treaties with Jordan, Russia, Vietnam and South Korea.

The main governing Democratic Party and the largest opposition Liberal Democratic Party voted for the pacts.

The treaties would allow Japan to export nuclear power generation facilities and transfer related technology to the nations.

Japan and the 4 countries signed the accords before the March 11th disaster and Fukushima nuclear accident. Diet approval had been pending ever since.

Japan's Prime Minister Yoshihiko Noda told the committee that Japan has a duty to share the lessons learned from the accident.

Noda said it would be meaningful for Japan to offer safe nuclear technologies to countries that request them, while ensuring the peaceful use of nuclear power and monitoring conditions in recipient nations.

But he expressed caution about signing similar pacts with more countries, citing the need to review the accident at the Fukushima Daiichi nuclear plant.

Friday, December 02, 2011 16:16 +0900 (JST)

## **Japan to export nuclear technology if wanted, Noda says**

TOKYO (Kyodo) -- Prime Minister Yoshihiko Noda said Friday that Japan will consider exporting its nuclear technology, in principle, as long as it is still wanted by other countries.

Noda said Japan will not provide its nuclear technology and expertise to any country without restriction, noting that peaceful use and other requirements must be ensured.

But Noda told a House of Representatives panel he believes it is "meaningful to provide things with high levels of safety" to other countries.

Noda's remarks came as Japan's bilateral civil nuclear cooperation accords with Jordan, Russia, South Korea and Vietnam are due to be approved by parliament this month, despite public concerns about the safety of atomic power in the wake of the Fukushima disaster.

The accords, which will lay the legal foundations for Japanese companies to supply nuclear equipment and technology to other countries, were approved by the committee on foreign affairs in the afternoon.

Japan signed the pacts with the four countries before the world's worst nuclear crisis since Chernobyl occurred at the Fukushima Daiichi power plant, following the March 11 earthquake and tsunami.

Before the crisis, the government led by the Democratic Party of Japan regarded exporting the country's nuclear technology, especially to fast-growing economies, as one of the most promising ways to generate economic growth.

Noda told the lower house panel that the government is seeking the parliamentary passage of the accords as necessary domestic procedures have already been completed in Jordan, Russia, South Korea and Vietnam. He said those countries are still hoping to have Japan's cooperation even after the nuclear crisis -- which has yet to be brought under control.

Noda said diplomatic relations must be taken into account with regard to the four accords as well as others Japan began negotiating prior to the crisis, including with Brazil, India and Turkey.

As for new agreements, Noda said the government must examine how Japan can cooperate for the peaceful use of nuclear energy taking into account the findings on the Fukushima accident.

To date, Japan has concluded bilateral nuclear accords with seven countries -- Australia, Britain, Canada, China, France, Kazakhstan and the United States -- and the European Atomic Energy Community.

A vote on the four nuclear accords in a lower house plenary session, which was initially due to take place on Friday, has been rescheduled for next week.

If all goes smoothly, they will come into force early next year after also being approved by the opposition-controlled House of Councillors during the current parliamentary session, which will end Dec. 9 unless extended.

In Jordan, a consortium of Mitsubishi Heavy Industries Ltd. and French nuclear power company Areva is competing with Russian and Canadian companies for contracts.

Jordan, which plans to conduct a bid to build a nuclear power plant by the end of this year, has urged Japan to approve their nuclear cooperation accord soon, according to diplomatic sources.

(Mainichi Japan) December 2, 2011

## **Diet panel approves civil nuclear pacts**

A committee of Japan's Lower House has approved civil nuclear cooperation treaties with 4 countries. The house is to vote on the agreements next week.

The foreign affairs committee gave majority support on Friday for the treaties with Jordan, Russia, Vietnam and South Korea.

The main governing Democratic Party and the largest opposition Liberal Democratic Party voted for the pacts.

The treaties would allow Japan to export nuclear power generation facilities and transfer related technology to the nations.

Japan and the 4 countries signed the accords before the March 11th disaster and Fukushima nuclear accident. Diet approval had been pending ever since.

Japan's Prime Minister Yoshihiko Noda told the committee that Japan has a duty to share the lessons learned from the accident.

Noda said it would be meaningful for Japan to offer safe nuclear technologies to countries that request them, while ensuring the peaceful use of nuclear power and monitoring conditions in recipient nations.

But he expressed caution about signing similar pacts with more countries, citing the need to review the accident at the Fukushima Daiichi nuclear plant.

Friday, December 02, 2011 16:16 +0900 (JST)

## **TEPCO injects nitrogen into pressure vessels**

The operator of the Fukushima Daiichi nuclear power plant has started injecting nitrogen, an inert gas, into the pressure vessels of the crippled reactors to prevent another hydrogen explosion.

In late October, Tokyo Electric Power Company began extracting gases from the containment vessel of the No.2 reactor to remove radioactive substances. During the work, TEPCO found hydrogen

accumulating in parts of the reactor at a density of up to 2.9 percent.

**TEPCO started pumping nitrogen into the pressure vessels of the No.1, 2, 3 reactors on Thursday to lessen the concentration of hydrogen.**

The density of hydrogen accumulating in the containment and pressure vessels is thought to be below 4 percent, the level where an explosion could occur.

TEPCO says the nitrogen injection will push out hydrogen and reduce its concentration.

Keeping hydrogen density low is an indispensable condition in the second step of the process decided upon by the government and TEPCO to resolve the nuclear accident. They are aiming to achieve a state of cold shutdown for the reactors by the end of the year.

The Nuclear and Industrial Safety Agency plans to assess how well TEPCO can manage hydrogen levels.

Friday, December 02, 2011 05:02 +0900 (JST)

See fire ?? on dec.1<sup>st</sup> near reactor no 4

## **Miyagi Pref. begins thyroid testing for kids near Fukushima border**

SENDAI (Kyodo) -- The Miyagi prefectural government began testing the thyroids of 83 children of up to elementary school age Sunday in the town of Marumori, which borders Fukushima Prefecture, to examine the health impact of the Fukushima nuclear crisis.

The radiation level in the prefecture north of Fukushima is estimated to be below the annual limit of 1 millisievert in most areas but at 4.1 millisieverts and 2.8 millisieverts in two areas of the town, prompting concerns among residents, particularly those with children, it said.

It is considering testing also for internal exposure using a whole-body counter, it said.

"As it borders Fukushima Prefecture and the radiation level is high, I hope to get rid of my worries. I want test opportunities to be offered regularly," said Toru Sakuma, a 28-year-old self-employed resident who took his 1-year-old boy Haruki for the test.

(Mainichi Japan) December 4, 2011

## **Decontamination work opened to media near Fukushima plant**

FUKUSHIMA (Kyodo) -- Work under a government model project to remove radioactive materials from areas around the crisis-hit Fukushima Daiichi nuclear power plant was opened to the media Sunday in Okuma, Fukushima Prefecture.

Using high-pressure water sprayers, a joint venture led by major construction contractor Obayashi Corp. has been engaged in the work for a week based on a detailed plan worked out by the government-commissioned Japan Atomic Energy Agency.

The project, aimed at confirming the decontamination method's effectiveness, safety and economic efficiency, is under way in areas within 20 kilometers from the Tokyo Electric Power Co. plant and other high concentration areas from where residents have been evacuated.

The administrative agency began monitoring radiation on Nov. 18 in Okuma, the town hosting those reactors at the plant that suffered core meltdowns in the wake of the March earthquake and tsunami. They have since released massive amounts of radioactive matter into the environment.

The day's work began at the Okuma town office building about 4 km southwest of the plant.

(Mainichi Japan) December 4, 2011

## **Confusion clouds Education Ministry notices on radiation levels in school lunches**

A radiation contamination guideline of 40 becquerels per kilogram that the government introduced in connection with school lunches was actually meant for selecting radiation measuring equipment, the ministry has announced.

On Nov. 30, the Ministry of Education, Culture, Sports, Science and Technology sent 17 prefectures notices that could be interpreted as stating that the limit for radiation in ingredients for school-provided lunches was 40 becquerels per kilogram, and in a news conference on Dec. 1, Senior Vice Minister Yuko Mori confirmed this. On Dec. 2, however, Minister Masaharu Nakagawa explained that the figure was actually a guideline for selecting radiation meters.

**The ministry did not consult the Ministry of Health, Labor and Welfare, which is formulating new radiation contamination guidelines under the Food Sanitation Law, before announcing the figure -- exposing the lack of communication between the two ministries.**

In the wording of its notice, the ministry did not use any terms indicating a binding standard, but rather a guideline that was actually supposed to cover the selection of radiation meters. However, as the confusion sparked nationwide inquiries, the ministry sent another notice to prefectural education boards across Japan late on Dec. 1 stating, "This is a guideline for selecting measuring equipment to purchase, and is not setting a standard for school lunches."

In its original notice in November, the education ministry provided an example which said that if the radiation level in food exceeded a measuring limit of 40 becquerels per kilogram, then that particular food item could be removed from lunch menus -- giving the impression that 40 becquerels per kilogram was the limit.

On Dec. 1, the Ministry of Health, Labor and Welfare, upon media reports of a "school lunch limit," made an inquiry with the education ministry. The following morning, an education ministry official contacted the health ministry and apologized for insufficient coordination.

Commenting on the situation, a health ministry representative said, "If they had talked to us, we could have pointed out that it would cause confusion. We don't know why they didn't talk to us."

A high-ranking education ministry official, meanwhile, said that the notice lacked a detailed explanation.

Earlier the education ministry was hit with a barrage of criticism for setting the radiation dosage limit at which schoolchildren's outdoor activities would be restricted at 20 millisieverts per year.

(Mainichi Japan) December 3, 2011

## **Australia to export uranium to India NHK**

Australia's ruling Labor Party has decided to lift the ban on uranium sales to India.

Australia has the largest known uranium reserves in the world, but the former Rudd administration did not allow exports to **India, which is not a member of the nuclear Non-Proliferation Treaty and possesses nuclear weapons.**

Prime Minister Julia Gillard told a conference of her ruling Labor Party on Sunday that exporting uranium to India, where energy demand is rising, is **in Australia's interest.**

Some cabinet members expressed concern that the uranium may be used to develop nuclear weapons.

Gillard said she will secure safety measures, indicating her intention to have India sign a bilateral agreement that would only allow it to use the uranium for peaceful purposes.

The plan to lift the export ban was approved with majority support from party members.

Australia apparently intends to strengthen its ties with India, which has a growing demand for nuclear power generation and is playing an increasingly important role in Asian security.

Sunday, December 04, 2011 23:11 +0900 (JST)

## **Plutonium brings no real chance of prosperity**



In this April 28, 2011 image from video footage released Friday, April 29, 2011 by Tokyo Electric Power Co. (TEPCO), top parts of fuel rods are seen about 6 meters (20 feet) from the surface of water in the spent fuel storage pool at the damaged Unit 4 reactor building at the Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Some readers appear to wonder why I recently write only about nuclear power generation in this column. I do so because I believe that it is a crucial issue that will determine the fate of Japan as well as the whole world.

There have recently been various news reports that offer valuable insight into the future of nuclear power generation. The Dec. 2 morning edition of the Mainichi Shimbun ran an article reporting that in 2002, the then administrative vice minister of economy, trade and industry and the chairman and president of Tokyo Electric Power Co. (TEPCO) were nearing an agreement to withdraw from a nuclear fuel recycling project.

Nuclear fuel recycling refers to a process of treating spent nuclear fuel from nuclear power stations with chemicals and extracting reusable uranium and plutonium from it. This project has so far been unsuccessful and there are no prospects that the project will work. It was only natural that the government regulator and the power supplier were negotiating a withdrawal from the project.

The negotiations came to nothing after top executives of TEPCO were forced to resign over the utility's cover-up of a series of technical problems. Nevertheless, the Mainichi report indicates that a change in Japan's nuclear power policy is not a pipe dream.

Furthermore, the Mainichi evening edition of the same day (the morning edition the following day in some areas) reported that the United Kingdom is planning to dispose of some of its surplus plutonium, which it had accumulated as a result of nuclear fuel reprocessing, in an underground repository. This news is of greater significance.

Plutonium is generated as a result of burning uranium in nuclear reactors. One gram of the substance has energy equal to that in 1 kiloliter of oil. It can be used as a material for both atomic bombs and fuel for nuclear reactors. The U.K. has steadily accumulated plutonium, but failed to develop fast-breeder nuclear reactors, which had been viewed as the core of the peaceful use of such a substance.

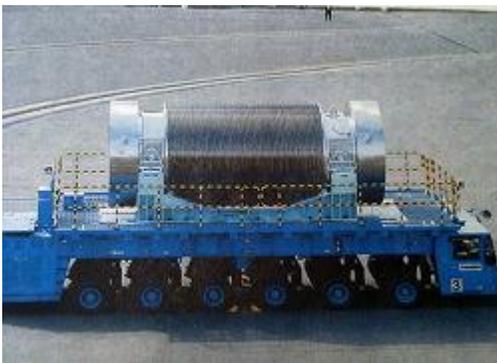
The U.K. then attempted to develop technology for the use of plutonium-uranium MOX fuel in thermal reactors at nuclear power stations, a project known in Japan as "pluthermal." However, the country has been unsuccessful in producing such fuel. The same is true with Japan. Areva SA, a nuclear technology

company in France, is now manufacturing plutonium-uranium MOX fuel, but questions remain as to its quality. The U.K. ended up being the world's largest holder of surplus plutonium.

The U.K. faced a major challenge in dealing with a massive amount of plutonium, which needs to be stored safely. The storage of plutonium costs a huge amount of money, but the U.K. can no longer afford to pay for this. The U.K. needs to prevent such a substance from falling into the hands of terrorists. The country has consequently decided to bury part of its plutonium in an underground repository that is scheduled to begin operations in 2040.

Even if the U.K. says it will bury only "part" of its surplus plutonium, its amount is enough to produce hundreds of atomic bombs. The amount of surplus plutonium that needs to be buried could increase as there is no prospect that the U.K. will be successful in developing technology to use plutonium-uranium MOX fuel in thermal reactors.

Moreover, the U.K. will abandon its project to reprocess spent nuclear fuel over the next decade. Behind the decision is the growing awareness that plutonium offers no positives, while also being a terrible nuisance. This is the essence of the story written by Haruyuki Aikawa, a Mainichi correspondent in London.



In this undated photo released Wednesday, April 13, 2011 by Tokyo Electric Power Co., a standing man is partially seen above an example of the truck used to move spent fuel rods in the pools. Nothing is decided yet but TEPCO told the press at its Tokyo headquarters Wednesday morning that this is one option TEPCO officials are considering to use at the tsunami-stricken Fukushima Dai-ichi nuclear power plant in Okuma town in Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

The U.K. has already abandoned developing fast-breeder nuclear reactors, and is set to give up nuclear fuel reprocessing as well. Moreover, its planned construction of a facility to dispose of radioactive waste including plutonium is likely to materialize even though it is still at a planning phase.

In contrast, there are no prospects that Japan can build a disposal facility. However, for Japan to call for operations at the Monju prototype fast-breeder nuclear reactor in Fukui Prefecture and the nuclear fuel reprocessing plant in the Aomori Prefecture village of Rokkasho to be carried out as planned, would be like putting the cart before the horse as it appears the country is incapable of building a disposal facility.

Plutonium is directly related to security issues. The U.K. possesses nuclear weapons but Japan does not. One may wonder whether Japan's independence will be threatened if it abandons nuclear fuel

recycling and loses its ability to produce plutonium. Even though it is an important point of contention the issue should not be used as a reason to underestimate the harm of plutonium.

Economy, Trade and Industry Minister Yukio Edano who is in charge of energy policy, Goshi Hosono, state minister for handling the nuclear crisis, and Yoshito Sengoku, second-in-command in the ruling Democratic Party of Japan's Policy Research Committee, have been hearing the views of experts on the issue.

It is not enough for the government to talk only about the dream of "prosperity" built on dependence on nuclear power. Japan's ability to overcome the mess that follows such prosperity is now being tested. (By Takao Yamada, Expert Senior Writer)

(Mainichi Japan) December 5, 2011

## **New contaminated water leak at Fukushima nuke plant may have hit ocean**



The wall of a leaky water purification unit is seen at the Fukushima No. 1 nuclear plant on Dec. 4. Dark patches where some of the contaminated water escaped the building can be seen along the bottom of the wall. (Photo courtesy of TEPCO)

Highly radioactive water may have escaped into the ocean from a water purification unit at the crippled Fukushima No. 1 nuclear station, plant operator Tokyo Electric Power Co. (TEPCO) announced on Dec. 4.

More than 45 cubic meters of water leaked from the unit with some of it escaping the machine's housing and flowing into a drainage ditch that leads to the Pacific Ocean 500-600 meters away, according to the utility, which added that the leak was discovered on Dec. 4 by a passing employee. TEPCO is now investigating the cause of the problem.

According to the power company, the leaked water contains radioactive substances such as strontium at between 100,000 and 1 million becquerels per cubic centimeter, emitting surface radiation of about 110 millisieverts per hour. The strontium content of the water is some 1 million times higher than the law allows for discharge into the ocean.

Some 45 cubic meters of contaminated water, about 5 centimeters deep, had collected in the purification unit housing, which covers 900 square meters. At the time of the leak's discovery, there were already signs that some of the water had escaped the housing and flowed into a drainage ditch about 10 meters away. TEPCO says it stopped the leak at just after 2 p.m. the same day.

"We currently believe the leak will have no effect on the water circulation system or our judgment on whether we've achieved a cold shutdown of the reactors," said TEPCO plant location headquarters representative Junichi Matsumoto.

(Mainichi Japan) December 5, 2011

## **Strontium-tainted water leak suspected**

The operator of the Fukushima Daiichi nuclear power plant says about **45 tons of strontium-tainted water** may have leaked out of a water treatment device, with a portion of it spilling out of the facility.

Tokyo Electric Power Company says the water may contain high levels of radioactive strontium. Strontium causes internal radiation exposure.

The company is trying to determine whether the water reached the sea.

The utility said at about 11:30 am on Sunday a water leak was spotted in a device to remove salt from contaminated water from which radioactive material had already been removed.

It said the leak was stopped after the device was turned off, but at least 45 tons of water containing radioactive materials may have leaked out, with some portion possibly reaching a ditch outside the facility.

The level of radioactive cesium had been reduced to 45 becquerels per cubic centimeter after the treatment. But **the water is believed to have contained 130,000 becquerels per cubic centimeter of radioactive strontium.**

**The ditch connects to the sea about 600 meters away. The power company is piling up sand bags in the ditch to prevent the water from flowing to the sea.**

The water is used to cool down the reactors in the power plant and the utility says the leak does not pose any problems for the process.

Monday, December 05, 2011 06:09 +0900 (JST)

## **TEPCO: Radioactive water may have leaked into sea**

The operator of the Fukushima Daiichi nuclear plant says radioactive water leaked from a water treatment facility may have reached the sea through a gutter.

Tokyo Electric Power Company says **slightly elevated levels of cesium were detected on Sunday in seawater around an outlet from the gutter.**

Earlier in the day, workers found that at least 45 tons of water had leaked from a desalinization device at the plant. The water then apparently seeped out of the building and flowed into the gutter.

The leaked water also contained radioactive strontium at levels that could pose health risks in case of internal exposure. **TEPCO says it will take about 2 weeks to complete its analysis of the situation.**

Before the leak was spotted, workers had last checked the water treatment device 21 hours ago and found no problems.

A TEPCO official says the company did not do enough to contain the leak because **it had assumed the water would stay within the building.** The official says it will take measures to ensure better detection of leaks.

## **Fukushima compiles radiation cleanup policy**

Fukushima Prefecture has compiled a policy paper on how to clean radioactive materials farmland and forests, which occupy about 80 percent of the prefecture. Fukushima hosts the damaged nuclear power plant.

The prefectural government says the policy aims to ensure that eventually no radioactive cesium will be detected in any farm produce from the prefecture.

The policy says that to reach this goal, **radiation-absorbing agents will be sprayed onto farmland, and the topsoil scraped off.**

**In orchards, tree bark will be removed and the trees then cleansed with water jet cleaners.**

The policy aims to cap annual radiation doses in forests at one millisievert.

The policy also says the government will try to reduce radioactivity in forests near residential areas by about half in two years. **Fallen leaves will be removed on a regular basis from areas up to 20 meters inside the forests' perimeters.**

Based on the policy, Fukushima Prefecture plans to help individual communities draw up their own decontamination plans.

Monday, December 05, 2011 14:43 +0900 (JST)

### **Model decontamination starts / Project to test effectiveness of various methods before full-scale work**

The Yomiuri Shimbun

FUKUSHIMA--An experimental decontamination project is now under way in parts of Fukushima Prefecture, including the town of Okumamachi, which is located within the 20-kilometer no-entry zone around the Fukushima No. 1 nuclear power plant.

The project went into full swing Sunday and will test various decontamination methods to see how effective they are at lowering the level of radiation in the air.

Official decontamination is scheduled to start in January around the nuclear power plant.

"We want to issue an interim report by the end of the year so full-scale decontamination can be conducted as soon as possible," said an official at the Japan Atomic Energy Agency, which has been entrusted with the project by the government.

The model project is scheduled to be carried out at 12 municipalities that include areas designated as no-entry or expanded evacuation zones, as the project aims to remove radioactive substances from wide areas.

On Sunday, decontamination operations were conducted at the Okumamachi town office, about four kilometers southwest of the nuclear power plant, and on a hill near a primary school in Katsuraomura, about 25 kilometers from the power plant.

About 45 workers clad in protective gear collected fallen leaves and cut grass.

High-pressure water jets were used to test the effectiveness of different methods on the rooftop of the Okumamachi town office--using cold water and hot water at a temperature of 50 to 60 C, and changing the duration of the spraying.

As a result, it was learned that spraying cold water for about 10 minutes lowered surface radiation by about 40 percent, to 9.87 microsieverts per hour from 16.45 microsieverts.

They also tried reusing the water after passing it through a filter.

"We want to test various techniques to establish an efficient method to lower air radiation levels," said Kazuo Todani, an executive director at the agency.

(Dec. 6, 2011)

## **Lower House approves civil nuclear agreements**

The Lower House of Japan's Diet has approved civil nuclear cooperation agreements with Jordan, Russia, Vietnam and South Korea.

The accords won majority support from the ruling Democrats and main opposition Liberal Democrats at a plenary session on Tuesday, and were sent to the Upper House for final Diet endorsement. The

opposition New Komei, Communist and other parties opposed the deals.

Japan signed the agreements before the March 11th disaster and Fukushima nuclear plant accident.

The accords would allow Japan to export nuclear power generation facilities and transfer related technology to the countries.

Democrat Kimiko Kyono voted against the accords in defiance of her party, saying she cannot take responsibility for exporting such facilities with the plant still out of control and future safety not ensured.

About 10 members of the party abstained from voting.

The accords are expected to clear the Upper House on Friday.

Tuesday, December 06, 2011 17:17 +0900 (JST)

## **Radioactive cesium found in Meiji baby formula**

Containers of Meiji Step condensed milk are seen in Chiyoda Ward, Tokyo, on Dec. 6. (Mainichi)

TOKYO (Kyodo) -- Radioactive cesium of up to 30.8 becquerels per kilogram has been found in infant formula produced and sold by Meiji Co., the major food company said Tuesday, citing an internal examination.

The company suspects a link with the radioactive leaks from the Fukushima Daiichi nuclear power plant damaged by the 11 March earthquake and tsunami, saying ingredients for its Meiji Step milk powder may have come into contact with airborne radioactive cesium when they were being dried at a plant in Kasukabe, Saitama Prefecture, between March 14 and 20.

Radioactive cesium has been found in baby formula for the first time since the March disaster, prompting the Health, Labor and Welfare Ministry to begin looking into the matter.

The levels of cesium-134 and cesium-137 contained in the product remain below the government-set allowable limit of 200 becquerels per kilogram. A radiation expert said the reading was not at levels that would have an immediate impact on human health.

The company nonetheless plans to offer customers free replacements, affecting around 400,000 850-gram cans of the Meiji Step formula.

Amid concern that babies are more susceptible to the harmful effects of radioactive materials than adults, the ministry has planned to set a new limit for food products for babies.

The company will offer replacement products for batches with recommended consumption dates of Oct. 3, 4, 5, 6, 21, 22, 23 and 24 next year, according to the manufacturer. The dates are printed on the bottom of the cans.

Of the 23 samples with recommended consumption dates ranging from September to November 2012, four contained radioactive cesium of between 21.5 and 30.8 becquerels per kg.

The formula in question came from milk produced before the March disaster, according to the company.

"Because the cesium is diluted to 3 to 4 becquerels (per kg) when the powders are added to hot water, we don't think it will have an impact on health. But we still want to address the anxieties of those who bought the product by providing replacements," a public relations official of the company said.

The examination was conducted after a civic group in Nihonmatsu, Fukushima Prefecture, found radioactive cesium in the company's infant formula in a test late last month and asked Meiji to conduct a similar test.

When the health ministry examined 25 infant formula samples from multiple manufacturers, including Meiji, between July and August, the cesium level in each sample was below the minimum detectable limit of 5 becquerels per kg.

Meiji commands a leading share of roughly 40 percent in domestic baby formula sales. The same product has been exported to Vietnam under a different name.

Meanwhile, Meiji's Chinese unit said Tuesday infant formula sold in China does not pose a safety risk as it has been produced in Australia.

(Mainichi Japan) December 6, 2011

## **Meiji to step up radiation monitoring**

Japanese food company Meiji says it will step up radiation monitoring of its products and release data online.

The company came up with new measures following the detection of radioactive cesium in its baby formula.

Meiji said on Tuesday that up to 30.8 becquerels of radioactive cesium per kilogram was found in powdered milk. The company produced the milk at a plant in Kasukabe, near Tokyo, immediately after

the March nuclear accident in Fukushima.

The level is below the government safety limit of 200 becquerels per kilogram, but Meiji decided to replace free of charge all 400,000 cans of powdered milk shipped in September.

Meiji says the contamination may have resulted from exposure to radioactive cesium from the Fukushima nuclear plant when the processing facility was ventilated to dry the product.

The food company says that from now on, it will check samples of its products daily instead of the current about once a month, and will upload the results to its website.

The company also plans to monitor aerial radiation levels in the plant's compound and stop production when readings are high.

Wednesday, December 07, 2011 10:58 +0900 (JST)

## **Water containing strontium leaked into sea from Fukushima plant**



This Sunday, Dec. 4, 2011 photo released by Tokyo Electric Power Co. (TEPCO) shows radioactive water leaked from a building with a purification device placed inside at the tsunami-damaged Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, north of Tokyo. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Tuesday that around 150 liters of water containing strontium and other radioactive substances has flowed into the Pacific Ocean from its crippled Fukushima Daiichi nuclear power plant.

The utility known as TEPCO said the amount of radioactive substances is estimated at around 26 billion becquerels, adding that the impact would be "negligible" even if people continue to eat marine products from the area.

The water leaked from a water processing facility after undergoing a process to remove radioactive cesium. But the facility is not capable of removing strontium, which tends to accumulate in bones and is feared to cause bone cancer and leukemia.



The wall of a leaky water purification unit is seen at the Fukushima No. 1 nuclear plant on Dec. 4. Dark patches where some of the contaminated water escaped the building can be seen along the bottom of the wall. (Photo courtesy of TEPCO)

The seawater near the plant has already been contaminated not only by massive radioactive fallout since the March 11 earthquake and tsunami triggered the nuclear crisis, but also by accidental releases of polluted water.

In the latest case, TEPCO found on Sunday that around 45 tons of water had accumulated inside a building housing part of the water processing facility and some of it was seeping through a concrete crack in the building to a nearby gutter, which leads to the sea about 500 meters away.

According to TEPCO's press release, the water contained radioactive materials including about 11 billion becquerels of strontium-89, 15 billion becquerels of strontium-90 and 4.4 million becquerels of cesium-137.

The water processing facility is essential to create water for injection into the crippled Nos. 1 to 3 reactors, as they have lost their key cooling functions since the March disaster.



This Sunday, Dec. 4, 2011 photo released by Tokyo Electric Power Co. (TEPCO) shows leakage from a purification device at the tsunami-damaged Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture. (AP Photo/Tokyo Electric Power Co.)

The water used to cool the reactors contains massive amounts of radioactive substances and is channeled to the water treatment facility so it can be recycled as a coolant.

TEPCO said the latest incident has not affected the injection of water into the reactors.

(Mainichi Japan) December 7, 2011

## **TEPCO set to sell off some power plants**

The Yomiuri Shimbun

Tokyo Electric Power Co. will consider canceling the construction of new thermal power plants and selling some existing ones to secure compensation funds for the crisis at the Fukushima No. 1 nuclear power plant, it has been learned.

Some of the money will also be used to decommission the nuclear plant, which was crippled by the March 11 disaster.

While reducing its own electricity generating capacity, TEPCO plans to buy power from factories with generating facilities through open bids, according to informed sources.

The new plan represents a major shift in TEPCO's corporate policy of generating and distributing power on its own, and could crack open the utility's regional monopoly and accelerate competition in the market.

TEPCO and the state-backed Nuclear Damage Liability Facilitation Fund will announce this week an action plan detailing the power company's corporate restructuring steps and future management policy.

The main pillar of the plan is a review of the electric power development program. Under this framework, TEPCO plans to cancel, in principle, the construction of new thermal power facilities, excluding those already under construction.

The Tokyo-based utility has been too financially strapped to build a new plant because it has been unable to issue corporate bonds since the accident at the Fukushima plant, the sources said.

TEPCO is moving ahead with a plan to build three or four thermal power-generating units, including one at its Hitachinaka thermal station in Ibaraki Prefecture, and have them fully operational by fiscal 2020.

A yet-to-be-built thermal power-generating unit that will be linked with the existing No. 1 unit at TEPCO's Goi thermal power station in Ichihara, Chiba Prefecture, and one planned at its Kawasaki plant, are likely to be reviewed, the sources said. The Goi plant will have an output of 2.13 million kilowatts.

TEPCO will decide by the end of March which of its 15 operating thermal stations will be sold. The plants, including facilities in Yokohama and Futtsu, Chiba Prefecture, will be judged on technical issues and economic efficiency, the sources said.

Following the sell-off, the utility will procure electricity from the so-called independent power producers (IPPs). Details of the bidding process will be decided by the end of January.

The sale of electricity by IPPs was liberalized in 1995. The revision allowed ordinary companies with power-generating facilities, such as gas and oil firms and steelmakers, to enter the market and wholesale power to utilities.

TEPCO bought electricity from IPPs from 1996 to 1999. From 2000 until recently, however, TEPCO did not buy electricity from IPPs, which discouraged new players from entering the power-generation business. But with its nuclear power plants shut down since the Great East Japan Earthquake, TEPCO has bought more power from IPPs.

Meanwhile, TEPCO said it will introduce smart meters on a wide scale in fiscal 2013. The meters will link power plants to electricity outlets.

With TEPCO set to drop its plans to build power plants, the utility plans to hold down power consumption during times of peak demand so it can avoid rolling blackouts and asking large-lot users to cut back on power, the sources said.

In addition to these cutbacks, TEPCO will trim a further 103.3 billion yen in expenses, on top of an earlier plan, raising the total cuts to 2.65 trillion yen over the next 10 years.

Under this restructuring plan, the company will not recruit new graduates and will solicit voluntary retirements from staff who have been at the utility for many years. TEPCO also plans to cut corporate pension benefits for retirees by up to 4.25 percent starting in October 2012. The company hopes to win approval for this plan from more than two-thirds of its retirees by the end of June.

===

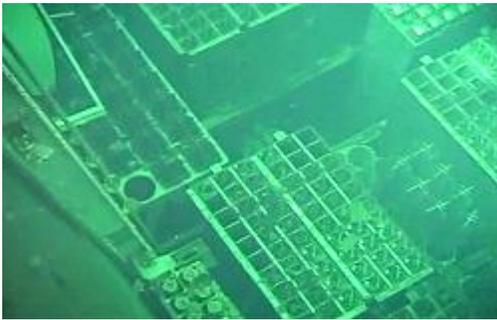
#### Key points of action plan

- Make further cost reductions of 103.3 billion yen, in addition to those of the previous plan, bringing total cost reductions to 2.65 trillion yen over the next 10 years.
- Cancel, in principle, the construction of new thermal power plants. Procure electricity from newcomers to the power sector through bidding to make up for lost power.
- Study the possibility of selling off existing thermal plants and formulate a policy by March 2012.
- Reduce employee numbers through the end of fiscal 2013 by holding back on recruiting new staff and soliciting voluntary retirement, with the aim of cutting staff costs by 324.4 billion yen over the next 10 years.

-- Aim to reduce the benefits of corporate pensions for retirees by up to 4.25 percent, starting in October 2012.

(Dec. 8, 2011)

## Gov't to decide Dec. 16 on 'cold shutdown' of Fukushima plant



In this April 28, 2011 image from video footage released Friday, April 29, 2011 by Tokyo Electric Power Co. (TEPCO), top parts of fuel rods are seen about 6 meters (20 feet) from the surface of water in the spent fuel storage pool at the damaged Unit 4 reactor building at the Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Japan is set to decide Dec. 16 that the crippled Fukushima Daiichi nuclear plant has been brought under control by achieving a stable state called "cold shutdown," government sources said Wednesday.

The government has determined that it is possible to put the Nos. 1 to 3 reactors at the complex in the stable state by year-end, a timeline envisaged for the completion of step 2 in a road map drawn up to bring the crisis under control, according to the sources.

The government has for months been trying to keep temperatures in the cores of the damaged reactors below the boiling point for water in a stable manner and prevent a fresh release of radioactive materials into the surrounding environment.

The decision is expected to be made at a meeting of the nuclear disaster countermeasure headquarters headed by Prime Minister Yoshihiko Noda on Dec. 16, they said.

Given the imminent completion of step 2, the government plans to begin working in earnest to review evacuation restrictions imposed on areas around the Tokyo Electric Power Co. plant by using radiation levels as a guide, to enable a speedy return for displaced residents.

The government and the utility, known as TEPCO, will compile a medium- to long-term road map toward decommissioning the plant, while envisaging the removal of spent nuclear fuel rods left in the pools for the reactors, possibly within two years.

The Nuclear and Industrial Safety Agency has found "largely acceptable" a TEPCO plan to safely manage company facilities over the next three years, while instructing the utility to look into a recent leak of radioactive water from circulatory contaminated water desalination facilities, according to the sources.

The government has set as conditions for a cold shutdown in the road map achieving the state in which **temperatures at the bottom of the pressure vessel for each of the Nos. 1 to 3 reactors stay at 100 C or below and the yearly radiation dose at the plant's perimeter at 1 millisievert or lower.**

TEPCO says nuclear fuel inside the pressure vessel for each of the Nos. 1, 2 and 3 reactors leaked into the containment vessel encasing the inner vessel, but that the fuel remains cooled because of continued water injection.

In the aftermath of the March 11 earthquake and tsunami, cooling functions were completely lost for most of the reactors at the six-reactor complex on the Pacific coast, resulting in fuel meltdowns inside the crippled reactors and a massive release of radioactive materials into the air and sea.

Step 1 in the current road map to bringing the reactors under control was completed in mid-July after TEPCO succeeded in keeping reactor cores cooled in a stable manner.

(Mainichi Japan) December 8, 2011

## **Cesium-tainted rice found in another city in Fukushima Pref.**

FUKUSHIMA (Kyodo) -- The Fukushima prefectural government said Wednesday it detected excessive levels of radioactive cesium in rice harvested in Nihonmatsu, following similar contamination of the crop produced in two other cities in the prefecture.

The cesium in the rice samples taken at a farm in Nihonmatsu measured 780 becquerels per kilogram, against the provisional 500-becquerel limit, local government officials said. None of the rice from the Nihonmatsu farm has been shipped to markets.

The number of rice farming households where cesium exceeding the limit has been detected in rice reached 22, the officials said. High levels of cesium exceeding the limit were found in rice samples collected in the cities of Date and Fukushima last month.

Fukushima Prefecture hosts the radiation-leaking Fukushima Daiichi nuclear power plant crippled by the March earthquake and tsunami.

(Mainichi Japan) December 8, 2011

## **Kansai Electric reactor shut down at Mihama**

The operator of the Mihama nuclear power plant in western Japan says it has shut down one of 3 reactors because of an **ongoing leak of radioactive water within the reactor.**

Kansai Electric Power Company says work began on Wednesday night to manually shut down the

number-2 reactor at Mihama in Fukui Prefecture. It was completed as of 4 AM on Thursday.

The utility says radioactive water has been leaking from a valve in the pressure vessel into the collection tank since early November. It says **there is a risk that the water will exceed the processing capacity of the tank.**

The company says all the leaked water has been collected into the tank within the reactor, and that the leakage has caused no damage to the environment.

The reactor was scheduled to be shut down on December 18th for a regular checkup.

**The suspension means that 46 of the country's 54 reactors, or 85 percent of them, are currently out of operation.**

Thursday, December 08, 2011 05:02 +0900 (JST)

## Radioactive ash returned from Akita



Akita Prefecture in northern Japan has begun to return radioactive ash from the incineration of garbage to the prefecture the ash was sent from. The ash had been brought to Akita from 10 municipalities in 6 prefectures located near Tokyo.

Because of the opposition of residents living near the garbage incineration plants, the prefecture has decided to return the radioactive ash to the municipalities of origin.

On Wednesday, about 18 tons of ash was sent from Akita to Saitama Prefecture.

In July, radioactive substances above the government's safety limit were detected in ash brought to Akita from two cities in Chiba Prefecture, raising concerns among residents near the incinerators.

There has been no place to store a total of 245 tons of ash with radiation levels below the government's safety limit. Akita Prefecture has begun to return the radioactive ash to the 10 municipalities of origin.

On Wednesday, about 18 tons of ash below the government's safety limit arrived in containers at a railway terminal in Saitama Prefecture, from Akita. The ash had been brought to 2 municipalities in

Akita from Kazo City in Saitama.

Kazo City says it is still without a site to dispose of the returned ash. It plans to keep it at its 2 garbage incineration facilities until it decides where to dispose of it.

Wednesday, December 07, 2011 19:29 +0900 (JST)

## **News Navigator: How much time and money are needed to dispose of the Fukushima reactors?**



In this photo released by Tokyo Electric Power Co. (TEPCO), a small fire breaks out from facilities sampling seawater located a few dozen meters from Unit 4 inside the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okumamachi, Fukushima Prefecture, northeastern Japan, Tuesday morning, April 12, 2011. The fire was put out soon and the ongoing cooling operations at the main units were not affected according to TEPCO. (AP Photo/Tokyo Electric Power Co.)

Heavy costs and decades of work are expected to be needed to dispose of the reactors at the devastated Fukushima No. 1 Nuclear Power Plant. The Mainichi answers common questions readers may have about the costs and time needed for the work.

Question: How much is the disposal of the Fukushima plant's No. 1 through 4 reactors expected to cost?

Answer: A government committee looking at Tokyo Electric Power Co.'s (TEPCO) finances estimated **at least 1.15 trillion yen, but this was in October, and the cost may grow larger.**

Q: Why is that?

A: Because work could drag on to remove radioactive material from the inside of the reactor buildings, repair the reactor containment vessels and fill them with water. Currently, no one can see inside the reactors to confirm how the nuclear fuel inside melted, and depending on the condition of the fuel, the time and costs of disposing of the reactors could increase. A top TEPCO official said, "We don't know how much it will cost in the end. It could end up costing trillions of yen."

Q: How are nuclear reactors normally disposed of?

A: First they are brought to under 100 degrees Celsius to a cold shutdown. They are then decontaminated of radiation, their radioactive materials are safely stored, and the reactors are disassembled. This generally takes about 15 years. However, in the case of the crippled Fukushima plant, the fuel is melted and additional work like filling the reactors with water is necessary, so 30 or more years are expected to be needed.

Q: Have cost estimations changed from before and after the Fukushima disaster?

A: Before the Fukushima disaster, the government's Agency for Natural Resources and Energy estimated that it would cost 65.9 billion yen to dispose of a single boiling water reactor with an output of 1.1 million kilowatts like those of the Fukushima No. 1 plant, and **3 trillion yen for all of the nation's 54 such reactors. However, after the disaster, a private think tank estimated that disposal of the Fukushima No. 1 plant reactors would cost up to 20 trillion yen over the course of 10 years.** The difference in these estimations shows just how huge the costs of this disaster are becoming. (Answers by Takuji Nakanishi, Science & Environment News Department)

(Mainichi Japan) December 8, 2011

## **Long and tough road ahead for work to decommission Fukushima nuclear reactors**

**It is expected to take more than 30 years to decommission crippled reactors at the Fukushima No. 1 Nuclear Power Plant,** and workers tasked with the difficult mission would have to venture into "uncharted territory" filled with hundreds of metric tons of highly radioactive nuclear fuel, experts say.

After the expert committee of the Japan Atomic Energy Commission (JAEC) compiled a report on procedures to decommission the No. 1 to 4 reactors at the Fukushima No. 1 Nuclear Power Plant on Dec. 7, the actual work is expected to move into high gear after the turn of the year. As in the case of the 1979 Three Mile Island accident, the workers would try to remove melted nuclear fuel after shielding radiation with water, a technique called a "water tomb." But the work would have to be done in a "territory where humans have not stepped into before," said a senior official of Tokyo Electric Power Co. (TEPCO), the operator of the troubled Fukushima nuclear power station. The work is so difficult that it is expected to take more than 30 years to finish decommissioning the reactors.

The key part of the decommissioning work is to remove a total of 1,496 fuel rods from the No. 1 to 3 nuclear reactors and 3,108 fuel rods from nuclear fuel pools of the No. 1 to 4 reactors. The government and TEPCO are expected to start decommissioning the reactors early in the New Year after unveiling detailed plans around Dec. 16 that the nuclear plant has been brought under control by achieving a stable state called a "cold shutdown."

According to experts, filling the containment vessels with water completely to shield radiation is the "foremost and biggest hurdle." In order to carry out the task, it is necessary to spot and repair damaged parts in the containment vessels. But it is not an easy task. Up to about 5,000 millisieverts per hour of radiation -- lethal levels -- have been detected in the reactor building of the No. 1 reactor.

In the work schedule announced in April, TEPCO said it would bring the nuclear plant under control by filling the reactors with water. But subsequent analysis of the accident suggested that the No. 1 and 2

reactors had holes of up to 50 square meters caused by hydrogen explosions and the like. In the work schedule announced in May, TEPCO said it had scrapped its plan to repair the containment vessels and suspended the work to fill them with water.

Moreover, workers have been fighting an uphill battle to remove crumbled fuel. The reactors had been running without cooling water for a long time, and most of the fuel melted and apparently dropped into the containment vessel from the bottom of the pressure vessel at the No. 1 reactor.

A single fuel rod contains about 170 kilograms of uranium, and a simple calculation suggests that **about 254 tons of uranium in the reactors alone must be recovered**. The distance between the upper lid and the bottom of a containment vessel is up to 35 meters. From that far away, the work has to be done to chop off and recover melted and crumbled fuel by using remote controlled cranes. Furthermore, the melted fuel is mixed with metal from fuel pellets and reactor parts.

"The decommissioning work should be moved up and finished promptly," said Fukushima Gov. Yuhei Sato. He submitted a 6-item statement to the JAEC's expert committee. But at the meeting on Dec. 7, the expert committee did not give any in-depth response but simply added to its report that "We will urge people concerned to realize it as soon as possible." Kyoto University professor Hajimu Yamana, who heads the expert committee, said on Dec. 7, "Because no one has seen the inside of the nuclear reactors, the timing of starting the work to recover nuclear fuel mentioned in the report is only a nonbinding target."

(Mainichi Japan) December 8, 2011

## **Three Mile Island lessons could help resolve Fukushima nuke disaster**

Lessons learned from the Three Mile Island nuclear disaster in the United States are playing a serious role in the handling of the meltdowns at the Fukushima No. 1 nuclear plant, according to a Japan Atomic Energy Agency (JAEA) scientist.

"We are putting the experience we gained from the Three Mile Island accident in 1979 to use," Fumihisa Nagase, who heads the agency's nuclear fuel safety research group, told the Mainichi. The JAEA is the only organization in Japan that has samples of melted fuel from the Three Mile Island nuclear station in Pennsylvania. Using the samples, Nagase and his team will increase research on how to dispose of the melted fuel at the Fukushima plant.

The fuel from Three Mile Island arrived in Japan in 1991 through an international research project run by the Organization for Economic Cooperation and Development. Roughly 60 small pieces of fuel, sealed in an aluminum container and weighing about 2.8 kilograms, now sit in a 15-meter-deep pool at the JAEA headquarters in Tokai, Ibaraki Prefecture.

The uranium fuel got mixed together with the zirconium oxide of its casing during the meltdown, and the pieces now look like chunks of hardened lava. Research on the pieces had been concentrated on gathering data on their exact composition and shape, and Nagase says the data will help develop tools to cut and collect the dangerous material in dealing with the Fukushima fuel.

In the Three Mile Island disaster, about 62 metric tons or 45 percent of the fuel in one reactor melted down. Of that, some 20 tons pooled at the bottom of the pressure vessel in a layer as thick as a meter. Workers didn't enter the pressure vessel until a year after the accident, and the fuel removal operation wasn't finished until 1990.

The Chernobyl disaster of 1986 was a different sort of accident altogether. There, most of the fuel was blown out of the reactor, so the entire reactor building was encased in a concrete "sarcophagus."

In the Fukushima No. 1 disaster, there was no core explosion. **However, the situation at the plant is far more serious than it was at Three Mile Island, as the pressure vessels of the Fukushima No. 1-3 reactors were destroyed. What's worse, the melted fuel in the No. 1 reactor began to eat into the concrete floor of the containment vessel.** Furthermore, the Three Mile Island meltdown was just one reactor. At Fukushima, three reactors melted down, while the No. 4 reactor -- in shutdown mode for regular maintenance at the time of the March 11 disaster -- was also severely damaged.

**"I don't think all the reactors can be decommissioned simultaneously,"** says Yuichi Hayase, a member of an expert committee on the Fukushima disaster and an advisor to plant operator Tokyo Electric Power Co.

Meanwhile Roger Shaw, former director of radiation protection at the Three Mile Island plant, has warned those handling the Fukushima disaster to expect the unexpected. Shaw told the Mainichi that in 1979, when Three Mile Island workers got a camera into the pressure vessel, they couldn't see anything because so many microbes had bred inside. He furthermore said that resolving the Fukushima crisis will be many times more difficult than the disaster he dealt with, adding that an unbelievable amount of effort and the best knowledge in the world would be needed.

(Mainichi Japan) December 8, 2011

## **TEPCO mulling release of low-level radioactive water in sea**



In this May 27, 2011 photo released on June 2, 2011 by Tokyo Electric Power Co. (TEPCO), temporary storage tanks for low-level radioactive polluted waters used for temporary cooling system in Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima prefecture, northeastern Japan, are shown. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Thursday it is considering releasing into the Pacific Ocean low-level radioactive water now stored in tanks at the premises of its crippled Fukushima Daiichi nuclear power plant as storage capacity may run short by next March.

The plant operator known as TEPCO said the water would be released only after it clears the country's legal concentration limit of radioactive substances, including cesium and strontium, but a fisheries group immediately expressed strong concerns.

The National Federation of Fisheries Cooperative Associations filed a protest against the plan with TEPCO, saying it cannot accept such an action that could affect the fishing industry by lowering fish consumption.

Nobutaka Tsutsui, senior vice minister for agriculture, forestry and fisheries, said at a press conference he cannot approve of the plan.

He said he has already asked Tadahiro Matsushita, senior vice minister for economy, trade and industry which oversees the nuclear industry, to reconsider the TEPCO plan and will work on relevant parties to prevent TEPCO from implementing the plan.

The plant has been plagued with highly radioactive water accumulating inside reactor turbine buildings as a result of the continuing injection of water to cool the stricken Nos. 1 to 3 reactors.

The water is currently recycled as a coolant after reducing its radioactive level through a water processing facility, installed after the plant was hit by the March 11 earthquake and tsunami.

But as about 200 to 500 tons of groundwater a day flows into the reactor turbine buildings, the amount of water that is processed has exceeded that needed for injection into the reactors, according to TEPCO spokesman Junichi Matsumoto.

He said the capacity of tanks installed at the plant's premises is expected to total 15.5 tons but there is a possibility the capacity would fall short possibly by early March.

"We cannot keep on increasing the number of tanks in the next year or two. So we're considering the possibility of releasing water into the sea," Matsumoto told a press conference.

The water processing facility reduces the amount of radioactive cesium, but does not remove radioactive strontium, which tends to accumulate in bones and is feared to cause bone cancer and leukemia.

TEPCO has not only accidentally released highly radioactive water into the sea after the nuclear crisis, but also intentionally dumped low level radioactive water as an emergency measure in April, drawing concerns from neighboring countries.

In another accidental case, TEPCO said Tuesday that around 150 liters of processed water has flowed into the sea. The water is estimated to contain strontium, it said.

(Mainichi Japan) December 8, 2011

## TEPCO boss part of utility group in shady deal on publication of radiation books



Photo shows supplementary books on radiation the Ministry of Education, Culture, Sports, Science and Technology commissioned the Japan Atomic Energy Relations Organization to produce. (Mainichi)

The education ministry commissioned a group managed by top executives of utility firms to produce supplementary books on radiation for elementary, junior and senior high school students even after the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant, it has been learned.

The Japan Atomic Energy Relations Organization (JAERO) won a contract from the Ministry of Education, Culture, Sports, Science and Technology to produce supplementary books on radiation for school children before the outbreak of the crisis at the Fukushima nuclear complex on March 11. But the ministry did not change its decision to ask JAERO to produce the educational materials even after the nuclear disaster.

Toshio Nishizawa, president of Tokyo Electric Power Co. (TEPCO), and other top executives of utility firms are JAERO's board members. Critics say the selection of the group as a subcontractor for the contract is not appropriate in light of the situation gripped by the ongoing nuclear crisis in Fukushima.

JAERO won the contract at a competitive auction for about 21 million yen on March 9. Because previous supplementary books said in part that "Nuclear plants are designed to withstand major earthquakes and tsunami," the ministry suspended the use of the educational materials at schools in the wake of the nuclear accident. The ministry decided to then produce new supplementary books. But the ministry reviewed the details of the contract for the project without changing the subcontractor and increased the project cost to about 37 million yen due to rising expenses.

Setting an agenda of enlightening the public on the peaceful use of nuclear power, JAERO earned a total of about 1.2 billion yen in fiscal 2010, about 40 percent of the total revenue came in the form of funds in trust from government bodies such as the education ministry and the Ministry of Economy, Trade and Industry. The full-time executive director is a former employee of Kansai Electric Power Co., and three of the four part-time executive vice-presidents are former employees of utility firms, including a former chief of the Fukushima No. 1 Nuclear Power Plant. Part-time executive board members include TEPCO president Nishizawa and Kansai Electric President Makoto Yagi.

On the reason why the ministry did not change the subcontractor for the project after the outbreak of the nuclear crisis, an education ministry official in charge of the project said, "There is no change in their knowledge of radiation." On its relationship with utility firms, JAERO commented, "It does not affect the content of the supplementary books."

On behalf of the education ministry, JAERO had 13 radiation experts and teachers form a production committee to write and edit the supplementary materials. The books are focused on the basics and convenience of radiation, with only a brief mention of the nuclear accident in the preface. Hisashi Nakamura, the production committee chairman and professor emeritus at Tohoku University, said, "We produced them from the standpoint of knowing about radiation correctly. The committee checked the content independently from the executive office (JAERO)."

Hideyuki Ban, a co-director of the Citizens' Nuclear Information Center, a non-profit organization in Tokyo, lashed out at the content of the supplementary books. "They highlighted coexistence with radiation. They treated radiation risks lightly." On the subcontractor, he said, "I don't think it reasonable for an organization that promotes nuclear power generation to be entrusted with the project. Soul-searching on the nuclear accident is lacking."

(Mainichi Japan) December 8, 2011

## **Japan's parliament OKs nuclear accords with 4 countries**

TOKYO (Kyodo) -- Japan's parliament approved on Friday bilateral civilian nuclear cooperation accords signed with Jordan, Russia, South Korea and Vietnam before the Fukushima disaster.

Approval by the opposition-controlled House of Councillors, with 183 votes in favor in the 242-seat chamber, paves the way for Japan to export its nuclear technology to the four countries.

The accords will take effect as early as next month because the necessary domestic procedures for them in the four countries have already been completed.

There have been persistent concerns about the safety of atomic energy in the wake of the nuclear accident at the Fukushima Daiichi power plant in the immediate aftermath of the March 11 earthquake and tsunami. Some ruling party lawmakers abstained from voting.

Lawmakers put parliamentary deliberations on the four nuclear accords on hold after the accident. But Prime Minister Yoshihiko Noda, who came to office in September, and other senior government officials said the accords should become effective as long as the four countries still want Japan's cooperation.

Noda also said Japan should avoid damaging diplomatic ties with the four countries as they have been waiting for the Diet to approve the agreements.

Japanese companies hope to export nuclear power plants to Jordan and Vietnam, and reactor parts to South Korea. Russia could give Japan access to a stable supply of nuclear reactor fuel.

Japan concluded bilateral nuclear accords with seven countries -- Australia, Britain, Canada, China, France, Kazakhstan and the United States -- and the European Atomic Energy Community.

Before the nuclear accident, the worst since Chernobyl, the government led by the Democratic Party of Japan regarded exporting the country's nuclear technology, especially to fast-growing economies, as one of the most promising ways to generate economic growth.

Foreign Minister Koichiro Gamba said Japan is still hoping to conclude a bilateral pact on peaceful nuclear energy cooperation with countries that the government began talks with before the Fukushima disaster, including Brazil, India and Turkey.

(Mainichi Japan) December 9, 2011

## **US official: Fukushima fuel worries were justified**

ATLANTA (AP) -- The top U.S. nuclear official in Japan said Thursday that his team warned higher-ups that a spent fuel pool at a malfunctioning nuclear plant could be at risk of running dry, an issue that created a political controversy between U.S. officials and their Japanese counterparts. U.S. Nuclear Regulatory Commission official Charles Casto was assigned to direct site operations for the U.S. government's response to the nuclear disaster at the Fukushima Dai-ichi nuclear plant shortly after the accident last March. The plant was struck by a massive earthquake and a tsunami on March 11 that disabled its emergency cooling systems, leading to meltdowns, explosions and radioactive releases.

Less than a week later, NRC Chairman Gregory Jaczko told U.S. lawmakers that all the water from a spent fuel pool was gone -- a development that if true raised the risk that the used fuel could ignite and spread more radiation into the environment.

Japanese officials denied Jaczko's statement at the time. NRC officials have since acknowledged that recent evidence shows that the pool probably did not go dry.

Casto said his team was operating in what he likened to the fog of war. They had the greatest concerns about the spent fuel pool on the Unit 4 reactor, which had the hottest fuel. Without reliable information from plant sensors, his team believed a combination of circumstantial evidence showed that Unit 4 pool could be empty. That information included the massive damage observed at the plant, a spike in radiation readings near the building and water vapor plumes.

Casto said there were also concerns that one of the many aftershocks that followed the initial quake could trigger another tsunami, making conditions at the plant even worse.

"It was a possibility that they may be empty," Casto said, speaking about the pools during an interview in Atlanta with The Associated Press. "It wasn't unreasonable to think there was damage in that liner."

The condition of the plant's spent fuel pools was a concern throughout the crisis. Utility companies must remove nuclear fuel rods from a reactor when they can no longer sustain the nuclear reactions that produce heat and, ultimately, electricity. Those used fuel rods remain extremely hot and radioactive. They must be submerged in pools for a minimum of roughly five years.

While reactors are encased in protective steel and concrete, spent fuel pools are not. If the water drains from a pool, the exposed fuel rods can emit lethal doses of radiation to anyone nearby and even ignite, causing a fire that spreads radioactive toxins.

Working from the U.S. embassy in Tokyo, Casto said NRC officials had very limited information about plant conditions. Without electricity, many plant sensors no longer worked. Information from the remaining equipment was suspect since so much of it was badly damaged. Casto said his team focused instead on radiation readings collected by the U.S. military.

He said he worried that a pool liner could have been punctured by debris flung by the natural disasters or the explosions rattling the plant.

"You see all that damage on the top of that building and you're thinking, 'There's probably some damage on the spent fuel pools,'" Casto said.

U.S. officials were aware that no one had poured water onto the pool for three to four days after the tsunami, Casto said. Images from flying drones and even TV cameras showed white smoke -- likely water vapor -- coming from the area of the Unit 4 pool. Casto's team interpreted that as a sign water from the spent fuel pool was boiling.

"And then suddenly it stopped," he said.

Plant workers also reported high radiation levels from debris in-between the Unit 3 and Unit 4 reactor buildings. Casto said his team thought those radiation readings could indicate that damaged nuclear fuel had spread on the site.

"You put that together and you say, 'We're worried that there may not be water in that spent fuel pool,'" he said.

Some information was open to debate. Japanese officials once called Casto to an emergency center where he watched video taken from a helicopter that flew over the Unit 4 building. Japanese officials told Casto that they saw a reflection among the rubble, indicating there was water in its pool.

"I couldn't see it," he said.

(Mainichi Japan) December 9, 2011

# **Fukushima residents' radiation exposure revealed**

Health checkups show that some Fukushima residents were exposed to 15 millisieverts of radiation in the first 4 months after the nuclear disaster.

The government has set a target of one millisievert per year as a safe exposure level.

Fukushima Prefecture has been testing all 2 million residents following the accident at the Fukushima Daiichi nuclear plant in March.

The authorities announced the estimated external exposure levels of about 1,700 people living in 3 municipalities, including Namie Town and Iitate Village.

These areas were designated as evacuation zones after the accident.

**The results show residents, excluding those working at the Daiichi plant, were exposed to a maximum of 15 millisieverts of radiation during the first 4 months after the accident.** About 10 people were exposed to more than 10 millisieverts.

This is the first time such figures have been made public.

Radiation levels of over 1,100 people, or two-thirds of the residents in the 3 municipalities, were less than the annual permissible limit of one millisievert.

98 percent of those tested are estimated to have been exposed to less than 5 millisieverts.

Some residents working at the nuclear plant have been exposed to more than 30 millisieverts.

## **Friday, December 09, 2011 10: Some Fukushima residents exposed to up to 37 millisieverts of radiation**

FUKUSHIMA (Kyodo) -- Residents in three municipalities near the crisis-hit Fukushima Daiichi nuclear power plant have been exposed to up to some 37 millisieverts of radiation during the four months after the powerful earthquake and tsunami on March 11 crippled the plant, Fukushima prefectural government officials said Friday.

The local government worked out the estimated dose of exposure after conducting health checks on about 1,730 of the 29,000 residents in the towns of Namie and Kawamata and the village of Iitate in Fukushima Prefecture, who filed their behavioral records during the four months. The average dose is estimated at just above 1 millisievert.

It calculated the radiation dose for residents, based on levels in the air measured by the Ministry of Education, Culture, Sports, Science and Technology and by the ministry's radiation projection system, called the system for predicting environmental emergency dose information, or SPEEDI, which is operated by the Tokyo-based Nuclear Safety Technology Center.

The Fukushima Medical University said about half the 1,730 residents have been exposed to less than 1 millisievert, the maximum limit of radiation exposure per year in normal times, during the four months.

The remaining half has been exposed to more than 1 millisievert. Of those, some 40 people were exposed to 5 to 10 millisieverts. Nearly a dozen people were exposed to more than 10 millisieverts and the highest level was about 37 millisieverts.

The doses do not include natural radiation or from internal exposure.

Those who were exposed to high levels of radiation included people who worked at the Fukushima Daiichi power plant to contain the crisis.

None of the residents have been exposed to more than 100 millisieverts -- a level that poses high health risks, they said.

The Fukushima prefectural government conducted health checks on some 29,000 residents in the three municipalities, which are close to the nuclear power plant and are designated as evacuation zones.

The local government is continuing to conduct health checks on all the residents in Fukushima Prefecture, a population of some 2 million.

It is also using whole body counters and conducting urine tests to measure internal radiation exposure on people who spend long hours outdoor, such as farmers and construction workers, as well as on children and mothers who were evacuated from the no-entry zone in the 20-kilometer radius from the crippled power plant.

(Mainichi Japan) December 9, 2011

## **Editorial: Japan needs more discussion before exporting atomic energy technology**

The Diet's approval of atomic energy agreements, which the government has signed with Jordan, Vietnam, Russia and South Korea, has opened the way for exports of nuclear power plants to these countries, but **the decision came too hasty and has not been thought through.**

The pacts are expected to come into force as early as January. However, the crisis at the tsunami-hit Fukushima No. 1 Nuclear Power Plant has not been brought under control and the cause of the accident needs to be clarified. The Diet has endorsed the accords without in-depth discussions on how to ensure safety of nuclear power stations.

Atomic energy agreements are aimed at preventing exported atomic-energy-related technology and materials from being diverted to military use, and are a prerequisite for exporting nuclear plants. Japan has already signed such accords with seven countries including the United States, France and China as well as the European Atomic Energy Community.

Under the agreements, Japan is expected to construct nuclear power plants in Jordan and Vietnam and commission Russia to enrich uranium while exporting parts for nuclear reactors to South Korea.

During Diet deliberation on the pacts, Prime Minister Yoshihiko Noda said, "If we receive requests for cooperation despite Japan's current situation based on lessons learned from the crisis, we should do whatever we can to contribute to international efforts to enhance the safety of atomic energy."

However, **one cannot help but wonder how Japan can prove its nuclear technology can contribute to global safety.** True, the Japanese nuclear power industry is quite advanced, but it alone cannot ensure the safety of operations at nuclear power stations.

Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima No. 1 Nuclear Power Plant, is highly unlikely to participate in such an international deal even though it had been expected before the crisis to play a leading role in operations at these nuclear power stations abroad. Moreover, **even if Japan emphasizes that its nuclear technology is safe without clarifying the cause of the crisis, it cannot win confidence from the international community.**

At the same time, the prime minister also emphasized that it is Japan's responsibility to share its experiences learned from the nuclear crisis with the international community. While this is correct, Japan should put greater emphasis on sharing with the world its knowledge on how to prevent nuclear accidents based on its thorough investigation into the Fukushima nuclear crisis.

The Diet had only 10 days to deliberate on the atomic energy pacts. It failed to carry out thorough discussions on safety measures even though Jordan is an earthquake-prone country and it is reportedly difficult to secure the massive amount of water needed to cool down reactors that are expected to be built in inland areas of the country.

It has been pointed out by some critics that the government was desperate to ensure the pacts clear the Diet within this year so that Japanese companies will not be put in a disadvantageous position amid international competition for contracts on the construction of nuclear power stations. However, **some members of the ruling coalition voted against the pacts. Deliberations that fail to convince even some ruling coalition legislators can never win confidence from the Japanese public and the international community.**

The government is currently negotiating atomic energy agreements with India, South Africa and Turkey. In particular, Japan should exercise prudence in its negotiations with India, which is not a party to the Nuclear Non-Proliferation Treaty even though it possesses nuclear arms.

**To prevent Japan from exporting danger and anxiety to the world while decreasing its reliance on nuclear energy,** the executive and legislative branches of the government are urged to hold more in-depth discussions on nuclear energy safety based on its verification of the cause of the Fukushima nuclear crisis.

(Mainichi Japan) December 10, 2011

## Residents exposed to high doses of radiation

The Yomiuri Shimbun

A Fukushima prefectural government survey on residents' external radiation exposure showed those in government-set evacuation zones were likely exposed to annualized radiation doses of up to 14 millisieverts, government sources said Friday.

This is the first statistical data indicating external radiation exposure among people living around the crippled Fukushima No. 1 nuclear power plant.

The prefectural government sent questionnaires to about 29,000 residents from Iitatemura, Namiemachi and the Yamakiya area in Kawamatamachi, which are designated as in either a no-entry zone or expanded evacuation zone, between late June and mid-July, ahead of those in other areas. The survey covered the four months after the crisis began.

The figure is based on analysis of questionnaires from 1,730 people who responded early. The prefectural Fukushima Medical University and the National Institute of Radiological Sciences analyzed the results of the survey.

About half of the surveyed residents from the three municipalities are believed to have been exposed to external radiation of at least the government-set annual limit of 1 millisievert, according to the sources.

While the prefecture projected the annualized external radiation exposure would be up to 5 millisieverts for most residents, the figure was 10 millisieverts or higher for about 10 residents.

Among those examined, a Fukushima plant worker was estimated to have been exposed to a maximum annualized dose of 37 millisieverts, while the highest dose among non-plant workers was 14 millisieverts. The resident is suspected to have gone through a highly contaminated area at the time of evacuation, according to the sources.

The prefectural government has been conducting health surveys on those who lived in the prefecture when the crisis broke out at the plant.

The prefectural government plans to release the survey results by the end of December.

Meanwhile, the city government of Koriyama, also in the prefecture, announced Thursday four primary and middle school students' cumulative radiation exposure exceeded 0.40 millisievert in the month from Oct. 5. The dose translates into an annualized dose of 4 millisieverts or more, city officials said.

The data was obtained from measurements by dosimeters that gauge cumulative radiation exposure. The city government distributed the dosimeters to 25,551 primary and middle school students. The cumulative radiation exposure levels among the students ranged between 0.01 millisieverts and 0.45 millisieverts, the city said.

"Experts told us the figures [for the four students] do not represent health problems, but we'd like to question the students to find out why their radiation exposure levels were high," a city official said.

The International Commission on Radiological Protection sets the annual limit for radiation exposure at 20 to 100 millisieverts at the time of an emergency and 1 to 20 millisieverts after the disaster has been contained.

(Dec. 10, 2011)

## At northern U.K. nuclear facility, decades of dismantling work remain



The former nuclear research site Dounreay as seen from a distance Dec. 6. The spherical structure is the western world's first experimental fast-breeder reactor. To its right is the prototype reactor. (Mainichi)

On Dec. 6, hail was falling on Dounreay, a nuclear research site in the United Kingdom's far north. The temperature was minus 2 degrees Celsius, and a bitter wind from the North Atlantic was blowing over a rough sea.

Clare Crawford, who handles community relations at Dounreay, where decommissioning work is underway, says that once the fast-breeder reactors and other nuclear facilities are dismantled, there will be no more work in this area. Pulling together her coat collar, she looked up at the sky. The conditions here, she says, are good for wind power generation. She hopes that the area can be transformed into a site providing renewable energy.

It was **in the 1950s** that the British government started constructing a fast-breeder reactor at Dounreay - becoming the first in the western world to do so. **Many people in the town, which had a population of about 10,000, were employed at the site** and it became a leading area in the nuclear fuel recycling business, which utilizes plutonium.

According to the British Department of Energy and Climate Change, officials at the time feared that petroleum and other fossil fuels would be exhausted before long. Following the advice of Nobel laureates and other scientists, the government invested a huge amount of national funds into the area as part of an energy-production dream. The complex that was built and put into operation contained 180 facilities, including fast reactors, nuclear fuel reprocessing facilities, and a nuclear fuel production factory.

The site's fast-breeder reactor program consisted of an experimental reactor built from 1954, a prototype reactor built from 1966, and a large demonstration reactor planned from 1985. However, in the late 1970s, large deposits of uranium ore were found in Canada and other areas, and the price of uranium plummeted to under 10 dollars per pound -- about one-tenth of the original price. Furthermore, an oil field was found off Britain, and the economic predominance of fast-breeder reactors grew thin. In addition, the reactors ran into problems including **repeated coolants leaks** -- similar to the accident that occurred at Japan's Monju fast reactor in 1995.



Workers in protective suits carry out the decommissioning process of the fast-breeder reactors at Dounreay. (Photo courtesy of the Nuclear Decommissioning Authority)

The British government subsequently gave up its fast-breeder reactor plan, and **in 1994, the prototype reactor was shut down. The British government is now spending a total of about 2.9 billion pounds (about 350 billion yen) and employing 2,000 technical workers to dismantle the site and construct a facility to dispose of radioactive waste.**

The goal for completing the dismantling of the facilities, which requires the removal of fuel rods, is **2039**. But Alex Anderson, who is in charge of this work, points out that **nearly 30 years have passed since the experimental reactor, which was shut down in 1977, started being dismantled in 1983, yet workers are still unable to remove the fuel rods from the reactor's core.** Even if the remaining work proceeds smoothly, it will take another 20 years, he predicts. That means the dismantling work will take **at least half a century in total.**

**Low-level radioactive waste will be buried underground within the facility, but this won't be "safe" until about 2300.**

Including spent nuclear fuel, **the Dounreay site still holds some 100 tons of uranium, and plutonium** -- which can be used in nuclear bombs -- and until officials decide what to do with it, the government needs nuclear nonproliferation and anti-terrorism measures. After I took photographs inside and outside the plant with the permission of a public relations officer, a security official told me, "You're too close. Delete them."

Britain's ending of the nuclear fuel recycling business that it pioneered is tinged with irony. It was not because of the cold that my hands shook as I deleted the photos on my camera. It was because I shuddered to think of the distant fate of this town and its shrinking population. (By Haruyuki Aikawa, Mainichi Shimbun)

(Mainichi Japan) December 9, 2011

## **TEPCO drops plan to release low-level radioactive water in sea**

Tokyo Electric Power Co. (TEPCO) has dropped plans -- **at least for now** -- to release low-level radioactive water from the Fukushima No. 1 Nuclear Power Plant into the ocean after protests from fishermen.

TEPCO on Dec. 8 submitted a midterm analytical report on the status of the crippled nuclear power plant to the governmental Nuclear and Industrial Safety Agency (NISA). But the report did not include an initial plan to release the water into the sea after a national fisheries cooperative association and others protested the plan.

TEPCO considered the release because underground water is accumulating inside the power plant's reactor buildings at a rate of 200 to 500 cubic meters per day as TEPCO continues to apply water to cool the heavily damaged reactors, and this water has become contaminated.

The water is sent to storage tanks but those tanks will reach full capacity in the near future, so TEPCO considered treating the water to lower its radioactive levels below a legal limit and then release it into the ocean. After the protests from fishermen and others on Dec. 8, however, the utility reconsidered the plan.

The report from TEPCO deals with measures including removal of nuclear fuel from the containment vessels and spent nuclear fuel pool. NISA was to hold a hearing Dec. 9 to hear opinions of experts and evaluate the report.

(Mainichi Japan) December 9, 2011

## **Radiation levels in Koriyama children exceed annual limit: survey**

KORIYAMA, Fukushima -- Radiation levels detected in children in this city near the crippled Fukushima No.1 nuclear plant exceed the government-set annual limit, a municipal government study has revealed.

The survey, the first of three to be conducted before March 2012, examined accumulated radiation levels in all 25,551 elementary and middle school children residing in the city, measured on a 24-hour basis daily, between the period of Oct. 5 and Nov. 6. Final survey data excludes the 0.06 millisieverts dosage presumed to be accumulated through natural exposure to radiation.

**The average radiation level according to the survey data announced on Dec. 8 was 0.12 millisieverts, which calculated over a one-year period equals 1.33 millisieverts -- 0.33 millisieverts more than the annual limit set by the government for both children and adults.**

The radiation exposure level was 0.10-0.19 millisieverts for 61.31 percent of the children, below 0.1 millisieverts for 32.73 percent, 0.20-0.29 millisieverts for 5.71 percent, 0.30-0.39 millisieverts for 0.23 percent, and 0.40-0.45 millisieverts for 0.02 percent.

Although the majority of the children -- 94 percent -- had radiation doses below 0.2 millisieverts, the highest dose found in four children equals 4.98 millisieverts when calculated over a one-year term. This is almost five times the annual limit.

According to officials at the Koriyama Municipal Government, the survey results were submitted to Toshiteru Okubo, the board chairman of the Radiation Effects Research Foundation, and other radiation experts serving as nuclear measures advisors to the city, for evaluation. All of them are said to have concluded that the results "pose no harm to the children's health."

Survey results were also reported to parents individually on Dec. 8.

"We hope this survey data will help people take action to decrease their radiation exposure levels by comparing it to their individual daily records," said an official at the Koriyama Municipal Board of Education.

The second phase of the survey was launched on Nov. 7 and will continue through Jan. 9, 2012, and the third will take place between Jan. 10 and March 1, 2012, the Koriyama Municipal Government has announced.

(Mainichi Japan) December 9, 2011

## **Japan PM: Crippled nuke plant stable by year's end**

TOKYO (AP) -- Work to stabilize Japan's tsunami-hit nuclear power plant is on track and the government plans to declare it stable by the end of the year as planned, the prime minister said Friday.

Temperatures of the three melted reactor cores have fallen below the boiling point and radiation leaks have significantly subsided, Prime Minister Yoshihiko Noda said.

Those are the two key conditions to achieve what Japanese nuclear officials call "cold shutdown conditions," a milestone in the effort to stabilize and eventually close the Fukushima Dai-ichi plant altogether.

"We're about ready to draw a conclusion," Noda told a news conference Friday, marking the end of the current parliamentary session.

Some nuclear experts, however, question that claim because the nuclear fuel moved as it melted, so its condition and locations are little known.

The March 11 earthquake and tsunami that set off the radiation crisis at Fukushima Dai-ichi also heavily damaged the plant, and the damage and radiation concerns have limited how much information can be obtained about spent fuel rods and reactor cores.

The government and plant operator Tokyo Electric Power Co. are expected to make a monthly progress report around Dec. 16, and a formal announcement of cold shutdown is expected then.

Nuclear safety officials said the core temperatures and radiation leakage have met the requirements for some time now, and they are now making an overall safety evaluation to determine whether the plant can stably run the cooling system and properly launch crisis management steps in case of an unexpected development.

The crisis forced some 100,000 people to evacuate their homes, and part of the no-go zone near the plant may be uninhabitable for decades.

Noda said bringing the plant to the stable conditions is only a passing point on the path toward full closure of Fukushima Dai-ichi, which the government estimates will take 30 years.

Concerns about food safety stemming from radiation leaks in the area is also a pressing issue, Noda said, citing recent ban on rice grown in Fukushima and a trace of cesium detected in baby formula.

"We must address concerns about (food) safety and provide fuller explanations about it. We still need work in that area," he added.

(Mainichi Japan) December 10, 2011

## **Radioactive water leaks at Kyushu Electric's Genkai reactor**



In this file photo, the Genkai nuclear power plant, owned by Kyushu Electric Power Co., is seen in Genkai, Saga Prefecture, on Dec. 7, 2009. (Mainichi)

SAGA (Kyodo) -- Kyushu Electric Power Co. said Saturday that 1.8 tons of coolant water containing radioactive materials had leaked within a purification system at an idled reactor at its Genkai nuclear power plant in Saga Prefecture.

But the utility failed to report the leak to the local governments when it detected it Friday morning, only notifying them of trouble with pumps in the system for the No. 3 reactor, which has been suspended for regular checkups, prompting the Genkai mayor to complain.

The water leaked from a joining area of the pumps, with no radioactive materials leaking outside the reactor building, and has been completely recovered, the utility said, adding that the intensity of radioactive matter contained is unknown.

On Friday, the company serving the Kyushu region in southwestern Japan said a rise in temperature over 80C at the base of one of the pumps triggered an alarm, but didn't reveal the water leak on the grounds that it did not go outside the purification system.

The government's Nuclear and Industrial Safety Agency said the leak within the purification system posed no immediate safety threat and urged the firm to investigate the cause.

But Genkai Mayor Hideo Kishimoto said, "It should have reported properly (to the Genkai town and Saga prefectural governments). I have been repeatedly telling it to change its corporate culture."

(Mainichi Japan) December 10, 2011

## **Radioactive water leaks at Kyushu Electric's Genkai reactor**

SAGA (Kyodo) -- Kyushu Electric Power Co. said Saturday that 1.8 tons of coolant water containing radioactive materials had leaked within a purification system at an idled reactor at its Genkai nuclear power plant in Saga Prefecture.

But the utility failed to report the leak to the local governments when it detected it Friday morning, only notifying them of trouble with pumps in the system for the No. 3 reactor, which has been suspended for regular checkups, prompting the Genkai mayor to complain.

The water leaked from a joining area of the pumps, with no radioactive materials leaking outside the reactor building, and has been completely recovered, the utility said, adding that the intensity of radioactive matter contained is unknown.

On Friday, the company serving the Kyushu region in southwestern Japan said a rise in temperature over 80C at the base of one of the pumps triggered an alarm, but didn't reveal the water leak on the grounds that it did not go outside the purification system.

The government's Nuclear and Industrial Safety Agency said the leak within the purification system posed no immediate safety threat and urged the firm to investigate the cause.

But Genkai Mayor Hideo Kishimoto said, "It should have reported properly (to the Genkai town and Saga prefectural governments). I have been repeatedly telling it to change its corporate culture."

(Mainichi Japan) December 10, 2011

## **Meiji ignored info on cesium-tainted baby food for 2 weeks**

TOKYO (Kyodo) -- Food maker Meiji Co. received information on three occasions in mid-November about radioactive cesium in its baby food but paid no heed to the leads for about two weeks until it finally looked into the matter when approached by Kyodo News and a citizens' group earlier this month, Kyodo learned Friday.

Meiji, which subsequently found up to 30.8 becquerels per kilogram in its Meiji Step milk powder, said it had initially concluded that "further investigation was unnecessary" because, of the three occasions, one was an anonymous call and the two others cited Internet information that the company was unable to confirm.

"We would like to respond with better sensitivity from now on," a Meiji spokesperson said.

An anonymous caller provided Meiji's customer service with information on Nov. 14 that a citizen's group in Fukushima Prefecture had detected cesium in the milk formula in late October, according to sources familiar with the matter.

On the same day, two consumers contacted Meiji saying they saw information about the suspected contamination on the Internet. They were told by the customer service that there was no problem with the product as the company conducts monthly checks, the sources said.

Meanwhile, in light of the cesium-tainted milk powder, Japanese health minister Yoko Komiyama said Friday her ministry will regularly test baby food products in connection with the Fukushima Daiichi nuclear plant crisis.

The tests will be conducted every three months or more frequently, she told a press conference.

The radioactive contamination of the Meiji product was the first found in baby food since the March 11 disaster and has attracted attention even though its level was far less than the government-set limit of 200 becquerels, amid concerns that babies are more susceptible to the harmful effects of radioactive materials than adults.

"As mothers and other consumers are very concerned (about radiation), we want to carry out regular tests," Komiyama said.

The ministry found no radioactive cesium when it tested 25 baby products in July and August after the earthquake and tsunami in northeastern Japan triggered the nuclear crisis.

(Mainichi Japan) December 10, 2011

## TEPCO N-plant to get foreign insurer

The Yomiuri Shimbun

Tokyo Electric Power Co. will likely conclude a new contract with a foreign insurer for the crippled Fukushima No. 1 nuclear power plant, as Japanese firms have refused to renew the current arrangement, according to sources.

from the current amount of between 200 million yen and 300 million yen a year per plant. The premium for the new insurance policy is expected to jump more than 10-fold

Electric power companies are obligated to obtain damage insurance for each nuclear power plant in case of an accident and other irregularities.

The Japan Atomic Energy Insurance Pool, a group of Japanese insurance companies that provide coverage for nuclear power plants, refused to renew the existing policy contract with the Fukushima plant after it expires Jan. 15 next year.

The Law on Compensation for Nuclear Damage prohibits operating nuclear power plants and decommissioning reactors without insurance.

This means that without insurance TEPCO might have been forced to halt decommissioning the reactors, unless the company deposited 120 billion yen, equivalent to the amount of insurance benefits, with the Justice Ministry's Fukushima District Legal Affairs Bureau.

The law obliges all nuclear power plants to sign a compensation contract, which allows the government to pay for damage caused by a nuclear accident due to an earthquake or tsunami.

The law also obliges utilities to sign insurance contracts with private companies to cover ordinary accidents that might happen during normal operations or decommissioning. For the crisis at the Fukushima plant, TEPCO has already received 120 billion yen from the government.

(Dec. 10, 2011)

## Massive signature campaign on nuclear power launched in Tokyo, Osaka



Advocacy group members ask people to sign a petition to express their opinions on the use of nuclear power in Tokyo's Shibuya Ward on Dec. 10. (Mainichi)

A residents' advocacy group seeking support for a local referendum on the use of nuclear power launched a pro-and-con nuclear power signature campaign in Tokyo and Osaka on Dec. 10.

Minna de kimeyo "Genpatsu" Kokumintohyo (Let everyone decide on nuclear power through local referendums) was formed in June 2011 amidst increased residents' concerns in the aftermath of the Fukushima nuclear disaster, triggered by the Great East Japan Earthquake and tsunami.

Celebrities such as actor Taro Yamamoto, "manga" (cartoon) artist Tetsuya Chiba, and movie director Shotaro Kobayashi are among the most vocal supporters and members of the group.

According to the law, campaign organizers are legally required to collect signatures from at least one-fiftieth of registered voters in Tokyo, or about 214,200 people, within a two-month period to demand that Gov. Shintaro Ishihara take action to revise a local ordinance to introduce a referendum.

If enough signatures are collected on time, Gov. Ishihara will have to officially submit the petition to an upcoming Tokyo Metropolitan Assembly session for deliberation.

"This is not an anti-nuclear power demonstration. We want to provide space for open debate where both anti and pro-nuclear power people can discuss the issue," said Kobayashi to residents in Tokyo's Shibuya Ward on Dec. 10.

During a press conference on Dec. 9, Gov. Ishihara said that he is not against people debating their personal opinions. "This is an open society," he said. "But I wish people would take radiation issues a bit more calmly."

(Mainichi Japan) December 10, 2011

## **Nobel laureate, citizens urge abolition of nuclear reactors**

TOKYO (Kyodo) -- Nobel literature laureate Kenzaburo Oe and antinuclear activists held a rally in Tokyo on Saturday calling for the abolition of nuclear reactors in the aftermath of radiation leaks at the Fukushima Daiichi power plant.

Addressing the protesters in Hibiya Park, who numbered around 5,500, according to the organizers, Oe condemned the Diet's approval Friday of nuclear cooperation agreements with Jordan, Russia, South Korea and Vietnam to allow exports of Japanese-made reactors and technologies to the countries.

"The levels of politicians' caution regarding nuclear reactors have returned to those before March 11" when the massive earthquake and tsunami crippled the Fukushima plant, Oe said.

Only citizens' movements based on a resolve to eliminate nuclear reactors are dependable when seeking to achieve that goal, now that politicians are increasingly losing a sense of danger in relying on nuclear power, the novelist said.

Ayako Oga, the 38-year-old chief of the secretariat of a civic group formed by Fukushima residents, said, "Our state of emergency will not end as long as there is a fear that radioactive substances could fall from the sky again (as a result of a nuclear accident), necessitating evacuation."

After the rally, the protesters marched to the head office of Tokyo Electric Power Co., the operator of the Fukushima plant, chanting, "Farewell to nuclear reactors, we cherish our lives."

Mizuho Fukushima, the leader of the Social Democratic Party who took part in the demonstration, said, "I felt the feelings and enthusiasm of these people. We would like to make efforts to abolish nuclear reactors through our activities on the Diet floor."

(Mainichi Japan) December 11, 2011

## Govt compiles decontamination guidelines

Japan's Environment Ministry has compiled guidelines for the removal of radioactive materials discharged from the Fukushima Daiichi nuclear plant.

The 164-page document with illustrations was disclosed at a meeting of experts on Sunday. It was compiled **for residents of cities and municipalities.**

The 4-part guidelines cover ways to measure radiation levels and remove radioactive substances. They also show how to collect, deliver and store radiation-tainted soil and other materials.

**The decontamination process will be different for buildings, roads, soil and plants.**

The guidelines recommend that water volume and pressure for decontaminating buildings should be adjusted as excessive amounts may cause the dispersion of radioactive materials.

It says moss and dead leaves should be manually removed before high-pressure sprays are used to save water.

It adds that **the used water should not be drained but collected in buckets.**

The guidelines propose the use of separate containers for different levels of radiation-contaminated soil. They also give the safe distances of storage spaces from residential areas.

Ministry officials say they hope the guidelines can facilitate the implementation of a plan to build temporary storage facilities as residents will have a clearer idea of the decontamination process.

The ministry is expected to release the document on Wednesday and explain the details to residents of the Tohoku and Kanto regions.

Sunday, December 11, 2011 23:28 +0900 (JST)

## **Vietnam PM: Growth centers on nuclear power**

Vietnam's Prime Minister Nguyen Tan Dung has stressed that his country will aim for further economic growth with nuclear power as a major source of electricity.

The Vietnamese prime minister delivered a speech on Saturday in the southern province of Ninh Thuan, where nuclear power plants will be built by Japanese and Russian companies, with the aim of starting operations in 2020.

In the speech, Dung emphasized his confidence in nuclear power even after the accident at Tokyo Electric Power's Fukushima Daiichi nuclear plant.

He described the nuclear technologies in Japan and Russia as the most advanced and safest in the world.

He went on to say that building nuclear power plants will bring speedy and sustainable economic growth to the country.

Vietnam is now facing a serious power shortage due to rapid economic growth. The country is having to buy electricity from China.

Vietnam's plan to build nuclear plants is set to progress as Japan's Diet approved a civil nuclear cooperation agreement between the 2 countries on Friday.

The Vietnamese government will finalize the selection of Japanese companies and the type of reactors, based on the results of a geological survey of the planned site.

Sunday, December 11, 2011 10:33 +0900 (JST)

## **Radiation rose slightly after water leak at Genkai plant**

SAGA, Japan (Kyodo) -- A radiation reading at Kyushu Electric Power Co.'s Genkai nuclear power plant in Saga Prefecture rose slightly above the usual range after coolant water leaked there Friday, the prefectural government said Sunday.

The reading at an outlet for seawater cooling the No. 3 reactor's secondary cooling system was 473 counts per minute at 3 p.m. Friday, against the usual range of 433 to 472 cpm, not high enough to immediately impact human health, it said.

On Friday morning, 1.8 tons of primary coolant water containing radioactive materials leaked within the reactor's purification system. The utility claimed the radiation reading is unrelated to that leak and said it will investigate the cause.

Water used in treating low-level radioactive waste is sometimes discharged from the outlet, but that was not the case Friday, the local government said, adding the reading sometimes rises under natural conditions such as rain.

(Mainichi Japan) December 12, 2011

## **Gov't nuclear cleanup work has to wait at least until late March**

TOKYO (Kyodo) -- The Environment Ministry said Sunday that full-fledged efforts to decontaminate areas highly polluted by radioactive matter from the Fukushima Daiichi nuclear plant disaster cannot begin until late March or later.

The government **needs time to obtain the consent of individual landowners and to secure temporary storage sites for contaminated soil** removed from irradiated areas, ministry officials told a panel of experts commissioned to discuss the issue.

At the meeting, the ministry also presented the panel with its draft guidelines for how to go about the cleanup work in areas contaminated with radioactive material emitting one to 20 millisieverts of radiation per year, excluding naturally occurring radioactivity.

While the national government will directly take charge of decontamination in the no-go zone and areas with annual radiation of 20 millisieverts or more, municipalities are to undertake the work in other contaminated areas, using state funds and the guidelines under a special law to take full effect in January.

According to the guidelines, due to be made official later this week, the cleanup work for houses is to prioritize eliminating radioactive cesium accumulated on rooftops, among fallen leaves in gutters, and in moss and mud.

Radiation is to be reduced to less than 1 millisieverts per year and no more work is basically required once that goal is attained.

Contaminated soil, after being removed, is to be stored in locations a certain distance away from residential areas.

**The ministry intends later this month to decide which areas to clean up.**

(Mainichi Japan) December 12, 2011

## **Full decontamination to start in Fukushima in Mar.**

Japan's Environment Ministry says it will delay the start of full decontamination work for no-entry zones and government-designated evacuation zones in Fukushima Prefecture until late March.

A law taking effect next month requires the state to decontaminate areas with high radiation levels. The restricted areas were designated after the March accident at the Fukushima Daiichi nuclear power plant. The government is now conducting a model project to seek effective ways to clean up the contaminated areas.

The Environment Ministry had said it would start decontamination work for these areas in January or later. However, it revealed on Sunday that full decontamination efforts for houses and farmland will begin in late March.

The ministry said it will start decontaminating infrastructure, including roads as well as water and electricity supply systems, in late January.

The ministry said it will take time to get permission from evacuees to decontaminate their homes and agricultural land. It also cited the difficulty of securing temporary storage sites for topsoil removed during decontamination work.

Regarding areas with annual radiation far above 20 millisieverts, the ministry said it will only start decontamination after launching a new model project to decide ways to do so and ensure the safety of workers.

The government is legally obliged to aim to end the transfer of contaminated soil to temporary storage spots by the end of March 2014, except for areas with particularly high radiation levels.

Monday, December 12, 2011 05:35 +0900 (JST)

25 November 2011 Last updated at 00:18 GMT - <http://www.bbc.co.uk/news/science-environment-15864806>

## Nuclear power 'gets little public support worldwide'

By Richard Black Environment correspondent, BBC News

There is little public appetite across the world for building new nuclear reactors, a poll for the BBC indicates.

In countries with nuclear programmes, people are significantly more opposed than they were in 2005, with **only the UK and US bucking the trend**.

Most believe that boosting efficiency and renewables can meet their needs.

Just 22% agreed that "nuclear power is relatively safe and an important source of electricity, and we should build more nuclear power plants".

In contrast, 71% thought their country "could almost entirely replace coal and nuclear energy within 20 years by becoming highly energy-efficient and focusing on generating energy from the Sun and wind".

Globally, 39% want to continue using existing reactors without building new ones, while 30% would like to shut everything down now.

The global research agency GlobeScan, commissioned by BBC News, polled 23,231 people in 23 countries from July to September this year, several months after an earthquake and giant tsunami devastated Japan's Fukushima Daiichi power station.

#### Rising tide

GlobeScan had previously polled eight countries with nuclear programmes, in 2005.

In most of them, opposition to building new reactors has risen markedly since.

In Germany it is up from 73% in 2005 to 90% now - which is reflected in the government's recent decision to close its nuclear programme.

More intriguingly, it also rose in pro-nuclear France (66% to 83%) and Russia (61% to 83%).

Fukushima-stricken Japan, however, registered the much more modest rise of 76% to 84%.

In the UK, support for building new reactors has risen from 33% to 37%. It is unchanged in the US, and also high in China and Pakistan, which all poll around the 40% mark.

Support for continuing to use existing plants while not building new ones was strongest in France and Japan (58% and 57%), while Spaniards and Germans (55% and 52%) were the keenest to shut existing plants down immediately.

In countries without operating reactors, support for building them was strongest in Nigeria (41%), Ghana (33%) and Egypt (31%).

#### Atlantic oddity

Although the survey cannot determine definitively whether the Fukushima disaster was responsible for changes of opinion, it appears likely.

"The lack of impact the Fukushima nuclear disaster in Japan has had on public views towards nuclear power in the UK and US is noteworthy," said GlobeScan chairman Doug Miller.

"This contrasts with significantly increased opposition to nuclear new-build in most countries we've tracked since 2005."

Other pollsters have also found continuing support in the UK for nuclear energy.

The BBC/GlobeScan poll is broadly consistent with other global polls as well.

In June, both [Ipsos-Mori](#) and the Japanese [Asahi Shimbun newspaper](#) found drops in support for the technology in most countries, with support continuing in a number including the US.

The Ipsos-Mori poll found that nuclear enjoyed the lowest support of any established technology for generating electricity, with 38%.

Coal fared not much better, at 48%, while solar, wind and hydro all found favour with more than 90% of those surveyed.

"That renewable energy combined with efficiency can replace coal and nuclear is not only a majority popular belief, but a fact supported by a growing number of authoritative reports," commented Jan Beranek, who leads the energy team in Greenpeace International.

"Nuclear power is a relatively tiny industry with huge economic, technical, safety, environmental, and political problems.

"And the Fukushima accident reminded the world that all reactors have inherent risks."

But bodies such as the International Energy Agency see a continuing role for nuclear power, as the global demand for energy grows and governments struggle to control greenhouse gas emissions at a reasonable cost.

John Ritch, director-general of the World Nuclear Association, said that Fukushima was the first significant nuclear incident in 25 years, and has not caused a single fatality.

"Policymakers must respect public opinion, but they must also respect facts; and the facts still favour nuclear power," he told BBC News.

"Those facts warrant a better educational effort from industry, from governments and from journalists.

"Nuclear power will be even safer after Fukushima, and will continue to mature as the world's premier non-carbon technology."

Follow Richard [on Twitter](#)

At today's press conference of Tepco and Japanese government Sonoda ministerial aid of Cabinet Office announced a man (60) died at decontamination in Dateshi Fukushima.

The only sure thing is "It has nothing to do with radiation."

They are having an experiment of decontamination in Fukushima.

A man who joined it volunteer died suddenly.

1:00 PM: a team member noticed he didn't come back from work. They found him in his car. He did not have consciousness.

1:08 PM: ambulance arrived. Resuscitation was started.

1:20 PM: It was reported to Cabinet office.

1:26 PM: He was sent to the hospital.

2:00 PM: They confirmed he died.

No more details are announced.

## **Editorial: Decommissioning of Fukushima plant will need cooperation and vigilance**

Experts of a Japan Atomic Energy Commission (JAEC) committee have drawn up a report on the procedures to decommission the stricken Fukushima No. 1 Nuclear Power Plant.

According to the schedule mapped out by the JAEC team, **workers will remove spent nuclear fuel from the plant within three years, and start the removal of melted fuel from the reactors within 10 years.** The entire decommissioning procedure is expected to take at least 30 years.

After all, we're talking about dealing with the damage caused by a disaster of unprecedented proportions, including nuclear meltdown in three reactors. In fact, the whereabouts and the state of the melted fuel are still unknown. Cleaning up after this disaster will undoubtedly be an extremely difficult task.

As varying levels of new technology will be necessary for the removal of nuclear fuel, it's hard to believe that the work will progress according to plan. We urge both plant operator Tokyo Electric Power Co. (TEPCO) and the government to make steady progress, only after adequately considering all possible stumbling blocks and ensuring both safety and efficiency.

It is important to consider the framework with which to carry out the decommissioning process. Since the crisis far surpasses a magnitude that Japan can deal with on its own, it will be beneficial to both Japan and the rest of the world to **carry out the work as an international project.**

There is bound to be technology and expertise abroad that we do not have in Japan. If we are able to take advantage of them, the work will proceed more efficiently. In return, Japan should be able to pass on the knowledge and lessons learned from the Fukushima crisis to the rest of the world.

Having caused a crisis of this magnitude, sharing knowledge internationally is Japan's responsibility. At the same time, increasing the transparency of the decommissioning process is likely to help Japan regain the world's confidence.

Cultivating a generation of Japanese and foreign workers with new expertise through the shutdown process is vital, as is the protection of intellectual property. If possible, we urge the exploration of possibilities not just in terms of technology, but also in the injection of funds toward such goals.

We stress the importance of ensuring that the decommissioning work does not advance the interests of certain groups. Considering the vast sums of money that the process will require, funds must not be funneled recklessly. We must rely on the wisdom we gain from a broad range of fields, and institute a system in which a neutral third-party organization inspects both the decommissioning plan and work. Fukushima Prefecture, which has suffered the greatest damage from the ongoing crisis, will be home to the decommissioning work for at least another 30 years. **Taking measures that tie the decommissioning process to the revival and development of local communities will be crucial.**

One way of supporting the recovery of local communities is to turn Fukushima into a research and development hub for the decommissioning of nuclear power plants. Of course, it is imperative that the voices of local residents be respected if such a path is to be taken.

It goes without saying that the decommissioning process must be carried out safely. We urge the government to proceed with vigilance, protecting workers from excessive radiation exposure and preventing any further radiation contamination outside the nuclear plant.

(Mainichi Japan) December 12, 2011

## **Fire breaks out at facility of Tsuruga nuke plant**

A fire broke out at the site of the Tsuruga nuclear power plant in Fukui Prefecture on Monday evening. Workers at the plant have brought it under control.

The Plant operator, Japan Atomic Power Company, says the fire began at 7:50 PM in a makeshift electric device installed at a facility to process radioactive waste. No injuries have been reported.

It also says no radioactive materials have been leaked to surrounding areas.

The Nuclear and Industrial Safety Agency says the fire was ignited when workers turned a switch on a makeshift power board.

Monday, December 12, 2011 22:12 +0900 (JST)

## **Fire breaks out at waste facility of Tsuruga nuclear plant**

TSURUGA, Japan (Kyodo) -- A fire broke out Monday evening at a waste disposal facility of a nuclear power plant in Tsuruga, Fukui Prefecture, but no one was injured and there was no environmental impact, the Nuclear and Industrial Safety Agency said.

The fire started at 7:50 p.m. on power-supply equipment of the waste disposal facility for the No. 1 reactor of Japan Atomic Power Co.'s plant, the agency said. The reactor is currently offline due to regular checkups.

The incident followed similar fire accidents that occurred at the plant on the Sea of Japan coast since May.

(Mainichi Japan) December 13, 2011

## **No Monju test runs in FY12, govt says**

The Yomiuri Shimbun

The government has announced it will not resume test operations for a Monju prototype fast-breeder reactor in Tsuruga, Fukui Prefecture, during fiscal 2012 in light of the current domestic situation following the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant.

Additionally, the government plans not to include 2.2 billion yen earmarked for test operation preparations in the fiscal 2012 budget.

Following recommendations from the Government Revitalization Unit, the government has reviewed the budgets for Monju and other nuclear energy-related projects, and will cut 4 billion yen from Monju's 21.5 billion yen budget request in the coming fiscal year.

On top of the 2.2 billion yen, the government is expected to slash about 10 percent of Monju's requested maintenance and operational costs. The project's research and development are run by the Japan Atomic Energy Agency.

The government is set to compile basic policies on energy strategy by next summer after a comprehensive review of its nuclear energy policies. Whether it will continue with the Monju project will depend on the government's new policies.

Test operations at the Monju reactor restarted last year for the first time in 15 years, but were once again suspended due to troubles during equipment inspection. The Education, Culture, Sports, Science and Technology Ministry made a budget request of 2.2 billion yen to prepare for restarting operations following the government's decision to do so.

The latest budget cuts, however, make it clear that the Monju prototype reactor will not be run during fiscal 2012, even if the program itself is kept intact. On Dec. 8, the House of Representatives Financial Administrative Oversight Committee passed a resolution to review budgets related to fast-breeder reactor development and the nuclear fuel cycle.

The 3.3 billion yen requested by the education ministry for research and development of practical applications for fast-breeder reactor technology also is the subject to budget cuts.

(Dec. 13, 2011)

## **Edano spurns releasing radioactive water into sea**

Industry Minister Yukio Edano has rejected an idea being considered by the operator of the crippled Fukushima nuclear plant to discharge low-level radioactive water into the sea.

Edano spoke to reporters on Tuesday, as Tokyo Electric Power Company considers the plan. TEPCO wants to reduce the level of radioactivity of the decontaminated water to below the level at which government standards allow it to be released into the sea.

The idea has drawn protests from fishing cooperatives across the nation.

Edano said that since March 11th, the fishing industry has been plagued by various issues, including falling sales due to unfounded rumors of radiation. He said going ahead with the discharge of tainted water without the understanding of the industry is unacceptable.

Edano added that TEPCO should properly think about how to win the industry's understanding and make proper efforts to this end.

Tuesday, December 13, 2011 15:34 +0900 (JST)

## **Fishermen's OK needed to dump nuclear plant water into sea: Edano**

TOKYO (Kyodo) -- Japanese industry minister Yukio Edano on Tuesday called into question the Fukushima Daiichi nuclear power plant operator's plan to release low-level radioactive water into the Pacific Ocean, saying doing so without consent from fishermen should not be allowed.

"It should not be socially allowed that (the operator) goes ahead (with the plan) before gaining agreement from people involved in the fishery industry," Edano said at a press conference.

Tokyo Electric Power Co. said earlier this month it is considering releasing into the Pacific Ocean low-level radioactive water now stored in tanks at the premises of its crippled Fukushima Daiichi nuclear power plant, as storage capacity may run short by next March.

The utility known as TEPCO said the water would be released only after it clears the country's legal concentration limit for radioactive substances, including strontium, but domestic fisheries cooperatives fiercely oppose the plan.

Edano's remark effectively makes it necessary for TEPCO to gain consent from the fishery industry for its release of the power plant's treated water into the sea.

(Mainichi Japan) December 13, 2011

## **Remember past enthusiasm for nuclear science as we edge towards non-nuclear future**

It's been pointed out in many quarters that the field of nuclear power in Japan has been failing to attract the interest of students. There was a time not so long ago, however, that nuclear energy was at the cutting edge -- the superstar of scientific disciplines.

One can catch a glimpse of this by looking at how nuclear researchers were depicted in the literature and films of the period -- although hints of misgivings are also easily found. Take, for example, Yasushi Inoue's novel "Hyoheki" (Ice wall), first serialized in the Asahi Shimbun newspaper in 1956 -- the same year the government formed the Japan Atomic Energy Commission and the industrial world entered the nuclear industry in a serious way.

"Hyoheki" is primarily the story of a man and a woman stranded in the mountains. However, the novel also depicts a senior researcher for a major company lab as a representation of the era's scientific rationalism. When someone tells him that nuclear science "carries all the hopes of humanity" and "contains within it every potentiality," the researcher replies, "I don't think only humanity's bright dreams and possibilities are wrapped up in nuclear science. It also carries the possibility of humanity's ruin."

When Inoue wrote these words, the United States and the Soviet Union were locked in a nuclear arms race and conducting above-ground nuclear tests, while at the same time the "peaceful use" of nuclear energy was being trumpeted as possessing "limitless possibility." In the cynicism expressed by the researcher Inoue depicted in the novel, one can see the author's own thoughts on nuclear technology seeping through.

In 1959, the Tokyo Shimbun newspaper ran a serialized novel by noted author Fumiko Enchi called "Watakushi mo moeteiru" (I, too, am burning). In the story, a young, dissolute nuclear physicist lost in his research absorbs a lethal dose of radiation when he makes a mistake during an experiment. Before dying, the man sums up the novel, saying, "I turned towards that thing all humanity hopes for: the peaceful application of nuclear technology. And I bet my life on opening that door just a crack."

Three years later, in 1962, film studio Toho Co. released a film titled "Gorath" in which nuclear power saves Earth from destruction by a mysterious object hurtling through space. The entire world's nuclear energy is combined to create a propulsion device at the South Pole and shift Earth out of the way of the object. The nuclear engine, however, alters Earth's orbit.

Regardless of the story's plainly ridiculous premise, what can be seen in the film is a spirit true to the era in which it was made, with the countries of the world transcending national interests to save the Earth through nuclear power.

In the period from the mid-1950s to the mid '60s, the image of nuclear power was forged by anxiety and fear of a nuclear holocaust mixed with sky-high hopes for nuclear technology's peaceful uses.

Things have changed a great deal since then. For today's youth, the Fukushima nuclear disaster has spurred the idea of leaving nuclear power behind. However, on this point there is one thing I'd like to say:

Look back on how nuclear science was portrayed in the 1950s and '60s. To resolve the great unknowns lurking in the undiscovered territories of a non-nuclear future, a fresh, vibrant intelligence and way of thinking -- a new superstar -- will be needed. Is it asking too much to bring all Japan's top minds together, just like in the movies, to tackle the challenge? (By Kenji Tamaki, Expert Senior Writer)

[JP Click here for the original Japanese story](#)

(Mainichi Japan) December 13, 2011

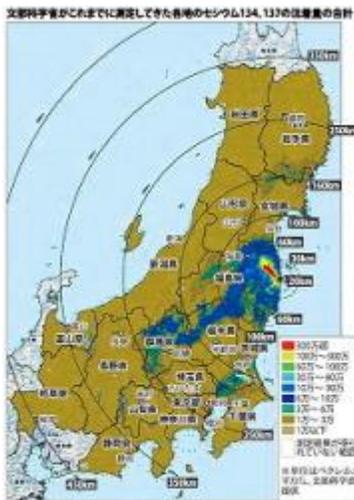
## Fukushima gov't estimates radiation exposure of up to 19 millisieverts

FUKUSHIMA (Kyodo) -- Residents near the crisis-hit Fukushima Daiichi nuclear power plant may have been exposed to up to 19 millisieverts of radiation in the four months after the plant was crippled by the March 11 earthquake and tsunami, the Fukushima prefectural government said Tuesday.

The local government released its estimates of residents' radiation exposure in 12 municipalities near the power plant -- Namie, Kawamata, Iitate, Futaba, Okuma, Minamisoma, Tamura, Tomioka, Naraha, Hirono, Katsurao and Kawauchi. The plant is located in the towns of Futaba and Okuma.

Residents who evacuated from high-risk areas in the village of Iitate in late June may have been exposed to the highest amount of 19 millisieverts, it said.

Shunichi Yamashita, vice president of the prefectural government-run Fukushima Medical University, told a news conference that the level is low compared with the 1986 Chernobyl nuclear disaster in the then Soviet republic of Ukraine. "I think there is no problem," Yamashita said.



A screen capture of a map released on Nov. 11 by the Ministry of Education, Culture, Sports, Science and Technology displaying accumulated radioactive cesium levels in eastern Japan. (Mainichi)

The prefectural government, which has conducted health checks on all of its roughly 2 million residents, said it based its estimates of radiation exposure on the timing and place of evacuation.

It used a radiation calculation system, developed by the state-run National Institute of Radiological Sciences in the city of Chiba east of Tokyo, to estimate residents' radiation exposure.

The estimates show residents in a no-go zone covering areas within a 20-kilometer radius of the crippled plant who evacuated in the early stages of the crisis were exposed to 0.18-2.3 millisieverts of radiation during the period.

But exposure levels for residents outside the no-go zone, who were advised to evacuate later, were high at 0.84-19 millisieverts.

Delayed evacuation may have led to the high level of radiation exposure, experts said.

Separate from the estimate, the prefectural government released the results of priority checks on around 29,000 residents in the towns of Namie and Kawamata as well as the village of Iitate.

The local government analyzed radiation exposure for 1,727 of the residents who filed records of their movements during the four months. One resident, who worked at the Fukushima Daiichi plant in containing the crisis, was found to have been exposed to up to 37.4 millisieverts of radiation.

The dosages for other residents stood at between over 10 and less than 15 millisieverts for eight people, over 5 and less than 10 millisieverts for 43, over 1 and less than 5 millisieverts for 591, and less than 1 millisievert for 1,084.

(Mainichi Japan) December 13, 2011

## **Fukushima releases radiation checkup results**

Japan's Fukushima Prefecture says a survey shows that radiation exposure levels among residents near the damaged nuclear plant are low, with little health impact.

The prefecture has been checking the health of its nearly 2-million residents, focusing on estimates of their external radiation exposure during the 4 months since the accident at the Fukushima Daiichi nuclear plant.

On Tuesday, the prefecture released the results for 1,727 people in Namie Town, Iitate Village and a district in Kawamata Town. The municipalities are 10 to 50 kilometers from the plant.

Fukushima says 1,675, or 97 percent, of the people are thought to have been exposed to less than 5 millisieverts of radiation. 1,084 people are thought to have been exposed to less than one millisievert -- the government's safety limit for one year.

Nine people are thought to have been exposed to 10 millisieverts or more. Five of them are nuclear plant workers, among whom the highest level was 37 millisieverts. Of other 4, one who repeatedly

visited an evacuation zone was exposed to 14 millisieverts.

Fukushima Medical University Vice President Shunichi Yamashita says the results show that exposure levels of most people were lower than a standard that would require evacuation, with extremely low health impact.

Tuesday, December 13, 2011 17:19 +0900 (JST)

## **Radioactive cesium detected in Tokyo grade school**

An extremely high reading of radioactive cesium has been detected on a groundsheet at an elementary school in Tokyo.

Officials of Suginami Ward detected 90,600 becquerels per kilogram of radioactive cesium on the sheet. It was used to protect the school lawn against frost from March 18th to April 6th, soon after the Fukushima nuclear accident. The school is located about 230 kilometers from the nuclear plant.

The sheet's radioactivity level is over 11 times the government's 8,000 becquerels-per-kilogram limit for disposal by burying underground.

The city is considering incinerating the sheet with other garbage.

The school stored the sheet next to a gymnasium until early November. Ward officials who measured radioactivity near the area where the sheet was kept detected 3.95 microsieverts per hour at about one centimeter above the ground.

A mother whose son and daughter attend the school said she is worried that contamination from the nuclear plant is reaching Tokyo, despite the capital's distance from Fukushima. She says she wants a thorough inspection of the school building, including windows and gutters.

Tuesday, December 13, 2011 19:59 +0900 (JST)

## **Interim storage facilities planned for near N-plant**

The Yomiuri Shimbun

The Environment Ministry plans to build interim facilities to store soil and ash contaminated with radiation from the Fukushima No. 1 nuclear power plant, in the prefecture's **Futaba county**, sources said Tuesday.

The ministry is expected to officially announce the plan by the end of the year. The ministry said it would select a location for the storage facilities by the end of fiscal 2012 at the latest. It now plans to choose municipalities to hold the material.

Futaba county has eight municipalities, including Futabamachi and Okumamachi, where the crippled nuclear power plant is located.

Toshitsuna Watanabe, mayor of Okumamachi, said Tuesday he was told by Environment Minister Goshi Hosono on Monday the ministry would hold a meeting with Futaba county municipalities soon to explain the interim storage facility plan.

According to sources familiar with the matter, ministry officials told the municipalities the government is considering purchasing or leasing land in areas with high levels of radiation expected to remain uninhabitable for an extended period.

The ministry believes limiting candidate sites for the interim storage facilities to within Futaba county, instead of elsewhere in Fukushima Prefecture, would boost facility construction and speed up decontamination work, the sources said. **The ministry plans to start building the facilities as early as the summer of 2014.**

But Watanabe told The Yomiuri Shimbun, "The government plans to construct interim storage facilities in Futaba county, but it should work on a model decontamination project first."

Meanwhile, Takashi Kusano, mayor of Narahamachi in the county, said, "As [the radiation] came from the Fukushima plant, we have no choice but to [build the facilities in the county]."

(Dec. 14, 2011)

## 9 months since 3-11 disaster

<http://www.simplyinfo.org/?p=4306>

While people were still in shock from the massive destruction caused by the earthquake and tsunami it was announced in the international media that there was a problem at a nuclear power plant. Little did anyone know what would transpire over the next few days.

TEPCO made brief announcements that there really wasn't a problem, they had everything under control at the Fukushima Daiichi nuclear plant. What was going on even before the tsunami hit was far worse than was being told. Workers saw critical cooling pipes rupture and heard explosions.

The plant director asked fearful workers to stay on, those that were not directly needed evacuated. The workers that stayed on struggled in darkness, scavenged car batteries and risked already rising radiation levels to try to bring the reactors under control. The back up generators were housed in the basements, the tsunami destroyed them. Offsite power was gone.

TEPCO executives decided they were going to abandon the plant. Had they actually done this and the reactors allowed to free fall, the scope of the disaster would have been considerably worse. As former Prime Minister Kan admitted in interviews after he stepped down, Tokyo would have been

abandoned, “nobody in Tokyo”. It would have not just left units 1-4 out of control but units 5 and 6 and also Daini where problems were also going on even though they were far less than at Daiichi.



TEPCO was still claiming to the public that everything was under control. The next day unit 1 exploded. The day after that (March 13th) unit 3 exploded in a massive blast that injured 11 people at the plant. On March 15th unit 2 exploded, though that is being disputed now by various parties as not being an explosion. There is speculation it was a massive water hammer into the torus that did significant damage to the lower portion of the building and containment. Also on March 15th unit 4 exploded in a blast that caused major structural damage and risked the failure of the spent fuel pool housing fresh fuel out of the reactor.

Billions of terabecquerels of radiation spewed into the air, even more leaked into the sea and continues to today. The radiation contamination dumped into the sea is now the largest radiation contamination of the seas in history. Radiation contamination was found by April in Russian seas and has been detected further west. Pacific tuna are being found in Japan with considerable contamination raising concerns about high on the food chain fish and those that migrate long distances across the Pacific like tuna.

Through all of this the residents of Fukushima were alerted and evacuated in an inconsistent pattern and all were told they could “go home very soon”. This was told to residents for months causing them to hold out hope and not begin the process of rebuilding their lives. It also caused residents to leave pets behind per government instructions leading to a massive problem of starving pets and farm animals in the evacuation zones. Many people today, 9 months later still remain un-evacuated in areas of high radiation. Students in Minamisoma can’t be outside for an extended period of time and wear dosimeters. Children all over the region are made to stay inside and otherwise try to avoid radiation rather than moving them somewhere safe. Initial testing showed many children in the region have significant internal radiation contamination.

Fukushima City showed shocking levels of radiation soon after the disaster started. The city still is not evacuated, Greenpeace recently did testing and found high levels in the city. Those with the means have left for somewhere safer. Those without the resources who did not get official evacuation assistance from the government are stuck. No new job, not enough resources to fund a move and no help from their government. Local officials have been far from compassionate. The mayor of Date City

accused people who didn't want to volunteer to clean up radioactive contamination as "acting like victims". The mayor of Fukushima City has been more worried about his tax base and economic implications than for the safety of the cities nearly 300,000 residents.

The elderly have been hit extremely hard by the disaster. Many died soon after the evacuations started as they were already weak and in hospitals or nursing homes. Some were abandoned and later rescued by others. The evacuations alone were too much for some to survive. Many elderly found the loss of homes that were in their families for generations and the loss of community too much and took their own lives. A number of farmers too found the loss of everything including their herds too painful and committed suicide after leaving heartbreaking notes.

The food problems have impacted people all over Japan. Initially the government downplayed the risk to the food supply and did nothing. Then slowly but surely cesium was found in beef in markets causing a major uproar all over Japan and huge concerns about the food supply. The government reluctantly added some testing programs while at the same time promoting food products from the impacted region. Citizens groups have stepped up and helped provide some food testing and confirmation of government testing to assure it is honest. Building a system from nothing has proven to be a monumental task. Meanwhile parents struggle daily about the normally simple task of what to feed their children. The government further failed the people by prematurely declaring all Fukushima rice "safe" after testing a few farms far from the areas known to be much more contaminated. As expected this backfired as rice from the region was found to indeed be contaminated. Parents have been fighting with school districts to assure students are fed safe foods for lunch. Bringing lunch from home is not permitted or is frowned upon in many schools making the safe lunch issue a major concern. Some districts have now adopted programs to test and prove lunch ingredients are safe.

Adding to the confusion and frustration around food is the government safety levels. The government declares anything under 500 bq/kg to be safe but few people see it that way and want to know the exact contamination level in their food. Citizen testing labs are helping as are programs such as Aeon foods testing of their products. The food retailer is doing their own testing, declaring exact contamination levels and not selling anything testing as contaminated even at low levels. These direct citizen and consumer actions are proving more effective than the government efforts that many times worry more about corporate profits and national image than the safety of the people.

All of this has caused anger, frustration and a growing dissatisfaction with both the government in Japan and the corrupt corporate structure of the power company monopolies. Decades of complacency, fraud, hiding accidents and ignoring safety has finally caught up with Japan's power companies. While the government has not done much to address the problems, the truth has been laid bare and the people are well aware. Huge protests have taken place in Japan in recent months. One large demonstration in Tokyo had over 60,000 people. Today marking the 9 month anniversary has demonstrations going on in cities all over Japan. Parents groups and anti-nuclear groups have steadily grown and are demanding change. Osaka recently bucked both main political parties and elected a mayor and governor who ran on a platform of public safety and ending nuclear power. Signatures are being collected in Tokyo and Osaka for two voter referendums that could end nuclear power in those prefectures.

The national government still has not quite realized what is going on. The focus has been on decontamination. A process that has been mostly using power sprayers to wash buildings, trees and roads with water in the hopes of removing radiation. This simply moves it into the soil, creeks, rivers and the sea. The decontamination process so far as been a failure, only lowering radiation levels by

about 10%. 70% of Fukushima is forest that will be impossible to effectively decontaminate without some significantly new technology. The forest contamination can then recontaminate other areas through run off, pollen and other methods. The government has pinned all their hopes on decontamination. Speculation about why frequently goes back to evacuee compensation and loss of tax payers in the impacted regions if people do not return. It boils down to money. If the government were to effectively address all the aspects of the disaster, from relocating all of the impacted to properly testing the food supply it could potentially bankrupt the entire country.

Evacuees worry about going home. Some worry they will be forced to return to somewhere unsafe, others worry they will never get to go home. Some worry that younger people will never return to the region leaving it to die as older populations dwindle. So many have had their lives torn apart and have lost everything. Many lost family members in the tsunami.

The workers have had their own struggles. Lack of proper safety gear, dishonest working conditions, lack of basic benefits and pay being skimmed by dishonest sub contractors have been just some of the problems at the plant. Many of the workers who were at the plant during the early days of the disaster received very high radiation doses. In the chaos of the early hours and days many on site didn't have proper safety gear including respirators. There have been a number of very suspicious worker deaths related to the plant that have all gone without investigation. One widow has received legal help from a lawyers association after her husband collapsed at the plant and didn't receive proper medical care for hours leading to his death. Workers have told stories of frightful events at the plant. One worker talked of going in to unit 3 to attempt to manually vent the unit. The torus unit was so hot it melted his rubber boots.

Fire department workers from all over Japan are being considered for ongoing medical care and screening. There was also talk of extending this to SDF soldiers. The ongoing health care, screening and potential disability coverage for the workers from both TEPCO and contractors is unknown. These brave men have been risking their lives and their health, a number of them have died or been injured. No program exists to assure they are paid back for their sacrifices.

For the last 9 months people from all over the world have been watching. They have been writing, researching, discussing and making sure this massive disaster that is still ongoing is not forgotten. Even just reading what is going on and being a person who possesses the knowledge of what is really going on in Japan plays a role in making sure this is all known. Sometimes just sharing the news is a powerful thing. Knowledge is power. Information wants to be free.

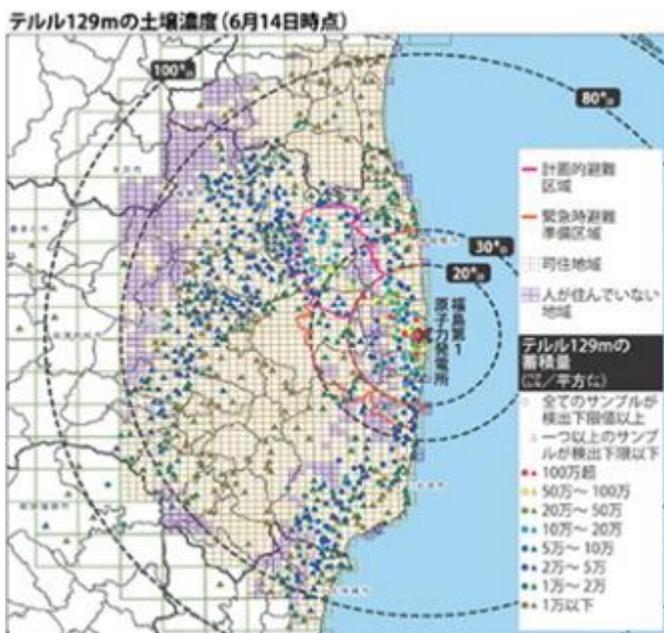
## **Gov't to designate 'difficult-to-return zones' near crippled Fukushima nuclear plant**

The government is expected to consider designating areas that are exposed to more than 50 millisieverts per year of radiation from the crippled Fukushima No. 1 Nuclear Power Plant as zones that are difficult for local residents to return to possibly for the next several decades and buying out tracts of land there.

The government has started to consider dividing the region affected by the Fukushima nuclear crisis into three zones according to levels of radiation they are exposed to. Under the current scheme, the region is divided into "evacuation zones" which fall within a radius of 20 kilometers from the troubled nuclear power station and "planned evacuation zones" that are exposed to more than 20 millisieverts per year of radiation.

Under the new scheme, the government will divide the region into three zones; "preparatory zones" that are exposed to less than 20 millisieverts per year of radiation, "restricted residential zones" exposed to radiation of more than 20 millisieverts but less than 50 millisieverts per year, and "difficult-to-return zones" that are exposed to at least 50 millisieverts per year of radiation. In dividing the region into three different zones, the government will discuss details with local municipalities so that it could designate community-based zones in the region because levels of radiation differ from one place to the other in the same municipalities.

At the meeting on Dec. 16 of its task force dealing with the nuclear crisis, the government is expected to decide that it has completed "Step 2" of the roadmap to contain the nuclear crisis with the crippled Fukushima nuclear plant being brought under control by achieving a stable state called a "cold shutdown" and unveil plans to review the current scheme of evacuation zones by the end of the year.



A screen capture of a Ministry of Education, Culture, Sports, Science and Technology map displaying the diffusion of the radioactive element tellurium 129m around the Fukushima No. 1 nuclear plant. (Mainichi)

The "preparatory zones" with radiation exposure of less than 20 millisieverts per year are those areas to which local residents are supposed to make preparations to return to. There are still no residents living there, and therefore, the government will try to decontaminate living spaces and improve infrastructure such as water supply and sewerage systems, roads, schools, hospitals and so on in the zones. The government plans to lift the evacuation order for those areas where local residents can return to their homes in line with requests from local municipalities and progress in the work to improve infrastructure there. That could start sometime after spring of next year at the earliest.

"Restricted residential zones" that are apparently difficult for people to live in for the next several years are areas the government plans to try to curb the levels of radiation below 20 millisieverts per year. Areas with high levels of radiation, which could be designated as "difficult-to-return zones," spread northwest from the area near the Fukushima nuclear power plant. Among those areas, there are some places where it is apparently difficult for people to live for the next several decades.

Prime Minister Yoshihiko Noda told the plenary session of the House of Councilors on Nov. 25, "There could be areas that are difficult for local residents to return to for a considerable period of time. The government wants to consider medium- and long-term measures responsibly including buying up tracts of land." There is an idea of attaching the word "long-term" to "difficult-to-return zones", but some people within the government say it should not be used out of consideration for the feelings of the affected people. The government is thus still discussing what to do.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 14, 2011

## **Nuclear disaster response recommendations shelved 10 days after explosion**

TOKYO (Kyodo) -- The government shelved the Nuclear Safety Commission's proposal to evacuate residents around the damaged Fukushima Daiichi power plant and provide iodine to them after receiving a forecast on the spread of radioactive materials, government sources said Tuesday.

The government determined that it would be too late to take such measures as around 10 days had already passed since the first of a series of hydrogen explosions occurred at the Fukushima complex, the sources said.

The forecast was based on data from a government computer system known as the System for Prediction of Environmental Emergency Dose Information, or SPEEDI, designed to predict the spread of radioactive materials released in a nuclear plant accident. **The prime minister's office received the first SPEEDI-based report on March 23**, according to the sources.

The government has been criticized for not being able to put the SPEEDI data to faster use after the March 11 earthquake and tsunami triggered the nuclear crisis.

A government panel investigating the crisis is now examining the details of the delay in utilizing the data, according to the sources.

(Mainichi Japan) December 14, 2011

## **Man continues to live alone in Fukushima no-entry zone despite criticism**

A man is continuing to live at his home inside the 20-kilometer no-entry zone set up around the Fukushima No. 1 Nuclear Power Plant, saying that while he understands the reasons behind the evacuation orders and why criticism could be leveled at him, he wants to stay as long as possible.

"I understand that the law is asking us to evacuate to protect our lives. But if that evacuation is to last for dozens of years, I want to stay as long as possible in the town of Tomioka, where I was born and raised," says 52-year-old Naoto Matsumura, who spoke to the Mainichi Shimbun outside of the no-entry zone.

Matsumura's home lies around 12 kilometers southwest of the Fukushima No. 1 Nuclear Power Plant. He says he is the only person left in the town of Tomioka. About one month after the March 11 disasters, Matsumura evacuated to the city of Koriyama, but seeing evacuees lying crowded on the floor of a shelter there, he felt he wouldn't be able to withstand it. He returned to Tomioka after around three days.

"I know people criticize me for being selfish. I'll pay any fines. But is it really a crime to return to your home? We're victims, after all," says Matsumura.

Water, electricity and other services are still cut to Matsumura's home. However, townspeople have allowed him to use any car gasoline he can find, fearing abandoned gasoline could cause fires. He eats stored rice and canned food. For a bath, he uses firewood to heat well water. At night he lights candles. "We made electricity for Tokyo, but now not even a single light works here," he says. At around 7 p.m. he climbs into his bedding and tunes in to the radio.

Every day, Matsumura spends several hours walking around the town, feeding wandering animals with food sent by humane societies. The animals include dozens of dogs and cats, around 400 cows, and even escaped ostriches. "It's what I can do, having returned to the town," says Matsumura.

Matsumura's parents lived with him before, but now they are evacuated to Shizuoka Prefecture. His mother, 80, has since developed dementia. His aunt, after evacuating from the area and being moved from hospital to hospital, saw her health deteriorate and passed away.

Wanting the world to know about what is really happening at Fukushima, Matsumura has actively responded to interview requests from western media like the BBC. He has passed the message that "no machine made by man is perfect" and "the 'energy of our dreams' (nuclear energy) was an illusion."

Matsumura has no dosimeter and does not know how much radiation he has been exposed to. He says that, for now, he is not experiencing health problems. However, even if problems appear, he says he does not want to leave.

"I want the area to be decontaminated as soon as possible, and to see the people return. I also think there are things that I can only do while I'm here. I want to do what I can so that residents can live here again."

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 14, 2011

## Govt releases rules for nuclear fallout cleanup

Japan's Environment Ministry has issued specific rules and procedures for cleaning up fallout from the accident at the Fukushima Daiichi nuclear power plant.

The ordinance says the central government will shoulder the cost of decontaminating soil in areas with radiation levels of 0.23 microsieverts per hour or above.

The government is also responsible for disposing of sludge and debris contaminated with radioactive cesium of more than 8,000 becquerels per kilogram.

The ordinance is aimed at accelerating the clean-up work being done by the public sector. The Environment Ministry will next week announce the names of more than 100 municipalities in northern Japan and areas around Tokyo where clean-up efforts are necessary.

Wednesday, December 14, 2011 17:47 +0900 (JST)

## Cesium can be removed completely from dead leaves and weeds: research team

A Japanese researcher and a businessman have developed a technique to remove radioactive cesium from dead leaves and weeds completely and reduce the volume of such plants containing the radioactive substance by about 90 percent.

The finding could pave the way for local governments to dispose of such contaminated plants in smaller spaces.

Eisaku Katayama, a 62-year-old special researcher at Chiba University's engineering department, and Isamu Kawakami, a 63-year-old executive managing director of a building firm in Shibukawa, Gunma Prefecture, jointly developed the technique. They found out that **radioactive cesium binds to particles called "plant opals" contained in leaves or stalks**. Then they succeeded in removing cesium from the plants by separating "plant opals" from them. "The technique can be applied to various decontaminations," said Katayama.

They focused their attention on the fact that cesium has a tendency to firmly bind to minerals consisting mainly of silica acid compounds such as mica. Therefore, they formulated a hypothesis that the same thing would happen to "plant opals" and conducted experiments.

Katayama, former professor at Tokyo Medical and Dental University, and Kawakami sealed 570 grams of weeds so as not to allow water to evaporate in Soma, Fukushima Prefecture, in mid-November. On Dec. 10, they detected 28,924 becquerels of cesium per kilogram in the weeds that were reduced to a decaying pulpy liquid. They then added water to the liquid and filtered it with a coffee filter. In the end,

no cesium was detected in the liquid. When they observed the sediments left on the filter with a microscope, they confirmed there were numerous plant opals there. That's apparently because cesium chemically bound to plant opals and stuck to the filter.

**The volume of the sediment was reduced to about one-tenth of the original volume of the weeds.**

Cesium became concentrated in the sediment, but Katayama and Kawakami thought that the volume of dead leaves and weeds could be drastically reduced, and therefore, they want to develop equipment to handle large amounts of dead leaves and weeds that are contaminated with radioactive cesium.

**Plant opals are particles of several micrometers to 100 micrometers. They come off from dead leaves and enter the air.** Such being the case of the plant opals, Katayama and Kawakami suggest that **fallen leaves and weeds must be kept in closed places, not outdoors, and people must take preventative measures such as wearing masks in contaminated areas strewn with many plants.**

Katayama and Kawakami share the hobby of astronomical observation. Kawakami started to conduct research after he was asked about decontamination from his friend in Fukushima Prefecture. Katayama then decided to help him. "Under ordinary circumstances, we should prepare a research paper and announce the results. But we would like to place priority on putting our findings to practical use," Katayama said.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 15, 2011

## **Gov't admits nuclear substances found in waste, unreported to IAEA**

TOKYO (Kyodo) -- The Japanese government admitted Thursday that nuclear substances have been found in the waste of domestic facilities subject to International Atomic Energy Agency inspection, but left unreported to the U.N. nuclear watchdog.

Top government spokesman Osamu Fujimura said in a news conference that the matter will be reported to the IAEA soon, but did not say how much nuclear material was involved.

The chief Cabinet secretary said an investigation last year of records led to the discovery of nuclear substances that were unaccounted for in waste at the Japan Atomic Energy Agency's Oarai Research and Development Center in Ibaraki Prefecture.

The Ministry of Education, Culture, Sports, Science and Technology then conducted a probe in August of nuclear energy facilities subject to the IAEA's safeguard program and also found nuclear substances unaccounted for in facilities other than the agency's.

"Based on investigation so far, most nuclear substances have been properly managed as waste, and from that perspective, there is no problem in safety management," Fujimura said.

He added that the matter is still being investigated.

Senior government officials earlier said Japan has begun discussing with the IAEA about the discovery of unaccounted-for or unreported enriched uranium and plutonium in large quantities of nuclear waste disposed of by Japanese facilities.

Under its safeguards system, the IAEA promotes the peaceful use of nuclear energy and the prevention of nuclear material being used in weapons. It verifies declarations made by nations about their nuclear materials and activities.

Japan's safeguard agreement with the IAEA came into force in 1977.

(Mainichi Japan) December 15, 2011

## **40 years estimated to scrap Fukushima plant**

Japan's government and the operator of the Fukushima Daiichi nuclear power plant say it will take up to 40 years to decommission the plant's damaged reactors.

NHK has learned about a timetable drawn up by the industry ministry and Tokyo Electric Power Company, based on a report released earlier by the state's Atomic Energy Commission.

The new timetable includes a plan to begin removing used fuel rods from spent fuel pools at 4 reactor buildings within 2 years, starting with reactor 4. That's one year ahead of what the Commission called for in its report.

The removed spent fuel will be temporarily stored within the compound.

The timetable also says that work to remove the melted fuel inside the No. 1 through No. 3 reactors should be completed in 25 years, when dismantling the reactors and buildings will begin. The ministry and TEPCO aim to completely scrap the entire compound within 40 years.

The schedule includes repair work to fill cracks in the reactors and containment vessels where contaminated water has leaked.

The unprecedented work involves very difficult working conditions, including high levels of radiation and the use of remote-controlled robots.

The government plans to declare on Friday that the second phase of its timetable to bring the Fukushima plant under control has been achieved, with all the reactors brought to a state of cold shutdown.

It also plans to release the new timetable to dismantle the reactors later this month.

Thursday, December 15, 2011 05:42 +0900 (JST)

## **Fukushima: No to nuclear power subsidies**

Fukushima Prefecture will no longer apply for government subsidies for hosting nuclear power plants.

The Fukushima prefectural government concluded it will not apply for about three billion yen, or nearly 38-million dollars in subsidies starting in fiscal 2012, which begins in April.

The prefectural government says it made the decision, as its reconstruction plan asks for the central government to scrap all reactors in Fukushima Prefecture.

Prefectural officials began drawing up the plan after the March 11th disaster and the subsequent nuclear accident at the Fukushima Daiichi power plant.

Subsidies have already been declined for a planned nuclear power station in Minamisoma City and Namie Town near the plant.

In similar developments, Kagoshima Prefecture and Satsumasendai City in southwestern Japan, where the construction of another station is planned, say they will also skip applications.

Fukushima Prefecture hosts 10 reactors at two nuclear power stations. This year, the prefecture and its local municipalities requested almost 170-million dollars in subsidies.

Thursday, December 15, 2011 16:14 +0900 (JST)

## **Radiation doses vary with evacuation patterns**

The Yomiuri Shimbun

FUKUSHIMA--Evacuation patterns affected the differing levels of external radiation to which residents of Fukushima Prefecture were exposed in the first four months of the crisis at the Fukushima No. 1 nuclear power plant, according to the prefectural government.

The difference was seen in interim results released Tuesday of health checks on all residents of the prefecture.

Just after the crisis began, the government initially failed to disclose data from the System for Prediction of Environmental Emergency Dose Information (SPEEDI), which was used to analyze how radioactive substances would spread from the nuclear plant.

The latest data renewed the anger of affected residents, who said they would have evacuated elsewhere had they been aware.

The interim health check results were shown in 18 model cases.

The model case with the highest estimated level of external exposure to radiation was that of residents who stayed in places with high levels of radiation in Iitatemura until evacuating the village in late June, when the village government relocated its functions to the outside of the village.

In this case, the estimated radiation level is 19 millisieverts.

The model case with the lowest level was that of Hironomachi residents who evacuated from the town the day after the crisis began.

In this case, the estimated radiation level is 0.18 millisievert.

Hiroe Yaguchi, 44, a resident of the Tatsuno district of Namiemachi, evacuated to the town's Tsushima district, outside the 20-kilometer radius no-entry zone around the nuclear plant, on March 12.

On March 15, she moved to an evacuees' shelter in Nihonmatsu.

Radiation levels in the town's Tsushima district have been high, and the district was later designated as part of a planned evacuation area.

Yaguchi said, "If I knew radiation levels in the Tsushima district were high, I would have evacuated to some other place. I wanted to be notified of the fact much earlier."

Yaguchi, her husband and their two children--who are middle and high school age--now live in a temporary housing unit in Nihonmatsu.

The interim results said the external radiation exposure of 97 percent of the residents was under 5 millisieverts and thus the expected negative health effects are extremely small.

But a 24-year-old woman in the Hiso district of Iitatemura, who evacuated with her three family members to Fukushima city, said, "I can't judge whether we should feel relieved even after seeing the numerical figures."

She, her husband, their 4-year-old daughter and 1-year-old son evacuated to Nihonmatsu on March 16, after which she learned she was pregnant.

"I fear the baby in my womb was affected [by radiation]. Because my children are small, I wish not only estimates but also checks on actual figures will continue to be done," she said.

(Dec. 15, 2011)

**'Absolutely no progress being made' at Fukushima nuke plant, undercover reporter says**



Tomohiko Suzuki, in full protective gear, near the Fukushima No. 1 nuclear plant on July 18. (Photo courtesy of Tomohiko Suzuki)

Conditions at the Fukushima No. 1 nuclear plant are far worse than its operator or the government has admitted, according to freelance journalist Tomohiko Suzuki, who spent **more than a month working undercover at the power station.**

"Absolutely no progress is being made" towards the final resolution of the crisis, Suzuki told reporters at a Foreign Correspondents' Club of Japan news conference on Dec. 15. Suzuki, 55, worked for a Toshiba Corp. subsidiary as a general laborer there from July 13 to Aug. 22, documenting sloppy repair work, companies including plant operator Tokyo Electric Power Co. (TEPCO) playing fast and loose with their workers' radiation doses, and a marked concern for appearances over the safety of employees or the public.

For example, the no-entry zones around the plant -- the 20-kilometer radius exclusion zone and the extension covering most of the village of Iitate and other municipalities -- have more to do with convenience than actual safety, Suzuki says.



Tomohiko Suzuki shows reporters a watch with a pinhole camera on Dec. 15 at the Foreign Correspondents' Club of Japan. He used the watch to photograph the inside of the Fukushima No. 1 nuclear plant while working undercover there in July and August. (Mainichi)

"(Nuclear) technology experts I've spoken to say that there are people living in areas where no one should be. It's almost as though they're living inside a nuclear plant," says Suzuki. Based on this and his own radiation readings, he believes the 80-kilometer-radius evacuation advisory issued by the United States government after the meltdowns was "about right," adding that **the government probably decided on the current no-go zones to avoid the immense task of evacuating larger cities like Iwaki and Fukushima.**

The situation at the plant itself is no better, where he says much of the work is simply "for show," fraught with corporate jealousies and secretiveness and "completely different" from the "all-Japan" cooperative effort being presented by the government.

**"Reactor makers Toshiba and Hitachi (brought in to help resolve the crisis) each have their own technology, and they don't talk to each other.** Toshiba doesn't tell Hitachi what it's doing, and Hitachi doesn't tell Toshiba what it's doing."

Meanwhile, despite there being no concrete data on the state of the reactor cores, claims by the government and TEPCO that the disaster is under control and that the reactors are on-schedule for a cold shutdown by the year's end have **promoted a breakneck work schedule, leading to shoddy repairs and habitual disregard for worker safety,** he said.

"Working at Fukushima is equivalent to being given an order to die," Suzuki quoted one nuclear-related company source as saying. He says **plant workers regularly manipulate their radiation readings by reversing their dosimeters or putting them in their socks, giving them an extra 10 to 30 minutes on-site before they reach their daily dosage limit. In extreme cases, Suzuki said, workers even leave the radiation meters in their dormitories.**

According to Suzuki, TEPCO and the subcontractors at the plant never explicitly tell the workers to take these measures. Instead **the workers are simply assigned projects that would be impossible to**

complete on time without manipulating the dosage numbers, and whether through a sense of duty or fear of being fired, the workers never complain.

Furthermore, the daily radiation screenings are "essentially an act," with the detector passed too quickly over each worker, while "the line to the buzzer that is supposed to sound when there's a problem has been cut," Suzuki said.



One of the reactor buildings at the Fukushima No. 1 nuclear plant destroyed by hydrogen explosions is seen in this photo taken with a hidden camera. (Photo courtesy of Tomohiko Suzuki)

Meanwhile much of the work -- like road repairs -- is purely cosmetic, and projects directly related to cleaning up the crisis such as decontaminating water -- which Suzuki was involved in -- are rife with cut corners, including the use of plastic piping likely to freeze and crack in the winter.

"We are seeing many problems stemming from the shoddy, rushed work at the power plant," Suzuki says.

Despite the lack of progress and cavalier attitude to safety, Suzuki claims the cold shutdown schedule has essentially choked off any new ideas. The crisis is officially under control and the budget for dealing with it has been cut drastically, and many Hitachi and Toshiba engineers that have presented new solutions have been told there is simply no money to try them.



"Yakuza to genpatsu," by Tomohiko Suzuki. (Cover image courtesy of Bungei Shunju)

In sum, Suzuki says what he saw (and photographed with a pinhole camera hidden in his watch) proves the real work to overcome the Fukushima disaster "is just beginning." He lost his own inside look at that work after it was discovered he was a journalist, though officially he was fired because his commute to work was too long.

"The Japanese media have turned away from this issue," he laments, though the story is far from over. (By Robert Irvine, Staff Writer)

-----

A book by Tomohiko Suzuki detailing many of his experiences at the plant and connections between yakuza crime syndicates and the nuclear industry, titled "Yakuza to genpatsu" (the yakuza and nuclear power), was published by Bungei Shunju on Dec. 15.

## L'accident nucléaire de Fukushima est désormais considéré comme "terminé"

LEMONDE.FR avec AFP et Reuters | 16.12.11 | 08h26 • Mis à jour le 16.12.11 | 09h10

**La procédure d'"arrêt à froid" des réacteurs de la centrale nucléaire de Fukushima, étape essentielle vers un règlement de la pire crise nucléaire depuis Tchernobyl, en 1986, a été menée à bien, a annoncé vendredi 16 décembre le premier ministre,**

**Yoshihiko Noda. La température à l'intérieur des cuves des réacteurs est désormais maintenue de façon stable sous 100 °C, et que les émissions radioactives sont sous contrôle, mais la crise n'est pas pour autant résolue.**

En lui-même, a-t-il ajouté, l'accident dans la centrale est désormais considéré comme terminé, mais il faudra des années encore avant de démanteler les réacteurs accidentés et traiter les conséquences de la catastrophe sur l'environnement. *"Même si des incidents imprévisibles surviennent, la situation est telle que les niveaux de radiation dans l'enceinte de la centrale peuvent désormais être maintenus à un niveau faible"*, a dit le chef du gouvernement japonais.



**Vue de la centrale de Fukushima, le 12 novembre 2011. AFP/DAVID GUTTENFELDER**

La centrale de Fukushima, située à 240 kilomètres au nord de Tokyo, a été fortement endommagée par le séisme et le tsunami survenus le 11 mars sur l'archipel nippon. Ses systèmes de refroidissement ont cessé de fonctionner, ce qui a entraîné une fusion du combustible et des fuites radioactives. Un "arrêt à froid" signifie que l'eau utilisée pour refroidir le combustible est maintenue sous son point d'ébullition et permet ainsi d'éviter une surchauffe.

### **Ill-prepared TEPCO must heed lessons and warnings**

Tokyo Electric Power Company (TEPCO), operator of the stricken Fukushima nuclear plant, has claimed that it had "taken various measures to prevent nuclear disaster" and that the tsunami that hit the plant following the Great East Japan Earthquake on March 11 "far exceeded predictions." However, a

government committee investigating the nuclear crisis has found that the utility had been ill-prepared, even pointing to evidence that the ongoing disaster may have been caused by human error.

According to the committee's earlier findings this past summer, Masao Yoshida, the former chief of the damaged Fukushima No. 1 nuclear plant, had supervised emergency efforts immediately after the crisis began without knowing that the isolation condenser of the No. 1 reactor had shut down. According to the committee's most recent findings, engineers operating the Fukushima No. 1 plant had stopped the high-pressure coolant injection (HPCI) system of the No. 3 reactor -- which was the final chance at cooling the reactor -- without authorization from higher ups. The main issue here is that **TEPCO was not adequately prepared for such a crisis, forcing engineers to take such action based on their own judgment.**

TEPCO's manual on procedures in the case of severe crises was developed with the assumption that any complete power outages at the plant would not last for long. Furthermore, procedures to vent containment vessels to protect them from exploding were not included in the guidelines. The committee's findings suggest that **a lack of disaster readiness led to confusion in the chain of command, and ultimately a failure to take the best course of action.**

Measures against severe nuclear crises were stepped up around the world after the 1979 Three Mile Island incident in the U.S. Japan also considered improved measures, with the Nuclear Safety Commission (NSC) of Japan appealing to nuclear plant operators in 1992 to institute appropriate measures. **Implementation was left up to individual operators, however, and strategies had not been reviewed since then.** Those involved in the nuclear power industry must humbly accept the various warnings that have been presented to them.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 16, 2011

## **People remain afraid of returning to homes near Fukushima plant**

FUKUSHIMA (Kyodo) -- People who were evacuated from their residences near the crippled Fukushima Daiichi nuclear power plant remain concerned about the huge obstacles to their returning home despite the government's declaration Friday that the nuclear crisis has been brought under control nine months after its outbreak.

Taisuke Hori, 27, who has fled to Tsukuba, Ibaraki Prefecture, said, "I don't think we will return." His home is located in a no-entry zone set within a 20-kilometer radius of the Fukushima plant damaged by the March 11 earthquake and tsunami disaster.

"I doubt if kids can live safely without concerns no matter how thoroughly the local tracts of land are cleaned up," said Hori, who has children aged 6, 2 and less than one.

テルル129mの土壌濃度(6月14日時点)



A screen capture of a Ministry of Education, Culture, Sports, Science and Technology map displaying the diffusion of the radioactive element tellurium 129m around the Fukushima No. 1 nuclear plant. (Mainichi)

Soichi Sampei, 31, who has evacuated to Komoro, Nagano Prefecture and is also from a no-entry zone, angrily questioned how the government could make such a declaration "while radioactive substances remain" in areas around the plant.

Earlier in the day, Prime Minister Yoshihiko Noda said the nuclear accident has been "settled," stating that the plant has achieved a stable state of cold shutdown, defined as a condition in which the bottom part of a reactor pressure vessel is kept below 100 C and exposure from the release of radioactive substances is being significantly contained.

There are calls from among some 20,000 people in the town of Namie, which was forced to evacuate as a whole, for a massive relocation to an area not far away from the town.

Hoji Sampei, 75, said relocation would maintain the bonds of the town's people and keep their hopes for reconstruction of the town alive.

In a survey conducted by the Namie town office last month, some 30 percent of people said they would not return to the town in the future.

(Mainichi Japan) December 17, 2011

## **Noda vows to speed up radiation decontamination work**

TOKYO (Kyodo) -- Prime Minister Yoshihiko Noda on Friday reiterated eagerness to speed up efforts to decontaminate areas tainted by radioactive substances, following the declaration of "cold shutdown" at the crippled Fukushima Daiichi nuclear power plant.

Noda pledged to spend more than 1 trillion yen for the time being and ensure over 30,000 workers around April for decontamination work near the radiation-leaking power station, severely damaged by a series of explosions in the immediate aftermath of the March 11 earthquake and tsunami.

"We haven't finished dealing with the accident. We'll make more efforts than before," Noda said at a press conference.

If more funds are necessary to move ahead with decontamination work, the government "will take responsibility to ensure them," he added.

His remarks came after the government announced Friday that the nuclear power plant in Fukushima Prefecture has achieved a stable state of cold shutdown, in a sign that the world's worst nuclear accident since Chernobyl has been brought under control nine months after its outbreak.

A cold shutdown is defined as a situation in which the bottom part of a reactor pressure vessel at a plant is kept below around 100 C and radiation exposure from the release of radioactive substances is significantly held down.

However, radioactive material continues to be released from the Fukushima plant and many residents of nearby areas remain unable to return to their homes.

"The government will do its best so that people who have been forced to leave their home areas can return home as soon as possible and reconstruct their lives," Noda said.

The premier has vowed to bolster efforts to reconstruct Fukushima Prefecture since he took office on Sept. 2, saying, "Without the revival of Fukushima, there will be no revival of Japan."

(Mainichi Japan) December 17, 2011

## **Daunting tasks await Japan after cold shutdown of Fukushima plant**



In this Nov. 12, 2011 file photo, workers in protective suits and masks wait to enter the emergency operation center at the crippled Fukushima No. 1 nuclear power station in Okuma, Japan. (AP Photo/David Guttenfelder)

TOKYO (Kyodo) -- Japan on Friday finally declared a state of cold shutdown at the crisis-hit Fukushima Daiichi nuclear power plant, only to find itself facing a long and thorny road toward the goal of scrapping the stricken reactors and restoring shattered public confidence in the government's nuclear policies.

The country plans to draw on the experience of the 1979 Three Mile Island accident in taking out the nuclear fuel from the plant's Nos. 1 to 3 reactors, but the task will be more challenging than in the U.S. case because the fuel is believed to have melted through the base of the reactor pressure vessels.

"A prolonged and enduring effort will be necessary for the decommissioning, along with work that requires an extremely flexible mind. The government will act responsibly in such medium- to long-term measures," nuclear disaster minister Goshi Hosono told a press conference.

Hosono also said he expects the decommission work to take 30 years or more, which experts think may require top-level technology that would be used for the first time in the world.

It took about 11 years to defuel the Three Mile Island Unit 2, which suffered severe damage to the reactor core. In the case of the Fukushima Daiichi plant disaster, a panel of experts set up under Japan's Atomic Energy Commission said in a recent report the plant operator Tokyo Electric Power Co. should aim to start taking out the fuel within 10 years after the shutdown.

But many uncertainties remain regarding how the next decade will unfold, let alone the next 30 years. Panel head Hajimu Yamana, a Kyoto University professor, said in drafting the report that the panel has decided to propose the goal of commencing within 10 years the work of removing fuel from the damaged reactors, but added it "would not be possible to make a firm commitment to do so."

"At this moment, we cannot say anything for sure until we take a look inside the reactor core," Yamana told reporters in late October.

Before taking the fuel out of the reactors, workers are expected to start within two years removing spent nuclear fuel stored in pools inside the Nos. 1 to 4 reactor buildings. They also must repair the damaged primary containment vessels of the Nos. 1 to 3 reactors so the vessels can be filled with water to block radiation.

But doubts remain over the method of flooding the vessels because the utility known as TEPCO once tried in the past to create a system to cool the reactors and later gave up, while the report said there is currently no alternative method to take out the fuel.

The report, which highlights the tasks TEPCO will have to deal with in the medium to long term, also said **no existing technology is capable of recovering fuel which has melted through a reactor pressure vessel and is accumulating at the outer primary container.**

Tadahiro Katsuta, an associate professor at Meiji University specializing in nuclear engineering and nuclear policy, warns that the government and TEPCO should not rush toward actual decommissioning work without grasping more accurately the conditions of the melted fuel.

"I feel there is a view within the government to 'put a lid on stinky things' (by moving ahead with the process of scrapping)...But much time is needed for preparation, possibly more than 10 years, to get to know where the fuel is located and think about how work can proceed with minimum radiation exposure," he said.

Hiroshi Tasaka, who served as a special adviser to the prime minister for about five months after the nuclear crisis erupted on March 11, has said that a cold shutdown is "just the beginning" of further problems created by the Fukushima accident.

"It is fine that the facility to clean radioactive water (created by cooling the melted fuel) is moving smoothly. But I must mention that **the water treatment process is creating massive amounts of highly radioactive waste, left in places such as filters. It is just moving a problem from one place to another,**" he said.

He also said that there is a more important task than the reinforcement of nuclear safety for the government now, which is to restore public trust in its handling of nuclear issues.

"No matter how much a government spokesman talks about safety now, it will mean nothing to the public if the government is not trusted," said the Tama University professor of nuclear safety and radioactive waste.

The government has decided to separate the nuclear regulatory body from the Ministry of Economy, Trade and Industry, which has also played a role in promoting nuclear power. It is creating a new nuclear safety agency as a step toward enhanced nuclear safety regulation.

But a mere organizational change is not enough, experts say.

"The government must carry out reforms that can ensure the highest level of safety in terms of personnel, organization, system and culture" to help restore public trust, Tasaka said.

He noted the need, for example, to increase the number of personnel of the new regulatory agency to a level closer to the U.S. Nuclear Regulatory Commission, which employs about 4,000 people, and to strictly train regulators to avoid cozy relationships with related organizations.

But Tasaka added that there is still a long list of questions the government should respond to, including how to dispose of high-level radioactive waste, what would be the long-term impact of radioactive

substances released into the environment, and whether nuclear power generation is truly as cheap an energy source as thought earlier.

"Responding to public questions in a sincere manner is where the government should start," Tasaka said.

(Mainichi Japan) December 17, 2011

## **Condition of Fukushima Daiichi plant declared to be in cold shutdown**

TOKYO (Kyodo) -- The following is the current condition of the Fukushima Daiichi nuclear power plant, which paved the way for the government to announce Friday that the complex has achieved a stable state of cold shutdown.

-- The temperature at the bottom of the reactor pressure vessels of the crippled Nos. 1 to 3 units is being kept below 100 C, while that of the water in the spent fuel pools of the Nos. 1 to 4 units is being kept below 25 C.

-- The amount of radioactive substances currently being released from the reactors equals the radiation level at the boundary of the plant below the government-set target limit of 1 millisievert per year.

-- The water circulation system to keep reactors cool has multiple backups. Even if all the equipment fails, water injection can be resumed in about three hours by using fire trucks.

-- The radiation level of below 1 millisievert per year can be maintained even in the event water injection into the Nos. 1 to 3 reactors stops for 12 hours.

-- A nuclear chain reaction called "recriticality" is unlikely but can be prevented by injecting water containing boric acid.

-- A system to cool spent fuel pools has multiple backups. Even if the system fails, it would take at least around 16 days until the water in the No. 4 unit's spent fuel pool, which holds a larger amount of fuel than the other three, drops below the necessary level.

-- A system to process highly radioactive water accumulating at the plant is capable of reducing radioactive cesium to below one ten-thousandth of the original level.

(Mainichi Japan) December 17, 2011

## **IAEA welcomes Japan's announcement of cold shutdown at Fukushima plant**

VIENNA (Kyodo) -- The International Atomic Energy Agency on Friday welcomed the Japanese government's announcement that the crippled Fukushima Daiichi nuclear power plant has achieved a stable state of cold shutdown.

Tokyo Electric Power Co., the plant's operator, and the Japanese government have "made significant progress," IAEA Director General Yukiya Amano said in a statement.

Amano also said the IAEA will continue monitoring the status of the plant and radiation data in the wake of the nuclear disaster.

"The agency continues to stand ready to provide necessary assistance to Japan as requested," he said.

(Mainichi Japan) December 17, 2011

## **Towns seek decommissioning of Hamaoka nuclear power plant**

SHIZUOKA (Kyodo) -- The assemblies of two municipalities near the suspended Hamaoka nuclear power plant in Shizuoka Prefecture passed resolutions Friday seeking the decommissioning of the plant or opposing its relaunch.

In Yoshida, located in a 20-kilometer radius of Chubu Electric Power Co.'s power plant, southwest of Tokyo, its town assembly unanimously adopted a resolution calling on the government to scrap the plant, which has five reactors, without restarting any of them and develop alternative energy sources.

In Fujieda, in a 30-km radius of the plant, its town assembly unanimously passed a similar resolution the same day opposing the relaunch of the reactors at the plant unless measures are taken to ensure the "absolute safety" of the residents.

Chubu Electric Power shut down the Hamaoka nuclear plant in May as requested by then Prime Minister Naoto Kan due to fears of a possible major earthquake, after the March 11 earthquake and tsunami triggered the Fukushima Daiichi nuclear plant crisis.

The Hamaoka plant is located at the epicenter of an area forecast to be hit by a magnitude 8-class temblor, called the Tokai earthquake, which the government expects will occur in central Japan sooner or later.

(Mainichi Japan) December 17, 2011

## **US nuclear head: "cold shutdown" marks milestone**

The chairman of the US Nuclear Regulatory Commission says Japan's declaration of a state of cold shutdown at the disabled Fukushima Daiichi nuclear power plant marks an important milestone.

Gregory Jaczko made the comments in an interview with NHK on Saturday, one day before arriving in Japan to inspect the plant for the first time since the March 11th disaster.

Jaczko said he is interested in the next steps the Japanese authorities will take.

He said cleaning up radioactive material is difficult and may take several decades.

He said everyone in the nuclear power industry is interested in getting more detailed information about the condition of the reactors.

Saturday, December 17, 2011 14:52 +0900 (JST)

## **20 mSv yardstick set for repatriating residents**

The Yomiuri Shimbun

A government working group has recommended that people be allowed to live in areas around the crippled Fukushima No. 1 nuclear power plant as long as the accumulated radiation exposure does not reach 20 millisieverts per year.

Drawing on the final report submitted Thursday by the working group, which has been examining how low exposure to radiation can affect the human body, the government has compiled a plan to designate three new zones according to annual radiation exposure, according to officials.

The plan would dissolve the current no-entry and expanded evacuation zones. Areas where the accumulated radiation exposure is less than 20 millisieverts per year would be designated "zones preparing to lift restrictions," to which people can return after decontamination is conducted and living conditions are restored.

In contrast, areas where the accumulated radiation exposure exceeds 50 millisieverts per year would be designated "zones where residency is prohibited for an extended period," where residents cannot return at least five years.

Areas with annual exposure of about 20 millisieverts to 50 millisieverts would be deemed "zones where residency is restricted," which would require several years of decontamination to lower radiation levels to less than 20 millisieverts so people can return.

The government will present this plan Sunday to local governments around the power plant, according to the officials.

A person's risk of death from cancer increases by about 0.5 percent if they are exposed to 100 millisieverts of radiation over an extended period, the report said, drawing on studies conducted among survivors of the atomic bombings of Hiroshima and Nagasaki at the end of World War II.

However, it is difficult to prove scientifically whether the mortality risk is increased through exposure to lower levels of radiation, the report said.

The chance of developing cancer from annual exposure to 20 millisieverts of radiation or less is considered lower than that from smoking and obesity, it said, making it difficult to prove a cause-and-effect link between low-level radiation exposure and developing cancer.

The risk of contracting cancer from smoking is equivalent to being exposed to 1,000 to 2,000 millisieverts of radiation, while that from obesity is equivalent to 200 to 500 millisieverts.

The working group also recommended measures specifically for children, who are considered more vulnerable to radiation. For example, it urged schools to restart classes on their premises only if radiation levels are 1 microsievert or less per hour.

(Dec. 17, 2011)

## **N-plant procedure ignored? / Workers 'didn't check' reactor pressure day before explosion**

The Yomiuri Shimbun

A government panel has found that workers at the No. 3 reactor of the crippled Fukushima No. 1 nuclear power plant stopped operation of a high-pressure core cooling system without checking if a substitute pumping system would work on March 13, one day before a hydrogen explosion occurred there, sources said.

By failing to check if the reactor's fire pump could inject water instead of the emergency cooling device, the workers may have failed to follow instructions in the plant's operating manual, according to the panel established to investigate and verify the facts of the nuclear crisis.

After stopping the operation of the high-pressure core cooling system in the early hours of March 13, the workers could not inject water through the fire pump because of the high pressure in the reactor.

As a result, water injection into the reactor was suspended for about 6-1/2 hours before a hydrogen explosion occurred just after 11 a.m. the following day.

The panel will include the actions taken by the reactor's workers in the interim report it is scheduled to release Dec. 26, according to the sources.

The No. 3 reactor lost power due to the March 11 tsunami, and the operation of a reactor core isolation cooling system--another type of emergency cooling device--was suspended at 11:36 a.m. the following day.

As a result, the water level in the reactor fell, which led to the automatic launch of the high-pressure core cooling system at 12:35 p.m.

According to the sources, workers at the reactor stopped the high-pressure core cooling system at 2:42 a.m. on March 13 to switch to the emergency fire pump to inject water.

According to the plant's manual on how to respond to severe accidents, workers must first confirm that there are about seven atmospheres of pressure or less in a reactor core before using a substitute pumping system. The fire pump uses relatively low pressure to inject water.

However, the No. 3 reactor's pressure had jumped to about 40 atmospheres at that time, preventing the fire pump from injecting water to it.

Therefore, the workers tried to revert to the high-pressure core cooling system, only to find it could not be started due to a low battery charge. They then took steps to lower the pressure.

Water was finally pumped into the reactor by fire-extinguishing vehicles at 9:25 a.m. that day. However, it did not prevent the hydrogen explosion from occurring.

The panel has raised questions about the workers' decision to switch from the high-pressure core cooling system to the fire pump without getting instructions from Masao Yoshida, chief of the plant at that time, according to the sources.

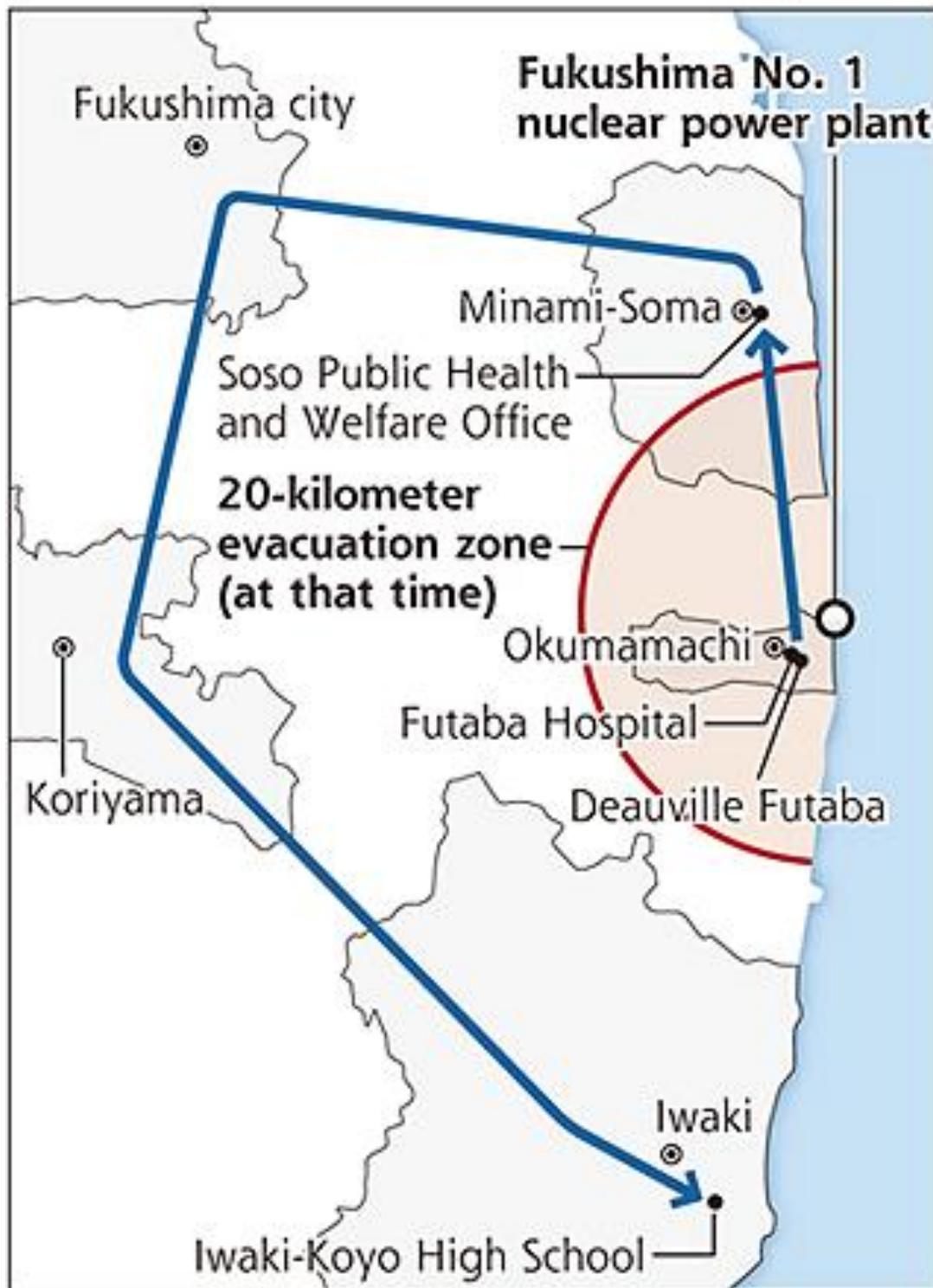
In its interim report released Dec. 2, plant operator Tokyo Electric Power Co. admitted that the high-pressure core cooling system at the No. 3 reactor had been suspended, but did not mention how the workers operated it.

(Dec. 17, 2011)

## **NUCLEAR CRISIS--9 MONTHS ON / Focus on radiation screenings ended up claiming patients' lives**

The Yomiuri Shimbun

# March 14 transfer route for patients at Futaba Hospital



This is the second and last installment in a two-part series that looks into problems facing the Nuclear and Industrial Safety Agency, among other issues, and what is needed for a new "nuclear safety agency" to be established in April.

It was the early morning of March 14, three days after the outbreak of the crisis at the Fukushima No. 1 nuclear power plant following the massive earthquake and tsunami. The Soso Public Health and Welfare Office in Minami-Soma, Fukushima Prefecture, was filled with patients and residents transferred from hospitals and homes for the elderly within 20 kilometers of the plant.

These patients--many of whom were bedridden elderly people with serious conditions--boarded buses to leave the government-designated evacuation area. When the buses arrived at the facility, some patients had blood backflow in their intravenous lines, while others had fallen out of their seats.

Earlier, the central government told the Fukushima prefectural government to evacuate about 840 people at medical and other facilities in the 20-kilometer evacuation zone, saying the power plant was "in a critical state."

The prefectural government asked the Self-Defense Forces to transfer the patients to the Soso Public Health and Welfare Office, about 25 kilometers north of the power plant, because it was designated as a radiation screening site.

"We believed they had to undergo radiation screenings first to be accepted at evacuation centers," a prefectural government public health official said.

However, Prof. Yoshio Hosoi of Hiroshima University--an emergency radiation medicine expert who was dispatched to the prefecture in response to the accident--could not help wondering if it was necessary for these patients to undergo the screenings. The professor believed they had probably not been exposed to excessive radiation because they remained indoors after the accident.

In fact, screenings for the 840 patients found none of them had been exposed to a level of radiation high enough for them to require decontamination treatment.

Among them were 132 patients and residents from Futaba Hospital and the Deauville Futaba home for the elderly, both of which were in Okumamachi. After arriving at the welfare office and undergoing radiation screening, they were then moved to Iwaki, in the southern part of the prefecture, via Fukushima city and Koriyama.

They traveled about 200 kilometers during the 12-hour journey before arriving at Iwaki-Koyo High School. Three patients died in transit, while another 11 passed away hours after arriving at the school.

"The public had excessive radiation exposure fears," Hosoi said as to why authorities put more focus on radiation screenings rather than the swift transfer of the patients.

Medical institutions also suffered from such fears.

At the crippled nuclear power plant, 11 workers were injured when a hydrogen explosion occurred at the No. 3 reactor at 11 a.m. on March 14. About three of those requiring hospital treatment were refused by some medical institutions over radiation fears.

The three workers were finally admitted by Fukushima Medical University in the prefectural capital the following day--about 20 hours after the blast. Examinations found none of the workers had been exposed to high levels of radiation.

"Radiation screenings are meant to find those requiring advanced treatment for radiation exposure or decontamination," Hosoi said. "However, the screenings were necessary [for evacuees] to be accepted by residents in the areas to which they have been evacuated."

===

Govt unprepared for screening

The Nuclear Safety Commission was in disarray over the screening.

On March 14, the Fukushima prefectural government raised the standard for designating people requiring full-body decontamination from 13,000 counts per minute (cpm) or more, which was based on its radiation emergency medicine manual, to 100,000 cpm or more. The cpm refers to the number of atoms in a given quantity of radioactive material to decay in one minute.

There were fears that, under the original standard, there would be too many people requiring full-body decontamination, preventing smooth evacuation due to staff shortage.

Also, water necessary for decontamination was in short supply due to suspension of water services.

"Decontamination was difficult in the situation. It was irrational to apply the normal standard to an emergency situation," said Hiroshima University Prof. Koichi Tanigawa, who suggested the prefecture raise the standard.

However, the NSC's Technical Advisory Organization, an emergency panel convened by the commission in a nuclear emergency, announced the same day the previous standard was appropriate.

This resulted in double standards between the central and prefectural governments. There were fears evacuees from Fukushima Prefecture would have been denied entry to evacuation centers in other prefectures, where the standard for full-body decontamination was lower than Fukushima Prefecture.

However, in a sudden reversal, the advisory organization on March 19 approved the increase of the standard to 100,000 cpm.

"To evacuate people to areas outside of the prefecture smoother, the standards should be unified," a panel source said.

"It took us time to understand the situation in the prefecture," NSC Chairman Haruki Madarame, explained.

It was not until April 17, more than one month after the March 11 disaster, when advisory panel investigators visited Fukushima Prefecture for the first time.

Taking the situation into consideration, the NSC began discussions in October aimed at revising screening purposes and standards for full-body decontamination.

===

Radiation Council fell short

While the NSC appeared to lack the ability to respond to the crisis, the Radiation Council of the education ministry was unable to demonstrate its use.

The Education, Culture, Sports, Science and Technology Ministry council consists of 19 experts on radiology.

The council is designed to set standards for people's radiation exposure to prevent radiation-caused health problems.

On March 14, the council was asked by the Health, Labor and Welfare Ministry for advice on raising the radiation exposure limit for workers at the Fukushima No. 1 nuclear power plant to 250 millisieverts from 100 millisieverts, in emergency situations. The council gave their approval the same day, although council members did not meet, but communicated via phone and e-mail.

The members of the council convened on Aug. 4 for the first time after the nuclear accident occurred.

Former council Chairman Takashi Nakamura, professor emeritus at Tohoku University, who participated in the meeting as an observer, said, "Don't you think the council should be more proactive with proposals in emergencies?"

"I guess so," incumbent Chairman Otsura Niwa, replied.

However, legally the council is limited to only giving opinions to ministry inquiries.

When government ministries and agencies were reorganized in 2001, most councils were left with only minimal functions, while others were integrated. Many councils were criticized as merely bureaucratic tools to form ministry policies.

As a result, the Radiation Council lost its ability to make proposals.

The government has already decided to transfer council functions to a new nuclear safety agency scheduled to be launched in April next year. The new agency will be an external bureau of the Environment Ministry. The NSC and the Nuclear and Industrial Safety Agency will also be integrated into the new agency.

A senior Environment Ministry official responsible for drawing up the new agency's organizational structure said, "After the nuclear disaster broke out, the expectation of the Radiation Council's role has changed."

"After the creation of the new agency, we have to combine the functions of the council and the commission to create an organization to quickly respond to the needs of society," he added.

(Dec. 17, 2011)

## **Editorial: Gov't declares cold shutdown at nuclear plant, but crucial steps lie ahead**

Nine months after the outbreak of an unprecedented nuclear disaster at the Fukushima No. 1 Nuclear Power Plant, the government has declared a stable "cold shutdown" at the plant, representing a major milestone in its handling of the disaster.

The public has keenly waited for the nuclear reactors to be brought under stable control, but Japan is still standing on thin ice and is miles away from a situation where it can really declare that the crisis is under control.

In the meantime, rebuilding the lives of residents near the crippled plants has been an urgent critical challenge. On the occasion of its latest political declaration, the government needs to renew its resolve to settle the crisis and achieve regional recovery.

The disaster-hit reactors are certainly now in a more stable condition. However, the phrase "cold shutdown" usually refers to suspension of a sound reactor. The fact that the government is attempting to apply this term in a severe accident in which three reactors have suffered core meltdowns should be called into question. The government should rather explain in detail the possibility of any additional explosions and whether a recriticality accident has been ruled out.

Simulations suggest that nuclear fuel has melted inside the reactor containment vessels, eroding their concrete floors. Although Tokyo Electric Power Co. (TEPCO), the operator of the stricken nuclear plant, has indicated that melted fuel has also been cooled down by water, this is nothing but speculation. We urge the utility and the government to find a way to ascertain the precise condition of the fuel.

Only the No. 1 reactor at the Fukushima plant has had a cover installed over it. Similar covers should be placed over the other reactors as soon as possible. The circulating water cooling system remains hastily arranged, and careful attention needs to be paid to prevent a leakage of water contaminated with radioactive materials.

The treatment of contaminated water, which has been accumulating due to an influx of underground water into reactor buildings, has been another source of concern. The utility must quickly respond to this problem.

While TEPCO has set forth government-approved plans to secure the safety of equipment to keep the nuclear plant in a stable condition over the next three years, the ongoing nuclear crisis has shown that secondary and even tertiary safety devices could fail simultaneously. Officials should take decisive measures to prevent any recurrence of such a crisis.

It is expected that the government will soon reorganize the radiation-contaminated no-go zone and planned evacuation zones around the plant into three zones. Even in areas with low levels of radiation, thorough decontamination work and health checks are needed to ensure residents can return home. Naturally, such efforts by themselves are far from sufficient.

The nuclear crisis has contaminated a farming belt, and it will be difficult for residents to return to their homes without re-establishing new foundations for their livelihood. While Prime Minister Yoshihiko Noda has referred to plans for the government to purchase contaminated land, the nation's politicians face an unprecedented challenge in dealing with areas where residents' homecoming will remain difficult over long periods of time.

The government is set to submit special bills on the recovery of Fukushima during the ordinary Diet session next year. It bears a heavy responsibility to respect the voices of residents and embody Fukushima's recovery from a long-term perspective as it aims to bring the seemingly infinite nuclear crisis under control.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 17, 2011

## **TEPCO faces tough challenges after 'cold shutdown' of Fukushima nuclear reactors**

The government declared on Dec. 16 that the Fukushima No. 1 Nuclear Power Plant has been brought to a stable "cold shutdown," paving the way for full-fledged work to decommission the plant's crippled nuclear reactors, but enormous financial difficulties loom for the operator of the nuclear complex.

Officials have determined it is likely to take more than 30 years to decommission the troubled nuclear reactors at the Fukushima nuclear plant, but it is hard to predict the total cost of scrapping the reactors.

"We can't see the whole picture when it comes to the cost of decommissioning the nuclear reactors. We can't imagine expenses spanning 30 to 40 years from now," said a senior official of Tokyo Electric Power Co. (TEPCO), the operator of the nuclear power plant.

The costs will certainly take a heavy toll on TEPCO. The government has started to consider injecting taxpayers' money into the utility in a bid to rescue the beleaguered company, but the company faces managerial problems that are likely to come to a head soon.

The utility has yet to clearly show how to deal with what a senior official of the Federation of Electric Power Companies has described as "work no one on earth has ever done before," and how it would finance this work. Such being the case, pessimism about the future prevails within the company.

Extra annual fuel costs in the range of 1 trillion yen -- resulting from suspension of the plant's nuclear reactors -- weigh heavily on the utility. According to estimates by a government third party panel, it will cost about 1.151 trillion yen to decommission the No. 1 to 4 reactors. If decontamination costs

were added to this amount, the total cost would likely reach several trillion yen. Furthermore, if the costs of decommissioning the Nos. 5 and 6 reactors were included, the financial burden on the utility would become even heavier.

Compensation to people affected by the nuclear crisis will not directly affect the utility financially because the government will foot the bills for compensation through the Nuclear Damage Compensation Facilitation Corporation. But the costs of decontamination and decommissioning the nuclear reactors are weighing on the company, and therefore it is fighting an uphill battle to secure funds by selling its assets and cutting personnel expenses. According to plans unveiled by TEPCO on Dec. 9, it will be able to cut only 2.649 trillion yen over next 10 years.

TEPCO president Toshio Nishizawa said that the company must "reform the profit structure" to secure funds by raising the utility rates and resuming the operation of the Kashiwazaki-Kariwa Nuclear Power Plant in Niigata Prefecture. But it is difficult to secure public understanding of such moves. Therefore, the worrying prospect that the company will face the risk of insolvency in the business year ending March 2013 is becoming increasingly realistic.

The government and the Nuclear Damage Compensation Facilitation Corporation have already started to discuss injecting public funds into the utility behind the scenes with an eye to incorporating funding into the comprehensive special business plan to be hammered out by next spring.

Nishizawa said he wants to keep TEPCO as a private company, but Economy, Trade and Industry Minister Yukio Edano is reluctant to allow an increase in utility rates. Furthermore, it is unclear when or whether the operation of TEPCO's nuclear reactors can resume. Hence, the utility's options are diminishing day by day.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 17, 2011

## **Former nuclear industry insider speaks out on lessons and disillusionment**



Toshiro Kitamura stands in front of temporary housing units for those who have been forced out of their homes by the ongoing nuclear disaster, built adjacent to Big Palette Fukushima, a convention center in

Koriyama, Fukushima on Nov. 30. Because of his five pet cats, Kitamura has moved into a rental house, and not a temporary housing unit. (Mainichi)

FUKUSHIMA -- The Great East Japan Earthquake and tsunami that triggered an unprecedented nuclear crisis forced a former nuclear energy advocate from his home due to its proximity to the stricken nuclear power plant, leaving him disillusioned with an industry he had so willingly believed in.

Toshiro Kitamura, 66, now lives in a rental home in the Fukushima Prefecture city of Sukagawa. After he picked me up in his car at JR Sukagawa Station, we headed to Big Palette Fukushima, a large-scale convention center in Koriyama.

"It was so cold here," Kitamura said as he got out of the car.

Immediately after the nuclear disaster at Fukushima No. 1 Nuclear Power Plant broke out, upwards of 2,500 residents of the local municipalities Tomioka and Kawamura were evacuated to the convention center. Kitamura, who had been living in Tomioka for the past 12 years, evacuated there on March 16 and stayed for about a month and a half. At the time, he'd figured he be returning home soon.

\*\*\*

Kitamura found employment at Japan Atomic Power Co. (JAPC) in 1967, in the midst of a booming economy. It was a year after JAPC launched operations of Japan's first commercial nuclear power plant, and the year that construction of the Fukushima No. 1 Nuclear Power Plant's No. 1 reactor began. The rapidly growing Japanese economy was demanding an increasingly more stable energy supply.

According to Kitamura, he had no interest in nuclear power as a college student. His degree was in economics, but he was more interested in going into work that would be of help to society than he felt going into business would. It was his search for just such a job that led him to JAPC.



In this undated file photo released by Tokyo Electric Power Co., the Fukushima Daiichi Nuclear Power Plant reactors stand in line intact before the accident in Okuma town in Fukushima Prefecture, northeastern Japan. (AP Photo/Tokyo Electric Power Co.)

Since 2005, after his retirement from the company, Kitamura has been serving as an advisor to Japan Atomic Industrial Forum (JAIF), an organization that conducts symposiums on nuclear power projects

and recruitment events for the nuclear power industry. He no longer stands on the "front lines," however, and had been enjoying life in Tomioka, Fukushima, when the quake disaster struck.

While at JAPC, Kitamura spent many years working at the Tokai and Tsuruga nuclear plants. He was primarily responsible for ensuring the safety of the plants' workers, including checking the durability of handrails and footholds during inspections and before the construction of new plants. Through his job, he gained comprehensive knowledge of nuclear power stations. "Without seeing the whole picture, from the reactors to everything else, you can't manage a plant's safety," he says.

Kitamura was exposed not just to the physical structure of nuclear plants, but to the multilayered relationships of the contractors that take on maintenance work, their subcontractors, and the subcontractors of those subcontractors. He also grew familiar with the insular nature of major power utilities and nuclear reactor manufacturers.

Nuclear power plants were often described as "apartments without toilets," and as such, more spent nuclear fuel was being accumulated with nowhere to put it. The Monju fast-breeder reactor project, whose objective is to utilize reprocessed spent fuel to produce more energy, had been derailed by repeated accidents. More and more concerns regarding nuclear power generation continued to be put on the back burner for the ostensible purpose of securing stable power supply. Kitamura wrote articles for industry journals to sound the alarms that were becoming too loud for him to ignore.

"I thought that the nuclear power industry would reach a stalemate at some point," Kitamura says. "But never did I imagine that such widespread radiation contamination would occur."

Kitamura had experience going to community information sessions to explain the safety of nuclear plants to local residents. He once told a group of residents that "the probability of an accident was very low, at about 1 out of 10,000," to which one attendee responded: "That means there's a possibility that an accident could occur tomorrow, right?" Kitamura had been at a loss for words.

"Now that I think about it, my theory of probability was flawed," Kitamura says, looking back.

After the Fukushima disaster emerged, Kitamura says he was criticized repeatedly by his wife, who told him: "You were so sure that 'an accident on the level of the Three Mile Island accident would never happen in Japan.' I understand that you'd tried to warn the industry, but still." Kitamura says her words stung.

It's easy to say with hindsight on one's side, but even a layperson could've imagined the possibility of nuclear plants being damaged by major quakes and tsunamis in a quake-prone country like Japan with long coastlines. So why couldn't the experts?

"You know why?" Kitamura began, taking another breath before continuing. "It's because experts reached conclusions based merely on statistics that 'in Japan, the country with the world's best record of non-interrupted power supply, it would be very difficult to imagine having no power supply for long periods of time,' and refused to entertain other possibilities. They did not go to the scene to check for themselves whether power could actually be restored. Therein lies the major problem."

Kitamura also points out that the government and power companies dismissed any lessons that could have been learned from the Chernobyl accident, citing the different types of reactors used in the former U.S.S.R. and Japan. As a result of underestimating the potential for disaster, emergency drills were oversimplified, and residents failed to maintain a disaster-ready mentality.

\*\*\*

Temporary municipal government offices of the village of Kawauchi and the town of Tomioka are located within the grounds of Big Palette Fukushima. Temporary housing units for those who have evacuated due to the nuclear crisis have also been built there. As we walked among the prefab housing, our conversation turned to Kitamura's life as an evacuee.

Confronted with the reality of the nuclear crisis -- including rations of bread past their expiration date, lack of information from the government, the hollow response of the officials from Tokyo Electric Power Co. (TEPCO), the operator of the stricken plant, and the fear of never being able to return to life as he once knew it -- Kitamura found he could no longer continue to hold on to his old views.

"Having experienced a disaster of this magnitude, isn't it clear that nuclear power is not worth the economic cost? We're entering an age of a declining population, which means dropping demand for energy. No matter how you look at it, it's going to be extremely difficult to make a convincing case for nuclear energy," says Kitamura.

Hopes of living with his wife and cats, in a house with a yard, surrounded by nature, had brought Kitamura to Tomioka 12 years ago. He also found appealing the excellent services provided by the municipal government, made possible by subsidies given to the town by the central government for hosting the Fukushima No. 2 Nuclear Power Plant.

Entry into a 20-kilometer radius of the stricken Fukushima No. 1 Nuclear Power Plant is not permitted, and Kitamura, whose home falls into that area, has only been able to make three short visits to his home since his evacuation. He estimates that the radiation levels around his home will reach at least 40 millisieverts per year, which eliminates any possibility that he'll be able to move back.

"My house is worth nothing now," says Kitamura. "I was planning on selling it to fund our eventual move into a nursing home."

\*\*\*

How ironic is it that this former nuclear energy advocate has lost both his current life and future life plans to nuclear energy?

"As someone who once promoted nuclear power, and also as someone who has suffered from the disaster, I believe that I should continue sharing my experiences," Kitamura says. "I have a responsibility to do so."

Since the nuclear crisis emerged, Kitamura has been receiving a greater number of invitations to give lectures. It was only after he became a victim of a nuclear disaster that he finally came to understand

the horrors of the non-critical promotion of nuclear power. The guilt he feels for having been party to that is what propels him now to speak up.

JAIF, where Kitamura now serves as advisor, comprises nuclear power-related companies and municipal governments. Because of this, some anti-nuclear advocates may accuse him of siding with the pro-nuclear camp.

"I anticipate such criticisms," says Kitamura. "But I think it's important for me to criticize the problems of nuclear energy from the inside."

This past October, the former JAPC board member published a book titled "Genpatsu suishinsha no munen" (The disappointment of a former nuclear power advocate).

"Until now, the industry did not have a culture of lending an ear to internal criticism. After the book was published, I received encouraging letters from former insiders of the nuclear power industry thanking me for writing what I did." (By Yoshiaki Ebata, Evening Edition Department)

(Mainichi Japan) December 18, 2011

## Hatoyama: Nationalize Fukushima N-plant

The Yomiuri Shimbun

Only by bringing the Fukushima No. 1 nuclear power plant into government hands can scientists thoroughly discover what caused the nuclear crisis, former Prime Minister Yukio Hatoyama says in an article published in the Dec. 15 issue of the British science journal Nature.

In the two-page article coauthored by Hatoyama and Tomoyuki Taira, a fellow Democratic Party of Japan member of the House of Representatives, Hatoyama said the Fukushima plant "must be nationalized so that information can be gathered openly."

"A special science council should be created to help scientists from various disciplines to work together on the analyses," he said. "Through such a council, the technologies needed for decommissioning and decontamination...can be developed."

It is extremely rare for a major science journal to carry an article written by a former prime minister as a cover story, according to an official of Nature Japan.

In the article, Hatoyama criticizes Tokyo Electric Power Co., the operator of the crippled plant, for disclosing only limited information to Diet committees. He also hints at the possibility of recriticality at the plant and says there is still much about the crisis that needs clarification, including the state of the molten fuel within the nuclear reactors.

Hatoyama also says that he and Taira obtained data on samples of contaminated water TEPCO obtained from the basement of the plant's No. 1 reactor and asked an outside research institute to reanalyze them.

Results showed that radionuclide **chlorine 38**, one of the isotopes released during recriticality, "was indeed present," he claims.

TEPCO reported at one point that it found chlorine 38 in the sampled water, but the utility later retracted that statement, saying there was a mistake in the analysis.

(Dec. 16, 2011)

---

## Japan says stricken nuclear power plant in cold shutdown

<http://www.reuters.com/article/2011/12/16/us-japan-nuclear-idUSTRE7BF06020111216>

Reuters) - [Japan](#) declared its tsunami-stricken Fukushima nuclear power plant to be in cold shutdown on Friday, taking a major step to resolving the world's worst nuclear crisis in 25 years but some critics questioned whether the plant was really under control.

The Fukushima Daiichi plant, 240 km (150 miles) northeast of Tokyo, was wrecked on March 11 by a huge earthquake and a towering tsunami which knocked out its cooling systems, triggering meltdowns, radiation leaks and mass evacuations.

In making the much-anticipated announcement, Prime Minister Yoshihiko Noda tried to draw a line under the most acute phase of the crisis and highlighted the next challenges: the clean-up and the safe dismantling of the plant, something the government says may take more than 30 years.

"The reactors have reached a state of cold shutdown," Noda told a government nuclear emergency response meeting.

"A stable condition has been achieved," he added, noting radiation levels at the boundary of the plant could now be kept at low levels, even in the event of "unforeseeable incidents."

A cold shutdown is when water used to cool nuclear fuel rods remains below boiling point, preventing the fuel from reheating. One of the chief aims of the plant's operator, Tokyo Electric Power (Tepco), had been to bring the reactors to that state by the year-end.

The declaration of a cold shutdown could have repercussions well beyond the plant. It is a government pre-condition for allowing about 80,000 residents evacuated from within a 20 km (12 mile) radius of the plant to go home.

Both Noda and his environment and nuclear crisis minister Goshi Hosono said that while the government still faced huge challenges, the situation at the plant was under control.

That provoked an angry response from senior local officials, Greenpeace and some reporters even as the Vienna-based U.N. nuclear agency welcomed "significant progress" at the plant.

"We hope that this will be a fresh step towards going back home but it does not change the fact that the path to bringing the crisis under control is long and tough," Fukushima governor Yuhei Sato said, according to the Asahi newspaper website.

Greenpeace dismissed the announcement as a publicity stunt.

"By triumphantly declaring a cold shutdown, the Japanese authorities are clearly anxious to give the impression that the crisis has come to an end, which is clearly not the case," Greenpeace Japan said in a statement.

Hosono acknowledged that there were some areas where it would be difficult to bring people back and said there could be small difficulties here and there, but he told a briefing: "I believe there will be absolutely no situation in which problems escalate and nearby residents are forced to evacuate."

The water temperature in all three of the affected reactors fell below boiling point by September, but Tepco had said it would declare a state of cold shutdown only once it was satisfied that the temperatures and the amount of radiation emitted from the plant remained stable.

Jonathan Cobb, an expert at the British-based World Nuclear Association, said the authorities had been conservative in choosing the timing of the announcement.

"The government has delayed declaration of cold shutdown conditions, one reason being to ensure that the situation at the plant was stable," Cobb said, adding that the evacuation zone should get progressively smaller as more of it was decontaminated.

Kazuhiko Kudo, professor of nuclear engineering at Kyushu University, said authorities needed to determine exactly the status of melted fuel inside the reactors and stabilize a makeshift cooling system, which handles the tens of thousands of tons of contaminated water accumulated on-site.

## HUGE COSTS, ANXIETY

The government and Tepco will aim to begin removing the undamaged nuclear rods from the plant's spent fuel pools next year. However, retrieval of fuel that melted down in their reactors may not begin for another decade.

The enormous cost of the cleanup and compensating the victims has drained Tepco financially. **The government may inject about \$13 billion into the company as early as next summer in a de facto nationalization**, sources told Reuters last week.

An official advisory panel estimates **Tepeco may have to pay about 4.5 trillion yen (\$57 billion) in compensation in the first two years after the nuclear crisis, and that it will cost 1.15 trillion yen to decommission the plant, though some experts put it at 4 trillion yen (\$51 billion) or even more.**

Japan also faces a massive cleanup task outside the east coast plant if residents are to be allowed to go home. The Environment Ministry says about 2,400 square km (930 square miles) of land around the plant may need to be decontaminated, an area roughly the size of Luxembourg.

The crisis shook the public's faith in nuclear energy and Japan is now reviewing an earlier plan to raise the proportion of electricity generated from nuclear power to 50 percent by 2030 from 30 percent in 2010.

Japan may not immediately walk away from nuclear power, but **few doubt that nuclear power will play a lesser role in future.**

Living in fear of radiation is part of life for residents both near and far from the plant. Cases of excessive radiation in vegetables, tea, milk, seafood and water have stoked **anxiety** despite assurances from public officials that the levels detected are not dangerous.

Chernobyl's experience shows that anxiety is likely to persist for years, with residents living near the former Soviet plant still regularly checking produce for radiation before consuming it 25 years after the disaster.

## 16/12/2011

### Les réactions Japonaises à la déclaration du p.m. Noda

## Le gouverneur de Fukushima contredit immédiatement la déclaration de M. Noda sur la "maîtrise de l'accident de Fukushima"

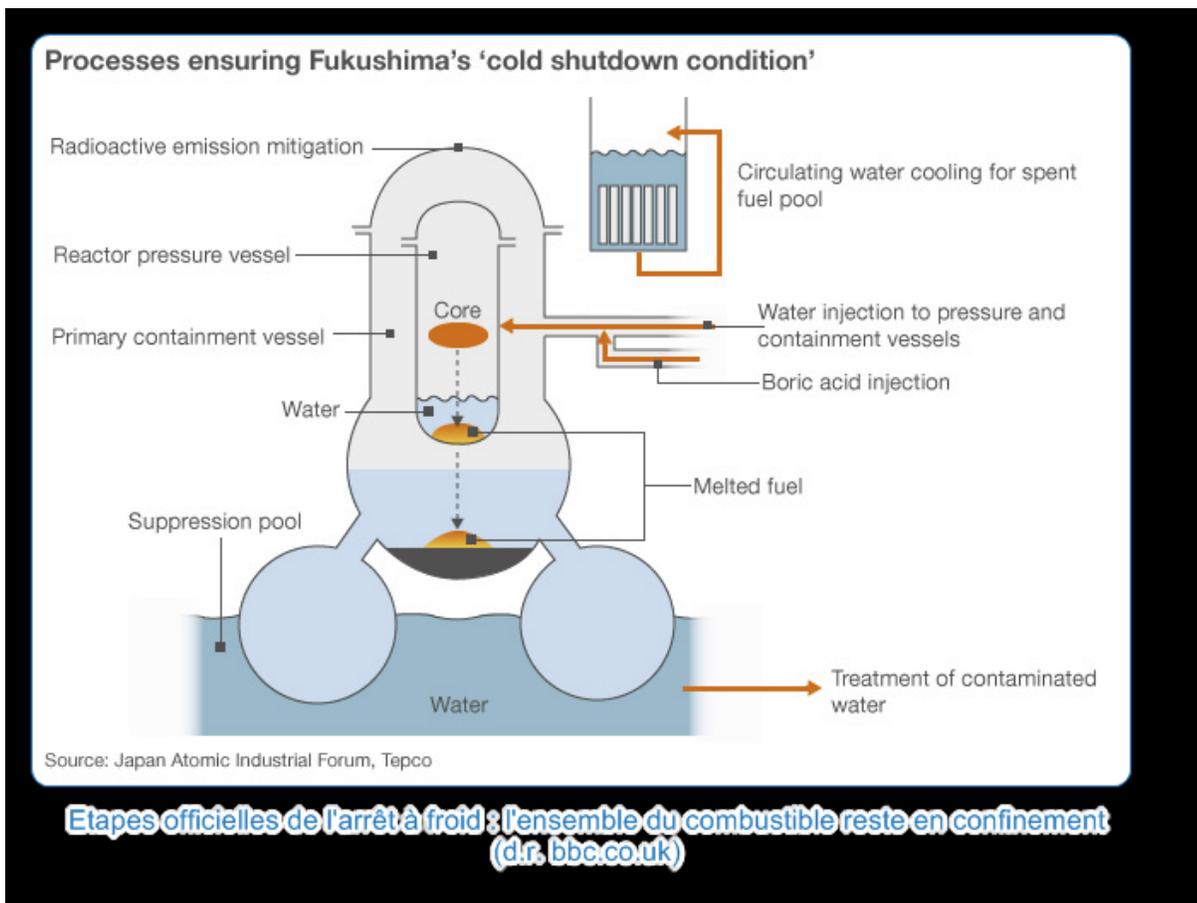
La première réaction à la déclaration effectuée par le Premier ministre du Japon estimant que "l'accident de Fukushima était sous contrôle" ne s'est pas fait attendre : dans un démenti cinglant et immédiat, le Gouverneur de la région de Fukushima à répliqué vertement : "L'accident est loin d'être maîtrisé" avant de détailler les nombreuses interrogations des habitants de la région sur la contamination de l'eau et des différents problèmes non résolus sur le site de la centrale accidentée.

D'autres voix s'élèvent au Japon afin de relativiser l'annonce officielle : ainsi M. Fumiya Tanabe, directeur de l'Institut de Recherche de sécurité sur les systèmes sociaux et techniques, a déclaré : "*Je me sens très mal à l'aise avec cette déclaration [de M. Noda] compte tenu du fait que le combustible n'ait pas conservé son intégrité initiale*".

Selon Yukio Hatoyama, ancien Premier ministre du Japon, seule une commission scientifique spéciale [comprenez : indépendante] pourrait imaginer et développer les technologies éventuelles de démantèlement des installations et de décontamination. M. Hatoyama estime par ailleurs dans [un article - payant - publié dans nature avant-hier](#) et [synthétisé gratuitement dans le yomiuri daily de ce jour](#) que des éléments techniques récents [présence de chlorure-38 = reprise de criticité du combustible] l'amènent à croire que l'accident est loin d'être terminé.

Le professeur Kudo, enseignant l'ingénierie nucléaire à l'université de Kyushu, estime quant à lui que [les autorités se devraient de déterminer précisément le statut du combustible](#) et agir sur le refroidissement à long terme ainsi que sur la gestion des quantités énormes d'eau contaminée stockés sur le site.

[Source : asahi shimbun, Anglais, 16/12](#)



## Govt speeds rezoning of contaminated areas

Yoshihiro Kiyonaga and Koichi Yasuda / Yomiuri Shimbun Staff Writers

### New zoning of radiation-contaminated areas being considered by government

Zoning	Definition	Annual radiation exposure levels on which zoning is based
Zones where residency is prohibited for extended periods	Areas where it will likely take at least five years until residents can return	50 millisieverts or higher
Zones with restricted residency	Areas where it will take some years until annual radiation exposure levels can be lowered to below 20 millisieverts even after decontamination	At least 20 millisieverts but less than 50 millisieverts
Zones being prepared for residents' return	Areas where residents can return if living conditions are restored	Below 20 millisieverts



The entire town of Namiemachi, Fukushima Prefecture, seen here on Dec. 2, is either within the no-entry zone or the expanded evacuation zone.

After declaring that the Fukushima No. 1 nuclear power plant's reactors were in a state of cold shutdown, the government is expediting a review of the zoning of radiation-contaminated areas.

The government has set a rough guideline to **allow residents to return home to places where radiation levels are under 20 millisieverts a year.**

However, the government is expected to continue restricting entry into areas where radiation levels are higher.

Many difficult tasks remain, including how to decommission the damaged reactors--a problem that may take 30 years or longer to complete.

At a meeting of the Nuclear Emergency Response Headquarters on Friday, Prime Minister Yoshihiko Noda emphasized the government would do its best to restore Fukushima Prefecture.

"The accident still forces many people to live in places far from their hometowns. The entire government will strive hard so people will be able to return home and rebuild their lives as soon as possible," he said.

About the announcement of the cold shutdown of the reactors Friday, a source said the government initially considered making the declaration "by the end of November."

The government apparently felt it was desirable to make the declaration as soon as possible to expedite work to have residents return to their hometowns.

**The date of the declaration was put off after radioactive xenon was detected in November. Officials suspected a resumption of a chain reaction known as criticality had occurred in the No. 2 reactor.**

At present, a 20-kilometer radius from the nuclear plant is designated as a no-entry zone, and places surrounding this zone where radiation levels are feared to reach 20 millisieverts a year are designated as expanded evacuation zones.

The government will rezone the areas on the basis of the estimated annual levels of radiation exposure. They will be:

-- Zones that will be off-limits for extended periods. Radiation levels in these areas will be 50 millisieverts a year or higher and are likely to take five years or longer to decontaminate sufficiently for residents to return.

-- Restricted zones in which radiation levels are at least 20 millisieverts but under 50 millisieverts. Residents may be able to return to these areas in a few years.

-- Zones being prepared for residents' return, where radiation levels are under 20 millisieverts. Residents will be able to return once living environments are restored.

Goshi Hosono, state minister in charge of the nuclear crisis, will visit Fukushima Prefecture on Sunday to explain the new plan to local government heads, as well as government measures to help residents rebuild their lives.

The government is expected to announce the rezoning plan by the end of the year, but it will not be an easy task to realize the return of residents.

Decontamination work has already been delayed because temporary storage sites where contaminated soil will be stored for about three years have been difficult to procure in the affected municipalities.

The start of full-scale decontamination work probably will be delayed by two months until next March.

The government has begun negotiations to construct an interim storage facility for contaminated soil and other waste after storage at temporary sites.

It wants to build the facility in Fukushima Prefecture's Futaba County, an area where residents will be prohibited from entering for an extended period. It plans to purchase land in the area for that purpose.

At a press conference Friday, Noda reiterated his intention to submit a bill to the ordinary Diet session next year that provides for special measures to rebuild and revitalize Fukushima Prefecture.

The bill will include such measures as preferential taxation to help reconstruction in the evacuated areas; measures to eliminate anxiety about health due to radiation; and rebuilding of the water supply and sewage systems and other infrastructure by the central government to improve residents' living conditions.

The government will offer additional assistance when residents are allowed to return home.

(Dec. 18, 2011)

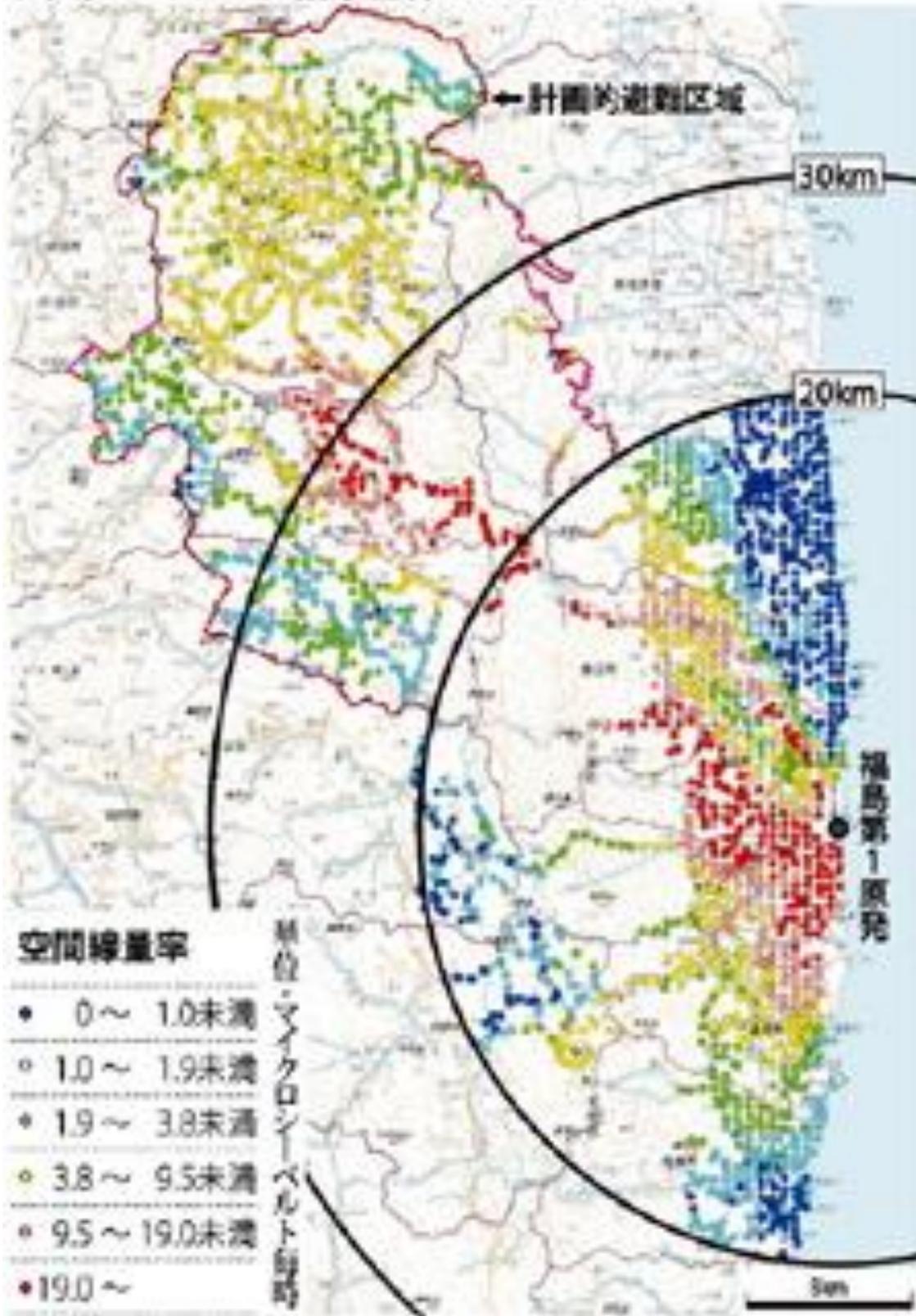
## **Gov't to reclassify Fukushima no-entry zones possibly in April**

TOKYO (Kyodo) -- The government told municipalities around the crippled Fukushima Daiichi nuclear plant on Sunday that it plans to reclassify no-entry zones, possibly on April 1, according to estimated annual radiation exposure, government officials said.

The government plans to reclassify the current two-tier no-entry zones, designated last April, into three categories, including one covering areas with estimated annual radiation exposure of 50 millisieverts or higher to which residents are unlikely to be able to return.

The two other zones would cover areas with an estimated annual radiation exposure of 20 to 50 millisieverts, where residence would be restricted, and areas with an estimated exposure of less than 20 millisieverts, where the government would allow residents to return.

# 広域モニタリング結果全体マップ(高さ1m)



A government map displaying radiation levels in the area around the Fukushima No. 1 Nuclear Power Plant.

The current no-entry zones cover areas within a 20-kilometer radius of the crippled plant and areas with an estimated annual radiation exposure of 20 millisieverts.

In line with the reclassification, the government plans to step up decontamination efforts and measures to help residents return to areas where radiation levels are relatively low, they said.

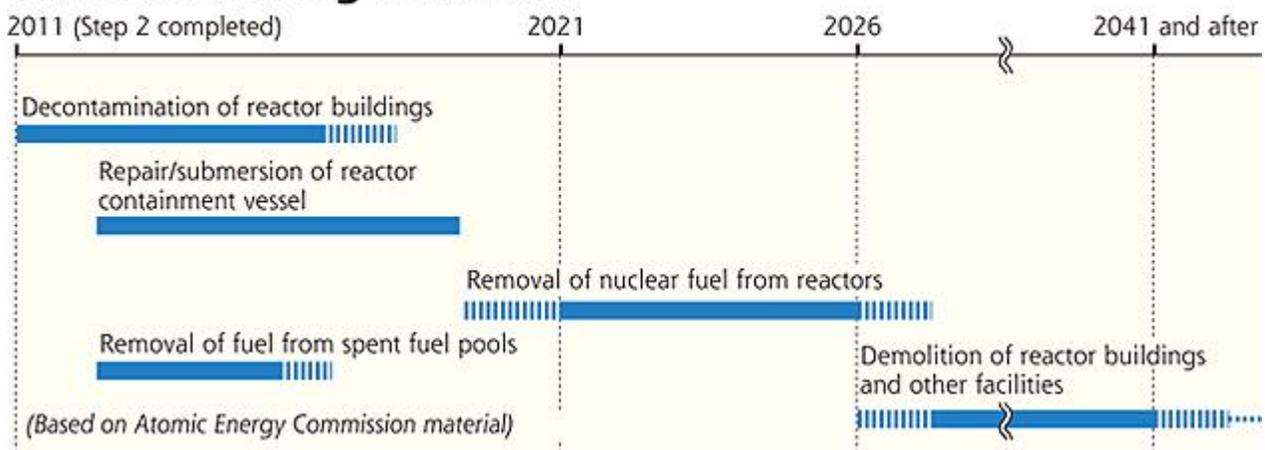
Yukio Edano, minister of economy, trade and industry, Goshi Hosono, nuclear disaster minister, and Tatsuo Hirano, minister in charge of reconstruction in areas affected by the March 11 earthquake and tsunami, notified Fukushima Gov. Yuhei Sato and representatives of 11 other municipal governments near the plant of the plan at a meeting in the city of Fukushima on Sunday.

(Mainichi Japan) December 19, 2011

## Prospects murky as N-shutdown eyed

Takashi Hagihara / Yomiuri Shimbun Staff Writer

### Decommissioning timetable



Despite the government's announcement that cold shutdown has been achieved, prospects for decommissioning the reactors at the Fukushima nuclear plant remain unclear as **it continues to be difficult to approach them due to high radiation levels.**

With Step 2 of the timetable complete, the government and Tokyo Electric Power Co. have embarked on the long road to shutting down the Nos. 1 to 4 reactors at the crippled plant, by establishing a medium- to long-term crisis management council.

However, the shutdown process is not likely to be completed until well beyond the scheduled date.

The most difficult task is removing the melted nuclear fuel from the reactors. As long as the fuel remains submerged in water, highly radioactive substances are prevented from being released. **The complicated operation to remove the fuel will involve a remote-controlled underwater system.**

A special committee of the Cabinet's Atomic Energy Commission that studies technical issues for decommissioning the reactors released a report on Dec. 7 that said the government and TEPCO will begin removing fuel from the reactors within 10 years.

After all of the fuel is removed, the reactors and buildings are to be demolished. The whole operation is expected to take until at least 2041, according to the report.

In a timetable for decommissioning work to be newly mapped out, the Economy, Trade and Industry Ministry and TEPCO are studying the possibility of achieving complete shutdown within 40 years.

An analysis by TEPCO released at the end of November showed that almost all of the nuclear fuel in the No. 1 reactor had melted, damaging the pressure vessel and eroding the containment vessel's concrete base by up to 65 centimeters.

"We expected [the containment vessel] to be eroded to some extent, but we didn't think it was this bad. Now we have another big problem to tackle," said Hajimu Yamana, the committee's chairman and a professor at Kyoto University.

**When nuclear fuel reacts with concrete it turns into fragile clods**, which will make operations more difficult. **The amount of fuel to be removed is also expected to increase significantly.**

TEPCO has posted a loss of about 800 billion yen over matters related to the nuclear disaster.

However, **according to the government's third-party committee tasked with overseeing TEPCO's financial situation, the cost of decommissioning the four reactors at the Fukushima plant is estimated at 1.15 trillion yen, and could increase by trillions of yen depending on how the situation develops.**

**It is unclear how such a costly operation will be financed** should TEPCO be unable to shoulder the financial burden on its own.

(Dec. 18, 2011)

## **Gov't to tighten laws for nuclear plant operations**

TOKYO (Kyodo) -- The government is set to tighten laws and regulations related to nuclear power plants, obliging operators of existing reactors to comply with the latest safety requirements and newly designating a maximum period for the use of reactors, government sources said Sunday.

The government has come up with the plan after weighing safety concerns about old reactors as well as the failure of the operator of the crippled Fukushima Daiichi power plant to properly upgrade safety measures in line with new scientific findings about the risk posed by tsunami, they said.

Prime Minister Yoshihiko Noda's government plans to introduce relevant bills during the parliamentary session starting next month.

**The revised laws and regulations will allow the government to order the suspension of a nuclear plant if its operator fails to meet the latest safety requirements, irrespective of the age of the facility, the sources said.**

**The tighter laws and regulations could force the operators of some reactors to decommission them if they cannot take any measures to meet the new standards, the sources added.**

**The government is also considering setting the maximum period for the use of a nuclear power station at around 40 years, they said.**

The March 11 earthquake and tsunami seriously damaged the six-reactor Fukushima Daiichi nuclear complex that Tokyo Electric Power Co. began operating in the 1970s.

(Mainichi Japan) December 19, 2011

## **Long road looms for next stage at Fukushima nuke plant**

December 17, 2011 - <http://ajw.asahi.com/article/0311disaster/fukushima/AJ201112170019>

With the government declaring Dec. 16 that Step 2 of the road map for bringing the Fukushima No. 1 nuclear power plant under control has been completed, that starts the long and difficult next stage, which could take decades.

Now begins the difficult processes of decontaminating radiation spewed from the plant and decommissioning the reactors.

**The work until now demonstrates that officials will have to be prepared for any possibility.**

For example, in November, water that had been decontaminated at the plant was found leaking from hoses. Officials of Tokyo Electric Power Co., the operator of the Fukushima plant, said on Dec. 7 that the leaks were caused by weeds that had poked holes into the plastic hoses.

About 4 kilometers of hoses have been placed on the ground in the Fukushima No. 1 nuclear plant to decontaminate water used to cool the reactor cores.

No plans have yet been drawn up to replace that temporary cooling and recycling system with a more permanent one that could withstand prolonged use.

There has also been no work done on processing the radioactive materials that remain after the cooling water has been decontaminated.

Workers at the Fukushima plant have also had to deal with unexpected localized increases in radiation levels as well as the accumulation of high concentrations of hydrogen gas in piping in the plant.

Decontamination of areas around the plant will also be important because reducing radiation levels is a major precondition for allowing evacuees to return to their homes.

Decontamination can only begin as soon as March because Environment Ministry officials said they need to obtain the approval of residents before workers could remove topsoil and cut tree branches in the yards of their homes.

No decision has yet to be made on where to temporarily store the contaminated topsoil that will be removed.

Even after decontamination work begins, other work to restore social services and roads will also have to be completed before residents could realistically expect to return home.

A problem on an even longer span is the decommissioning of the reactors at the Fukushima plant.

The central government and TEPCO are expected to release a road map for decommissioning on Dec. 21.

**Sources said the road map would be made up of three stages. In the first stage that would begin next year and last for about three years, spent nuclear fuel would be removed from the storage pools in the reactors. In the second stage, extending from four years down the road to about a decade later, work would be done to repair the containment vessels to allow for the removal of nuclear fuel from the reactor cores.**

**The main task for the final stage that would commence after about 11 years would be the removal of the melted fuel.**

The final stage will involve coming up with an entirely new way of removing the fuel because much of it has likely leaked outside the pressure vessel, an unprecedented situation.

Because TEPCO officials have no idea what the situation within the reactor is actually like, the methods and equipment to be used for removing the fuel will have to take into consideration the extent to which the fuel has melted and leaked out of the pressure vessel.

For that reason, **the road map to be compiled for decommissioning is more like a set of objectives than a plan for dealing with the situation at the Fukushima nuclear plant.**

## **Contaminated water found in plant's tunnel**

[http://www3.nhk.or.jp/daily/english/20111219\\_02.html](http://www3.nhk.or.jp/daily/english/20111219_02.html)

The operator of the crippled Fukushima Daiichi nuclear power plant says a large quantity of contaminated water was found in a tunnel below a building storing highly radioactive water.

The Tokyo Electric Power Company, or TEPCO, is investigating how about **230 tons of water flowed**

**into the tunnel.**

TEPCO says a worker found the pool of water on Sunday. **The water reportedly was about 50 centimeters to 3 meters deep throughout the 54-meter long tunnel.**

The utility says the level of radiation at the surface of the water is 3 millisieverts per hour. It is just a fraction of the level of the highly radioactive water stored in the waste processing facility above.

**TEPCO suspects that the radioactive water of the facility may have flowed into the tunnel and was diluted by groundwater.**

**The utility says the tunnel is not connected to the sea.**

The discovery raises questions about TEPCO's inspection and management capabilities because the firm failed to notice the water in the tunnel after the waste processing facility was completed in April.

Monday, December 19, 2011 05:28 +0900 (JST)

## **Cutting Japan's dependency on nuclear power 'basic direction': gov't panel**

TOKYO (Kyodo) -- A government panel tasked with compiling a basic framework for Japan's new energy policy said Tuesday it will continue its discussions with the view that reducing Japan's dependence on nuclear power is the "basic direction" to pursue.

In a report that compiled key issues in the panel's discussions to date, the 25-member panel said there are various opinions on how to reduce Japan's dependence on nuclear power and that some members called for clarifying the conditions on which reactor operations can be resumed in order to satisfy the public.

A growing number of reactors in Japan remain idled amid heightened public concerns over the safety of nuclear power after the nuclear accident at the Fukushima Daiichi plant, crippled by the March earthquake and tsunami.

The paper incorporated opinions calling both for early withdrawal from nuclear power generation and for maintaining it at a certain level from a strategic point of view. It also stated opinions both supporting and opposing nuclear fuel recycling, underscoring the gaps between panel members in their views on nuclear power policy.

The panel chaired by Nippon Steel Corp. Chairman Akio Mimura has been considering Japan's future energy portfolio as it is tasked with providing input for the country's next basic energy plan to be compiled by next summer.

(Mainichi Japan) December 20, 2011

## **New nuclear safety agency to have 500 staff: Hosono**

TOKYO (Kyodo) -- Japan's new nuclear safety agency to be launched in April under the Environment Ministry will consist of about 500 staff members and is expected to secure some 50 billion yen in the fiscal 2012 budget, Environment Minister Goshi Hosono said Tuesday.

The figures are larger both in terms of the scale of the organization and the budget compared with the existing nuclear regulatory body, the Nuclear and Industrial Safety Agency, which has around 400 personnel with a budget of about 40 billion yen. NISA, under the industry ministry, will be integrated into the new agency.

The move to **overhaul the country's nuclear safety system** came as public confidence in the agency was shaken in the wake of the nuclear crisis at the Fukushima Daiichi power plant, with **questions raised about whether it is appropriate to have regulators under the industry ministry, which also promotes nuclear power.**

The new nuclear safety agency is expected to focus on enhancing crisis management functions and will also be in charge of conducting health surveys for people affected by the Fukushima accident, which was triggered by the March 11 earthquake and tsunami, according to the environment ministry.

The Finance Ministry plans to compile a draft fiscal 2012 budget for Cabinet approval on Saturday. The Diet is expected to start deliberations on it early next year.

(Mainichi Japan) December 20, 2011

## **Japan hoping to enhance robot technology in wake of nuclear disaster**

TOKYO (Kyodo) -- Nuclear disaster minister Goshi Hosono said Monday he hopes Japan will develop top-class robot technology that could be applied to scrapping the crippled nuclear reactors at the Fukushima Daiichi power plant, after facing criticism that Japanese robots did not prove useful in dealing with the nuclear crisis at the plant.

Mentioning that some people had made "disgraceful" remarks that a Japanese robot had played the violin at the Shanghai Expo in 2010 but had not been deployed at the Fukushima plant, Hosono told the Foreign Correspondents' Club of Japan in Tokyo that Japan's unmanned technology has contributed to collecting radiation-contaminated rubble at the nuclear complex.

"In the 30 to 40 year decommissioning process, we need unmanned technology to take out nuclear fuel...and I want Japan to establish top-class technology in a true sense," Hosono said, adding that the government plans to make Fukushima Prefecture, where the plant is located, a base for such technological development.

Fukushima should also become a base for advanced radiological research and the government should set an ambitious goal such as reducing the cancer rate in the prefecture to the lowest level Japan, Hosono said.

As for schools in Fukushima, he said they should not be reopened until radiation levels drop to 1 microsievert per hour or lower.

The Japanese government announced Friday that the crippled reactors had achieved a stable condition equivalent to a cold shutdown, about nine months after the plant was hit by a magnitude 9.0 earthquake and tsunami.

But decommissioning the Nos. 1 to 4 reactors is expected to be extremely difficult as the nuclear fuel left inside the Nos. 1 to 3 reactors is believed to have melted.

(Mainichi Japan) December 20, 2011

## **Steps to put residents' lives back in order should be core of Fukushima restoration**

Measures to put the lives of disaster victims back in order should be the core of efforts to restore Fukushima Prefecture, hit hard by the triple disasters of the March 11 Great East Japan Earthquake, tsunami and ensuing nuclear crisis.

After declaring that the crippled Fukushima No. 1 Nuclear Power Plant has been brought to a stable condition known as a "cold shutdown," the government has notified affected municipalities in Fukushima Prefecture that it will reorganize evacuation zones into three levels depending on radiation doses.

The government intends to determine the designation of areas affected by the nuclear disaster as early as April 2012 after consulting local municipalities.

Prime Minister Yoshihiko Noda earlier announced that the nuclear crisis has been brought under control, but his announcement only highlights a wide perception gap between the national government and local residents as long as it cannot show evacuees prospects of when they can return to their neighborhoods or how they can make a living.

Many municipalities in Fukushima Prefecture have been unable to launch full-scale work to recover from the disaster as many residents have been evacuated from their neighborhoods and are taking shelter in other areas. Even areas outside evacuation zones face serious problems, such as the need to decontaminate neighborhoods tainted with radioactive substances leaking from the nuclear plant and harmful rumors that agricultural and other products from the areas are contaminated with radiation.

Under the government's new policy, areas currently designated as no-go zones and planned evacuation zones will be divided into three different levels depending on their radiation doses. The government will aim to enable evacuated residents at an early date to return to their homes situated in areas where radiation levels are less than 20 millisieverts a year, which will be newly designated as "evacuation order termination preparation zones."

It is necessary for the government to take different measures in a flexible manner depending on the situation in these areas, regardless of their designation. However, evacuees cannot return to their

neighborhoods unless decontamination and health management of residents are thoroughly carried out and their fears about clothing, food and housing are dispelled.

The mayors of municipalities in affected areas have voiced concern that if a line is drawn strictly according to rules, it could split municipalities and local communities. To relieve their concerns, the central government should hold sufficient consultations individually with local governments over their designation.

Under a bill on special measures for the restoration of disaster-hit areas, which the national government will submit to the Diet in the next regular session, all parts of Fukushima Prefecture would be subject to tax privileges and the national government would build or improve infrastructure in areas where evacuation orders have been lifted. Moreover, the bill will call for the expansion of tax privileges for disaster victims. These measures are necessary, but unless they are implemented in parallel with other livelihood restoration measures such as securing jobs for victims, they will be ineffective.

The government will also be required to consider permanently relocating residents of areas that will be designated as zones where they cannot return for a long period of time. If local governments cannot secure land for the collective relocation of residents, neighboring municipalities will need to accept their relocation. The government's buy-up of land from victims who need to be permanently relocated will be an effective way to extend financial assistance to them.

While the municipalities concerned should play a leading role in rebuilding their disaster-hit areas, the national government needs to create a concrete vision on assistance to the entire prefecture in order to make sure that Fukushima will recover from the disasters. Even if the government works out a plan to make the prefecture a base for the development of renewable energy and high-level medical services, it could end up being a pie in the sky unless it creates economic and social infrastructure in the area.

Some experts have pointed to the need to build and improve a transportation network running from east to west in Fukushima. The national government must fulfill its responsibility to take all possible measures to ensure Fukushima Prefecture residents can restore their areas and their own livelihoods and maintain their communities.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 21, 2011

## **Gov't proposal calls for lower radioactive limit for ordinary food**

TOKYO (Kyodo) -- A health ministry proposal for new limits on radioactive cesium found in food calls for a ceiling of 100 becquerels per kilogram for regular food items, one-fifth the current 500-becquerel limit, government sources said Tuesday.

The proposed limits, including an even stricter limit for food items for infants, will be presented to a meeting of a task force under the Health, Labor and Welfare Ministry's food sanitation council on Thursday.

While the ministry expects to enforce the new limits from April, grace periods of between six and nine months will be set for such food items as rice and beef to give both consumers and producers time to be informed of the changes, the sources said.

The proposal calls for a limit of 50 becquerels of cesium per kg of milk or infant food, and a 10-becquerel limit on drinking water, against the current 200-becquerel limit set by the government following the Fukushima Daiichi nuclear disaster in March.

**In proposing the new limits, the ministry has lowered the annually allowable radiation exposure by 80 percent -- to 1 millisievert from the current 5 millisieverts.**

If a person keeps eating for one year food items containing maximum amounts of cesium allowed under the proposed limits, the total radiation exposure during that period is estimated by the ministry at 0.7 millisievert, below the 1-millisievert ceiling.

The ministry believes such a case is unrealistic and actual levels of radiation will be much lower once the new yardstick is in place, according to the sources.

The proposed 10-becquerel limit on drinking water reflects the fact that water is a necessity of life with no alternative, while the 50-becquerel limit on milk and infant food takes into account that children are particularly susceptible to the effects of radioactive materials.

(Mainichi Japan) December 21, 2011

## **Governors urge central gov't to address nuclear crisis more promptly**

TOKYO (Kyodo) -- The National Governors' Association urged the central government Tuesday to tackle problems and concerns caused by the nuclear disaster at the Fukushima Daiichi power plant more promptly as burdens on evacuees are compounding with time.

In a petition submitted to Economy, Trade and Industry Minister Yukio Edano, the association of prefectural governors said that although it has been more than nine months since the disaster occurred, a number of local residents remain evacuated and an increasing number of families live separately from children due to concerns over radiation.

"Among households with children, there are increasing moves to have their children evacuate to remote areas out of concerns over radiation damage on their health," the association said in the petition, noting that the situation is getting worse.

The association called on the central government to accelerate efforts on decontamination work near the crippled power station and reconstruct affected areas, while taking measures to improve the safety of nuclear power plants in Japan.

Edano said after receiving the petition from Aomori Gov. Shingo Mimura that he takes the governors' calls seriously and that the related issues should be addressed with the government's all-out efforts.

(Mainichi Japan) December 21, 2011

## **Fire burns ceiling of Tokai village nuclear reactor building**

MITO, Japan (Kyodo) -- A fire partially burned the ceiling of a building housing a nuclear reactor at the village of Tokai, Ibaraki Prefecture, on Tuesday, the prefectural government and the reactor's operator said.

The fire broke out at around 9:30 a.m. and was extinguished two hours later, they said, adding the blaze at the research reactor facility did not result in any leakage of radiation into the environment. No one was injured.

The ceiling under the steel plate roof of the building was set alight by sparks during welding work on the roof, Japan Atomic Energy Agency said.

A 110-square-meter area of glass-fiber acoustic absorbent covering the ceiling was burnt, it said.

The reactor core is located in the underground section of the 22-meter-high building. The reactor has been undergoing a periodic check since September.

There was no change in the airborne radiation levels inside and outside the building, it said.

Part of the roof was corroded and "there is a high possibility that the sparks fell through that part onto the ceiling," an agency official said.

The agency started operating the reactor in 1975 for research on nuclear fuel safety. It suspended operation in February, before the March 11 earthquake and tsunami that crippled the Fukushima Daiichi nuclear plant in Fukushima Prefecture, north of Ibaraki.

(Mainichi Japan) December 21, 2011

## **Gov't, TEPCO set 40-yr work plan toward scrapping Fukushima reactors**

TOKYO (Kyodo) -- The government and Tokyo Electric Power Co. said Wednesday that they would seek to finish scrapping the four crippled nuclear reactors at the Fukushima Daiichi power plant in the next 30 to 40 years in a newly unveiled work schedule describing measures to be taken after the plant's stabilization.

Based on the road map toward decommissioning, the plant operator known as TEPCO would start removing the nuclear fuel stored in the spent fuel pools of the Nos. 1 to 4 units within two years and the melted fuel from the Nos. 1 to 3 reactors within 10 years.

At the outset of a meeting held Wednesday between government and TEPCO officials to discuss the issue, industry minister Yukio Edano called on the utility to "move up" the planned work as much as possible to allay concerns of people who are still living as evacuees because of the disastrous radiation-leaking accident at the plant.

The latest move came after the government announced Friday that the plant, hit by the March 11 megaquake and tsunami, has recovered to a stable state, or what it calls a "cold shutdown condition."

According to a government panel report, the spent fuel pools of the Nos. 1 to 4 units contain 3,108 nuclear fuel assemblies. The Nos. 1 to 3 reactors have 1,496 fuel assemblies inside, although many are believed to have melted or been largely damaged.

The fuel of the No. 4 reactor had all been placed inside the spent fuel pool because the reactor was halted for a regular inspection before the March 11 disasters.

In the case of the 1979 accident at the Three Mile Island Unit 2 in the United States, which resulted in a partial meltdown of the reactor core, defueling took about 11 years. Japan's case is expected to be more challenging, given that multiple reactors have suffered meltdown and the fuel is believed to have melted through the base of the reactor pressure vessels.

(Mainichi Japan) December 21, 2011

## **Fukushima local decontamination costs bust estimates**



Workers use high-pressure water cleaners to decontaminate a roof in the city of Fukushima. Some say the method is insufficient. (Mainichi)

FUKUSHIMA -- The prefectural government here has said that radioactive decontamination operations now under way in three municipalities will cost an average of about 1.3 million yen per household, far over the funds allotted.

The figure -- revealed by prefectural environment department head Hiroyuki Aratake in answer to a question in the prefectural assembly -- is for cleanup operations now under way in the cities of Fukushima and Date, and the village of Kawauchi.

Priority decontamination in these areas began in November and has so far consumed some 1.7 billion yen, and the average household cost vastly exceeds the basic prefectural subsidy of 700,000 yen per home allotted to municipalities to decontaminate properties smaller than 400 square meters. The

overrun, Aratake explained, was because large properties in agricultural districts were also covered by the priority decontamination operation.



Workers experiment with draining radioactively contaminated mud from a paddy field, left, onto a tarp-covered adjacent field in Iitate, Fukushima Prefecture, on Aug. 24. (Mainichi)

Regarding the cleanup cost for the some 600,000 homes in the decontamination area, Aratake said that based on the 700,000 yen per household estimate, the total cost would come to about 420 billion yen. This must be covered by the 184.3 billion yen allotted for cleanup in the prefecture's September supplementary budget as well as funds set aside in the central government's third supplementary budget. If it is not enough, the prefecture plans to ask Tokyo to cover the difference.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 21, 2011

## **U.S. nuclear chief says Fukushima plant stable but major task remains**

Visiting U.S. Nuclear Regulatory Commission Chairman Gregory Jaczko said Dec. 20 that there was no longer enough energy in the reactors at the crippled Fukushima No. 1 Nuclear Power Plant to produce an offsite release of radiation, but pointed out that a large cleanup task remained.

Jaczko made the comments at a news conference in Tokyo, following the Japanese government's announcement that the plant has completed "step 2" of its roadmap to bring the Fukushima nuclear crisis under control and has achieved cold shutdown conditions at the plant.

The U.S. nuclear safety chief arrived in Japan on Dec. 18, and visited the Fukushima No. 1 and No. 2 nuclear complexes. He said it was a "humbling experience" to see the extent of damage caused by the March 11 earthquake and tsunami, and expressed admiration over the efforts of workers handling the disaster.

Speaking on the announcement of the completion of step 2 in the project, he pointed out that this was just one part of the major task of returning the area to its original state and decommissioning the reactors.

During the news conference, Jaczko commented on the planned establishment of a new nuclear power safety agency in Japan next spring, saying it was pleasing to see a new body with boosted independence and stronger regulation being formed.

After the news conference, Jaczko met with Japanese nuclear disaster minister Goshi Hosono and other officials to discuss Japan's response to the crisis. Hosono expressed appreciation for the help from the U.S. amid the crisis and sought continued support.

"Thanks to the support from the U.S., the onsite accident has been brought under control. If we have assistance from the U.S. in the decommissioning of the reactors, which will take another 30 years or more, we will certainly overcome this," he said.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 21, 2011

## **US expert: time to scrap reactors unknown**

A US nuclear expert says it is impossible to predict the time needed to decommission the crippled reactors at the Fukushima Daiichi nuclear plant.

Charles Casto told NHK on Wednesday that the true situation inside the reactors remains unknown. Casto represents a team from the US Nuclear Regulatory Commission dispatched to Japan since the nuclear accident in March.

Casto said that after the accident his team advised the Japanese government to continue injecting sea water into the reactors, as well as fresh water, to cool down spent nuclear fuel.

He also said Japanese authorities failed to provide appropriate information to the US government soon after the accident.

Casto said his team felt deep dissatisfaction with Japan for providing only limited information from a small number of engineers.

Last Friday, Japan declared the Fukushima reactors had reached a state of cold shutdown -- the second phase in the program to bring the facility under control.

Wednesday, December 21, 2011 20:50 +0900 (JST)

## **Town hosting Fukushima nuke reactors to keep getting power station subsidies**

The government intends to continue providing power station-hosting subsidies to the town where the Fukushima No. 1 nuclear plant's shattered reactors are located, Economy, Trade and Industry Minister Yukio Edano has stated.

Local governments with power stations in their jurisdiction can apply for the subsidies, with the amount based on how much electricity the plants produced two fiscal years before the application, among other factors. Under this system, the town of Okuma, Fukushima Prefecture -- which hosts the Fukushima No. 1 plant's wrecked No. 1-4 reactors -- would no longer be eligible for the subsidies in fiscal 2012, as the nuclear disaster hit the plant and the reactors will be decommissioned.

However, "Considering present societal conditions it would be unthinkable not to provide the subsidies to Fukushima (local governments) if applied for," Edano said at a news conference following a Dec. 20 Cabinet meeting. He also stated that the government "is considering revising the subsidy system rules to allow for payments for guaranteeing safety and peace of mind," which would allow money to flow to the Okuma Municipal Government.

The town of Futaba that hosts the Fukushima No. 1 plant's No. 5 and 6 reactors, Naraha hosting the Fukushima No. 2 plant's No. 1 and 2 reactors, and Tomioka where the Fukushima No. 2 power station's No. 3 and 4 reactors are situated are still eligible for the subsidies under the current rules. The Fukushima Prefectural Government is also receiving power station-hosting subsidies, but will reduce its application for fiscal 2012 funds as it has called for all 10 reactors in the prefecture to be shuttered.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 21, 2011

### **3-stage map adopted for decommissioning**

The Yomiuri Shimbun

The government and Tokyo Electric Power Co. decided Wednesday on a 30- to 40-year road map for decommissioning the Nos. 1 to 4 reactors at the Fukushima No. 1 nuclear power plant, government officials said.

The decision was made at the first meeting of a council tasked with implementing mid- and long-term measures to decommission the crippled plant.

As the work involves the unprecedented task of removing nuclear fuel that melted through the base of the pressure vessels in the Nos. 1 to 3 reactors, the whole process has been divided into three stages. So-called "assessment points" also have been established, to judge whether work can proceed to the next stage.

The road map was devised by the Natural Resources and Energy Agency, the Nuclear and Industrial Safety Agency and TEPCO. Their work followed the completion on Dec. 16 of Step 2--achieving cold shutdown--in the plan to bring the crisis under control.

In the first phase of the new road map, which is set to start this month and continue until fiscal 2013, removal will begin of nuclear fuel stored in the spent fuel pool of the No. 4 reactor.

In 2012, new equipment will be introduced that can remove the radioactive material that cannot be extracted from contaminated water with the current facilities.

In the second phase, which is scheduled to last from fiscal 2013 to fiscal 2021, all the fuel stored in the spent fuel pools of all the reactors will be removed. Then work will shift to submerging the Nos. 1 to 3 reactors so their melted fuel can be removed.

In the meantime, the existing mechanisms that remove radioactive substances from contaminated water and reuse that water to cool the reactors will be made smaller, so they can be housed within the reactor buildings.

In the third stage, which is set to last from fiscal 2021 until fiscal 2051 at the latest, removal of the melted fuel will be completed. Also, the reactors, reactor buildings and other structures will be dismantled and removed, leaving vacant plots of land where the facilities once stood.

(Dec. 22, 2011)

## **Local mayors discontent with plan to reclassify no-entry zones**

The Yomiuri Shimbun

FUKUSHIMA--Municipal leaders in areas affected by the crisis at the Fukushima No. 1 nuclear power plant have expressed dissatisfaction with the government's plan to reclassify no-entry and expanded evacuation zones into three categories based on annual radiation exposure.

"Our town will be divided [if the plan is implemented]," one leader said.

There are about 109,000 evacuees from both zones and some have given up on trying to return to their hometowns.

After a meeting Sunday with central government leaders, Futabamachi Mayor Katsutaka Idogawa spoke of the likelihood that most of his town will be placed into a category that could prevent the return of residents for up to five years. Futabamachi is one of the municipalities that contains the Fukushima plant.

"We can't keep silent for five years. We have to call for a provisional town in some form," Idogawa said. The town's government offices have moved to Kazo, Saitama Prefecture. As for the location of the provisional town, he said, "It's on a clean slate. I want to discuss the matter with the townspeople," he said.

Mayor Toshitsuna Watanabe of Okumamachi, which is also home to the crippled nuclear power plant, expressed similar concerns and said most areas in his town could be placed into same the category.

"We have the right to live in Okumamachi. The government and Tokyo Electric Power Co. should make the town livable through decontamination," he said.

Namiemachi Mayor Tamotsu Baba said the reclassification would split his town into three areas. "As our town will be separated, we want to take careful measures consulting with the government," he said.

Tomiokamachi Mayor Katsuya Endo said, "The decision is very severe for us as the town will be split and many of the townspeople won't be able to return home." He also expressed dissatisfaction with the government, saying "[The government] did not explain things that are of concern to residents, such as how long it will take for decontamination and what its effects will be."

Minami-Soma Mayor Katsunobu Sakurai said, "The government should understand how hard it is for residents to be divided according to the areas in which they live."

Katsuraomura village head Masahide Matsumoto called on the government to explain why people cannot live in areas with an estimated annual radiation exposure of 20 millisieverts or more.

Akishige Kobata, 74, lives in a temporary housing unit in Aizu-Wakamatsu, Fukushima Prefecture, because his house is located in Okumamachi within a three-kilometer radius of the crippled plant.

At first, Kobata was eager to return home but gave up on the idea when he paid a visit to his house on Sept. 1 and was surprised by the high radiation levels in the area. "I wanted to return home but at that time I thought it was impossible," he said.

Radiation levels around Kobata's house have remained high, and he thinks his house will be included in the zone that prevents the return of residents. "Now I've given up on returning home," he said.

(Dec. 22, 2011)

## **Gov't should play leading role in decommissioning crippled nuclear reactors**

The government should play a leading role in decommissioning nuclear reactors at the tsunami-hit Fukushima No. 1 power plant to ensure the work progresses as quickly as possible.

It is expected to take up to 40 years to decommission and dismantle the reactors at the plant, unprecedentedly long work, according to a plan worked out by the national government and plant operator Tokyo Electric Power Co. (TEPCO).

Due to high levels of radiation, it is extremely difficult for workers to enter the buildings housing the crippled reactors, requiring the development of 14 kinds of new technology, including a remotely-controlled robot, to recover and manage melted fuel.

"We've instructed the plant operator not to delay the work because of high costs," Goshi Hosono, state minister for nuclear accident countermeasures, told a news conference.

Still, some government officials are skeptical of the feasibility of the decommissioning plan. "We don't know whether the reactors can be decommissioned and dismantled in 30 to 40 years until the work is actually done," one of them said.

If the development of necessary technology proves a serious challenge, the time and money required to decommission and dismantle the reactors will certainly increase.

Even if the work can be completed in 30 to 40 years as planned, difficult questions remain as to who will manage the recovered fuel and where.

A total of 1,496 melted fuel rods remain in the plant's No. 1 to 3 reactors while 3,108 fuel rods are kept in the pools for spent nuclear fuel at its No. 1 to 4 reactor buildings. This means that a combined 1,381 tons of radioactive substances need to be stored semi-permanently.

Hosono admitted at the news conference that there are no prospects for what should be done with the fuel.

A newly established government panel will assess progress in the work outlined in the roadmap to decommissioning the reactors at each stage. However, the Agency for Natural Resources and Energy says the panel can assess the progress once a year at the most, raising fears that the work to decommission and dismantle the reactors could be left entirely up to TEPCO.

To achieve the decommissioning of the reactors in the shortest possible period, the government has the responsibility to take the initiative in ensuring that the decommissioning process goes smoothly until the work is completed. (By Takuji Nakanishi, Mainichi Shimbun)

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 22, 2011

## **TEPCO omits total cost of decommissioning nuclear reactors from work schedule**

Tokyo Electric Power Co. (TEPCO), the operator of the crippled Fukushima No. 1 Nuclear Power Plant, did not specify the cost of decommissioning the plant's reactors in its work schedule announced Dec. 21 -- apparently to obscure the possibility of the utility becoming insolvent and no longer viable as a company.

The utility, however, will inevitably come under pressure to process and release accounting information on the snowballing costs of decommissioning the No. 1-4 reactors at the plant, which was crippled in the aftermath of the March 11 Great East Japan Earthquake and tsunami.

The government is considering injecting taxpayers' money into the utility and nationalizing it to turn it into an entity dedicated to providing compensation for the nuclear crisis. The government is also poised to launch a full-scale debate on the fate of TEPCO's management with major lenders to the utility.

It is difficult to predict how much it will cost to decommission the four reactors -- a task expected to take up to 40 years and be fraught with difficulties. A government-appointed third-party panel estimated in October that it will cost 1.151 trillion yen to decommission the troubled reactors. TEPCO, meanwhile, has decided to set aside some 940 billion yen for decommissioning.

The utility, however, is aware that the decommissioning costs "are certain to snowball, to the point where an additional allocation of more than 200 billion yen would be far from enough," according to a TEPCO executive. A senior official with the Economy, Trade and Industry Ministry says the utility "would go under instantly if the entire decommissioning costs were processed all at once."

Although TEPCO Vice President Zengo Aizawa said during a news conference on Dec. 21 that the utility was now "working out the details of the costs and would be able to project the decommissioning costs over a two-year period," he stopped short of specifying the total costs required for decommissioning.

During another news conference the same day, Economy, Trade and Industry Minister Yukio Edano reiterated his hard-line stance that the decommissioning costs "should be shouldered by TEPCO as a matter of course." Regarding the possibility that TEPCO, the main entity handling decommissioning work and providing compensation, could become insolvent, Edano said, "We are considering all possible options to support the utility through the Nuclear Damage Liability Facilitation Fund."

The Nuclear Damage Liability Facilitation Fund has been providing financial support to TEPCO in its compensation payments to those affected by the nuclear crisis, but the fund does not envisage monetary support for decommissioning costs. Injecting taxpayers' money into decommissioning has therefore been considered the primary option, though TEPCO has shown a strong desire to retain its own management. Since nationalizing the utility would require support from financial institutions, the government is set to discuss such a possibility with major lenders to the utility.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 22, 2011

## **Town assembly votes to call for shutdown of all reactors in Fukushima Pref.**

NIHONMATSU, Fukushima -- The assembly of Namie, Fukushima Prefecture -- a town where all residents have been evacuated along with the municipal government in the wake of the Fukushima nuclear disaster -- voted on Dec. 21 to demand the closure of all 10 reactors in the prefecture.

The motion, carried by a vote of 10 to nine, was the first by a municipal assembly in the Futaba district -- host to the stricken Fukushima No. 1 nuclear plant -- calling for the central government and plant operator Tokyo Electric Power Co. (TEPCO) to put an end to nuclear power in Fukushima Prefecture. The vast majority of Namie Municipal Assembly members have indicated they understand the decommissioning of the 10 reactors at the No. 1 and 2 Fukushima nuclear plants, but concerns over the loss of nuclear-related jobs made the vote a close one.

"Some 170,000 Fukushima Prefecture residents, including all 21,000 from Namie, have been made refugees (by the nuclear disaster), and are beset by fears for their health," the town assembly stated, taking aim at the central government's response to the crisis.

The Namie Municipal Government moved its operations to the prefectural city of Nihonmatsu after the town was ordered evacuated in the wake of the Fukushima No. 1 plant meltdowns.

The town assembly also voted unanimously on Dec. 21 to revoke an invitation to Tohoku Electric Power Co. to build another nuclear power station straddling Namie and the neighboring city of Minamisoma. Both resolutions came on the heels of an Oct. 20 Fukushima Prefectural Assembly decision to petition for the closure of all nuclear reactors in its jurisdiction.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 22, 2011

## **Academic critical of gov't response to nuclear crisis lauded by journal Nature**



Tatsuhiko Kodama

University of Tokyo professor Tatsuhiko Kodama, who blasted the government over its response to the Fukushima nuclear crisis, has been selected by British science journal Nature as one of 10 important people this year.

Kodama, 58, appeared in "365 days: Nature's 10," a list in the Dec. 22 edition of the journal featuring 10 "people who mattered this year."

Kodama has visited Fukushima almost every weekend, and cooperated in radiation measurements and decontamination measures. In July, the professor appeared before the House of Representatives Committee on Health, Labor and Welfare, and sharply criticized the government over its response to the crisis at the Fukushima No. 1 nuclear plant, saying, "What on earth is the Diet doing when 70,000 people are wandering about, away from their homes?"

[!\[\]\(b0b93a5783526d6bde8e4d6079c7324b\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) December 22, 2011

## **TEPCO builds temporary storage facility for highly radioactive nuclear waste**



A temporary storage facility for steel vessels containing nuclear waste, under construction on the premises of the crippled Fukushima nuclear plant, is pictured in early December. (Photo courtesy of Tokyo Electric Power Co.)

Tokyo Electric Power Co. (TEPCO) said on Dec. 21 that it has completed the construction of a temporary storage facility for highly radioactive nuclear waste produced in the process of purifying contaminated water at the crippled Fukushima No. 1 Nuclear Power Plant.

The facility built on the premises of the troubled nuclear power complex is capable of storing up to 744 steel containers, called "vessels," that contain radioactive substances including cesium. Each vessel measures about 1.4 meters in diameter and is about 2.4 to 3.5 meters high.

Contaminated water is purified through vessels that have pumice stones inside that can absorb radioactive substances. Vessels are replaced with new ones when levels of radiation in them get high. TEPCO, the operator of the crippled Fukushima nuclear power station, had to look for storage spaces for vessels filled with highly radioactive nuclear waste. Several vessels need to be replaced each week, and a total of 316 vessels had already been used by Dec. 20.

Used vessels will be placed in the temporary storage facility with a 30-centimeter-thick concrete floor built on a space measuring 40 meters by 210 meters. In addition, the facility will be surrounded by sandbags each measuring 2.4 meters high and 1.6 meters wide to hold the levels of radiation on the fringe of the premises below 1 millisievert per year. TEPCO said the facility is large enough to store vessels that will be used over a one-year period.

[!\[\]\(0892bf9f69eb8eb20d4d2cf31ba73f16\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) December 22, 2011

## **Gov't to cut R&D spending on nuclear fuel cycle program based on fast-breeder reactor**

The government has decided to slash spending for research and development on the country's nuclear fuel cycle program based on a fast-breeder reactor (FBR) by 25 percent for fiscal 2012 -- a move that will effectively freeze its long-term plan to put the ambitious project to commercial use.

The cut will shave about 10.2 billion yen from the project's research and development, dropping funding to 30 billion yen in fiscal 2012 versus the current fiscal year ending March 2012. The money saved by the government decision will be used to improve technologies related to the environment and nuclear safety such as radioactive substance removal and measures to ensure safety at nuclear facilities in the wake of the crisis at the Fukushima No. 1 nuclear plant. The FBR project has long been a pillar of Japan's energy policy, but now looks effectively frozen as the government responds to calls to reduce the country's reliance on nuclear energy.

A total of 40.2 billion yen was set aside for projects related to the nuclear fuel cycle program in the current fiscal year, including 21.6 billion yen for research and development on the Monju fast-breeder reactor and 10 billion yen for research and development aimed at realizing the "fast-breeder reactor cycle." The government granted the money in the form of a subsidy to the state-run Japan Atomic Energy Agency (JAEA) for its research on an FBR designed to burn plutonium extracted from reprocessed spent nuclear fuel from commercial power plants.

As to the budget for the Monju project, the government will cancel a power output experiment originally scheduled for fiscal 2012, and thereby save 2.2 billion yen. The maintenance and operation costs will be reduced by 1.8 billion yen by cutting personnel and other expenses, and money will be set aside only for the minimal operations needed to maintain the facility. Moreover, all research and development aimed at realizing the fast-breeder reactor will be completely frozen to reduce overall spending by nearly 70 percent, and only 3.3 billion yen will be set aside to cover maintenance costs for the facility.

Theoretically, an FBR can produce more plutonium than it consumes to generate electricity, but the research and development on the Monju reactor has stalled after a string of problems. In November, a government panel tasked with cutting wasteful spending called for a fundamental review of the Monju project, including the possibility of scrapping it. In its review of the country's energy policy to be completed by around the summer of 2012, the government's Energy and Environment Council is expected to discuss what to do with plutonium-thermal power generation together with the nuclear fuel cycle program.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 22, 2011

## **Ministry eyes stricter limits for cesium levels in food**

The Yomiuri Shimbun

The health ministry has compiled a plan to revise the current provisional limits for radioactive cesium in food, setting stricter standards that would require drinking water to contain no more than 10 becquerels per kilogram--or one-twentieth of the current limit--according to officials.

The Health, Labor and Welfare Ministry aims to implement the new limits in April next year, the officials said.

Current provisional standards stipulate that milk and dairy products, as well as drinking water, should contain no more than 200 becquerels per kilogram, with the limit for other food items set at 500 becquerels per kilogram. Under the new standards, powdered milk and other food items for babies, in addition to regular milk, should contain no more than 50 becquerels per kilogram. The limit for general foodstuffs will be set at 100 becquerels per kilogram, according to the officials.

The envisioned criteria would be even tougher than those set by the United States and the European Union, officials said. The United States sets 1,200 becquerels per kilogram as the limit for general food items, while limits in the European Union range from 400 to 1,250 becquerels per kilogram.

The ministry will also set a transitional period allowing the current provisional criteria to be applied to rice and other food items that are usually marketed the year after their harvest, the officials added.

In setting stricter limits for radioactive cesium in food, the ministry has taken into account that there has been a decreasing amount of radioactive substances released from the Fukushima No. 1 nuclear power plant in the nine months since the March 11 earthquake and tsunami. It regards the current provisional limits as standards for an emergency period, while the revised criteria can be considered closer to those for a normal time, according to the officials.

The revised limits have been worked out on the assumption that the general public should be exposed to no more than 1 millisievert of radiation per year from food intake--the same limit set by an international organization that has developed food safety standards, according to the officials.

However, these new limits may cause further confusion among consumers because they contradict current provisional standards, according to experts. Moreover, local governments will face additional financial burdens when the new criteria are implemented, they added, because public facilities will have to get new devices to meet them.

Prof. Masayori Ishikawa of Hokkaido University said he welcomed the stricter criteria because they take into account how exposure to radiation over an extended period can affect the human body.

"Nonetheless, it may be difficult for some local governments to immediately respond to the new criteria because there's been a shortage of testing devices," the medical physicist said. "Therefore, it would be necessary [for the government] to set a transition period by allowing relaxed standards to be applied until they are fully prepared."

Meanwhile, Hideaki Karaki, president of Kurashiki University of Science and the Arts, said it would be important for the general public not to regard the stricter criteria as standards ensuring food safety because these limits would be used as the benchmark for authorities to decide the suspension of shipping or selling contaminated foodstuffs.

"Even if you consume food items that contain a little more [radioactive cesium than the new limits], it would pose no health risk unless annual radiation exposure exceeds the allowable level of 1 millisievert per year," the food safety expert said. "Even if some individual food items are found to contain [radioactive substances] beyond the limits, that alone would not immediately threaten the safety of foods in general."

(Dec. 23, 2011)

## **Gov't starring in own show to bring Fukushima nuclear crisis 'under control'**



The Fukushima No. 1 Nuclear Power Plant is pictured in this pool photo taken on Nov. 12.

After determining that the damaged Fukushima No. 1 nuclear plant had achieved "cold shutdown conditions," the government announced earlier this month that the nuclear crisis had been brought under control.

"Cold shutdown conditions," however, is a vague phrase, and the government has rewritten the "completed" road map for bringing the crisis under control seven times. It is apparent the government is trying to close the curtain on a performance it has written and acted out to stress to international society that it has brought the crisis under control quickly.

Nine months have now passed since the onset of the disaster. At this time it is worthwhile to look back on crisis management following the outbreak.

At the end of May, an International Atomic Energy Agency (IAEA) delegation speaking to officials of the Ministry of Economy, Trade and Industry noted that the No. 1 plant was in a serious state. The delegation added that while the No. 2 plant had been in a similarly serious state after the March 11 earthquake and tsunami, it had "miraculously" been cooled, offering praise for the handling of the crisis.

In the wake of the tsunami, which also partially knocked out power at the Fukushima No. 2 nuclear plant, workers urgently gathered makeshift cables from the Kashiwazaki-Kariwa Nuclear Power Plant in Niigata Prefecture and other locations to cool No. 2 plant's four reactors. A large number of workers were brought in and they worked through the night taking down a baseball field fence on the compound to create a heliport, and the headlights of 20 workers' cars were used to guide helicopters carrying the cables. A total of nine kilometers of cable were laid over two days, and workers just managed to cool the plant. Normally such work would have taken 20 days.

The reason the plant was able to employ such human wave tactics was that the March 11 earthquake occurred on a Friday afternoon, and there happened to be several thousand workers from cooperating companies on the premises.

Naohiro Masuda, head of the Fukushima No. 2 nuclear plant, commented, "I shudder to think how it would have been if it had happened on a Saturday."

While all this was going on, power loss at the No. 1 to 4 reactors of the No. 1 nuclear plant prevented officials from cooling nuclear fuel, and the pool holding 1,535 rods of spent nuclear fuel in the No. 4 reactor building started boiling. If the spent rods had melted down, in a worst-case scenario as many as 30 million people in the Tokyo metropolitan area would have had to be evacuated. However, just before the pool went dry, there was a hydrogen explosion in the reactor building that sent water from a neighboring pool into the one holding the spent fuel, and this scenario was averted.

Hydrogen had also been building up in the No. 2 reactor building but an explosion in the neighboring No. 1 reactor building forced open a window in the No. 2 building, releasing the trapped hydrogen and averting another hydrogen explosion. If the pool of the No. 4 reactor building had continued to heat up without water and an explosion had also occurred in the No. 2 reactor, radioactive contamination would be incomparably higher than current levels.

When I interviewed an official from the nuclear plant's operator, Tokyo Electric Power Co. (TEPCO), the official told me, "Bringing the situation under control was possible because this happened in Japan; overseas it would have been impossible."

Naturally, I have the utmost respect for the workers who have tirelessly set about dealing with the situation under the threat of radiation exposure. But let us not forget that a series of coincidences also played a part in Japan's response to the accident.

Another point to consider is that when creating the road map to bring the nuclear crisis under control, the government and TEPCO put off facing root problems and instead focused on bringing the disaster "under control."

The road map for settling the crisis consisted of two steps. Step 1, which was to be carried out between April and July, focused on stably cooling the reactors, while step 2, covering the period between July and January 2012, aimed at achieving "cold shutdown conditions." The government looked to speed up work to have step 2 completed by the end of this year.

One of the goals that TEPCO initially announced for step 2 was filling the reactor containment vessels with water. However, the utility abandoned this plan after it emerged that there were holes in the containment vessels. Eventually, officials decided to delay such measures for five years or more. The company also established a goal under step 2 of "dealing with and reducing the amount of radioactive water" on the site, but when the road map was rewritten, it was decided that there would "ongoing treatment" of contaminated water after the completion of other processes.

The latest announcement that the goals of the road map have been achieved is merely the result of officials lowering their own hurdles. It reminds me of the time during World War II when the Imperial Japanese Army headquarters called the Japanese army's retreat a "shift in position."

The definition of "cold shutdown conditions" is a situation in which the temperature at the bottom of the reactor pressure vessels is below 100 degrees Celsius, and the radiation levels within the grounds of the nuclear complex are under 1 millisievert per year, among other factors. However, the heat gauges onsite have error margins of up to 20 degrees Celsius, and the exact temperature inside the reactors remains unknown. Furthermore, the amount of radiation includes only radiation in the atmosphere, and does not take into account radioactive materials released into the sea -- highlighting the vagueness of the standards.

Even Haruki Madarame, chairman of the Cabinet Office's Nuclear Safety Commission, stated, "We have never used the term 'cold shutdown conditions' before. Applying definitions to a nuclear reactor that has had a meltdown is difficult."

The government view disclosed by nuclear disaster minister Goshi Hosono that "the situation is under control onsite, but not offsite," is based only on circumstantial evidence; no one has actually seen inside the reactors.

We can only deduce that the "conclusion" of the crisis, rather than being based on scientific evidence, comes from placing priority on a political decision to create the impression that the crisis has been brought under control quickly. As the stance of a government that is supposed to protect the lives and property of people, such an approach is questionable.

In a news conference on Dec. 16, TEPCO President Toshio Nishizawa called the completion of the road map for bringing the crisis under control a "milestone," but a "milestone" achieved merely by lowering one's own targets is meaningless. The government bears a continued responsibility to monitor TEPCO until its nuclear reactors are decommissioned, and release all necessary information.

Japan has no need for inflated terms like "under control" and "cold shutdown conditions." It is the job of the government and TEPCO to seek "true control" of the disaster. ("As I see it," by Takuji Nakanishi, Tokyo Science and Environment News Department)

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 23, 2011

## **Fukushima nuke plant worker stopped coolant injection over damage fears**

A worker at the tsunami-hit Fukushima No. 1 nuclear station manually stopped a coolant injection system in the plant's No. 3 reactor following the disaster for fear that the reactor would be damaged and lead to a radiation leak, its operator said.

Plant operator Tokyo Electric Power Co. (TEPCO) has defended the worker's judgment as appropriate after analyzing the sequence of events and releasing its findings at the order of its government regulator, the Nuclear and Industrial Safety Agency.

The reactor core isolation cooling (RCIC) system of the No. 3 reactor stopped at 11:36 a.m. on March 12, the day after the plant was hit by a massive tsunami triggered by the Great East Japan Earthquake, causing the water level in the reactor to decline.

In response, its high-pressure coolant injection (HPCI) system, powered by a battery, was automatically activated.

However, the pressure in the reactor subsequently lowered below the standards specified by its operation manual, and vibrations increased. The worker in charge stopped the HPCI system and decided to switch to manual injection of water for fear that the trouble could cause radioactive substances to leak from the reactor, according to the utility.

The manager of the power plant received a report on the operation after the HPCI system was manually stopped.

However, a valve to lower the pressure inside the reactor before water was manually injected would not open because all external power had been lost. As a result, water could not be injected into the reactor, causing a meltdown of the core.

The government's fact-finding panel on the nuclear crisis earlier confirmed that **plant workers decided to switch off the HPCI system at their own discretion.**

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 23, 2011

## **Tokyo to double local electric power generation capacity**

The Tokyo Metropolitan Government is set to double the electric power generation capacity in the capital by 2020, officials said.

The metropolitan government made the decision as the crisis at the tsunami-hit Fukushima No. 1 nuclear plant has highlighted the fragility of the power supply system.

Tokyo will increase power generation capacity in the capital by 3 million kilowatts to approximately 6 million kilowatts by 2020.

Of the 3 million kilowatts, 1 million kilowatts will be generated at a liquefied natural gas power station it plans to build in the capital. The metropolitan authorities also plan to introduce a co-generation system -- a generator that diverts its heat exhaust to run steam turbines or for other functions -- to produce 500,000 kilowatts, and install solar panels on 300,000 houses -- one-sixth of all those in Tokyo -- with a total output of 900,000 kilowatts. Moreover, the metropolitan government plans to set up a public-private infrastructure fund to build power stations with a combined output of 500,000 kilowatts.

These measures will cover about 40 percent of the electricity consumed in Tokyo.

At a regular news conference on Dec. 22, Tokyo Gov. Shintaro Ishihara announced a plan to set up a fund capitalized by institutional investors in Japan and overseas. The new fund will make investment in

companies that launch power-generation businesses. The metropolitan government intends to invest 2 to 3 billion yen in the fund.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 23, 2011

## **Gov't unveils lower radioactive limits for food**

TOKYO (Kyodo) -- The health ministry proposed Thursday new limits on radioactive cesium found in food and a task force under its food sanitation council approved the proposed stricter ceilings at a meeting.

It plans to enforce them from April.

The proposal calls for a ceiling of 100 becquerels per kilogram for regular food items such as rice, meat, vegetables and fish, one-fifth the current 500-becquerel limit.

It calls for a limit of 50 becquerels of cesium per kg of milk or infant food, including powdered milk, and a 10-becquerel limit on drinking water, against the current 200-becquerel limit set by the government following the Fukushima Daiichi nuclear disaster in March.

Grace periods of between six and nine months will be set for food items such as rice and beef.

The Health, Labor and Welfare Ministry will refer the proposal to the science ministry's radiation council and hold briefing sessions in seven prefectures, including Fukushima, Tokyo and Osaka, from January and will seek public comment.

(Mainichi Japan) December 23, 2011

## **Panel sees gov't evacuation order in nuclear crisis as irrational**

TOKYO (Kyodo) -- A government panel investigating the nuclear crisis at the Fukushima Daiichi power plant is expected to point out in its upcoming report that the government's evacuation order issued shortly after the accident was irrational, sources close to the matter said Thursday.

The order instructed people living within 20 kilometers of the plant to evacuate. Panel members believe the order led some residents to move to areas where radiation levels were higher and caused confusion, the sources said.

The government's nuclear safety agency and the science ministry had data that would have helped prevent people from unnecessary radiation exposure, but they did not report it to the crisis management center at the prime minister's office, thinking that the data was "merely a hypothetical calculation result," according to the sources.

As a result, people who fled from the coastal area of Fukushima Prefecture to northwest ended up moving to places with higher radiation, because wind blowing at that time raised the radiation level of some areas beyond the 20-km zone, they said.

That situation occurred because the government issued the evacuation order only by considering the distance from the plant, the sources said.

They also said data from a system designed to predict the dispersal of radioactive materials could have served as a reference for evacuation because, although the amount of radiation dose was not accurately predicted, it had given a quite clear picture of areas with high or low radiation levels.

The panel, led by Yotaro Hatamura, a professor emeritus at the University of Tokyo, is expected to release its interim report on the accident on Monday.

(Mainichi Japan) December 23, 2011

## **Panel slams govt's shoddy info-sharing / Interim report to rip response to N-disaster**

The Yomiuri Shimbun

Lack of communication within the Prime Minister's Office and its delays in releasing key information caused serious confusion in the wake of the Great East Japan Earthquake, a government panel investigating the crisis at the Fukushima No. 1 nuclear power plant will assert in an interim report to be released Monday, sources have said.

Established to investigate and verify the facts of the crisis at the Fukushima plant, the panel has found there were many problems not only in the government's information-gathering following the March 11 disaster, but also in its sharing and disclosure of key information, according to the sources.

The panel's interim report also will raise questions regarding the initial response to the disaster by plant operator Tokyo Electric Power Co., saying it failed to understand what was happening at the reactors and make proper decisions on how to react, the sources said.

Just after the quake occurred at 2:46 p.m. on March 11, senior bureaucrats from ministries and agencies arrived at the Prime Minister's Office's crisis management center. Then Prime Minister Naoto Kan and other top government officials gathered at the prime minister's working room on the fifth floor.

The panel's interim report will say the government made important decisions only in consultation with the limited number of senior bureaucrats and TEPCO executives who were present in Kan's room, without sufficient communication with the people in the crisis management center, according to the sources.

Such lack of communication within the Prime Minister's Office prevented the government from taking advantage of the System for Prediction of Environmental Emergency Dose Information, or SPEEDI, a system that predicts the spread of radioactive substances, the sources said.

The report reveals that those on the fifth floor were not aware of SPEEDI's existence and states residents around the crippled plant could have taken better evacuation routes if the government had made the system's data public when issuing instructions, the sources said.

To make matters worse, the government's evacuation orders did not immediately reach local governments near the plant, the panel has found. Therefore, authorities were forced to decide how to evacuate their residents without sufficient information, according to the sources.

The report concludes the government's information disclosure was insufficient at a time of emergency and argues it failed to make immediate announcements of crucial information, such as the nuclear meltdowns at the plant and radiation's impact on human health, the sources said.

Regarding TEPCO's initial response to the crisis, the panel found that neither the utility's headquarters nor the people at the plant understood exactly how the No. 1 reactor's isolation condenser would react to a blackout. As a result, TEPCO took measures on the assumption that the emergency cooling device was still working, despite the fact it stopped following the tsunami, according to the sources.

At the No. 3 reactor, the panel has found, workers stopped operation of a high-pressure core cooling system without consulting their supervisors, before a substitute pumping system was secured.

The report will state that a series of such misunderstandings and misjudgments by the plant's operator delayed the injection of water into the reactors, resulting in the deterioration of their conditions, according to the panel.

(Dec. 23, 2011)

## **AEC chairman warned people within 170 km of Fukushima plant might need to relocate**

The head of the government's nuclear energy panel warned in March that all residents in areas within a 170-kilometer radius of the crippled Fukushima nuclear plant might need to be relocated in a worst-case scenario, sources close to the government have disclosed.

Japan Atomic Energy Commission (AEC) Chairman **Shunsuke Kondo** made the warning in a report numbering about 20 pages, which he compiled on March 25 -- two weeks after the Fukushima No. 1 Nuclear Power Plant was hit by a massive tsunami generated by the Great East Japan Earthquake -- and submitted it to then Prime Minister Naoto Kan.

At the time, the plant had lost its reactor core cooling functions due to the loss of all external power, hydrogen explosions had ripped through the plant's No. 1, 3 and 4 reactor buildings, and radioactive substances were leaking from the No. 2 reactor due to a meltdown. Workers at the plant had no choice but to manually inject water into the reactors to cool down their cores.

Kondo assumed that in a worst-case scenario, another hydrogen explosion could occur in the No. 1, 2 or 3 reactor buildings, raising radiation levels. Continuing aftershocks would prevent workers from cooling down the reactors for an extended period and that all fuel in a pool for spent nuclear fuel in the No. 4 reactor building pool would melt. At the time, the pool held 1,535 fuel rods that could fill two nuclear reactors.

If that happened, Kondo estimated the level of radioactive cesium per square meter of soil in areas within a 170-kilometer radius of the plant would surpass 1.48 million becquerels -- as high as that around the Chernobyl nuclear power plant shortly after the crisis there broke out. Moreover, he estimated areas within 250 kilometers from the plant, including Tokyo and Yokohama, would be contaminated with radioactive substances to a degree that residents would have to be evacuated at least temporarily.

Kondo admitted having compiled the report.

"I assumed the worst-possible case. I've heard that it prompted utilities to strengthen cooling functions at their nuclear plants," he said.

In an interview with the Mainichi in September, Kan said, "All residents would have to be evacuated in areas 100, 200 or even 300 kilometers from the plant if the leak of radioactive substances can't be stopped." He apparently made the remark with Kondo's worst-case scenario in mind.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 24, 2011

## **New radiation limits alarm local entities**

Tsuyoshi Nakamura and Tomoko Koizumi / Yomiuri Shimbun Staff Writers

## Domestic, overseas limits on radioactive cesium in food

	Drinking water	Milk	General foodstuffs	Food items for babies
Japan (new limits)	10	50	100 (including dairy products)	50
Japan (provisional limits)	200	200 (including dairy products)	500	200 (baby formula)
United States	1,200	1,200	1,200	1,200
European Union*	1,000	1,000	1,250	400
Codex	1,000	1,000	1,000	1,000

Unit: becquerels per kilogram. \*Only applied to items produced within the EU. When Japanese agricultural products are imported to the EU, Japan's provisional limits are applied.

### Food categories, main items under new limits for radioactive cesium

Food categories	Main food items
Foods for babies	Baby formula, baby food; snacks, juice, lactic acid beverages, supplements for babies and toddlers
Milk	Regular milk, low-fat milk, calcium-fortified processed milk
Drinking water	Tap water, green tea in plastic bottles
General food items	Rice, spinach, beef, dairy products such as cheese and yogurt

The Health, Labor and Welfare Ministry's new limits on radioactive cesium in food items are far more stringent than international standards, alarming local governments in charge of checking for radioactive contamination.

The local governments will be forced to beef up their checking systems to meet the new standards. Observers say it will take some time before the new limits can be strictly enforced.

The stiffer limits, scheduled to be put into force in April next year, will make it necessary for the local entities to acquire expensive high-precision instruments to measure radiation levels, while also considerably adding to the time needed to carry out the examinations, according to the observers.

Following the announcement of the proposal Thursday, after its approval by a relevant council, ministry officials looked proud as they noted that the new limits on radioactive cesium were "scientifically the strictest" to minimize people's exposure to radiation from food.

===

Stiffer than intl criteria

However, as many local government officials tasked with actually testing food items for radiation have expressed concern over the stiffer criteria, twists and turns are expected in the process of implementing the proposed limits.

A senior official of the ministry emphasized the new ceilings on radioactive cesium in food items were "based on the judgment that we should take into account permissible levels [of radioactive substances in food] that have been approved by the relevant international entities."

The new limits were calculated by working backward from the figure of 1 millisievert of radioactive cesium, which is the maximum allowable annual dietary intake for an ordinary person, according to the ministry.

The 1-millisievert annual limit was set by the Codex Alimentarius Commission, a body linked to the U.N. Food and Agricultural Organization and the World Health Organization, which is responsible for setting international food safety standards.

The Codex's highest permissible level of radioactive cesium for general foodstuffs is 1,000 becquerels per kilogram, or 10 times the level now proposed by the health ministry.

This is because the ministry has assumed the "contamination ratios" of food, or the ratios of radiation-contaminated food compared to all food on the market, to be significantly higher than the ratios adopted by food-related international organizations, ministry officials said.

Not only are the ministry-proposed ceilings far stricter than the nation's current provisional regulatory limits, they are also stricter than internationally accepted levels. They were set this way "from the viewpoint of securing all the more the public's safety and reassurance," a senior official said.

The planned tightening of the limits is already puzzling local government officials who are charged with monitoring radioactive cesium in food.

====

#### Problems with water

Especially problematic is observation of the ceiling of 10 becquerels per kilogram for water, one-twentieth the current 200-becquerel limit. The limit on drinking water has been made particularly strict because everybody needs water and also because water is used for cooking purposes, the ministry said.

To test the quality of tap water, it said local entities should preferably be equipped with high-precision instruments accurate enough to measure radiation levels one-tenth of the new limit for water. In other words, they should be capable of detecting a single-digit level of becquerels.

This has prompted expressions of concern from local governments.

For instance, the Kanagawa prefectural government has been measuring radiation concentrations every day at the prefecture's two major water purification facilities using simple devices with a maximum radiation detection ability of about 10 becquerels per kilogram.

"Although we are considering purchasing a high-precision instrument, it would cost more than 10 million yen per unit and is very heavy. So, we'll have a problem of where to put it," a prefectural official said.

"In addition, the time necessary to complete the check using the new instrument will take twice the current measurement time," the official said.

Manufacturers of precision radiation measuring instruments say they have been flooded with 10 times as many inquiries from local governments and other entities as in an ordinary year.

Shipments of the instruments are expected to be made three to four months after orders are received, they said, making it uncertain whether the equipment can be in place in time for next April as proposed by the ministry, even if local entities do decide to purchase the instruments.

The category of drinking water subject to examination under the ministry's proposal also includes beverages such as bottled green tea.

An official in charge of beverage safety tests for the Kita-Ibaraki municipal government in Ibaraki Prefecture said: "It is extremely hard for us to obtain a high-performance measurement instrument because of our budgetary constraints. We would have no option other than leasing it from an institution outside of our government."

===

100 or 500 before April?

Also in an uncomfortable spot are people involved in the preparation of school lunches for which large volumes of ingredients are used daily.

According to a southern Kanto local organization that has been conducting sample tests for radiation on four to five ingredients for school lunch dishes every day on its own, some of the ingredients are not available until the morning of the day they are served.

An official of the board of education concerned said, "The toughening of the examination standards will be certain to cause the radiation examination time to be substantially longer than at present."

He added, "We are worried whether it will be possible to change the school lunch menu when radiation in excess of the new limits is detected."

The official said he also was concerned about how to run the school lunch service from now until April next year, when the new limits are scheduled to be put in place.

"Given that the new limit for general food items of 100 becquerels per kilogram has been made public, it is hardly conceivable that we can get understanding from parents of schoolchildren about using foodstuffs containing more than 100 becquerels, even if the concentration is less than 500 becquerels in line with the current limits," he said.

"We will have to refrain from using ingredients with radiation exceeding 100 becquerels even before April," according to the official.

(Dec. 25, 2011)

## **Farmers relieved at new criteria**

Nobuhiko Harada / Yomiuri Shimbun Staff Writer

Although the new limits for radioactive cesium in food, which were presented to a meeting of the Health, Labor and Welfare Ministry's Pharmaceutical Affairs and Food Sanitation Council on Thursday, are much stricter than the existing provisional ones, they also appear to take the concerns of farmers into account.

The current provisional standards stipulate that limits for tea leaves and dried shiitake mushrooms should be applied before the items are prepared for consumption with water. In contrast, the new criteria state that these products should be examined after they are brewed or soaked in water--the condition in which they are ready to eat or drink.

According to the ministry, the change is modeled on the approach taken by the Codex Alimentarius Commission, which requires food items to be measured for radiation when they are prepared for consumption.

Some industry associations welcome the new standards.

Tea farmers--who were forced to suspend shipping in some regions in eastern Japan after leaves were found to contain excessive amounts of radioactive materials--have insisted that applying the provisional limits to raw or dried tea leaves does not reflect the reality of how tea is used, citing data that suggests brewed tea contains just one-fiftieth to one-sixtieth the radioactive cesium found in dried tea leaves.

"I think the new criteria reflect our requests," said a senior official at the Chamber of Tea Association of Shizuoka Prefecture. "I'd like the ministry to present a clear measuring method for tea, such as how it should be brewed."

The price for dried shiitake mushrooms, on the other hand, has fallen by nearly 1,000 yen per kilogram from last year, according to a cooperative of shiitake farmers based in Fujieda in the prefecture.

Many schools have been refraining from using the dried mushrooms in school lunches.

Therefore, the industry saw it as a matter of life and death whether the new criteria would stipulate the product should be measured after being soaked in water.

"If you measure dried shiitake mushrooms after they've been soaked in water, [cesium] radiation levels are lower," said a senior member of the cooperative.

In a bid to avoid confusion in the distribution of products along with the introduction of the new criteria, the ministry decided to set a transition period in which the current provisional limits will be applied to certain food items, including rice.

However, details of the transition period may be modified because some members attending Thursday's panel meeting called for a shortened transition period to be set.

(Dec. 25, 2011)

## **Radiation fears spread to forest industry**

SHIROISHI, Miyagi -- Radiation fears stemming from the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant and radiation monitoring activities are raising concern among people handling trees to grow mushrooms and make charcoal.

Forest workers are very concerned about any potential fallout from the nuclear crisis because they have to independently monitor radiation before applying to the plant operator, Tokyo Electric Power Co. (TEPCO), for compensation, unlike farmers and fishermen who have standing in law.

Decontamination work in the mountains is said to be much more difficult than on flat land and some forest workers are considering switching jobs.

The Forestry Agency in October set a ceiling of 150 becquerels per kilogram for raw wood for mushroom cultivation and in November set limits on radioactive cesium found in firewood and charcoal for cooking at 40 becquerels and 280 becquerels, respectively.

The governmental agency advised Tokyo and other prefectures concerned not to market forestry products that exceed those ceilings. While local governments conduct radiation checks on farm and marine products under the Food Sanitation Law, there is no law for contaminated raw wood or charcoal. The agency says it is simply requesting members of the forest products industry to unilaterally check radiation and make redress requests.

"Even if I prepare expensive testing equipment, I can't do business because of a dwindling number of clients," Tomio Takahashi, a 58-year-old forestry operator in Shiroishi, Miyagi Prefecture, near the border with Fukushima Prefecture, said with a sigh.

He started his forest business 35 years ago using wood from southern Miyagi and Fukushima Prefecture to produce and sell raw wood for mushrooms, charcoal and firewood. The nuclear crisis triggered by the March 11 earthquake and tsunami occurred as his firm's annual turnover reached 90 million yen.

His firm is located 70 kilometers away from the Fukushima nuclear power plant. His business partners asked him about radiation contamination and subsequent examinations by an inspection entity of raw wood for shiitake mushrooms found a cesium level of 333 becquerels per kilogram.

Massive cancellations ensued, and one firm said it cannot accept his forest products for the next two years.

Cesium levels of about 1,800 becquerels per kilogram were also found in ash in the firm's charcoal kilns. Takahashi wonders if the firm's six kilns have been contaminated due to the burning of timber. Tearing down the kilns would cost about 30 million yen and disposing of them afterward poses a challenge as well.

"I don't know how long radiation will remain in the mountains," he says, adding he is considering quitting charcoal production because "there is no guarantee when his customers will come back."

The Miyagi Prefectural Government has launched a search for forests with low levels of cesium to pass on information to forest workers and owners.

[!\[\]\(5d7d1c84e1515142337b02e005d45356\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) December 26, 2011

### **3 pilot plants to try decontaminating debris in Fukushima**

FUKUSHIMA (Kyodo) -- Three decontamination pilot plants will begin operations as early as January in Fukushima Prefecture to seek efficient ways to reduce the amount of radiation there in debris and soil, sources familiar with the matter said Monday.

Under a project of the Japan Atomic Energy Agency, a government-funded research organization, the small plants will be built in Okuma, the town where the crippled Fukushima Daiichi Nuclear Power Station is located, and in Tomioka and Naraha, towns straddled by the Fukushima Daini nuclear plant, the sources said.

The project is designed to advance decontamination in areas affected by radioactive materials emitted in the country's worst nuclear plant accident, as a prerequisite for evacuated residents to return home after the government redraws its evacuation zones, possibly in April.

In Okuma, construction company Kumagai Gumi Co. will set up a plant near the municipal government office to conduct a test to decontaminate soil taken from schools and parks with water using a special washer.

The washed soil will be enclosed in concrete and the radiation effects will be monitored, the sources said.



A worker pushes a wheelbarrow across a baseball diamond after helping scrape off the top layer of contaminated soil at a sports ground in Minamisoma, northeastern Japan, just outside the 20 kilometer exclusion zone around the Fukushima No. 1 Nuclear Power Plant, Saturday, Nov. 19, 2011. (AP Photo/ Greg Baker)

Hitachi Plant Technologies Ltd. will build a plant on a town-run playing field in Tomioka to treat radioactive substances in schoolyard soil using a thermal process. It will also see if the treated soil can be reused safely.

In Naraha, construction company Toda Corp. plans to decontaminate debris by shredding it into small pieces and washing it with water, using some of the roughly 15,400 tons remaining in the town, they said.

(Mainichi Japan) December 26, 2011

## **Ministry sets guideline to reuse contaminated waste**

TOKYO (Kyodo) -- The Environment Ministry presented a guideline Sunday to reuse radioactively contaminated disaster waste generated in nuclear crisis--hit Fukushima Prefecture as construction materials within the prefecture.

The average density of radioactive cesium in the waste should remain 3,000 becquerels per 1 kilogram at the maximum and it should be covered with a 30--centimeter--thick coating of other materials, such as asphalt, gravel and concrete, to be recycled for purposes including building roads, railways and breakwaters, according to the guideline.

The waste should be reused only for public works projects so it could be appropriately handled after completion of construction work, the guideline says, while calling for facility managers to keep preconstruction records on the level of radioactive cesium density and other details -- such as which parts of the waste were used.

The ministry said it estimates that at least 342,000 tons of disaster waste remain in five municipalities around the troubled Fukushima Daiichi nuclear power plant, including Minamisoma and Namie.

(Mainichi Japan) December 26, 2011

## **Genkai reactor suspended, leaving 6 reactors in service in Japan**

FUKUOKA (Kyodo) -- Kyushu Electric Power Co. suspended operation of the No. 4 reactor at its Genkai nuclear power plant in Saga Prefecture late Sunday for a regular checkup, the utility said.

The suspension left only six among 54 commercial reactors in Japan in service in the wake of the nuclear disaster at the Fukushima Daiichi power plant triggered by the March earthquake and tsunami, with operations of all six reactors in Kyushu Electric's service area being suspended.

Kyushu Electric has decided to ask customers to reduce their maximum power usage by more than 5 percent between Monday and Feb. 3.

The suspension of the No. 4 reactor will put the utility's supply capacity at 14.69 million kilowatts in January against the expected maximum power demand of 14.57 million kilowatts, with the reserve rate standing at 0.8 percent, according to the utility.

The rate, however, will fall to minus 2.2 percent if electricity demand grows to the level seen a year earlier, when the area faced a hard winter, it added.

(Mainichi Japan) December 26, 2011

## **No direct link between soil radiation and contaminated rice: survey**

FUKUSHIMA -- High radiation doses in rice produced here are not necessarily linked to soil radiation levels, and could be linked to a lack of potassium and insufficient cultivation of rice paddies, a joint governmental survey has revealed.

The survey, conducted by the Fukushima Prefectural Government and the Ministry of Agriculture, Forestry and Fisheries, inspected the conditions of rice paddies in the prefecture where rice was found to surpass the provisional upper limit of 500 becquerels per kilogram.

An analysis of soil samples showed that the paddies' levels of potassium -- which prevents rice plants from absorbing radioactive cesium -- were only about one-third of the average concentration of potassium in the city of Fukushima.

It was also determined that rice grown in insufficiently cultivated paddies, including those in mountainous areas where rotary tillers are not used, tends to be tainted with higher doses of cesium. This is caused by the rice plants' roots being closer to the soil surface in comparison to those in well-cultivated paddies.

Based on the assumption that unpolished rice absorbs about 10 percent of cesium in the soil, the government allowed rice to be planted in paddies where soil radiation doses were under 5,000 becquerels.

However, rice tainted with nearly 800 becquerels of cesium was found in a paddy that had radiation levels of only 2,321 becquerels -- less than half of the limit allowed by the farm ministry.

In fact, the survey showed that nearly one-fourth of the inspected paddies, where radiation-tainted rice was grown, had radiation levels below the set limit -- a finding that led the Fukushima Prefectural Government to conclude that there is no direct correlation between levels of radiation found in soil and the rice grown in that soil.

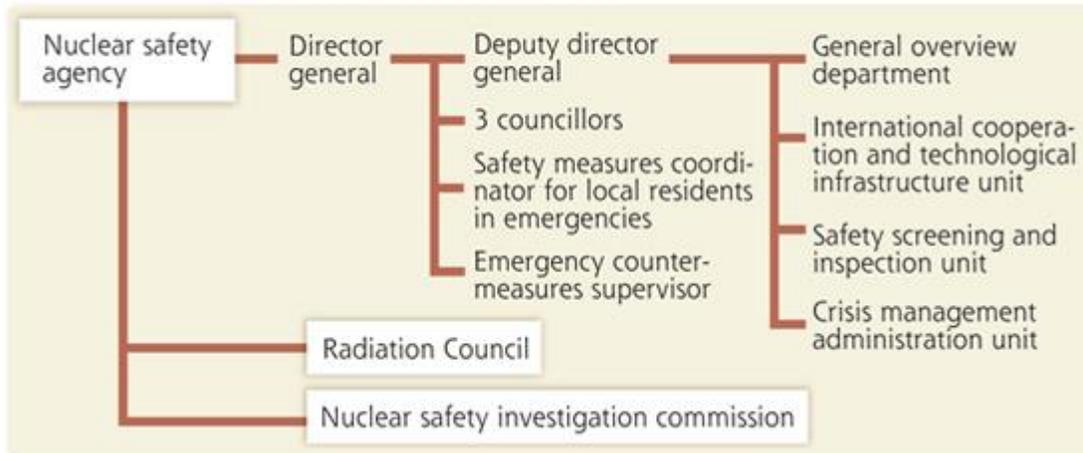
[Click here for the original Japanese story](#)

(Mainichi Japan) December 26, 2011

## Details of new N-agency announced / 485-strong body to tighten safety rules

The Yomiuri Shimbun

### Plan for nuclear safety agency



The outline of a new nuclear safety agency to be launched in April with the aim of overhauling the country's nuclear safety regulation system has been unveiled by the Environment Ministry.

One of the senior officials of the new agency, tentatively called the nuclear safety agency, will oversee the response of nuclear power plant operators in the event of emergencies, the ministry said Saturday.

The official will provide supervision and advice to power utilities in the event of an emergency by drawing on the lessons learned from the inadequate initial government response to the crisis at the Fukushima No. 1 nuclear power plant, according to the ministry.

The planned agency will integrate the two existing nuclear safety-related organizations: the Economy, Trade and Industry Ministry's Nuclear and Industry Safety Agency (NISA) and its watchdog organ, the Nuclear Safety Commission of the Cabinet Office.

The new organization will be staffed by 485 people, up about 100 from those staffing NISA, the existing regulatory body.

The increase in staff is needed because the planned agency will take over the functions of the environmental radiation monitoring department of the Education, Culture, Sports, Science and Technology Ministry, the Environment Ministry officials said.

Seven senior officials will become councillors or have higher posts. These will include a "safety measures coordinator" in charge of ensuring the safety of local residents at the time of a disaster, they said.

The administrative arm of the agency will comprise three units: an international cooperation and technological infrastructure unit; a safety screening and inspection unit; and a crisis management administration unit, as well as a general overview department.

The screening and inspection unit will have five "safety regulation supervisors" in response to criticism that safety screening arrangements before the March 11 nuclear accident were inadequate, the officials said.

The supervisors will be in charge of working out safety measures against a range of disasters, including earthquakes and tsunami, they said.

In addition, an independent body, tentatively named the nuclear safety investigation commission, will be created to oversee the overall nuclear regulation system. This body will have about five staff members.

The education ministry's Radiation Council that stipulates radiation ceilings for the prevention of radioactivity-caused health hazards will also be moved to the planned agency.

When the agency is launched, the number of senior vice ministers and parliamentary secretaries at the Environment Ministry will be increased to two, up from one each at present, the officials said.

In a press conference after an extraordinary Cabinet meeting Saturday, Environment Minister Goshi Hosono, who is also state minister in charge of the nuclear crisis, said the new safety agency may offer "the last chance" for the government to restore public confidence in nuclear safety regulations.

"We must clearly break away from the conventional nuclear safety regulations that have often played second fiddle to the promotion of nuclear power generation," Hosono said.

(Dec. 26, 2011)

## **Fumbling gov't faces huge challenges in 2012**

Hiroaki Koide, an assistant professor at the Kyoto University Research Reactor Institute (KURRI), is someone who has made one of the strongest impressions on me among the experts I've spoken to about the ongoing Fukushima nuclear disaster.

The public's views toward Koide have changed by the minute. He went from first being considered a nuclear "maverick" to a "pioneer" and finally to "one polemicist from the anti-nuclear camp." His ever-changing reputation has been symbolic of Japan's wavering between the promotion of nuclear energy and independence from it.

There's a reason why Koide came to mind as the year draws to a close. Last week, a government insider I've known for years wondered aloud whether they couldn't "drag someone like Koide" into the process of drawing up the government's new energy policy.

When I asked Koide about this, however, he responded: "I'm completely disillusioned with politics. No matter what committees are set up, nothing's going to change while politics continues to be carried out the way it is now. I won't accept a position from the government. When it comes to one-on-one public debates, however, I'm willing to go anywhere to participate."

Many of the experts who have been involved in the government's related committees since before the outbreak of the nuclear crisis on March 11 are pro-nuclear energy advocates. The inclusion of some anti-nuclear experts in discussions since March has created a bit of a stir, but they're still vastly outnumbered. Talks remain under the tight control of bureaucrats from the Ministry of Economy, Trade and Industry (METI) and the Ministry of Education, Culture, Sports, Science and Technology (MEXT), as well as staff dispatched from utility companies. The lineup is so skewed to nuclear energy promotion that it even gets a government insider anxious to get "someone like Koide" involved.

The government is now reviewing its energy policy in terms of a management overhaul at the stricken plant's operator, Tokyo Electric Power Co. (TEPCO), and comprehensive reform of the electric power system. It is beginning to look like TEPCO will be nationalized to ensure stable power supply, with the government obtaining at least two-thirds of TEPCO's shares. A final decision about the utility will be reached before account settlements for the fiscal year ending next March are made.

Meanwhile, the most significant point of contention within power system reform is nuclear power generation. The government claims it will present concrete energy policy options to the public next spring, with plans to finalize new policy by summer.

But that just isn't going to be possible. The government may be able to come up with options, but it won't be able to reach a decision. The issue of power reform is not something that the ruling Democratic Party of Japan (DPJ), which has bungled the relocation of U.S. Marine Corps Air Station Futenma and is floundering over the Yamba dam project, can handle.

Winning the public over is the biggest obstacle that lies ahead for the government. There is talk that some in the government and ruling party are advocating a referendum. But the government's planned timing of this process -- spring and summer of next year -- coincides with a critical time for Prime Minister Yoshiko Noda's cherished consumption tax bill. Can the government handle two such massive issues at once?

So what would happen if the debate over energy policy fails to pick up steam, and things proceed with the "nuclear village," a pro-nuclear collection of politicians, bureaucrats, academics and utilities, firmly in charge? A bureaucratic source offered the following vision: "Dependence on nuclear energy for our power supply can stay at (pre-March 11 levels of) 30 percent. This would still be lower than our original goal of achieving 50-percent dependence, so it would count as a 'reduction in nuclear dependence.' It would be acceptable to abandon the Monju fast-breeder project, but nuclear fuel reprocessing plants should be preserved. We would process MOX fuel from plutonium extracted from spent fuel, and export it at the same level as Britain and France."

This scheme is a pipe dream. Nuclear power plants across the country are being stopped for regular inspections, with no clear prospects of them being restarted. No one believes the government's recent announcement that "the crisis has been brought under control." This widespread mistrust is not something that one-sided rhetoric from government or business leaders can dispel.

Protests against an unjust system that forces rural communities to suffer for the power consumption of the country's cities has erupted far and wide. Some municipalities have even begun to return subsidies they received for hosting nuclear power plants to the national government.

If underestimating the public's anger and leaving decisions up to the nuclear village is Noda's political stance, then not just Koide, but also the rest of us, cannot help but be disillusioned. Changes must be made to the lineup of experts tasked to draw up energy policy, but the appeal is unlikely to be heard. Clearly, a possible hike in the consumption tax is not the only controversy that we'll face in the year 2012. (By Takao Yamada, Expert Senior Writer)

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 26, 2011

## **Fukushima accident shows need to prepare for the unexpected: panel**

TOKYO (Kyodo) -- A government panel investigating the nuclear crisis at the Fukushima Daiichi power plant said Monday the accident shows the need to prepare for unexpected events if the consequences of them happening could be disastrous, referring to the poor emergency responses by the plant operator and the government.

Releasing an interim report following some six months of investigation, the panel said that many problems related to the crisis were linked to the absence of measures to deal with severe nuclear accidents caused by tsunamis as well as the failure to assume that a nuclear crisis could occur in combination with a natural disaster.

"It cannot be denied that people who have been involved in nuclear disaster response and those in charge of managing and operating nuclear power plants have lacked the big-picture viewpoint for seeing nuclear disaster preparedness," the report said.

"In that point, there has been a major problem in nuclear disaster preparedness, which would not allow them to make the excuse that they were not able to handle the situation because...the plant was hit by tsunami waves beyond the scope of their assumptions," it said.

The remarks are in contrast with the outcome of an in-house investigation conducted by plant operator Tokyo Electric Power Co., which blamed the larger-than-expected tsunami for the failure to prevent the world's worst nuclear accident since the 1986 Chernobyl disaster.

With key buildings flooded by tsunami waves more than 10 meters high, the plant located on the Pacific coast in northeastern Japan lost nearly all of its power sources and consequently the ability to cool the reactors and spent fuel pools.

The report by the investigation committee led by Yotaro Hatamura, a professor emeritus at the University of Tokyo, said TEPCO misunderstood and mishandled the situation at the Nos. 1 and 3 reactors, which eventually suffered meltdowns along with the No. 2 reactor.

As for the No. 1 unit, injecting water into the reactor by using fire trucks was delayed mainly because officials at the plant's emergency headquarters mistakenly thought that a cooling system called an isolation condenser was functioning when it was not.

There was "a good chance" the actual situation could have been noticed, the report said, but reactor operators and headquarters staff apparently did not have sufficient knowledge about the equipment itself or how to handle it, which was an "extremely inappropriate" situation for a plant operator.

TEPCO "had not expected a situation in which all power sources would be lost at multiple reactors simultaneously due to an extremely severe natural disaster, and it had not provided enough training and education to respond to this situation," the report said.

In the case of the No. 3 reactor, meanwhile, some workers stopped an emergency cooling system without reporting to senior officials of the plant's headquarters.

If workers had been able to release the pressure in the Nos. 1 and 3 reactors and start injecting water earlier, the reactor cores might not have been damaged as much as currently believed and a smaller amount of radioactive substances might have been emitted, the report said.

The government's response in the early stage of the crisis was also problematic, with communications among officials at the prime minister's office insufficient and the emergency response center in the industry ministry not functioning well in performing its role of gathering information as stipulated in the nuclear disaster response manual.

Members of the industry ministry and the nuclear safety agency were "strongly frustrated by the lack of speed in information provision" by TEPCO, but even so they did not take such actions as sending agency staff to the company's head office, the report said.

The committee also said that the government's evacuation order issued to residents around the plant was not clear enough in that it sounded almost the same as telling them to "just run," and in some cases residents were found to have been evacuated to areas where radioactive substances had spread.

Summarizing its findings, the report said that TEPCO did not take steps to deal with severe accidents caused by tsunami and that nuclear regulators acted similarly. The possibility of such an incident was seen as very low and treated as an "unexpected" issue.

"But even if it is a phenomenon with a very low probability of occurring, it does not mean that you can ignore it. If an irreversible situation is going to happen...measures should be taken to prevent the situation," the report said.

Since launching its investigation in June, the investigation committee had conducting hearings from a total of 456 people as of Dec. 16. It is expected to release its final report next summer.

Gist of investigation report on Fukushima nuclear accident

The following is the gist of the interim report issued Monday by a government panel investigating the nuclear accident at Tokyo Electric Power Co.'s Fukushima Daiichi power plant.

The government:

- failed to communicate well within the prime minister's office.
- had problems gathering information through channels stipulated in the nuclear disaster response manual.
- did not use in issuing evacuation orders data from a computer system to predict the dispersal of released radioactive materials.
- failed to fully use a facility planned to serve as the local headquarters as it was unprepared for a rise in radiation levels.

TEPCO:

- misunderstood the functioning status of the No. 1 reactor's cooling system called the isolation condenser.
- had not trained reactor operators sufficiently to handle the isolation condenser.
- mishandled the No. 3 reactor's emergency cooling system.
- might have been able to lessen the damage of fuel inside the Nos. 1 and 3 reactors if it acted more appropriately.

The investigation committee:

- calls for the need to be prepared for low-probability events if the possible consequences could cause extremely huge damage.
- calls for the need to consider the possibility that a nuclear accident can occur in combination with natural disasters.
- believes that people involved in considering the country's nuclear disaster measures lacked a broader perspective on the issue.
- has so far not confirmed that reactor vessels were damaged by the March 11 earthquake, before being hit by ensuing tsunami waves.

(Mainichi Japan) December 26, 2011

## **Panel compiles interim report on nuclear accident**

A panel looking into the disaster at the Fukushima Daiichi nuclear power plant has severely criticized both the operator and the government for mishandling the accident.

The government panel released an interim report on Monday. Its investigations were based on interviews with about 450 people, including workers at the Tokyo Electric Power Company and government officials.

The report says that the utility itself predicted in 2008 that a tsunami larger than 10 meters high could hit the plant but that it failed to take preventive measures.

The report says that after the plant lost all its electricity following the March 11th earthquake and tsunami, workers mishandled the emergency cooling system at No 1 and 3 reactors.

The report says if fire trucks had been dispatched earlier to pump water into the reactors, there would have been less damage to the fuel rods, and smaller amounts of radioactive substances released into the air.

The report also describes the government's handling of the crisis as problematic.

It says lack of communication within the Prime Minister's Office in Tokyo prevented the government from making use of the so-called SPEEDI system that predicts the spread of radioactive substances.

Data from SPEEDI wasn't used when the government issued evacuation orders to residents living near the crippled Fukushima Daiichi power plant.

The report says the evacuation orders were not precise and failed to promptly reach the municipalities involved.

The panel intends to question Cabinet ministers and others to further learn how the government handled the crisis before it compiles a final report by next summer.

Monday, December 26, 2011 19:47 +0900 (JST)

## **Editorial: More detailed information needed in final report on nuclear crisis**

A fact-finding panel on an accident at the tsunami-hit Fukushima No. 1 Nuclear Power Plant should put more specific and detailed information in its final report on the still ongoing crisis.

The panel released an interim report on the crisis consisting of more than 500 pages on Dec. 26 after reportedly interviewing 456 individuals involved over a total of a 900-hour period.

While the report highlights problems involving plant operator Tokyo Electric Power Co. (TEPCO) and the government's response to the accident, it appears far from satisfying the public. The puzzle has been largely filled with pieces, but still fails to show the entire picture of the accident.

One of the reasons is that the panel has not finished interviewing Cabinet ministers concerned. Shortly after the crisis broke out, top government officials -- including Cabinet members concerned and the chairman of the Nuclear Safety Commission of Japan (NSC) -- as well as TEPCO executives, who were on the fifth floor of the Prime Minister's Office, were making decisions in response to the crisis.

Questions remain as to what these Cabinet ministers, who were playing a leading role in the decision-making, did or failed to do in efforts to bring the crippled plant under control and what problems emerged involving the chain of command. The panel cannot get to the bottom of the crisis unless these questions are answered. The investigators are urged to thoroughly examine these matters before they compile a final report on the crisis.

Another problem with the interim report is its failure to shed light on problems involving the "safety culture" that contributed to the accident.

TEPCO's preparedness for massive tsunami and serious accidents as well as the response to the ongoing crisis were extremely inadequate. The government's Nuclear and Industrial Safety Agency (NISA) was useless in responding to the crisis. The interim report bitterly criticized these problems, but should clarify why these entities have become so incompetent. Specifically, it should shed light on their historical backgrounds, collusive relations between the government and TEPCO and the mental conditions of insiders of these organizations from the viewpoint of group psychology.

The report also failed to completely answer questions that many members of the public have asked since the crisis occurred, such as why the government's prediction of how radiation would spread using the System for Prediction of Environmental Emergency Dose Information (SPEEDI) was not released promptly.

The report only pointed out that the government organizations concerned did not even think of proactively dispatching such information to the public. The panel should clarify whether someone in the government attempted to block the flow of such information or how it should have been utilized to help smoothly evacuate residents from affected areas.

Another problem is that the report took into consideration the position of TEPCO as a private company in considering the utility's inadequate preparedness for serious accidents. Even if there are limits to what it could have done as a private company to prevent such accidents, the panel must keep in mind that TEPCO is primarily responsible for safety measures at its nuclear power stations.

The report's failure to show the entire picture of the Fukushima nuclear crisis may be attributable to the way it was written. Some paragraphs show that the writer of the report mistakenly omitted some specific information in compiling it based on interviews with many people over such a long time. The failure to clarify the subjects of sentences and vague wording obscured the essence of the report.

The panel should take note of these problems in compiling a final report. Specifically, it should consider chronologically listing organizations' and individuals' actions since the nuclear accident so that readers can follow the flow of the response to the crisis.

Physicist Richard Feynman, a member of the fact-finding panel on the explosion of the U.S. space shuttle Challenger in 1986, wrote his personal view on the accident while remaining not bound by the organization's expectations for the panel's report and won sympathy from numerous members of the

public. The fact-finding panel on the Fukushima nuclear crisis should keep this in mind in verifying the facts related to the disaster before issuing a final report.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 27, 2011

## **Many Fukushima evacuees remain reluctant to return to homes near nuclear plant**

Municipalities near the crippled Fukushima No. 1 Nuclear Power Plant have started preparations to return to where they were before the outbreak of the nuclear crisis in March following the central government's announcement on Dec. 26 to redraw evacuation zones, but many evacuees are reluctant to return to their homes due in part to fears over long-running effects of radiation.

Local government leaders are trying to persuade evacuees to go back to where they were before the nuclear power station was crippled by tsunami triggered by the Great East Japan Earthquake on March 11, but an increasing number of affected people have become accustomed to their lives in areas where they have taken shelter.

Most of about 3,000 residents of Kawauchi village, whose eastern part falls within a government-designated evacuation zone within a radius of 20 kilometers from the troubled nuclear power complex, evacuated from their homes in the wake of the nuclear crisis. But an emergency evacuation preparation advisory was lifted in late September for the western part of the village where the municipal government building stands. Levels of radiation there are now low.

Kawauchi Mayor Yuko Endo is expected to declare it is safe to return home soon and urge all villagers to return to their homes by building 50 temporary houses in the western part of the village by next April. The local government functions, which have been operating in the Fukushima Prefecture city of Koriyama since the outbreak of the nuclear crisis, are expected to be relocated back to where they were.

According to a survey conducted by the local government in June, 80 percent of the evacuees from the village said they wanted to return to their homes. But a senior local government official said, "If we conduct a survey now, 80 percent of them would say they do not want to return."

"It is unreasonable to tell us to return by next spring," said a 56-year-old woman who lives in temporary housing in Koriyama. Following the nuclear crisis she had moved from one place to another such as relatives' homes and evacuation shelters before settling in a temporary housing unit in June. She has recently found a job at least for the time being. "I have gotten used to life in Koriyama," she said. On the other hand, it remains unclear when or even if the supermarket, hospital and the nursing home she used to work at before the disasters will reopen, as they are in the evacuation zone. "Is the municipal government telling us to fend for ourselves?" she said.

There are 139 people living in the village today. Following the lifting of the designation as an "emergency evacuation preparation zone," more people were expected to return and live there, but ironically nearly 50 people left the village. Mayor Endo said, "If the residents return, shops will reopen

and there will be places to work at. I am afraid of radiation, but I am afraid more of the fact that the villagers' desire to return is fading."

The same is true for Iitate village which created a goal of ensuring all of its villagers return to their homes five years from now. Iitate Mayor Norio Kanno said, "Unless we decontaminate (the village) quickly, people's relationships will fall apart."

Kazuo Ouchi, 53, who works for Japan Agricultural Cooperatives (JA), said, "I want to return, but I don't want my children to return." Ouchi took shelter in Fukushima city with his 10 family members including his parents and wife. His third son and first daughter go to public elementary and junior high school in Kawamata, respectively, but an increasing number of their schoolmates have been changing schools because it takes them one hour for a round trip to their schools. His ageing parents no longer say, "We want to return."

Katsutaka Idogawa, mayor of Futaba which is likely to be designated as a "difficult-to-return zone" under the government's new scheme, is considering a collective relocation of the townspeople to a "temporary town." But the government's functions are still based in Kazo, Saitama Prefecture, and its people have taken shelter all over the country. Such being the case, it is impossible for the mayor to discuss reconstruction with the townspeople and build consensus.

Emi Matsumoto, a 39-year-old housewife, was born and raised in Futaba. She now lives with her twins -- first-grade elementary school students -- in a city-rented housing unit in the Fukushima Prefecture city of Iwaki. Levels of radiation near her home in Futaba are low now, but she said, "Our grandchildren could be affected. I can't take the consequences. On the possible collective relocation of the townspeople, she said, "I can't follow such a plan. The townspeople have spent nine months in the aftermath of the earthquake disasters. The municipal government must consider what steps they should take after listening to voices of individual residents."

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 27, 2011

## **TEPCO dissatisfied with panel's view of severe accident measures**

TOKYO (Kyodo) -- Tokyo Electric Power Co. showed dissatisfaction Tuesday with a view suggested in an investigation report on the nuclear accident at the Fukushima Daiichi power plant that the utility should have taken precautionary measures to deal with severe nuclear accidents triggered by tsunami.

"It is not exactly right to say that we should have done so before March 11 (when the plant was hit by a huge earthquake and tsunami), although in hindsight the steps we had taken were not sufficient," a TEPCO official told a press conference, a day after a government panel released an interim report on its investigation.

Although TEPCO came up with a study in 2008 that tsunami over 10 meters high may hit the plant, the company justified its decision not to take immediate action because the figure was based on a "hypothetical calculation which did not have any scientific basis."

TEPCO also said that, even before the nuclear crisis, the plant operator was taking steps to deal with severe nuclear accidents that could result in serious damage to the reactor core through such measures as ensuring ways to release pressure from reactor containment vessels.

The report, compiled by the panel led by Yotaro Hatamura, a professor emeritus at the University of Tokyo, said that TEPCO did not take enough precautionary measures in anticipation of a severe accident that could be caused by tsunami like the one that triggered the Fukushima crisis.

"The Investigation Committee is of the view that specific measures against tsunami should have been in place including measures against severe accidents," the report said.

(Mainichi Japan) December 27, 2011

## **Fukushima rice farmers asking 'until when will this continue?'**

FUKUSHIMA -- With the government announcing a possible ban on future rice planting in areas where contaminated rice was detected, farmers in Fukushima Prefecture are on the verge of losing the little hope that has kept them going amidst months of torture.

"What should I do? There's really nothing to be done. I had to receive medicine from my doctor because I can't even sleep at night," says Eiji Watanabe, 62, a farmer from the Yoshikura (former Shibukawa) area in Nihonmatsu.

On Dec. 8, the government banned the shipment of rice harvested in Shibukawa this autumn after detecting radiation doses surpassing the provisional upper limit of 500 becquerels per kilogram in some of the region's paddies. A few weeks later, on Dec. 27, it was announced that rice planting in the region will likely be banned for the next harvest year.

For farmers like Watanabe, however, -- in whose rice radioactive cesium has not been detected -- this means one more year of enormous financial and emotional damage.

Surrounded by six tons of stored rice packages, harvested this autumn, and with nowhere to ship them, Watanabe is at a loss as to what to do. "I understand that they (the government) can't allow the shipment of potentially affected rice, but if we can't plant next year it will be very difficult. I wonder until when this will continue."

Prior to the Fukushima No. 1 Nuclear Power Plant disaster, Watanabe -- the eighth generation of a family of farmers -- used to ship about 50 tons of rice to small shops in Tokyo and other retailers every year. However, in mid-March he received a call from a shop owner, to whom Watanabe had sold rice for 17 years, telling the farmer he can no longer buy his rice. "Customer won't buy it," he was told.

The shop cancelled orders for some nine tons of rice from this year's harvest and 2.7 tons of last year's - the total sales of which usually stand at about 2.98 million yen. Watanabe was also asked to sign a cancellation contract, the postscript of which read: "If the government and Tokyo Electric Power Co. (TEPCO) had taken appropriate measures after the nuclear disaster, we wouldn't have had to do this. The rice had been very popular among our customers."

"The shop owner was apologetic," says Watanabe.

"It is my duty to leave this rich land to my future generations," says Watanabe, whose son -- a university student in Tokyo -- said that one day he would return to Fukushima. "I want to tell this to the authorities: Give me back my land," said Watanabe.

Hiroyuki Suzuki, a friend of Watanabe's and also a farmer in the neighboring village of Otama, has plans to file a lawsuit against TEPCO, the operator of the crippled power plant, next year, demanding compensation for losses caused by the nuclear crisis. Encouraged by his 61-year-old friend, Watanabe also plans to take part in the lawsuit and has already turned to law books for reference.

Like farmers, officials from the agricultural administration department in Fukushima, a city where rice shipments continue to be banned in two districts, Onami and Watari, can't hide their bewilderment at what to do.

"The majority of inspected rice packages in Onami had radiation of less than 100 becquerels per kilogram. Yet, shipments were banned for the whole area. We don't know how to explain this to farmers," said an official from the department. "Farmers hope that decisions are reached only after every paddy is inspected one by one. If farmers don't produce rice for a whole year, it is unclear whether they can return to normal farming later on. The industry is under threat in the whole area."

"I've lived through bad harvests and droughts, but I've always looked ahead with hope, because I knew there was a future. This time, however, it seems like there's no hope for the next harvest," said Morio Sato, 74, a seventh generation farmer, as his voice choked with sadness.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 27, 2011

## **NISA 'powerless to handle severe accident' / Interim report: Agency merely urged TEPCO to provide information, failed to control situation**

Shin Watanabe / Yomiuri Shimbun Staff Writer

An interim report released Monday by a government panel investigating the crisis this year at the Fukushima No. 1 nuclear plant stated that the Nuclear and Industrial Safety Agency (NISA) and other governmental organizations failed to deal with the crisis effectively in their respective capacities and also failed to cooperate with each other.

Ahead of the establishment in April 2012 of a new regulatory body to oversee nuclear safety, many problems with NISA have been revealed.

The interim report by the government's investigation committee said the agency could hardly fulfill its function as the supervisory body in the wake of the accident, referring to its lack of self-awareness in dealing with the issue and actively collecting relevant information.

After the crisis began, the agency played the role of secretariat of the Nuclear Emergency Response Headquarters set up at the Prime Minister's Office. It should have become the core organization for gathering information from various organizations, such as the power plant and its operator, Tokyo Electric Power Co.

However, immediately after the accident, NISA relied on information obtained by staff dispatched by TEPCO's head office to the agency. The staff members got the information from TEPCO's head office by cell phone.

At that time, TEPCO's head office shared information with the local headquarters in Fukushima Prefecture in real time through a videoconference system.

But the agency did not dispatch its officials to TEPCO's head office, which is only about 600 meters away from the agency's office.

As the agency could not obtain sufficient information about the ongoing situation, the Prime Minister's Office apparently initiated its own direct contacts with TEPCO executives and the nuclear power plant staff. This situation led to a muddying of the command channels.

NISA's nuclear safety inspectors, who should have played the role of nuclear watchdog, apparently lacked a strong will to deal with the crisis.

During the accident, four inspectors were at the nuclear power plant. But they temporarily evacuated around 5 a.m. on March 12. They returned to the plant the next morning, but left again on the evening of March 14 because of a hydrogen explosion at the No. 3 reactor before noon that day.

The interim report severely criticized NISA's instructions to TEPCO as having little influence on decision-making at the nuclear power plant, as most of the agency's instructions went no further than urging TEPCO to provide correct information as soon as possible.

Yohishiro Nishiwaki, a visiting professor at the University of Tokyo and former director of the agency's nuclear power inspection division, said: "It's difficult to deal with severe accidents without extensive and sufficient knowledge. But ordinary safety regulations by the agency mainly aim at preventing severe accidents [rather than dealing with severe accidents]."

"The agency lacked both human resources and knowledge to respond to the emergency," Nishiwaki added.

Regarding a new nuclear safety agency set to succeed the current agency, the interim report stated: "It is necessary to develop professional competence to provide appropriate advice and leadership to the responsible personnel and relevant organizations that are in charge of emergency response."

===

## Poor communication blamed

The interim report also found the Prime Minister's Office caused greater confusion by making important decisions without sufficient consultations with concerned organizations.

As an example, the interim report described how then Prime Minister Naoto Kan responded to the injection of seawater into the No. 1 reactor on the night of March 12, one day after the Great East Japan Earthquake. He was later criticized for trying to stop the operation out of concern that it would cause a recriticality at the reactor.

According to the interim report, the crisis management center in the basement of the Prime Minister's Office was already aware that the power plant had started the sea water injection when Kan and other top government officials--in the prime minister's working room on the fifth floor--were still discussing concerns about the possible recriticality without being informed of the fact.

The interim report suggested such confusion could have been prevented if the people in the prime minister's working room and the crisis management center had sufficient communication with each other.

While continuing the discussions, Kan issued an instruction at 6:25 p.m. on March 12 that the evacuation zone should be expanded to a radius of 20 kilometers around the plant from the initially designated 10 kilometers.

The interim report found the decision also was related to concerns about the possible recriticality, but the order was issued without consulting concerned ministries and agencies or local governments.

Areas outside the 10-kilometer zone had not been subject to emergency drills before the outbreak of the crisis. Therefore, authorities were not prepared at all to evacuate residents in the newly designated zones. Procedures for briefing concerned local governments and securing shelters were among the missing elements.

As a result, local governments near the crippled plant were forced to decide how to evacuate residents without sufficient information, according to the interim report.

"Residents [near the plant] eventually became very distressed by the mixed messages they were getting," the report stated.

Nobuo Ishihara, who served as deputy chief cabinet secretary at the time of the 1995 Great Hanshin Earthquake, described disaster response as "a battle against time."

"Therefore, the government has to gather all information in an integrated manner," Ishihara said. "The Democratic Party of Japan-led government might have failed to sufficiently communicate with bureaucrats [following the quake] under its slogan of politicians taking the initiative in carrying out policies."

(Dec. 28, 2011)

## Locals fume at poor N-crisis response

The Yomiuri Shimbun

The interim report on the crisis at the Fukushima No. 1 nuclear power plant has produced an angry backlash toward the poor response by the government and Tokyo Electric Power Co. among people who were forced to evacuate from around the stricken plant.

"We had no idea where we should run to," said Reiko Koizumi, 69, who before the crisis lived with her 36-year-old daughter in the Tajiri district of Namiemachi, Fukushima Prefecture. Her home is inside the 20-kilometer exclusion zone that now surrounds the nuclear plant.

Koizumi said they first fled to the Tsushima district of Namiemachi on March 12 after an explosion rocked one of the plant's reactor buildings. They were not able to get any further because their car ran out of gas, Koizumi said.

In its interim report released Monday, a government panel investigating the cause of the crisis singled out the government's failure to swiftly provide the public with data on the spread of radiation from the System for Prediction of Environmental Emergency Dose Information (SPEEDI).

"If the data had been provided, municipalities and residents could have chosen their evacuation routes and directions more appropriately," the report said.

SPEEDI data released later showed radioactive substances leaking from the plant had been predicted to spread along the path Koizumi and her daughter evacuated.

"We didn't even know SPEEDI existed," said Koizumi, who now lives in Shirakawa in the prefecture.

Hiroki Sato, a 53-year-old employee of the JA agricultural cooperative who lives with his parents, wife and their four children in Minami-Soma, evacuated to the home of his in-laws in Iitatemura on March 13.

"I thought the village was safe because of the mountain between the village and the plant," Sato said.

However, high levels of radiation were later measured in the area, and the entire village was designated part of a planned evacuation area in April.

Sato and his family ended up returning to Minami-Soma, where radiation levels have been lower than in Iitatemura.

"If the SPEEDI data had been released, we would've gone in a different direction," Sato said. "It was terrible risk management."

Criticism has also been voiced from municipal governments affected by the nuclear disaster.

Namiemachi Mayor Tamotsu Baba said, "Our residents could have fled to Yamagata or Niigata prefectures if the SPEEDI data had been available." The village's coastal areas are part of the no-entry zone and its inland mountainous areas are part of the planned evacuation zone.

Katsuya Endo, mayor of Tomiokamachi, also criticized the poor handling of the crisis by the government and the plant operator.

"Their management of the crisis was sorely lacking," he said. "It's like the government and TEPCO never even tried to cooperate in the initial response."

The entire village is now part of the no-go zone.

(Dec. 28, 2011)

## **Radioactive cesium in cedar pollen in Fukushima poses no health hazard: gov't agency**

Levels of radiation in cesium contained in cedar pollen in Fukushima Prefecture, which hosts the crippled nuclear power plant, are so low that they will not pose any health hazard, the Forestry Agency said.

The agency released an interim report on levels of radioactive cesium in cedar pollen checked at 87 locations in Fukushima Prefecture. Based on maximum levels of cesium measured at 87 spots in the prefecture, the level of radiation a person can be exposed to by inhaling cedar pollen is 0.000192 microsievert per hour, the agency said. Therefore, there is no need to worry about radiation exposure by inhaling cedar pollen, the agency said.

The agency decided to conduct the survey because people have a "strong interest" in cedar pollen which could contain radioactive cesium due to contamination of forests with cesium emitted from the troubled Fukushima No. 1 Nuclear Power Plant. Cedar pollen itself flies as far as several hundred kilometers.

The agency collected male cedar flowers that release pollen at about 180 locations in eastern Japan including Fukushima Prefecture, and it compiled the interim report focusing on data on radiation levels in male cedar flowers picked in areas close to the troubled nuclear power station in Fukushima Prefecture.

Of the 87 locations in Fukushima Prefecture, male cedar flowers from Namie carried 253,000 becquerels of radioactive cesium per kilogram -- the highest level of all the male cedar flowers sampled in eastern Japan. But one piece of cedar pollen is very light, and even if the agency calculated the level of radiation an adult person is exposed to per hour using the largest amount of cedar pollen in the air detected over the last nine years when data on cedar pollen is available, then that figure is still only 0.000192 of a microsievert. The agency said 2,200 pieces of cedar pollen per 1 cubic meter -- the largest amount of cedar pollen in the air -- were detected in March 2008.

Masahiro Fukushi, professor at the Tokyo Metropolitan University's graduate school conducted a separate but similar survey in November. After analyzing male cedar flowers collected from Okutama, northwestern Tokyo, he found that 93 becquerels of radiation were detected in male cedar flowers per

kilogram. Fukushi said, "This is at a level which we need not worry about its impact on humans. If people are still worried about it, they should wear a mask or goggles to protect against pollen."

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 28, 2011

## **Fukushima governor demands TEPCO decommission all its 10 nuke reactors**

FUKUSHIMA -- Gov. Yuhei Sato has demanded that Tokyo Electric Power Co. (TEPCO), the operator of the crippled nuclear plant, decommission all its 10 nuclear reactors in the prefecture.

Sato made the demand in a meeting with TEPCO President Toshio Nishizawa at prefectural government headquarters in the city of Fukushima on Dec. 27. Nishizawa stopped short of mentioning the possibility of decommissioning the reactors, and **left the prefectural government without answering questions from reporters.**

Nishizawa visited the Fukushima Prefectural Government's headquarters to report to the governor that the power supplier has completed Step 2 of the road map to bring the tsunami-hit Fukushima No. 1 Nuclear Power Plant under control.

In the meeting, Sato strongly demanded that TEPCO decommission and dismantle all 10 reactors at the utility's Fukushima No. 1 and 2 nuclear plants.

"Fukushima Prefecture will build a society that won't rely on nuclear energy, and demands that all the reactors in the prefecture be decommissioned and dismantled," Sato told Nishizawa.

In response, the TEPCO head only said, "We'll sincerely take measures to ensure safety, pay compensation to those affected by the disaster and decontaminate tainted areas."

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 28, 2011

## **Promoter of controversial fast-breeder reactor project appointed to top bureaucratic post**

The Education, Culture, Sports, Science and Technology Ministry has decided to appoint a high-ranking official who promoted the controversial project to develop a fast-breeder nuclear reactor to its top bureaucratic post.

The ministry is set to appoint deputy minister Yasutaka Moriguchi as administrative vice minister, effective on Jan. 6.

Since he promoted the Monju fast-breeder reactor project as head of the ministry's nuclear energy division, his appointment as the top bureaucrat in the ministry could have influence on discussions on whether to decommission the reactor.

Education, Culture, Sports, Science and Technology Minister Masaharu Nakagawa said he named Moriguchi as top bureaucrat in the hope that he will deal with the Fukushima nuclear crisis in an appropriate manner.

"We expect he'll properly respond to the nuclear power station accident. Since he is knowledgeable about nuclear energy, he will make realistic judgments with technological matters in mind," the minister said.

Moriguchi joined the now defunct Science and Technology Agency in 1976, and **has worked mainly on nuclear energy and space development.**

In May 1999, when he was director of the Power Reactor Development Division of the agency's Atomic Energy Bureau, Moriguchi appeared in a TV debate program on Monju and underscored the need for the project.

"In the short term, Monju may not be needed. In the long term, however, it'll be necessary to increase plutonium in fast-breeder reactors and burn it. If the use of atomic power is disapproved, then how should we secure an alternative energy source?" he said in the program.

 [Click here for the original Japanese story](#)

(Mainichi Japan) December 28, 2011

## **Edano asks TEPCO to mull option of temporary state control**

TOKYO (Kyodo) -- Industry minister Yukio Edano told Tokyo Electric Power Co. President Toshio Nishizawa on Tuesday to consider putting the utility under temporary state control as one of the options to fundamentally bolster its financial standing, while warning against the company's moves to resort to electricity bill hikes.

The economy, trade and industry minister made the request to the operator of the Fukushima Daiichi nuclear power plant after the utility sought an additional 689.4 billion yen in aid from a state-backed entity to secure funds for colossal compensation payments to people and companies harmed by the nuclear disaster at the plant. While funds to pay compensation is provided by the Nuclear Damage Liability Facilitation Fund, TEPCO has said that it is in a tough business condition due to growing fuel costs to boost thermal power generation to compensate for lost nuclear power production.

"I think there is the need to fundamentally reinforce TEPCO's financial basis to appropriately handle the accident and the decommission work of (the crippled reactors)," Edano said, adding that he wants TEPCO and the fund to consider crafting a comprehensive special business plan on TEPCO in March "without ruling out any possibility, including temporary state control."

The comprehensive plan is a revised version of the current special business plan, in which the utility promised to cut more than 2.55 trillion yen in costs over 10 years and the government decided to provide about 891 billion yen from the fund during this fiscal year.

Nishizawa said that the utility would craft the comprehensive plan "based on the instructions" given by Edano, but did not elaborate on whether the company is going to accept the injection of public funds.

Edano also told Nishizawa that electricity bill hikes should not be justified "under the banner" that stable electricity supply is needed, in an apparent warning to TEPCO, which announced last week that it will raise electricity charges for corporate users from next April and seek to hike household rates as well.

"An (electricity) rate revision should be conducted in combination with the restoration of public confidence" in TEPCO, said Edano, who would need to approve any household rate increase.

As for TEPCO's request for additional funds from the state-backed entity, Edano said that he wants the utility to step up its efforts to realize swift compensation payments as a precondition for issuing an approval for providing financial assistance.

It is the second time TEPCO has asked for assistance from the entity. TEPCO said it needs more funds than earlier anticipated partly because a government panel has set guidelines for compensation payments to people who evacuated voluntarily in the wake of the world's worst nuclear crisis since the 1986 Chernobyl disaster.

The utility is required to repay the money to the body in the form of what is called "special contributions."

(Mainichi Japan) December 28, 2011

## **Govt requests sites for waste soil storage**

The government has officially requested permission to temporarily store radioactive waste soil in 8 municipalities around the crippled Fukushima Daiichi nuclear plant.

Environment Minister Goshi Hosono on Wednesday met governor Yuhei Sato of Fukushima Prefecture and the mayors of 8 districts of Futaba County.

Hosono said Futaba County was chosen because areas exposed to over 100 millisieverts of radiation per year are concentrated there. He said this makes ordinary decontamination methods impractical.

Hosono said the government will buy up or borrow land on long-term leases to build temporary storage sites.

After the meeting, Governor Sato said it will be very painful for the people of Futaba County to accept the government request. He said the government should adopt great courtesy in explaining its plan to

the relevant municipalities and residents.

The governor said he would decide whether or not to allow the plan after listening to responses from the municipalities.

Wednesday, December 28, 2011

## **Residents reluctant to accept govt plan**

Local residents are reluctant to accept the government's plan to build a temporary facility for storing radioactive soil in Futaba County.

Kazumi Takano, who was evacuated from Futaba to Saitama Prefecture, says he does not know how long it will take for contaminated soil to become safe. His home is located 4.5 kilometers from the crippled Fukushima Daiichi nuclear power plant.

Takano says he objects to the facility being built in the area because there is not enough space to store contaminated soil from other regions in addition to soil from the town.

Haruo Takaoka, whose home is located 7 kilometers from the nuclear plant, says he hopes the storage facility will not be built in his town. But he also says that if no other districts are ready to accept it, there seems to be no other option than to build one somewhere in Futaba County in the light of the urgent situation.

The mayor of Namie town, Tamotsu Baba, says he cannot accept the government's request to build a storage facility in the area.

**He says that if the facility is built, evacuees might feel they can no longer return home.**

Baba adds that he will discuss the request with officials from other local governments.

Environment Minister Goshi Hosono says he is very sorry to ask the people in the Futaba district to accept the facility. He says he knows that the district has long helped supply power to Tokyo and other areas of Kanto.

Hosono stressed that the government has no choice but to build storage facilities as it proceeds with work to decontaminate radioactive soil. He said he is aware that the government is being criticized for choosing a site in the district, but that he will seek to win the understanding of local residents.

The Environment Ministry will make a final decision about the location of the storage facilities after consulting with officials from Fukushima Prefecture and local governments.

Wednesday, December 28, 2011

## **Hosono seeks OK for N-storage / Officials in Fukushima Pref. asked to accept temporary waste disposal site**

The Yomiuri Shimbun

FUKUSHIMA--Environment Minister Goshi Hosono on Wednesday officially asked Fukushima Prefecture and the heads of eight municipal governments in the prefecture's Futaba County to approve construction of a midterm storage site for radioactive waste in the county.

Hosono met with Fukushima Gov. Yuhei Sato and the mayors of eight towns and villages in the county and told them the central government plans to build the storage facility in the county.

The facility will store waste, including soil, contaminated with radioactive substances released from Tokyo Electric Power Co.'s crippled Fukushima No. 1 nuclear power plant.

Sato told Hosono he would respect opinions of local residents on whether to accept the request.

If the town and village mayors accept its request, the central government, in cooperation with the local governments, will select a site in the county where the facility will be built.

Hosono met with the governor at 9 a.m. at the prefectural government office building and told Sato: "I can't find words of apology to ask for the construction of the facility in Futaba County. But we'll make all possible efforts to obtain understanding."

Sato said: "It's an extremely hard and severe request. I'll consider it very seriously and will seek opinions of the mayors. I want the central government to carefully explain the project to local residents."

Hosono then met with the mayors of the municipalities--including Okumamachi and Futabamachi, which each include part of the power plant's grounds--in a nearby hotel and told them the plan.

After the meeting, Hosono told reporters, "I received some positive opinions."

Hosono cited two reasons why the facility should be built in the county.

First, the county has some areas where estimated levels of annual exposure to radiation are 100 millisieverts or higher, he said. It will be extremely difficult for residents to return to such areas in the foreseeable future, even if decontamination work is done.

Second, the county is near places where a huge amount of soil contaminated with high levels of radioactive substances will be gathered during decontamination work, said Hosono.

According to a road map the ministry released in October, the basic design of the facility and procurement of the land will be completed by the end of fiscal 2013, and contaminated soil and other waste may begin to arrive in January 2015.

(Dec. 29, 2011)

## Japan starts operating new centrifuges for enriching uranium

AOMORI (Kyodo) -- Japan Nuclear Fuel Ltd. started on Wednesday the operation of new, more efficient centrifuges **at its uranium enrichment plant in Rokkasho, Aomori Prefecture.**

After a warm-up operation, the centrifuges -- each capable of processing enrichment four to five times more efficiently than a previous one -- will start producing uranium products around March, the company said.

**In one year of operation, the new centrifuges can enrich one-third of uranium required for a 1-gigawatt reactor per year,** according to the operator.

Japan Nuclear Fuel plans to replace all old units with new ones over the next decade at the enrichment facility that went on-stream in 1992.

(Mainichi Japan) December 29, 2011

## Fukushima plant's backup generator failed in 1991

The operator of the Fukushima Daiichi nuclear plant failed to take preventive measures after a backup generator was inundated by a leaking pipe 20 years ago.

Former employees of the Tokyo Electric Power Company told NHK that the problem occurred in October 1991.

They said water leaked from a pipe and entered the basement of the Number 1 reactor's turbine building. This caused the failure of one of the two backup generators.

A former engineer at the Fukushima plant said he told his superiors that tsunami could damage the emergency generators in the basement, as the turbine buildings are close to the sea.

**TEPCO installed doors to block water leaks in the rooms hosting the backup generators, but did not move them above ground to avoid tsunami damage.**

The plant's reactor cooling system failed when the emergency generators in the basement were inundated by the March 11th tsunami. All power sources were lost.

**Japan's Nuclear Safety Commission says it will revise the safety guidelines for designing nuclear plants and require the installation of additional power sources. [ça n'est pas encore fait, plus de 9 mois après la catastrophe ?]**

Thursday, December 29, 2011

## **TEPCO neglected anti-flood measures at Fukushima plant despite knowing risk**

A room housing an emergency power system at the Fukushima No. 1 nuclear plant had been submerged due to a pipe leak 20 years ago, plant operator Tokyo Electric Power Co. (TEPCO) revealed Dec. 29.

The utility's latest revelations indicate that the company had failed to institute measures against flooding despite knowledge that it was possible.

According to TEPCO, the incident took place on Oct. 30, 1991, when seawater used as reactor coolant leaked from a pipe inside the turbine building of the plant's No. 1 reactor. Although the emergency power system room was flooded, the power supply was not cut. The reactor, however, was stopped for the day.

Both the emergency power room and pipe were located on the basement floor of the building. The corroded pipe leaked water at a rate of 20 cubic meters per hour, which penetrated the room with the reactor's emergency power system through the door and holes for cables. Of the two power sources, one was completely submerged, but its drive mechanism remained unaffected.

Water from tsunami following the Great East Japan Earthquake in March this year flooded the power plant's emergency power systems and power switchboards through aboveground openings, disabling them. The reactors subsequently overheated, leading to reactor meltdowns.

(Mainichi Japan) December 30, 2011

## **Editorial: Gov't should promote renewable energy as myth of nuclear power's cheapness shattered**



One of the reactor buildings at the Fukushima No. 1 nuclear plant destroyed by hydrogen explosions is seen in this photo taken with a hidden camera. (Photo courtesy of Tomohiko Suzuki)

"The cost of nuclear power generation is cheap" -- we have repeatedly heard such a line as part of the reasoning for promoting nuclear energy. The myth of the cheapness of nuclear power generation collapsed following the catastrophe at the Fukushima No. 1 Nuclear Power Plant.

A government panel set up in the wake of the nuclear disaster estimates that the cost of nuclear power generation now stands at a minimum of 8.9 yen per kilowatt hour -- 1.5 times higher than the figure presented by utilities and the government before the disaster. If the costs for decontaminating areas affected by radioactive materials, decommissioning the damaged reactors at the Fukushima No. 1 nuclear plant and compensating for damages emanating from the nuclear crisis soar further, the cost of nuclear power generation would be even higher.

Considering the fact that the costs of coal-fired power generation and liquefied natural gas (LNG)-fueled power generation stand at somewhere near 10 yen per kilowatt hour, respectively, the superiority that nuclear power generation had enjoyed in terms of "cost performance" can be said to have been shattered.

Even wind power generation and geothermal power generation could rival with nuclear power generation in terms of cost performance depending on conditions, while the cost of solar power generation is likely to become cheaper in 20 years time. The government should take this opportunity to proceed with full-scale measures to invest in and promote renewable energy sources, which had previously been shunned for their "high costs."

What makes the government panel's latest estimation significantly different from previous calculations is that the panel took into consideration the social costs emanating from nuclear power generation, such as accident risks, on top of the expenses for the construction, operation and maintenance of nuclear power plants as well as their fuel costs.

In hindsight, it was a mistake that we failed to take into account accident risks involving nuclear plants. It shows that the myths of the safety and the cheapness of nuclear power generation were closely intertwined with each other.

The government panel has also indicated that energy savings per household are tantamount to generating power and pointed to the potential of a dispersed power system, to which we should pay renewed attention. The panel's estimates should be indicating the feasibility of the government's policy of cutting down on nuclear power generation.

In the meantime, we should take heed of the fact that the figures currently presented are highly uncertain. Experts were sharply divided in their opinions over how nuclear accident risks should be evaluated when they were discussing how they should calculate the latest estimates. While some experts projected that the odds of such a serious accident as the Fukushima disaster happening were once every 100,000 years, their opinions are way too different from ordinary people's feelings considering the fact that we have seen three major nuclear accidents across the globe -- Three Mile Island in the United States in 1979, Chernobyl in the former Soviet Union in 1986, and Fukushima in 2011 -- over the past several decades.

It should be noted that the government panel has given minimum estimates because it excluded accident probabilities from their estimates for nuclear accident risk-related costs. The panel has also indicated that the cost of the nuclear fuel cycle -- which the government describes as the core of Japan's nuclear energy policy -- is almost twice that of direct disposal. The nuclear fuel cycle program, albeit the large amount of money spent on it, should be reviewed from square one.

The panel's estimates should be examined by people from various quarters in order for Japan to come up with the best mix of energy policies. Those estimates should serve as the first step toward achieving such diverse energy policies.

(Mainichi Japan) December 29, 2011

## **Gov't request for nuclear storage facility site sends shockwaves through Fukushima**



The Watari district of Fukushima city is seen in northeast Japan, Sunday, Nov. 20, 2011. (AP Photo/ Greg Baker)

The government's request that an interim facility to store soil and other waste contaminated with radiation be built somewhere in Futaba county near the crippled nuclear power plant sent ripples of concern through local governments and residents in Fukushima Prefecture.

On Dec. 28, Environment Minister Goshi Hosono met and asked local leaders in Fukushima Prefecture for permission to build an interim storage facility somewhere in Futaba county in which two municipalities host the troubled Fukushima No. 1 Nuclear Power Plant.

Some local residents, particularly those people who want to return to their homes in areas near the nuclear power station, are worried that such a storage facility could stay there permanently. But those residents who have given up hope of returning to their homes have tended to accept the government request.

At the meeting with Hosono in Fukushima city on Dec. 28, Okuma Mayor Toshitsuna Watanabe said, "I will take the proposal seriously and consider it." Katsurao Mayor Masahide Matsumoto said, "We have no option but to accept it because it is needed." Some local residents are paying attention to the fact that there will be no places to dispose of such waste unless the interim storage facility is built, while hoping that new jobs will be created for the construction of the facility.

Nevertheless local leaders and residents are faced with a dilemma. In order for residents to return to their homes, it is necessary to decontaminate their municipalities, but the interim storage facility could hamper residents' efforts to go back to their homes. Namie Mayor Tamotsu Baba said, "Residents will not be able to return because the negative image is so strong." Kawauchi Mayor Yuko Endo voiced concern about the possibility that the interim storage facility could be used permanently. "We want the government to legally guarantee (that the facility will be used only for 30 years)."

Soichi Saito, 62, who lives in a temporary house in Iwaki, is skeptical about the government's intentions, saying, "They say it is an interim storage facility, but I suspect that it will become a final disposal site." He had run a farm in the town of Futaba with his family before the disasters struck northeastern Japan.

His 84-year-old mother, Yoshiko, said with tears in her eyes, "I want to grow sweet and tasty spinach again." But she added, "Even if we go back, we probably won't be able to farm the land because of harmful rumors (about radiation). But I don't want to give up easily because we will disappoint our ancestors."

A 60-year-old farmer, who moved into a temporary house in Aizuwakamatsu from Okuma, said, "Is it fair that we send electricity to Tokyo but waste will be put in Futaba county? If we accept it, no one will be able to live here."

Meanwhile, Masumi Kowata, 56, from Okuma, who lives in a temporary house in Aizuwakamatsu, said, "Even if we use tax money to try to decontaminate high dosage areas, they will not become livable. It is better for us to accept the facility and have the government prepare other places for us to live instead."

When the government plan was unveiled, Kowata was angry, saying, "Is the government going to put more burden on the people of Fukushima?" But when she visited her home briefly, she realized that levels of radiation were so high in the area near her home. "Even if we want to go back, I don't think we will be able to live in our hometown that is tainted by radiation," she said. More and more members of a women's civic group formed in the wake of the disasters have tended to accept the interim storage facility as they now think that it would be needed to facilitate decontamination work, she said.

(Mainichi Japan) December 29, 2011

## **New Fukushima Daiichi investigation to start**

A panel of experts investigating the cause of the accident at Japan's Fukushima Daiichi nuclear plant will begin full-fledged work in January.

The body is independent from the government. It held its first meeting earlier this month and decided to set up 4 working teams.

Chair Kiyoshi Kurokawa says the experts will examine the interim report on the investigation by the government and Tokyo Electric Power Company, the operator of Fukushima Daiichi. Kurokawa adds the panel will focus on problems the government and TEPCO were unable to address.

The experts are also expected to scrutinize the nuclear crisis response by former Prime Minister Naoto Kan and other senior government officials.

In addition, they are supposed to come up with proposals for Japan's future nuclear policy and administrative structure so the recurrence of a major accident would be prevented.

The panel is required by law to submit a report in about 6 months.

Friday, December 30, 2011

## **City and citizens go from confrontation to cooperation on decontamination work**

KASHIWA, Chiba -- In this city where radiation from the Fukushima No. 1 nuclear plant is relatively high, citizens' groups and the municipal government have moved from confrontation to cooperation as they work to decontaminate playgrounds and measure radiation.

Following the meltdowns in Fukushima, the city repeatedly released statements that "The radiation is at a non-problematic level," and citizens grew frustrated with a lack of action. Mothers worried about their children's health came together via word-of-mouth and the Internet, and in June submitted a petition signed by over 10,000 people calling on the city to do something about the radiation.

Surprised city officials responded in July, ordering elementary and junior high schools to decontaminate their grounds. In September, Mayor Hiroyasu Akiyama wrote an apology in a city newsletter reading, "We understand the citizens gave us a scolding for not appropriately addressing their concerns. We sincerely apologize."

In October, young fathers used Twitter and blogs to call for volunteers to do decontamination work. Wearing rubber gloves and masks, they used shovels to remove topsoil at three children's facilities. Representative Teruo Kawada, 36, said, "We want to continue living in Kashiwa with our children. We won't depend only on the government, and we want to do the work cheerfully, not solemnly."

Another group of around 10 people takes radiation measurements in parks using the same methods as city employees. They send the data to the city, which will do cleanup work starting from sites with the highest radiation.

The city is planning a three-year decontamination plan starting from next fiscal year, with costs estimated to pass 3.3 billion yen.

(Mainichi Japan) December 31, 20

## **Nuclear decontamination law to go into full force Sunday**

TOKYO (Kyodo) -- A nuclear decontamination law will go into full effect Sunday, setting the stage for full-fledged efforts to clean up buildings, soil and waste contaminated with radioactive materials in areas affected by the nuclear crisis at the Fukushima Daiichi power plant in Fukushima Prefecture.

The central government will be responsible for the cleanup efforts in a no-go zone around the crippled plant and other evacuation areas in the seaside prefecture also heavily hit by the March 11 earthquake and tsunami.

Under the law, which was partially enacted in August, decontamination plans will be formulated by 102 municipalities in eight prefectures where radiation doses are expected to exceed 1 millisievert a year on top of natural background radiation and that from medical treatment.

The cleanup cost in the areas will be shouldered by the central government. The eight prefectures are Iwate, Miyagi, Fukushima, Ibaraki, Tochigi, Gunma, Saitama and Chiba.

The Environment Ministry is set to launch a 60-odd member office in the city of Fukushima on Sunday to push decontamination work within Fukushima Prefecture, with plans to start in late January the cleanup of infrastructure such as roads and water supply inside the no-go zone and elsewhere.

Full-fledged cleanup work is likely to start at the end of March, ministry officials said.

The ministry hopes to halve annual radiation doses for ordinary people and reduce those for children by 60 percent by the end of August 2013.

Under the law, the state will dispose of ashes from incinerated waste and sludge if they are found to contain more than 8,000 becquerels of radioactive cesium per kilogram.

It will still be necessary to find either space in the affected areas to temporarily keep contaminated soil and waste or landfills for disposal. The central government has recently asked municipalities in the Futaba district in Fukushima Prefecture to host a temporary storage facility for a massive amount of contaminated soil to be removed within the prefecture.

In the prefectures except Fukushima, contaminated waste is to be buried in landfills with plastic liners, but whether local communities will give a nod to the disposal remains to be seen.

(Mainichi Japan) December 31, 2011

**JANVIER 2012**

(Mainichi Japan) January 2, 2012

## **Cover-up of estimated costs to dispose of radioactive waste raises serious questions**

Revelations that officials from the Agency for Natural Resources and Energy concealed the estimated costs of disposing of spent nuclear fuel highlights the distorted logic of government officials who stick to reprocessing radioactive waste even by lying.

The cover-up is essentially similar to a case in which some high-ranking government officials hid a 2002 Russian diplomatic document in which Moscow offered to accept spent nuclear fuel from Japan, in that both helped promote the reprocessing of radioactive waste at a plant in Rokkasho, Aomori Prefecture.

The government's panel on energy and environmental policies is under mounting pressure to hold thorough and transparent discussions on Japan's new energy policy.

The matter is serious all the more because Masaya Yasui, who was director of the agency's Nuclear Power Policy Planning Division when he instructed his subordinate in April 2004 to conceal the data, currently serves as counselor in charge of reform of nuclear power safety regulations. In other words, **the official who ordered the cover-up of the data is now responsible for working out safety measures at nuclear plants following the accident at the tsunami-hit Fukushima No. 1 Nuclear Power Plant.**

Moreover, Yasui is deeply involved in preparations to split the Nuclear and Industrial Safety Agency from the Economy, Trade and Industry Ministry and reorganize it into a new entity in April.

The ministry's stance to **allow an official who has promoted nuclear energy, even by concealing data, to play a leading role in regulating nuclear power safety** should be called into question.

It surfaced in July 2004 that the government had estimated the costs of disposing of radioactive waste through Mainichi and other reports. A contradiction between the revelations and the government's denial of such data in a Diet session only four months earlier came into a question.

Kazumasa Kusaka, then director general of the Agency for Natural Resources and Energy, told a House of Councillors session in March 2004 that such costs had never been estimated. He was responding to opposition Social Democratic Party leader Mizuho Fukushima, who had asked the government how much it would cost to deal with radioactive waste if it was not reprocessed.

Kusaka as well as Yasui, who wrote the agency head's answer, were subsequently reprimanded for giving an "incorrect" answer to the Diet.

As to the reason for punishing them leniently, then Economy, Trade and Industry Minister Shoichi Nakagawa explained, "Since they had not known the existence of estimated data until recently, the answer was neither a lie nor malicious."

However, now that it has recently come to light that the data was deliberately concealed, the ministry is obliged to reinvestigate the case and reconsider punitive measures against the officials involved. (By Tadashi Kobayashi, Kenji Shimizu and Seiichi Ota, Mainichi Shimbun)

## **Challenges ahead at Fukushima nuclear plant**

The operator of the crippled Fukushima Daiichi Nuclear Power Plant has to juggle two daunting tasks this year.

One is to continue cooling the damaged reactors. The other is to start preparing for decommissioning.

The Japanese government said 2 weeks ago that the reactors at the plant had reached a state of cold shutdown -- the second phase in the program to bring the plant under control.

The government and Tokyo Electric Power Company released a work schedule showing that decommissioning may take 40 years.

The nuclear fuel must be removed from reactors 1, 2, and 3 before the reactors and their buildings are scrapped. Some of the fuel is believed to have melted and fallen through to the containment vessels.

This year, TEPCO will remove debris from the Number 4 reactor building, which was damaged by explosions, so it can start removing spent nuclear fuel.

As part of its preparations for decommissioning, TEPCO will conduct research and develop technology for decontaminating the inside of the reactor buildings and repairing the containment vessels.

The nuclear fuel needs to be cooled as it is still emitting heat. TEPCO plans to halve the length of the 4-kilometer-long pipes used for cooling and treating contaminated water. It also plans to install a new facility to remove radioactive strontium from waste water.

Professor Hisashi Ninokata of the Tokyo Institute of Technology says there is always a risk that contaminated water in the pipes will leak. He says TEPCO should minimize the hazards by preventing groundwater from seeping into buildings and by making the system that filters waste water more compact.

Monday, January 02, 2012 11:58 +0900 (JST)

### **54% of N-zone evacuees have yet to return**

The Yomiuri Shimbun

FUKUSHIMA--Fifty-four percent of evacuees from areas between 20 and 30 kilometers of the Fukushima No. 1 nuclear power plant have yet to return home, three months after the government lifted its emergency evacuation preparation zones.

Due to slow progress in decontamination operations and a lack of job opportunities in the five municipalities in Fukushima Prefecture, 31,600, or 54 percent, out of a total 59,049 evacuees from the areas near the crippled plant continued to live in shelters instead of returning home as of Tuesday.

In Minami-Soma City alone, 22,983, or about 50 percent of 46,744 evacuees from the city, still remain outside the city.

Masahiro Igawa, 33, whose house in the city's Haramachi Ward was swept away by the March 11 tsunami, evacuated to Fukushima City with his wife and four children.

"Though decontamination operations have started, areas around schools still show high radiation levels, and hospitals have not been restored to original conditions. We can't go home even if we want to, out of consideration for our children," he said.

At Omika Primary School in Minami-Soma, 204 students had been expected to register this academic year. But most of the school's district was designated as an emergency evacuation preparation zone, which decreased the number of students to 81 as of Dec. 19.

According to a survey conducted by the city's board of education at the end of November, about 40 percent of parents of the school's students still living outside the city said they will not return for the next academic year. About 30 percent said they were undecided as to whether to return.

Katsushige HIRAMA, the school's principal, said an unstable employment situation is one of the factors delaying people's return to the city. "In addition to the radiation fears, [children's] parents are facing employment problems," HIRAMA said.

According to the Hello Work Soso job placement center, which serves Minami-Soma, the ratio of job seekers to jobs in October was 3,194 to 2,870. The number of people who actually obtained a job was 317.

"There are many one-year contract jobs for decontamination or debris removal, but there are few long-term jobs," said Masahiro KIKUCHI, a career counselor at the office.

A 37-year-old housewife who along with her family took refuge in Fukuchiyama City, Kyoto Prefecture, from the Minami-Soma's Haramachi Ward, said: "There are no jobs for us if we return home. I also have fears about radiation. Although my parents and relatives are staying in Minami-Soma, we're not going back there."

Many residents from other municipalities also have yet to return home, as decontamination operations have progressed slowly, and schools have not reopened since the disaster.

In the village of Kawauchi in the prefecture, none of 2,675 evacuees have returned home. "Unless there is progress in decontamination work, there's nothing we can do," an official of the village office said.

(Jan. 1, 2012)

## **Energy agency boss told subordinate to cover up estimated costs to dump nuclear fuel**

A division head at the Agency for Natural Resources and Energy instructed a subordinate in April 2004 to conceal the estimated costs for disposing of spent nuclear fuel without reprocessing it, sources involved in the case and a memorandum have revealed.

Two months later, a government advisory panel proposed a system under which electric power consumers would be required to foot approximately 19 trillion yen for the costs of operations at a spent nuclear fuel reprocessing plant in Rokkasho, Aomori Prefecture.

Under the current government policy, all spent nuclear fuel is supposed to be reprocessed. However, if the data had been disclosed, it would have revealed that dumping nuclear waste is far cheaper than reprocessing it and could have spurred calls on the government to review its so-called nuclear fuel recycling policy.

It earlier came to light that top officials of Tokyo Electric Power Co. and the Economy, Trade and Industry Ministry had considered withdrawal from the nuclear fuel reprocessing project since 2002.

Masaya Yasui was serving as director of the agency's Nuclear Energy Policy Planning Division when he instructed the cover-up. Yasui, a technical official who had majored in nuclear engineering at the University of Tokyo, has been involved in atomic energy promotion policy for many years.

In other words, those involved in the promotion of nuclear power blocked moves toward abandoning the nuclear fuel recycling project.

However, Yasui denied having instructed the subordinate to cover up the data. "He might have brought such data to me, but I have no recollection of instructing him to cover it up."

In the late 1990s, the then International Trade and Industry Ministry commissioned the Radioactive Waste Management Center, which is now called the Radioactive Waste Management Funding and Research Center, to estimate the costs of disposing of spent nuclear fuel.

In 1998, the center estimated the costs at 4.2 to 6.1 trillion yen, one-fourth to one-third of the approximately 19 trillion yen needed to reprocess nuclear waste.

An April 20, 2004 memorandum, which the Mainichi Shimbun has recently obtained, states, "The subordinate notified director Yasui yesterday of the existence of the estimate. The director ordered the subordinate to 'keep it away from the eyes of the general public.'"

In an interview with the Mainichi, the subordinate admitted that Yasui had instructed him to keep the data somewhere where nobody else could see it.

However, officials of the agency's Nuclear Energy Policy Planning Division did not inform panel members of the existence of the estimated costs. In June of that year, the panel proposed a system under which the approximately 19 billion yen necessary to operate the Rokkasho reprocessing plant would be added to electricity bills.

Based on this, the government worked out the current nuclear power policy outline, which calls for all spent nuclear fuel to be processed and recycled.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 2, 2012

## **2 nuclear safety panel members got 7.1 mil. yen donation from industry**

TOKYO (Kyodo) -- The head of the Nuclear Safety Commission of Japan and a member of the government panel received donations totaling 7.1 million yen from the atomic power industry before assuming duties at the watchdog, the two said Monday.

Haruki Madarame, a former University of Tokyo professor who became the commission chief in April 2010, said he received 4 million yen over four years through 2009 from Mitsubishi Heavy Industries Ltd., a major manufacturer of nuclear power reactors.

Seiji Shiroya, another member of the panel who joined the commission at the same time as Madarame, said he received 3.1 million yen from a regional branch of Japan Atomic Industrial Forum Inc. over three years to 2009 while serving as a Kyoto University professor.

The forum consists of power companies and other companies in the nuclear industry.

Madarame said the donations have not influenced the panel's decision-making process. The five-member state commission is tasked with double-checking regulatory measures implemented mainly by the industry and science ministries to ensure nuclear safety.

The donations provided by private entities were intended to promote research at universities, and the money was spent to conduct research and to cover overseas business trip costs, according to the two experts.

Madarame said the panel has made public the minutes of its meetings and that he would leave it up to the public to judge whether such donations were appropriate.

(Mainichi Japan) January 3, 2012

## **TEPCO says water level in tank at Fukushima nuclear dropped due to quake**

Tokyo Electric Power Co. (TEPCO) said on Jan. 2 that the level of water in a tank for the No. 4 reactor at the crippled Fukushima No. 1 Nuclear Power Plant dropped "abnormally" after an earthquake measuring up to 4 on the Japanese scale of 7 struck the Kanto and Tohoku regions on New Year's Day.

TEPCO, the operator of the troubled Fukushima nuclear power station, believes that after the earthquake, a supply of radioactively-contaminated water going from a spent nuclear fuel pool to the tank at the No. 4 reactor stopped when the water flowed oppositely into the reactor containment vessel. TEPCO said the incident did not affect the cooling of the spent nuclear fuel pool.

According to TEPCO, the water level in the tank drops about 1.6 centimeters per hour under normal conditions due mainly to natural evaporation. **But after the earthquake on Jan. 1, the water level was dropping by eight to nine centimeters per hour.** Normally, water in the tank is returned to the pool after going through a heat exchanger and filters to get rid of heat and foreign particles.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 3, 2012

## Toshiba to launch mobile decontamination system

Japanese electronics maker Toshiba has developed a mobile system to decontaminate areas affected by the accident at the Fukushima Daiichi nuclear plant.

The communities will begin full-scale decontamination work after the government's rules and procedures for the clean-up took effect January 1st.

**Toshiba says the equipment can remove up to 97 percent of the radioactive substances from 1.7 tons of contaminated soil and sludge per day.**

Toshiba and a Japanese machinery maker have also developed a machine to extract residual low-level radioactive materials from water in reservoirs and sewerage systems.

The 2 devices are based on technologies used to decontaminate the Fukushima plant.

Toshiba says it has already received requests to use the machines in factories. Some local governments have also expressed interest.

The firm says it is trying to reduce the equipment's operating cost and improve its treatment capacity, and hopes to increase production while assessing the demand.

Wednesday, January 04, 2012 04:45 +0900 (JST)

## Hosono: Fukushima as center for nuclear safety

Japan's nuclear crisis minister says he wants to make Fukushima Prefecture an international center to promote nuclear safety.

Goshi Hosono spoke Tuesday to NHK and explained a **plan to set up an international institute in Fukushima, where specialists would be trained in nuclear safety and advanced radiological medicine would be studied.** He says training personnel will be one of the major issues to overcome with respect to nuclear safety.

Hosono says the prefecture will be a relevant venue to learn about the basic principles of nuclear safety, as well as the long process of scrapping the reactors at the Fukushima Daiichi plant. The work is expected to take 30 to 40 years.

Hosono says he believes lessons learned from the ongoing nuclear crisis, including the use of medicine for people exposed to radiation, must be made available to the rest of the world.

Hosono also notes his ministry will concentrate on the **development of robots** that will be used to dismantle and dispose of the damaged reactors. The project is expected to rely heavily on robots to remove spent fuel rods and handle other highly radioactive material.

The nuclear crisis minister says he believes Japanese industry will be able to boost their competitiveness by taking advantage of the new technologies that will be developed to deal with the decommissioning of Fukushima Daiichi.

Tuesday, January 03, 2012 22:40 +0900 (JST)

## **NISA pledges to regain public trust**

The head of Japan's nuclear safety agency has called for every possible effort to regain public trust in the government's energy policy.

Hiroyuki Fukano said on Wednesday that he is deeply sorry his agency was not able to prevent the nuclear accident at the Fukushima Daiichi power plant.

He said the agency's officials should remember that many Fukushima residents are still displaced from their homes.

Fukano said it is not easy to regain public trust in nuclear safety. He added it has completely been undermined by the accident and the officials must go back to basics.

The government agency, launched 11 years ago, will be united with the Nuclear Safety Commission and merged into a new nuclear safety body in April.

The new body will face many challenges. The agency was heavily criticized in a government report on the nuclear accident released in December.

The report said agency officials working on the emergency task force at the Fukushima plant evacuated in the initial stages of the accident. It also said the agency's collection and release of information was insufficient.

Wednesday, January 04, 2012 20:04 +0900 (JST)

## **Futaba mayor opposes radioactive soil storage**

The mayor of Futaba Town in Fukushima Prefecture says he opposes the government's plan to build a facility for storing radioactive waste soil in Futaba County.

Mayor Katsutaka Idogawa expressed for the first time his opposition to the facility in his New Year address to town employees on Wednesday.

The mayor said he cannot accept the facility because townspeople who evacuated would not be able to return once it is built.

The central government officially requested late last month that a temporary storage facility for radioactive waste soil be built in Futaba County. The county has eight municipalities, and it is also home to the Fukushima Daiichi nuclear power plant.

The entirety of Futaba Town is designated as a no-entry zone. The residents and the town office have been evacuated to a city in Saitama Prefecture, north of Tokyo.

Wednesday, January 04, 2012 19:09 +0900 (JST)

## **Fukushima to conduct blanket screening of rice to be harvested in fall**

FUKUSHIMA (Kyodo) -- The Fukushima prefectural government plans to conduct blanket screening of rice to be harvested this fall to ensure product safety, following the detection of excessive levels of radioactive cesium in last year's crop in the prefecture hit by a major nuclear crisis, Fukushima officials said Thursday.

The prefecture will subsidize agricultural cooperatives and distributors purchasing high-accuracy instruments that can measure radiation levels quickly, possibly use a fund scheduled to be established to buy the equipment estimated to cost around 2 billion yen, they said.

The Fukushima government expects that more than 100 measuring instruments, each costing about a dozen million yen and equipped with a conveyor belt to facilitate speedy checks of samples, would need to be installed across the prefecture to efficiently examine all rice bags before shipment, according to the officials.

The prefecture also plans to have each rice bag carry a bar code so consumers can trace the results of screening on the Internet, the officials said.

Last October Fukushima Gov. Yuhei Sato declared that newly harvested rice produced in the prefecture, which hosts the radiation-spewing Fukushima Daiichi nuclear power plant, is safe for shipment after tests showed all samples cleared the central government-set allowable limit of 500 becquerels per kilogram for radioactive cesium.

However, excessive levels of contamination were found in rice produced in some areas in the prefecture after the governor's declaration, following additional tests conducted at the request of farmers.

The central government is set to lower the allowable limit for radioactive cesium found in food items from 500 becquerels to 100 becquerels in April, and some manufacturers are now developing an updated model of their conveyer-belt radiation measuring instrument to enhance its accuracy.

(Mainichi Japan) January 5, 2012

## **Municipalities to be prepared for nuke accidents**

More than 130 Japanese municipalities are stepping up preparations for nuclear accidents after the government tripled the size of emergency zones around nuclear plants to 30 kilometers.

Japan's Nuclear Safety Commission expanded the size of the zones from 10 kilometers last November.

The move follows the issue of evacuation orders to areas up to 30 km from the stricken Fukushima plant, far beyond the government's initial expectation.

The expansion includes not only communities hosting nuclear power plants but also surrounding areas, multiplying the number of municipalities involved.

These local governments must now boost disaster preparedness by setting evacuation routes and securing shelters.

Many are reaching out beyond prefectural borders with plans to share food and other goods, and dispatch staff in the event of nuclear disasters.

The government almost tripled the funding for nuclear disaster preparedness to 108-million dollars in a budget plan for the next fiscal year.

But further financial help will be needed for the municipalities within the expanded emergency zone.

Thursday, January 05, 2012 08:59 +0900 (JST)

## **New nuclear safety agency's performance questioned**

The new nuclear safety agency will be tasked with overhauling Japan's nuclear regulations, but has yet to come up with concrete safety rules.

The new agency, which will be launched under the Environmental Ministry in April, faces the challenge of providing supervision and advice to power utilities in the event of an emergency.

The agency will take over the functions of the industry ministry's Nuclear and Industrial Safety Agency. It will also be responsible for the advisory functions of the Cabinet Office's Nuclear Safety Commission.

The new agency is to be staffed with 485 people.

Japan's government has allocated a budget of nearly 650 million dollars for the agency in its financial plan for the next fiscal year, unveiled late last month.

That's up nearly 180 million dollars from this year, a sign that the agency is expected to strengthen crisis management, upgrade its regulations and take on more work.

The government has come under fire for being slow to collect and release existing data after the nuclear accident last March, and for not instructing the operator of the crippled Fukushima plant to prepare for a huge tsunami.

The government says **the new body must secure experienced, professional personnel and cultivate a sharper sense of crisis among officials in addressing safety.**

A Cabinet Ministry senior official preparing for the launch of the new agency says it must protect the people and the environment.

Thursday, January 05, 2012 07:56 +0900 (JST)

## **Fukushima mayors seek help over waste storage**

Municipalities around the troubled Fukushima Daiichi nuclear plant have asked for help from the prefectural government over the central government's plan to temporarily store radioactive waste in the communities.

Representing 8 towns and villages in Futaba County, Tomioka Town Mayor Katsuya Endo made the request when he met Fukushima Governor Yuhei Sato on Thursday.

Endo said the municipalities take the state government's proposal seriously but that it is too much of a burden for them to handle alone.

He asked the prefecture to act in coordination with the municipalities and set up a forum for regular meetings, citing the difficulty they face as a result of mass evacuation from their areas following the nuclear accident.

Governor Sato responded positively to the request and promised to create a forum for talks.

The municipalities are divided over the central government's plan on interim storage of radioactive soil and debris. The mayor of Futaba Town, Katsutaka Idogawa, voiced opposition while some other local leaders say they have no choice but to accept it.

Thursday, January 05, 2012 14:07 +0900 (JST)

## **Number of hunters in Fukushima Prefecture drops due to nuclear crisis**

The Yomiuri Shimbun

The number of registered hunters in Fukushima Prefecture this season plunged about 30 percent from the previous season amid negative effects of the accident at the Fukushima nuclear plant, raising fears of damage to crops due to pests.

As to reasons for the decline, some people who lived in the no-entry zone left guns behind when they evacuated, while others fear that wild animals and birds in the prefecture may be contaminated with radioactive substances.

The hunting season generally falls between mid-November and mid-February, with an extra month for boar hunting.

Local residents who wish to hunt for birds and other animals are required to register with the prefectural government every year to engage in their respective hunting methods, such as the use of firearms or traps.

This season, there were 3,291 applications to register in the prefecture as of Nov. 15, much lower than the 4,779 in the previous season.

Shinichi Yamada, 67, from the town of Namie, who now lives in a house provided by the Iwaki city government, went hunting at least 30 times per season until this season.

But he did not register as a hunter this season because he is not allowed to retrieve guns from his home in the no-entry zone and bring them to his temporary housing unit.

Though he entrusted one gun to an acquaintance, visiting the acquaintance to retrieve his gun would cost him much money and time.

Yamada said, "If my life as an evacuee is prolonged, I may have to give up on trying to get my gun."

Masami Ogawa, 69, of Fukushima City also gave up on hunting this year, as radioactive cesium exceeding the government's interim limit of 500 becquerels per kilogram was detected in the meat of boars and black bears captured in the prefecture.

After the prefectural government warned local residents not to eat the meat of boars and other animals captured in eastern and central parts of the prefecture, he decided not to register.

"It had been one of my great pleasures to see neighbors tasting meat [of game I brought back from hunting]," Ogawa said.

With the decline in the number of hunters, fewer rodents and pests are expected to be killed, raising fears of widespread damage to agricultural crops in the prefecture.

In an effort to avoid this problem, the Nihonmatsu City government started offering 20,000 yen per boar to hunters starting this season.

Though the Date City and Kawamata Town governments have taken similar measures, it is uncertain whether it will be enough to encourage local residents to continue hunting.

Yoshihiko Mizuno, chief of the prefectural government's natural environment preservation section, said: "At this stage, there is nothing we can do to encourage people to register as hunters. We should steadily take measures to prevent damage caused by harmful animals and birds, such as encouraging people to improve fences."

The numbers of hunters in Iwate and Miyagi prefectures have also been on the decline due to impact of the Great East Japan Earthquake.

The number of registered hunters was 2,580 as of Nov. 10 in Iwate Prefecture, down from 2,808 a year ago.

In Miyagi Prefecture, the number was 2,000 as of Nov. 18, down from 2,278 a year ago.

Local government officials said the decreases were mainly a result of people losing their guns in the tsunami, while others decided to retire early in the wake of the disaster.

(Jan. 5, 2012)

## **Worst scenario during Fukushima crisis was reactor explosion: Hosono**

TOKYO (Kyodo) -- The government predicted two weeks after the nuclear crisis erupted at the Fukushima Daiichi power plant in March that the worst scenario would involve an explosion at the No. 1 reactor and the water inside the No. 4 unit's spent fuel pool drying up, nuclear disaster minister Goshi Hosono said Friday.

That scenario, which would have resulted in a more extensive release of radioactive material, was not announced because it was "quite difficult to foresee" at that time, Hosono said, noting the No. 1 reactor's containment vessel was believed to already have been damaged by an explosion inside the building housing the reactor.

"It was only a scenario based on a hypothetical assumption... We refrained from announcing it, as there was a possibility of triggering unnecessary concerns among people," said Hosono, who at the time was serving as a special adviser to then Prime Minister Naoto Kan.

Hosono also said that he was making "preparations to act against any kind of possibility" and "there was nothing wrong" in what he did in dealing with the nuclear crisis.

The scenario was produced on March 25 by Japan Atomic Energy Commission Chairman Shunsuke Kondo, in line with Kan's order.

The nuclear fuel inside the Nos. 1 to 3 reactors is believed to have melted down in the early days of the crisis, triggered by the March 11 mega earthquake and tsunami.

Explosions also took place at the buildings housing the Nos. 1, 3 and 4 reactors, blowing off the roofs and walls of the structures.

The No. 4 unit is different from the three other units, in that all the fuel in the reactor had been placed inside the spent fuel pool because the reactor was halted for a regular inspection before the natural disaster.

(Mainichi Japan) January 6, 2012

## Japan to set 40-year limit for operation of nuclear reactors

TOKYO (Kyodo) -- The Japanese government plans to limit the operation of nuclear reactors to 40 years, and to legally require nuclear plant operators to take measures to prepare for severe accidents that could result in serious damage to the reactor core, nuclear disaster minister Goshi Hosono said Friday.

The plan is to be included in a bill to amend a law on the regulation of nuclear reactors and nuclear fuel material, which the government is currently compiling in the wake of the nuclear disaster at the Fukushima Daiichi power plant.

**It would be the first time for the country to stipulate the life span of a nuclear reactor,** according to government officials. The United States has a similar limit, they added.

The bill is expected to be submitted to parliament during the ordinary Diet session to be convened later this month. The officials, however, did not make clear when they expect the revised law to come into force.

According to the outline of the planned law revision, the government would not allow nuclear reactors to operate for more than 40 years, although there would be exceptions if certain requirements are met.

**If a plant operator sought an extension, the government would check the degree of obsolescence of the facility, and the operator's technological ability to appropriately maintain the facility.**

But Hosono told a press conference that approved extensions would be "very rare" under the envisioned regulatory reinforcement.

Of Japan's 54 commercial reactors, three are at least 40 years old -- the No. 1 reactors at Tokyo Electric Power Co.'s Fukushima Daiichi plant, Japan Atomic Power Co.'s Tsuruga plant in Fukui Prefecture, and Kansai Electric Power Co.'s Mihama plant also in Fukui.

As a result of the Fukushima nuclear accident, triggered by the March 11 megaquake and tsunami, three reactors -- including the No. 1 unit -- suffered core meltdowns and released massive amounts of radioactive materials into the environment.

**Under current regulation, the government has left it up to utilities whether to take steps against severe nuclear accidents, based on the assumption such disasters cannot happen.**

(Mainichi Japan) January 6, 2012

<http://mdn.mainichi.jp/mdnnews/news/20120106p2g00m0dm136000c.html>

## **Tunnel full of radioactively-contaminated water found at Fukushima nuclear plant**

A massive amount of water contaminated with radiation has been found in a tunnel at a waste treatment facility at the crippled Fukushima No. 1 Nuclear Power Plant, the plant operator said.

The radioactive water amounts to 142 cubic meters, enough to fill 710 drums, and it contains about 100 becquerels of radioactive cesium per liter, according to Tokyo Electric Power Co. (TEPCO). Company officials said that the radioactive water has not leaked into the sea from the tunnel.

TEPCO suspects that the water comes from rain that flowed into the tunnel and got contaminated with radiation.

In late December last year, about 220 cubic meters of radioactive water, enough to fill 1,100 drums, were found in another tunnel on the premises of the power station. The high concentration of radioactive substances in that water led TEPCO to suspect that the water leaked from a facility storing radioactive water from the basement of a reactor building.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 7, 2012

## **Photo exhibition shows pictures of animals left behind in Fukushima no-go zone**

SAPPORO -- A photo exhibition showing dozens of pictures of animals left abandoned within the no-go zone around the crippled Fukushima No. 1 Nuclear Power Plant started here on Jan. 6.

The exhibition, being held in an underground passageway near Sapporo Station, puts on display some 60 pictures of pet animals and livestock that were left abandoned within the 20-kilometer zone around the troubled nuclear plant after the nuclear crisis broke out in March last year.

Hiroshi Hoshi, 56, a company executive from Soma, Fukushima Prefecture, who currently lives in Tokyo, took the pictures. By the end of last year, he had taken custody of some 100 animals that were left within the no-go zone. After learning about his activities, some 10 people in Sapporo planned to hold the exhibition, wishing to rescue as many animals as possible.

Among the photos are a picture of a dog whose head got trapped in a fence after it tried to eat food beyond the fence, a cow that starved to death, and a dog weakened by skin disease.

The exhibit is running through 7 p.m. on Jan. 7. Organizers are also asking for donations.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 7, 2012

## Govt mulls public operations of N-plants

The Yomiuri Shimbun

The government will study whether it should place the management of nuclear power plants in public hands as part of an overhaul of the current system in which private utilities hold managerial authority, it has been learned.

The implementation of reform could drastically change the nation's nuclear policy, which has been in place for more than 40 years.

In addition to the transfer of plant management to a public body, the government will examine the impact of changing the ownership of nuclear plants.

By increasing its authority over nuclear plant management, the government hopes to clarify whether the private or public sector is responsible for a range of matters such as compensation in the event of an accident, as well as to generate support from disgruntled local governments opposed to state plans to restart nuclear reactors.

Economy, Trade and Industry Minister Yukio Edano said the current system must be reformed.

"Nuclear plants are owned by private utilities but the state is responsible for compensation and decontamination work [in the aftermath of a nuclear plant accident]. It can no longer be permitted [for the private sector] to enjoy only the benefits [of the system]," he told The Yomiuri Shimbun.

"The course of action by private utility firms should be determined: either they'll continue to manage nuclear plants while paying huge insurance premiums or they'll relinquish the benefits they currently enjoy and ask the state to bear the cost of compensation [in the event of an accident]," Edano said.

While nuclear power plants are owned and managed by private utilities, the government is responsible for deciding where they should be built and has developed regulations such as safety guidelines. **But in the aftermath of the crisis at the Fukushima No. 1 nuclear power plant, the operator of the crippled plant, Tokyo Electric Power Co., found it impossible to pay damages without government assistance.**

Given Edano's desire for reform, METI will accelerate discussions by spring and is likely to make conclusions while watching the progress of talks about a revision of the Law on Compensation for Nuclear Damage, scheduled to be concluded this summer.

The law holds utilities liable for unlimited damages, but has proved ineffective because TEPCO cannot pay full compensation for the damages caused by the crisis at Fukushima.

(Jan. 7, 2012)

## **Fukushima exposes contradictions / Nuclear crisis prompts govt to rethink private companies' operation of N-plants**

Hiroshi Ikematsu / Yomiuri Shimbun Staff Writer

The government's moves to overhaul the state's nuclear policy were prompted by serious contradictions discovered in that policy, as a result of the nuclear crisis at the Fukushima No. 1 nuclear power plant.

Although the Law on Compensation for Nuclear Damage stipulates that electric companies have unlimited liability in the case of accidents, the government had no choice but to support Tokyo Electric Power Co.'s efforts to pay compensation for damage caused by the Fukushima crisis. Therefore, the government plans to overhaul the law, including a review of utilities' unlimited liability.

If it does so, however, entrusting utility companies with the operation of cost-efficient nuclear power plants, the companies may just siphon off profits and push the risk of accidents onto the state.

Hence, the government likely will review the current system in which electricity companies possess and operate nuclear power plants. There are various options for overhauling the nation's nuclear policy:

- Bringing the operation and management of nuclear power plants under state control, completely separating the plants from utility firms.
- Entrusting only the operation of plants to the state.
- Managing plants through a public organization funded jointly by the public and private sectors.

A new system of managing nuclear power generation may have a serious impact on the earnings of utility firms such as Kansai Electric Power Co. Nuclear power plants provide a large share of KEPCO's profits.

The separation of nuclear power plants from electricity firms may require passage of a resolution at the companies' general meetings for shareholders. However, it is highly possible such resolutions would have difficulty passing.

====

Edano: Fair competition needed

The Yomiuri Shimbun

The following is a Yomiuri Shimbun interview with Economy, Trade and Industry Minister Yukio Edano:

The Yomiuri Shimbun: The crisis at the Fukushima No. 1 nuclear power plant has brought to light problems with the government policy of entrusting the management and operation of nuclear power plants to private utility firms.

Yukio Edano: Electric companies have been collecting revenue from nuclear power plants. But after the outbreak of the nuclear crisis, [Tokyo Electric Power Co.] cannot pay for the damage [by itself ] and is using taxpayers' money, which has made it very unclear [where the responsibility lies]. It should be clarified whether they will take all the risks [of operating nuclear plants], or give up the perks they enjoy and ask the government to handle the management.

Concerning who should operate the power plants, we'll hammer out a course of action by summer based on discussions in the Energy and Natural Resources Committee [the economy minister's advisory body] and a decision by electric companies.

Q: The government has proposed four types of reform to force utilities to separate power generation from power transmission and distribution, toward liberalization of the power supply business.

A: It's necessary to set up a system in which [users] can choose electric companies and power rates. The power transmission section [monopolized by electric firms] has become an obstacle to increasing renewable energy sources and the number of new companies entering the business. So we should institute a fair power transmission system.

Japanese utility firms separate the accounting for their power transmission sections, which has hindered [new entrants] from participating in the business for fair competition.

The most likely option is that various enterprises generate power while neutral entities transmit the electricity. Furthermore, it is necessary to greatly strengthen "tie lines" [that connect different electricity systems through which the firms buy and sell electricity]. So, we'd like to intensify public involvement [in the power business.]

Q: What will happen to the temporary state control of TEPCO?

A: Society will not allow that company to rebuild [as a new TEPCO] by casting off its responsibility for such things as compensation for the nuclear crisis and decommissioning the plant. There's a high possibility [the government] will need [to put TEPCO under complete public control] for decommissioning and compensation.

But it is essential for the private sector to shoulder the responsibility to supply electricity. We don't intend [to keep the firm] under state control forever.

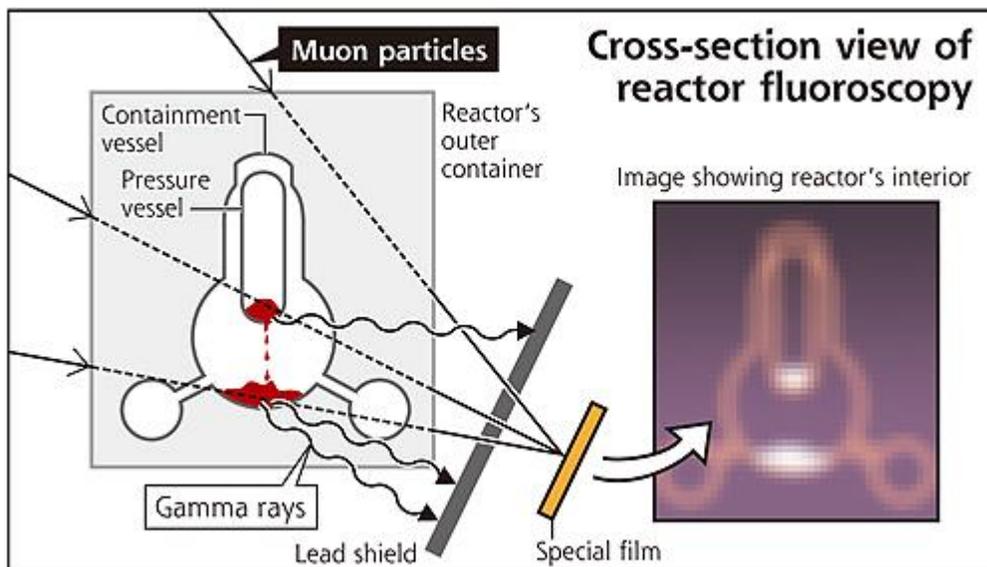
Q: What will you do about the management of other electric companies?

A: Other companies' situations are different from that of TEPCO. But the structure--monopolizing local areas' power supply and hindering new entrants--is not socially acceptable. We'd like to create a situation in which winners are determined by the efforts of their management in an environment of fair competition.

(Jan. 7, 2012)

## Tiny particles may illuminate reactor cores

The Yomiuri Shimbun



Using particles from space to look into the heart of nuclear reactors--this is the goal of researchers at Nagoya University.

The Yomiuri Shimbun has learned that a team of researchers from the university is developing technology to use elementary particles from space to see into the interiors of crippled reactors at the Fukushima No. 1 nuclear power plant.

Their aim is to establish technology that can obtain images similar to X-rays of what is happening inside the Nos. 1 to 3 reactors, whose cores melted down in the wake of the March 11 earthquake and tsunami.

Tokyo Electric Power Co. plans to start operations to move melted-down nuclear fuel out of the reactors within the coming 10 years as a step toward decommissioning them.

To do so, the power utility must know exactly where the lumps of nuclear fuel are in the reactors. The government has therefore thrown its support behind the critical project at Nagoya University.

The university team is scheduled to launch studies on practical use of the envisaged technology when the amount of radiation being emitted from the reactors is reduced, making it possible for members to work nearby.

The team comprises researchers at the state-run university's Kobayashi-Maskawa Institute for the Origin of Particles and the Universe, and is led by Associate Prof. Mitsuhiro Nakamura of the university.

The researchers are using elementary muon particles in lieu of X-rays. Muon particles are one of 12 kinds of elementary particles that constitute matter. They have properties similar to electrons, but

weigh about 200 times more, and fall to Earth from space at a rate of one particle onto a person's palm per second.

Muon particles have a strong ability to penetrate substances, but are absorbed in proportion to the concentration of those substances. The greater the density of the substance they pass through, the more muon particles are absorbed and the more their number declines, according to the study team.

Observation of muon particles penetrating the reactors will make it possible to determine differences in density within the reactors, the researchers said.

By setting a special film measuring one square meter near each of the reactors, researchers will be able to create an image of their interiors based on the muon particles penetrating the reactors, they said.

As the density of nuclear fuel is higher than steel and other materials used in the reactors, the areas containing the fuel will appear paler than the images of other materials on the special film, making it possible to determine the exact locations and shapes of melted-down nuclear fuel, the researchers said.

The Nagoya University group successfully observed the bottom of the crater of Mt. Showa Shinzan, a volcano in Hokkaido, in collaboration with the University of Tokyo in 2007, obtaining images of magma locations.

Nakamura took the initiative in starting the reactor fluoroscopy project after the March 11 disaster.

The Japan Science and Technology Agency of the Education, Culture, Sports, Science and Technology Ministry has designated the research project as eligible for receiving government subsidies from fiscal 2011 to 2014.

**When the fluoroscopy method is applied to reactors, however, the special film may be affected by gamma rays emitted from the reactors, the researchers said. Gamma rays also have strong powers of penetration.**

The research team therefore plans to shield the reactors with lead, so only muon particles can be detected.

**The exact locations of the melted-down nuclear material in the Nos. 1 to 3 reactors and their container vessels are currently unknown.**

(Jan. 8, 2012)

## **Noda wants temporary storage facility in Fukushima**

Prime Minister Yoshihiko Noda has asked the governor of Fukushima to allow the government to build a facility in the prefecture to temporarily store radioactive soil.

Noda visited a disaster-hit area for the first time this year and met Fukushima Governor Yuhei Sato at

the prefectural office on Sunday.

Noda said the fight is not over yet, even though he declared last month that the Fukushima Daiichi reactors had reached a state of cold shutdown -- the second phase in the program to bring the plant under control.

He said the government will intensify its efforts to deal with decontamination, compensation and health management issues.

Noda asked Sato to consider the request that Environment Minister Goshi Hosono made late last year to have a storage facility built in Futaba County.

Sato said he would like the government to remember that many people from Fukushima were unable to celebrate the New Year in their hometowns.

He said children are the future of Fukushima and their health must be protected. He urged Noda to provide free medical services to all Fukushima residents under the age of 19.

Sato said the damage caused by **the accident was so severe that it had seriously undermined confidence in the government's nuclear policy.**

He asked Noda to shut down and dismantle all 10 reactors at the Fukushima Daiichi and Fukushima Daini plants as called for in the reconstruction plan.

Sunday, January 08, 2012 22:53 +0900 (JST)

## **Fukushima governor says accident not yet contained**

Fukushima Governor Yuhei Sato has called on the government to deal responsibly with the nuclear accident until the evacuees are able to return home.

The central government and Fukushima held a regular meeting on the prefecture's reconstruction on Sunday. **Sato criticized the declaration made by Prime Minister Yoshihiko Noda in December that the nuclear accident had been contained.**

He said the sentiments of Fukushima residents are very different, and asked the government to understand this.

**He said a declaration that the accident has been contained can only be made after all the evacuees return home.** He urged the government to deal responsibly with the accident until that time.

Noda replied that the government will swiftly start where it can and rebuild infrastructure that people need for their daily lives.

He said he wants to provide sufficient support to people who are being asked to evacuate for a long

time, and is determined to work for reconstruction with the prefecture, municipalities and the people of Fukushima.

Sunday, January 08, 2012 22:53 +0900 (JST)

## **Noda hopes to restore healthcare in disaster zone**

Japan's Prime Minister Yoshihiko Noda says he hopes to restore healthcare in areas affected by the March 11th disaster and the accident at the Fukushima Daiichi nuclear plant.

Noda visited a private hospital in Minamisoma City, Fukushima Prefecture, on Sunday.

The hospital is 24 kilometers from the damaged plant.

The central government lifted the evacuation advisory for the area last September. **But the hospital is still struggling to find staff to provide medical services for patients.**

**Hospital director Yasunori Kikuchi said medical care in the region is on the verge of collapse, despite the lifting of the evacuation advisory.**

Noda said it is vital to have a functioning healthcare system in place when people return to rebuild their hometowns in Fukushima Prefecture.

He added that he wants policy-making to reflect the opinions he heard during his visit.

Sunday, January 08, 2012 22:53 +0900 (JST)

## **2 towns at risk of disappearing / Okuma, Futaba face uncertain future due to nearby crippled N-plant**

Yasushi Kaneko / Yomiuri Shimbun Staff Writer

How will the government help the estimated 25,000 people who lived in areas where residency likely will be prohibited for an extended period due to the crisis at the Fukushima No. 1 nuclear power plant?

In particular, Okuma and Futaba towns in Fukushima Prefecture will face extreme hardship because most of their residential areas fall in those areas. The crippled nuclear plant is located in the two towns.

It will be extremely difficult for the municipal governments to restore the towns to their conditions before the disaster. The central government will need to consider providing assistance to the evacuees so they can lead self-reliant lives.

The Education, Culture, Sports, Science and Technology Ministry detected many spots in the two towns where annual levels of exposure to radiation would be 100 millisieverts or higher. This is at least five times higher than the level deemed safe for human habitation.

The ministry measured radiation levels one meter above the ground and monitored the radioactive contamination of soil.

The ministry has regularly measured radiation levels using vehicles and planes in affected prefectures--mainly Fukushima Prefecture but also including Tokyo--with cooperation from local governments.

Air radiation levels were measured at about 3,000 spots in the no-entry zone around the nuclear plant and planned evacuation areas as of Dec. 11. Of them, annual radiation levels of 50 millisieverts or higher were estimated at about 700 spots. **These sites likely will be designated as zones where residency is prohibited for an extended period.**

**According to Japan Atomic Energy Agency calculations, it would take more than 50 years for radiation levels at the sites to naturally fall below the safe limit of 20 millisieverts.**

Environment Minister Goshi Hosono has said it will be "difficult to lower air radiation levels with conventional decontamination methods" in areas where annual levels are 50 millisieverts or higher. Residing in these areas will be forbidden for an extended period.

The government has only said "it will likely take at least five years" until residents can shift back to these areas. The government has not specified after how many years residents can return--or even if they actually will be able to live there again.

A survey by Fukushima University found that about 60 percent of residents of the two towns wish to return. Many of the evacuees said they cannot make any concrete plans for the future until it becomes clear whether they will be able to return to the towns.

The government needs to properly explain the current conditions in the towns--and the likely fate of the municipalities--to the evacuees.

**Government assistance to evacuees mainly comprises measures that assume they will return home,** such as construction of temporary housing units in which they can live for two years in principle.

From now, it will be necessary to consider helping evacuees resettle elsewhere by offering assistance in such fields as employment and education, and helping them fit in and form local communities.

The government should present such measures as soon as possible.

Meanwhile, **Futaba Mayor Katsutaka Idogawa has suggested his town might need to move elsewhere.**

"I'll have to ask for a temporary site to which our town will be relocated," he said to reporters.

Okuma and Futaba might have to consider merging with neighboring municipalities to which some residents will move, if the locals consent to such a tieup.

(Jan. 9, 2012)

## **Renewal after nuclear disaster impossible without sound foundations**

All-too-simple calls to move toward renewal by pressing ahead with restitution for victims of the Fukushima nuclear disaster ignore the problem's complexity. Thus far, not even half the households ordered to evacuate by the government because of the disaster have apparently applied for compensation payments from Tokyo Electric Power Co. (TEPCO), the plant's operator.

Resuming nuclear plant operations "once their safety is confirmed" is not the straightforward path that it may appear to be, either, for a safe method of operating nuclear reactors has yet to be established.

Revival and renewal cannot be achieved on such half-baked foundations.

According to news reports over the New Year holiday, TEPCO has received 34,000 non-corporate compensation applications since September 2011. Since approximately 150,000 people from about 70,000 households were subject to mandatory evacuation, more than half those households have yet to submit their claims.

So why have disaster victims been slow to apply for recompense?

"Because the crisis hasn't ended yet," an acquaintance of mine from Fukushima who's evacuated to Yamagata Prefecture says. "We're still in the midst of it."

A self-employed man in his 60s, the evacuee says he was struck by a scene in the Dec. 28 airing of the television drama series "Carnation," set around the World War II era. In the scene, the protagonist listens in a daze to a radio broadcast, in which Emperor Hirohito announces Japan's unconditional surrender in the war.

"The disaster hasn't ended for us," the aforementioned man repeats.

His family has been torn apart. Not only must he go through life with fears about his well-being, so must his children and grandchildren. How is anyone going to take responsibility for that, he wonders, asking himself whether it would be better to consult a lawyer instead of negotiating individually with TEPCO. Though he now has had the liability application papers sent to him, he still hasn't decided what to do.

When the liability claim process began last fall, TEPCO's applications and other papers were deemed too complicated, and the utility was forced to produce new versions. The government-backed Nuclear Damage Liability Facilitation Fund was founded, and lawyers and administrative scribes began making consultation visits to victims who had been relocated.

As compensation applications were submitted, piles of paperwork accumulated. Some 2,200 staff, of which 800 are TEPCO employees, are now fielding inquiries and conducting data entry at the 14-floor building of TEPCO Systems Corp., a TEPCO subsidiary located in Tokyo's Koto Ward. The process may have been streamlined, but only a small percentage of evacuees have so far applied.

Bigger challenges lie further down the road: damage claims of an unprecedented scale that are expected to be submitted by victims who evacuated voluntarily, as well as those who still live in areas with high levels of radiation. The government has announced that some 1.5 million people from central and northern Fukushima Prefecture are eligible for damages. Meanwhile, there are 500,000 people from the Aizu and Shirakawa regions, which were excluded from compensation eligibility. Damage claims from those beyond the prefecture's borders, in both Japan and overseas, cannot be ignored, either.

Compensating the disaster's victims will be a massive task. Municipal governments, in addition to TEPCO and central government organizations, should also embark on reparative efforts. An attitude in which cost and other logistics are the primary focus will not get us anywhere. Only by taking steady, honest steps can we expect to approach renewal.

The year 2012 will be the year that the government decides what it's going to do about nuclear power.

Will we be able to make it through the summer without resuming operations at nuclear plants? Is a return to thermal power generation acceptable, even if it means emitting more greenhouse gases? Can we get by without our nuclear power plants, especially at a time when Iran's nuclear program is causing tension in the Strait of Hormuz? Are the above reason enough to turn a blind eye to the dangers of nuclear power plants? The government will likely face an election that elucidates the will of the people.

The TEPCO Systems building, where compensation claims are being reviewed, is located on the former site of Eiichi Shibusawa's residence. Known as the father of Japanese capitalism, the Meiji-era industrialist established around 470 companies during his lifetime.

It's an interesting stroke of fate that efforts to clean up the mess left by economic development are taking place in a location associated with Shibusawa, a man who denounced undue profits and placed great value on the public good and morality. We must move forward with the awareness that reviewing Japan's energy policy is not a backward-looking dilemma, but a cutting-edge challenge. (By Takao Yamada, Expert Senior Writer)

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 9, 2012

## **Gov't request for temporary storage site displeases Fukushima Pref.**

FUKUSHIMA (Kyodo) -- Prime Minister Yoshihiko Noda on Sunday again sought cooperation from Fukushima Prefecture to accept a temporary storage site for contaminated soil and waste from the nuclear crisis at the Fukushima Daiichi power plant, but the prefecture's governor instead expressed strong displeasure at Noda's announcement last month that the crisis has been brought under control.

That announcement was "far from the feeling of the residents in Fukushima Prefecture and those who had to evacuate" from the radiation-contaminated areas, said Fukushima Gov. Yuhei Sato at a meeting to discuss decontamination and reconstruction work in the prefecture. "We can call it under control only when evacuated people can come home."

The governor's comment reflected the strong frustration among people in crisis-hit areas of Fukushima over Noda's announcement in mid-December that the crippled nuclear plant had been brought to a state of "cold shutdown" and that "the accident at the plant itself has been settled."

Following the announcement, the central government asked the Futaba district of Fukushima Prefecture to host a temporary storage facility for contaminated soil and waste to be removed from around the crippled nuclear power plant in the prefecture.



Huge piles of plastic bags containing used radioactive gear and other contaminated waste are seen at the J-Village facility. (Photo courtesy of TEPCO)

Some experts, as well as politicians from both the ruling and opposition camps, have said it was too early to call it settled. The Fukushima prefectural assembly also unanimously passed a resolution demanding the central government retract the announcement.

Some local leaders in eight municipalities of Futaba district have said they would accept to host the planned interim storage, but others, including Futaba town mayor Katsutaka Idogawa, are opposed to the idea. Fukushima Gov. Sato has held a position that the proposal should be examined carefully.

(Mainichi Japan) January 9, 2012

## **N-zones may keep 25,000 from home**

The Yomiuri Shimbun

The homes of about 25,000 evacuees from around the Fukushima No. 1 nuclear power plant are expected to fall within zones where the government will prohibit residency for at least five years, according to government sources.

The number accounts for about 30 percent of evacuees from the current no-entry and expanded evacuation zones.

The government will likely establish the areas where residence is prohibited for at least five years in seven of 11 affected municipalities in Fukushima Prefecture, when it reorganizes the no-entry zone and expanded evacuation zones into three new zones.

About 109,000 people have evacuated from the 11 municipalities, which are wholly or partially inside the no-entry zone and expanded evacuation areas. Of these, about 86,000 people were from the no-entry zone and expanded evacuation zones.

The new zones in which residency will be prohibited for a minimum of five years will cover areas where annual radiation levels are projected to be 20 millisieverts or higher for at least that amount of time. The homes of about 90 percent of the residents of the town of Okuma and about 70 percent of those from the town of Futaba will likely fall under this category.

The sources also revealed that the central government has asked some municipalities to merge.

A no-entry zone currently covers areas within a 20-kilometer radius from the nuclear plant, and places outside the no-entry zone where annual levels of radiation exposure may reach 20 millisieverts are designated as expanded evacuation zones.

As early as April 1, the government plans to reorganize these areas into three new zones--zones where residency is prohibited, zones with restricted residency, and zones being prepared for residents' return.

Based on the latest data from radiation monitoring by the Education, Culture, Sports, Science and Technology Ministry, the government will discuss the plan with the local governments and decide on the new zoning by March.

According to the sources, the central government's decontamination work under a law concerning special measures to cope with environmental pollution caused by radioactive substances will first be implemented in areas where radiation levels are relatively low. The law went into effect Jan. 1.

This will delay the start of decontamination work in zones where residency is prohibited for the time being.

Areas whose current annual radiation levels stand at 50 millisieverts or higher one meter above the ground will likely be designated as zones where residency is prohibited.

According to some projections, including one released by the science ministry on Dec. 11, parts of the towns of Okuma and Futaba as well as the city of Minami-Soma and three other municipalities inside the no-entry zone will likely be designated as zones where residency is prohibited for an extended period. About 23,500 people lived in these areas.

The zones also will likely cover four municipalities currently designated as expanded evacuation zones, including parts of the village of Iitate, in which about 2,000 people lived.

Designations of zones with restricted residency and zones being prepared for residents' return are expected to affect about 30,000 residents each.

But the proposed zoning may split certain municipalities into two different categories. In that case, the central government may consider prioritizing decontamination work in such municipalities, after consulting the local governments concerned, so the entire municipality can be designated as a zone being prepared for residents' return.

Mayor Tamotsu Baba of the town of Namie, which neighbors Okuma and Futaba, said he was asked to consider a merger of the three towns and Katsurao Village into a single municipality.

A senior official of the central government's team to assist nuclear disaster victims reportedly spoke to the mayor regarding the plan in late December, when the official visited the town government office.

Baba quoted the official as saying, "There is a choice of a municipal merger. Why don't you merge [with other municipalities] to improve your infrastructure?"

The mayor said he replied, "I must hear the opinions of the town's residents. I can't just make a snap decision."

(Jan. 9, 2012)

## **Monju reactor operator paid 109 mil. yen in fees to related bodies**

TOKYO (Kyodo) -- The state-run operator of Japan's Monju prototype fast-breeder reactor paid a total of 109 million yen in 2009 to bodies linked to it as "membership fees," raising concern about the use of taxpayers' money for the entity, a ruling party panel found Monday.

The Japan Atomic Energy Agency under the jurisdiction of the Ministry of Education, Culture, Sports, Science and Technology, provided the money between April and September in 2009 to the bodies, at some of which former ministry and agency officials had landed cozy postretirement jobs.

In fiscal 2009, the operator of the Monju reactor received around 185 billion yen in state subsidies, part of which was financed by a tax to promote the development of power resources that is charged on top of utility charges paid by households.

Retired senior bureaucrats often assume highly paid posts at government-affiliated bodies and private-sector firms related to their former areas of supervision under a dubious practice known as "amakudari," literally meaning descent from heaven.

The Democratic Party of Japan panel on administrative reform found that the atomic energy agency provided the fees 124 times for the purpose of supporting the entities in the reported period.

Among the recipients, the Atomic Energy Welfare Association, which offers welfare services to the agency's officials, received around 4 million yen every month between April and September 2009.

The Wakasa Wan Energy Research Center, which conducts research on nuclear power-generation technologies, received 31.5 million yen in September that year. A former director general of the science ministry served as an executive of the center.

A panel member said the operator of the Monju reactor should have reduced its spending to the minimum necessary, but an official of the agency told Kyodo News that it needed to pay the membership fees as part of its operations.

In November, the Government Revitalization Unit, a body tasked with screening wasteful spending, proposed a sweeping review of the long-running program to develop nuclear fuel recycling technology using the Monju reactor. The reactor located in Tsuruga, Fukui Prefecture, has been plagued by a series of mishaps, casting doubt on the project's viability.

Separately, the DPJ panel also found that the National Institute of Information and Communications Technology, which is linked to the Ministry of Internal Affairs and Communications, similarly offered a total of 45.5 million yen to 41 bodies it supports in fiscal 2010.

Among the 41, an entity promoting information and communications technologies received about 5.9 million yen to cover the personnel costs of seconded workers, according to the panel.

The institute said it is up to the Government Revitalization Unit, which has been examining spending by 102 government-linked entities, to decide whether the payments were appropriate.

(Mainichi Japan) January 10, 2012

## **Fukushima nuclear plant worker in coma after collapsing at site**

A worker in his 60s at the Fukushima No. 1 Nuclear Power Plant is in a coma after collapsing at the site, plant operator Tokyo Electric Power Co. (TEPCO) has announced.

The man, an employee of a company cooperating with TEPCO, has been in a state of cardiac and respiratory arrest, the utility said on Jan. 9. The worker had been exposed to 52 microsieverts of radiation on Jan. 9 before collapsing and losing consciousness at the crippled plant that day. TEPCO is trying to confirm how long he has been working at nuclear plants and how much accumulated radiation doses he has been exposed to so far.

According to TEPCO, the man had been pouring concrete since the morning of Jan. 9 in order to manufacture a tank to hold radioactive materials following the treatment of contaminated water emanating from the cooling of nuclear reactors at the plant.

At around 2:20 p.m., the worker complained of sickness and was treated at the plant's medical office. However, he did not recover and was later transferred to a hospital in Iwaki, Fukushima Prefecture, at around 4:30 p.m.

Since the outbreak of the nuclear crisis in March last year, three workers have died of sickness and other causes at the disaster-stricken plant.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 10, 2012

## **Civic group battles to get support for referendums on nuclear power in Tokyo, Osaka**

A civic group has been fighting an uphill battle to collect enough signatures for petitions to hold referendums in Tokyo and Osaka on whether Japan should continue to rely on nuclear power despite the ongoing crisis at the Fukushima No. 1 Nuclear Power Plant.

The civil group called "Minnade Kimeyo (Let all of us decide)" started collecting signatures on Dec. 10. The group needs to collect one-fiftieth of all eligible voters in Tokyo and Osaka, respectively. The group has already secured about 50,000 signatures in Osaka before the Jan. 9 deadline -- more than about 43,000 signatures, or one-fiftieth of the eligible voters needed to directly oblige the Osaka mayor to take necessary steps toward holding a referendum. As of Jan. 8, the group had collected only about 78,000 signatures, about one-third of about 210,000 it needs in Tokyo to file the petition.

Considering the possibility of some signatures being judged invalid by the election administration commission, the group has been trying to collect some 300,000 signatures in Tokyo, with actor Taro Yamamoto and other members of the group urging people to sign their names at major railway stations in the capital. The group still needs to collect signatures from more than 130,000 eligible voters by the Feb. 9 deadline, with the exception of local municipalities where signature collecting activities cannot be carried out due to elections for local chiefs.

Eiko Nakamura, 57, one of the organizers of the campaign, said the group had to fight an uphill battle mainly because the government declared in late December that the Fukushima nuclear plant had been brought under control. She said that public interest in the nuclear issue has apparently been fading due to the prevailing mood that nuclear power poses no problem.

About 12,000 people are involved in the campaign to collect signatures, and many of them are housewives and student volunteers. Eri Takada, 48, one of the 32 representatives, said, "I was indifferent to nuclear issues and I had no experience in civic activities. But I started to think about whether there is anything I can do in the wake of the nuclear accident. I want to help create a mechanism in which individuals think about what real affluence is and their wisdom and opinions can be reflected."

(Mainichi Japan) January 10, 2012

## **EDITORIAL: Resuming tests at Rokkasho plant a bad idea**

January 11, 2012 - <http://ajw.asahi.com/article/views/editorial/AJ201201110032>

A test-run is due to resume in mid-January at the nuclear fuel reprocessing plant in the village of Rokkasho, Aomori Prefecture.

In late December, Aomori Governor Shingo Mimura gave a nod to safety measures at the prefecture's nuclear facilities. This effectively became a go-ahead signal for Japan Nuclear Fuel Ltd. to restart the trial operation.

This is not right.

The nuclear disaster at the Fukushima No. 1 plant led to the current government policy to review the nuclear fuel cycle project of reprocessing and extracting used plutonium for recycling.

A report from the Japan Atomic Energy Commission estimates the **costs of used fuel recycling at double the costs of the "direct disposal" method of burying unprocessed fuel underground.**

Resuming the Rokkasho test-run, just when serious debates on nuclear fuel reprocessing are about to begin on the basis of various available data, can only spell one purpose: to establish an operational "track record" to justify the continuation of the fuel recycling project.

The plant began operating on a trial basis in March 2006, but this was suspended in 2008 when problems developed in the process of mixing highly radioactive waste fluid with molten glass in a high-temperature melting furnace for vitrification. Shortly before operations were to resume in March 2011, the Fukushima meltdowns occurred, and the Rokkasho plant has remained idle since.

The plant has a vehicle-mounted power generator, which an Aomori Prefecture investigation committee commended as an effective backup for power outages. In its report, the committee also stressed this plant's differences from nuclear power generation plants, noting, "Unlike at nuclear power generation plants, chemical processes at this fuel reprocessing plant are conducted under ordinary temperature and normal pressure."

The committee is correct on this point. And we are also aware that the **resumption of operations at the plant was requested by the local community.**

However, a review of the entire nuclear energy industry and the debunking of the "myth of safety and low running costs" are what the Fukushima disaster has made mandatory.

We have repeatedly suggested a road map for weaning our society off nuclear power generation. We applaud the government's legal amendment bill that stipulates 40 years as the life expectancy of nuclear reactors.

If our country continues to pursue the "no nuke" route, the whole nuclear fuel cycle will eventually collapse.

Even if a certain degree of reliance on nuclear power generation is to be maintained, the relevance of the used fuel recycling project is already in serious doubt. As for the development of fast-breeder reactors, which is the ultimate purpose of keeping up the nuclear fuel cycle, the prototype Monju has remained virtually idle despite the huge costs spent on it so far. Its commercialization is now nothing more than a pipe dream.

We are having trouble understanding the government's position on the Rokkasho plant. The issue at hand goes to the very core of the nation's nuclear energy policy, and yet Yukio Edano, minister of economy, trade and industry, noted to the effect that the government is no longer in a position to approve or disapprove the resumption of trial operations.

Japan Nuclear Fuel intends to resume the construction of a factory where mixed oxide (MOX) plutonium fuel will be manufactured after reprocessing.

The decision is premature, and the operator must not be allowed to call all the shots.

--The Asahi Shimbun, Jan. 10

## **Inspectors checked nuke facilities using manuals given by facility makers, users since '03**

The Japan Nuclear Energy Safety Organization (JNES) has systematically copied and used entire inspection manual procedures prepared by manufacturers and users of nuclear facilities to inspect nuclear power plants run by those companies since its foundation in October 2003, according to the results of an investigation conducted by JNES's third-party panel.

The third-party panel is expected to submit its report to the JNES on Jan. 12, urging the only legally mandated nuclear inspection body in Japan to carry out inspections independent of manufacturers and users of nuclear facilities in a bid to defuse suspicions over its credibility.

The problem came to light last November when the Mainichi reported on the alleged oversight. The JNES has insisted so far that there was no problem with its inspection system, but it will now certainly come under pressure to review how it inspects nuclear facilities.

The third-party panel, comprising of five experts including scholars, conducted investigations into the JNES by interviewing inspectors and the like. The investigation revealed that since its foundation in 2003 the JNES had systematically asked Global Nuclear Fuel-Japan Co. (JNF-J), a company that makes and processes nuclear fuel, to prepare draft inspection manual procedures, changed nothing but their covers and used the copied documents to inspect JNF-J's nuclear fuel rods.

The third-party panel says in its report, "Inspections are part of the system to ensure safety. Inspections must not be entrusted to business operators." There are cases in which the JNES inspected nuclear facilities and passed them even without looking at inspection manual procedures. Therefore, the third-party panel harshly criticizes the JNES, saying, "Based on what standards has it been carrying out the inspections? The JNES lacks understanding and awareness of inspections."

The report by the third-party panel also refers to the revelations that the JNES had overlooked inadequacies in documents prepared by Kansai Electric Power Co. and failed to inspect some of the facilities during its regular inspections of the Oi Nuclear Power Plant from 2009 to 2010. The issue surfaced last August. The report says, "It is unavoidable for people to think that the JNES gave rubber-stamp approval of inspections by the business operator." The panel is expected to propose that the JNES keep records of meetings with business operators in an effort to have tense relations with them and to step up education and training of inspectors.

The JNES was founded in October 2003 because the government's Nuclear and Industrial Safety Agency (NISA) failed to spot the falsification of inspection results by Tokyo Electric Power Co. That trouble came to light in August 2002. The JNES will come under the jurisdiction of the "Nuclear Safety Agency" to be formed in April after the NISA is dissolved. Therefore, a senior JNES official says, "The fundamental overhaul of the inspection system will be carried out sometime after April.

[!\[\]\(c47677d40dd8f5c4ff9bcb53c7abbcfd\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) January 11, 2012

## 'Doomsday Clock' moves 1 minute closer to midnight



Hiroshima Peace Memorial Museum Director Koichi Maeda resets the museum's "peace clock" -- which displays the number of days since the last nuclear weapons test -- to 55 on Jan. 10. (Mainichi)

NEW YORK (Kyodo) -- Scientists on Tuesday moved forward the minute hand of the "Doomsday Clock" by one minute to "five minutes to midnight," citing a lack of progress toward a world free of nuclear weapons.

The clock, symbolically measuring the likelihood that mankind will begin a nuclear war, was last moved in January 2010, when its minute hand was pushed back one minute from five to six minutes before midnight in response to U.S. President Barack Obama's April 2009 speech in Prague calling for a nuclear-free world.

The clock is now back to its time in 2007 when it was pushed two minutes closer to midnight, which represents global catastrophe.

The U.S. magazine *Bulletin of the Atomic Scientists*, which created the clock in 1947 and has since maintained it, said, "The path toward a world free of nuclear weapons is not at all clear, and leadership is failing."

"The world still has approximately 19,500 nuclear weapons, enough power to destroy the Earth's inhabitants several times over," it said in a statement.

The magazine mentioned the nuclear accident at the Fukushima Daiichi power plant in Japan, saying it is disheartening that the world has suffered another calamitous accident in light of over 60 years of improving reactor designs and developing nuclear fission for safer power production.

"The Fukushima disaster raised significant questions that...must be addressed. Safer nuclear reactor designs need to be developed and built, and more stringent oversight, training, and attention are needed to prevent future disasters."

"A major question to be addressed is: How can complex systems like nuclear power stations be made less susceptible to accidents and errors in judgment?"

At a press conference in Washington, the scientists sounded unclear about the impact of the Fukushima crisis, saying that the event could be conducive to enhancing safety of nuclear power stations while also helping boost opposition to nuclear energy, which is viewed as an effective tool to fight global warming.

The magazine has taken a neutral position on nuclear power generation.

The magazine was launched by physicists shocked by 1945 atomic bombings of Japan. The clock, initially set at seven minutes to midnight, was as close as two minutes to midnight in 1953 in the wake of U.S. and Soviet hydrogen bomb tests. It was as far away as 17 minutes to midnight in 1991, when the Cold War era ended.

(Mainichi Japan) January 11, 2012

## **Gov't tells TEPCO to prepare repair plan for Fukushima Daini equipment**

TOKYO (Kyodo) -- The Nuclear and Industrial Safety Agency told Tokyo Electric Power Co. on Wednesday to prepare a report by the end of January on how to repair equipment at its Fukushima Daini nuclear power plant damaged by the March 2011 earthquake and tsunami, a senior agency official said.

The report is needed to "further ensure" the plant will remain in a stable state of cold shutdown, Kenji Matsuoka, chief of the disaster prevention section at the agency, said at a press conference, denying it is aimed at requiring the utility, known as TEPCO, to prepare for restarting the plant.

A cold shutdown is defined as a condition in which the bottom part of a reactor pressure vessel is kept below 100 C and exposure from the release of radioactive substances is being significantly contained.

The Fukushima Daini nuclear power plant was not so fatally damaged as the nearby Fukushima Daiichi plant by the magnitude-9.0 earthquake and subsequent tsunami. In December, the government lifted its declaration of a state of emergency at the Fukushima Daini plant.

But facilities at the plant, including the emergency power generator and the cooling system for spent nuclear fuel pools, have been damaged, according to the agency.

(Mainichi Japan) January 12, 2012

# Reactor monitor failure caused by bad maintenance

The operator of a nuclear monitoring system covering Japan says the system malfunctioned last month because of poor maintenance.

The Emergency Response and Support System failed to transmit data to terminal screens at the Nuclear and Industrial Safety Agency for more than 24 hours from December 30th. The agency also failed to notice the problem for more than one hour.

The system monitors pressure, temperature, and other real-time conditions of reactors at nuclear power plants around the country, as well as radiation levels in surrounding areas.

An investigation by the government-affiliated corporation that manages the system revealed that the data-processing functions malfunctioned because of poor maintenance.

The corporation says it will step up its maintenance of the system by rebooting its server software twice a year and introducing an automated alarm system.

Thursday, January 12, 2012 04:33 +0900 (JST)

A major epidemiological study just published in the January 2012 edition of [\*The International Journal of Cancer\*](#) indicates there is “a possible excess risk” of acute leukemia among children living in close vicinity to French nuclear power plants (NPP). The study called for an “investigation for potential risk factors related to the vicinity of NPP, and collaborative analysis of multisite studies conducted in various countries.”

The study found a doubling of occurrence of childhood leukemia between the years of 2002-2007 among children under 5 years living within 5 km of nuclear plants – similar to the findings of the [German 2008 study](#) by the Cancer Registry in Mainz which found an association between the nearness of residence to nuclear power plants and the risk of childhood leukemia.

The epidemiological study was conducted by a team from the Institut National de la Santé et de la Recherche Médicale, the Institut de Radioprotection et de Sécurité Nucléaire (IRSN) and the National Register of hematological diseases of children in Villejuif. The results marked a surprising and encouraging change at IRSN which had endeavored to discredit earlier French epidemiological studies that had shown an impact of nuclear facilities on health.

From Beyond Nuclear

## Iodine pills should be distributed to households near nuclear plants: experts

The intake of potassium iodine tablets immediately after a nuclear accident is effective in preventing the thyroid from being exposed to radiation, and they should be distributed to households near nuclear power plants in advance, a recent nuclear safety commission proposal suggests.

The plan was put together by a subcommittee of the Nuclear Safety Commission (NSC) and was released on Jan. 12.

The committee suggests that the pre-distribution of potassium iodine tablets to households in the Precautionary Action Zone (PAZ), within a 5-kilometer radius of a nuclear power plant, and to those within the Urgent Protective Action Planning Zone (UPZ), within a 30-kilometer radius of a nuclear power plant, is "efficient" or "somewhat efficient" in preventing radiation exposure in case of a nuclear accident.

The committee's proposal further suggests that potassium iodine tablets should also be distributed prior to and during evacuation orders to stay indoors to every household in the Protection Planning Area (PPA), which falls within a 50-kilometer radius from a nuclear plant.

The experts' proposal further reflects local governments' failure to distribute the tablets immediately after the outbreak of the disaster at the Fukushima No. 1 Nuclear Power Plant in March last year.

Although at present, many local municipalities around nuclear plants in Japan have secured potassium iodine tablets and are ready to distribute them to people in affected areas in case of a nuclear disaster, such tablets were hardly utilized following the outbreak of the Fukushima nuclear crisis.

## **Lack of memory caused breakdown in nuclear plant monitoring system**

The government's emergency support system to respond to nuclear plant accidents broke down temporarily late last year when it ran out of memory, the Nuclear and Industrial Safety Agency (NISA) has announced.

NISA said on Jan. 11 that the Emergency Response Support System (ERSS), which monitors the operational conditions of nuclear plants across Japan from NISA and off-site centers, was temporarily suspended **after it ran out of memory for data storage, triggering a breakdown in the system's data processing software.**

The agency said it will reset the memory twice a year and prepare manuals to respond to system abnormalities in order to prevent a recurrence. If any new nuclear disaster had erupted during the freeze, the government's system for predicting the spread of radioactive materials -- the System for Prediction of Environmental Emergency Dose Information (SPEEDI) -- may have failed as it uses data from ERSS.

"We take the fact that it took almost a whole day to restore the (ERSS) system after the glitch occurred very seriously. We will oversee the system steadfastly in order to prevent a recurrence," said a NISA official.

On Dec. 31 last year, NISA announced that an inspector at the Shika Nuclear Power Plant in Shika, Ishikawa Prefecture, noticed that the ERSS display system was not working shortly before noon on Dec. 30. The inspector contacted other nuclear plants, and found that the entire system was not functioning. The system was restored at around 2:30 p.m. on Dec. 31.

The government spent some 15.5 billion yen on the development of the ERSS, but due to power losses the system also failed when the nuclear disaster broke out at the Fukushima No. 1 nuclear plant.

[JP Click here for the original Japanese story](#)

(Mainichi Japan) January 12, 2012



A screen capture of a map released on Nov. 11 by the Ministry of Education, Culture, Sports, Science and Technology displaying accumulated radioactive cesium levels in eastern Japan. (Mainichi)

According to the committee, the System for Prediction of Environment Emergency Dose Information (SPEEDI), which functioned as a reference to the government during its investigation of the merits and demerits of distributing the pills, did not function efficiently and as a result the use of potassium iodine tablets after the Fukushima disaster was minimal.

Potassium iodine tablets are considered "strong medicine" according to the Pharmaceutical Affairs Law, which requires them to be treated with special caution. The NSC subcommittee, however, suggests that laws related to the prescription of potassium iodine tablets, such as the Pharmaceutical Affairs Law and the Medical Practitioners Law, should be revised to smoothen future procedures.

The proposal further suggests that the government should specify concrete guidelines for the intake of the medicine.

The committee's proposal will be incorporated in the government's nuclear disaster preservation guidelines that are expected to be revised this spring at the earliest.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 12, 2012

### **3 nabbed over fake contract for nuclear repair work in Fukui**



An aerial view of the Oi Nuclear Power Plant of Kansai Electric Power Co. in Oi, Fukui Prefecture, on Nov. 16, 2010. (Mainichi)

FUKUOKA -- Police have arrested three people for allegedly dispatching a worker to the Oi Nuclear Power Plant in Fukui Prefecture under a falsified contract, sparking a police probe into the yakuza's possible involvement in nuclear-related jobs, investigative sources say.

The Fukuoka and Fukui prefectural police forces on Jan. 12 announced the arrests of Hideo Ichise, 58, of Tsuruga, Fukui Prefecture, Yoshimi Tomita, 59, of Maizuru, Kyoto Prefecture, and Kanae Ikegami, 36, of Kitakyushu's Wakamatsu Ward, on suspicion of violating the Employment Security Law.

Ichise is the Fukui business manager of Taihei Dengyo Kaisha Ltd., a Tokyo-based power plant construction and maintenance firm. He previously served as the firm's Oi operation chief. Tomita is president of Takada Kiko, a plumbing firm in Takahama, Fukui Prefecture, and Ikegami is an executive of Dream, previously known as Soshin Kogyo, a plumbing and housing equipment firm. Police have identified Ikegami as the wife of a gang leader with ties to the Kitakyushu-based crime syndicate Kudo-kai.

Police suspect Soshin Kogyo dispatched workers to nuclear power facilities, thereby providing the Kudo-kai with a source of funds, according to investigative sources. The case has sparked a rare police investigation into the alleged involvement of yakuza in nuclear-related employment in Japan.

According to police investigators, the three were implicated in an unlawful contract scheme in which a male employee of Soshin Kogyo was dispatched to Kansai Electric Power Co.'s Oi plant and forced to engage in repair work under the supervision of Taihei Dengyo from early March to late September in 2010. The three have admitted to the allegations, the sources say.

Fukuoka police and others with knowledge of the case say the fake contract was set up through deals between Soshin Kogyo and Takada Kiko, and between Takada Kiko and Taihei Dengyo. The Fukuoka

and Fukui police forces believe the Soshin Kogyo employee served as a temporary worker in violation of the law, and suspect he may be just one of several temporary staffers sent to nuclear power facilities under bogus contract deals, investigative sources say.

Various temporary agencies have been suspected of siphoning off workers' wages and crime syndicates are suspected of playing a part in dispatching such temporary workers.

The National Police Agency (NPA) has ordered Tokyo Electric Power Co. to cut off ties with crime syndicates in connection with work at the crippled Fukushima No. 1 Nuclear Power Plant. The NPA set up a council with 22 general contractors last July to fight the yakuza's involvement in employment at the Fukushima plant.

Established in 1947, Taihei Dengyo has capital of about 4 billion yen and is listed on the First Section of the Tokyo Stock Exchange. It has built and repaired nuclear power stations across Japan and has been taking part in the work to bring the Fukushima nuclear crisis under control. Its sales in the business year ending in March 2011 came to about 61.8 billion yen.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 13, 2012

## **Nuke administrative agency ordered to produce own inspection manual**

The Japan Nuclear Energy Safety Organization (JNES), an incorporated administrative agency tasked with inspecting Japan's nuclear facilities, has been ordered to produce an independent inspection manual and end its reliance on inspection manuals made by nuclear power plant operators.

A third-party panel of the JNES made the request in a report to the agency under the jurisdiction of the Ministry of Economy, Trade and Industry on Jan. 12.

The panel made the request after the JNES has been found to have inspected nuclear power facilities across the country by relying on copies of inspection manuals of nuclear power plant operators.

JNES President Yoshihiro Nakagome said at a news conference he and his agency staff reflect deeply on the practice to duplicate such manuals and use them for inspection purposes. He said his agency will draw up and release a road map for reform and a timeline within one to two weeks.

The third-party panel in its report criticized the JNES for copying the manuals of nuclear power plant operators, baring its dependence on such operators and giving rise to public distrust.

The report also said the agency's training system lacks details and is not systematic, as compared to that of the U.S. Nuclear Regulatory Commission. It recommended strengthening education and training and 12 other remedial steps.

Toshihiko Kashiwagi, president of Omiya Law School in Saitama Prefecture who chaired the third-party panel, said, "Inspections help ensure the safety of nuclear power. The manual procedures represent a basis for inspections." He added that it is not appropriate for the JNES to copy the manuals prepared by nuclear power plant operators and that the agency should write its own manual even if it is laborious.

Nakagome said his agency is full of regret for the suspicious way it has conducted inspections of nuclear facilities and vowed to implement remedial measures at an early date.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 13, 2012

## **300 tons of tainted water found near No. 3 unit at Fukushima plant**

TOKYO (Kyodo) -- Around 300 tons of water contaminated with relatively high amounts of radioactive substances has been found in an underground tunnel near the No. 3 unit at the crippled Fukushima Daiichi nuclear power plant, the plant's operator said Thursday.

Tokyo Electric Power Co. said the water in the tunnel, used to lay electric cables, contained 49 to 69 becquerels of radioactive cesium per cubic centimeter, adding that it will check how the contaminated water accumulated in the area.

Some water with lower concentrations of radioactive materials was also found in a tunnel near the No. 1 unit.

The utility known as TEPCO is checking for accumulated pools of water in underground tunnels at the plant after around 220 tons of contaminated water was found on Dec. 18 in a tunnel near a facility on the plant premises for storing highly contaminated water.

On Wednesday, contaminated water was found to have accumulated in two underground tunnels.

(Mainichi Japan) January 13, 2012

## **All 3 nuclear reactors in Shikoku suspended**

IKATA, Ehime -- Operations at all three nuclear reactors in Shikoku have been suspended as the last one was stopped for a regular inspection on Jan. 13.

Shikoku Electric Power Co. suspended operations at the No. 2 reactor of its Ikata Nuclear Power Plant on the night of Jan. 13. Its No. 1 and 3 reactors, which had been shut down for regular inspections,

cannot be reactivated because of the ongoing crisis at the tsunami-hit Fukushima No. 1 Nuclear Power Plant.

Shikoku Electric Power became the second utility in Japan with no nuclear reactors running, following Kyushu Electric Power Co.

Currently, only five of the 54 commercial nuclear reactors across the country are in operation.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 14, 2012

## **Antinuclear conference calls for full support of victims in Fukushima**

YOKOHAMA (Kyodo) -- Citizens, politicians and scientists attending an antinuclear conference called Sunday for sufficient support to be provided to those affected by the nuclear accident at the Fukushima Daiichi power plant.

Participants of the Global Conference for a Nuclear Free World also called for "full transparency" by the Japanese government and the plant operator, Tokyo Electric Power Co., when dealing with the accident and helping victims.

The requests were part of the Yokohama Declaration that more than 10,000 participants from some 30 countries adopted on the second and last day of the event in Yokohama, organized by nongovernmental organizations such as Peace Boat.

Rights should be protected for those affected by the nuclear crisis, including "the right to evacuation, health care, decontamination, compensation and the right to enjoy the same standard of living as before March 11, 2011," said the declaration.

The declaration further urged the government to collect data related to the plant crippled after the March 11 earthquake and tsunami in a "comprehensive" manner.

It also called on Japan not to export nuclear power generation equipment or technology to other countries in Asia, the Middle East, Africa and Europe.

And the declaration said Japanese atomic power plants that are currently idled should not be restarted.

(Mainichi Japan) January 15, 2012

## **Radioactive gravel likely shipped to over 200 companies**

Radioactive gravel thought responsible for high radiation readings in a new apartment complex in Nihonmatsu, Fukushima Prefecture, was likely shipped to over 200 companies, making its way into apartments, bridges, and possibly temporary homes for evacuees, according to government investigators.

The gravel was kept in a part of the town of Namie, in an area near the disaster-hit Fukushima No. 1 Nuclear Power Plant. From the time the nuclear disaster began to the establishment of the area as an evacuation zone on April 22, the company owning the gravel had shipped 5,200 metric tons of it to 19 companies, according to national and local government sources.

Two of the receiving companies were ready-mix concrete companies and the rest were construction companies. However, the gravel was then reportedly sent on to over 200 other companies, where it was used in building materials.

On Jan. 16, Fukushima Prefectural Government officials agreed at a meeting to work to help move residents from the homes affected by the radioactive gravel, investigate the source of the contamination, and check for other places where contaminated building materials may have been used.

After the nuclear disaster began, standards were set for reuse of sludge and debris that may have been irradiated, but none were set for gravel used in concrete. The gravel industry is regulated by the Ministry of Economy, Trade and Industry. The ministry investigated the gravel industry in areas near the plant in May of last year, but after being told that "the businesses have evacuated and no one is making shipments," it took no special measures.

Since the problem with the gravel surfaced, many calls criticizing the slowness of the government's response have reportedly come in to a call center for the national government set up in Fukushima Prefecture.

Kinki University professor Hideo Yamazaki compared the gravel problem to the one of irradiated straw being sent out around the country: "It's exactly the same problem. The stone quarry is inside the evacuation zone, and what happened was something the government could have predicted. It's frustrating that the government does not think about the movement of materials, including gravel. The ones I feel sorry for are the gravel producers. It was impossible for them to notice the contamination at the time of shipping, and it's not right for them to be blamed. The government's actions have all been reactionary, and the locals are paying for it."

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 16, 2012

## **Irradiated gravel used for Fukushima condominium**

Officials in Fukushima Prefecture say they have detected high levels of radiation in a new building. They say a construction material may have been tainted with radioactive substances from the Fukushima Daiichi nuclear power plant.

The officials say the contamination was found at a 3-story apartment building in Nihonmatsu City that was completed last July.

The city checked the condo for radiation in December after regular monitoring found that children living there had been exposed to higher levels of radiation than other children over a 3-month period.

The city found that the radioactive cesium level on the first floor was 1.24 microsieverts per hour, which is higher than outside.

Radiation levels on the second and third floors were much lower.

The officials say that the gravel used on the first floor came from a stone-crushing site in Namie Town in an evacuation zone near the crippled plant.

The city says it will ask the tenants of the first-floor apartments to move out and will interview the other residents.

The city and the central government will confirm the cause of the contamination and check if gravel from the same site has been used elsewhere.

Sunday, January 15, 2012 22:48 +0900 (JST)

## **Concrete sold to over 200 firms may be tainted**

The Japanese government is investigating the distribution of crushed stones that may contain radioactivity from the accident at the Fukushima Daiichi nuclear power plant. It has found that concrete made of the stones has been sold to more than 200 firms.

The probe comes after radioactive cesium was detected in a new apartment building in Nihonmatsu, Fukushima Prefecture where the concrete was used. Readings of up to 1.24 microsieverts per hour have been recorded inside the building which is higher than outside.

The gravel comes from a quarry in Namie that was designated as an evacuation zone in April.

The quarry operator says it shipped more than 5,000 tons of crushed stones to 19 firms in the weeks after the accident. The government has set no limit on radiation in stones and sand used for construction even after the nuclear accident.

The company president told reporters on Monday that he never imagined that stones from his quarry would cause such a problem and that he wants to apologize to residents of the building for their exposure to radiation.

The economy ministry says 2 of the 19 firms sold concrete made of the stones to more than 200 companies. It believes that the concrete was used in housing construction and on roads.

Monday, January 16, 2012 13:54 +0900 (JST)

## **Opponents of Hamaoka nuclear plant restart gain momentum**

SHIZUOKA -- A growing number of municipalities near the suspended Hamaoka Nuclear Power Plant in Shizuoka Prefecture are up in arms about plans by operator Chubu Electric Power Co. to restart the plant.

Chubu Electric Power shut down the nuclear plant in May as requested by then Prime Minister Naoto Kan due to fears of a possible huge earthquake in the aftermath of the March 11 earthquake and tsunami that triggered the crisis at the Fukushima No. 1 Nuclear Power Plant.

Chubu Electric Power is aiming to restart the plant, southwest of Tokyo, after implementing measures against tsunami, including an 18-meter-tall seawall now under construction.

But many municipalities near the plant, including those within a 10-kilometer radius of the plant known as an emergency planning zone (EPZ) and those within a 30-kilometer radius known as an urgent protective action zone (UPZ), have passed resolutions and opinions opposing the plant's restart.

The city assembly in Makinohara, one of four cities within the 10-kilometer radius of the power plant, spearheaded the campaign against the plan by adopting a resolution last September calling for the decommissioning of the plant citing radiation fears among major firms in the city.

The city assembly in Omaezaki, host to the Hamaoka power station, took steps to counter the move by adopting documents that said that the city, heavily dependent on nuclear power-related revenue and subsidies, was troubled by the decommission appeal.

But the cities of Kikugawa and Kakegawa subsequently approved documents that say they cannot approve of the restart unless they win their residents' understanding.

Other local governments, which will be required to take preparatory steps if designated as parts of the UPZ in the course of a review of the nation's nuclear disaster-prevention system, are also becoming vocal about their opposition to the nuclear plant.

In addition to the city of Shimada, which adopted an anti-restart document in June, the city of Yaizu, home port of the Lucky Dragon No. 5, a tuna fishing boat exposed to nuclear fallout from U.S. thermonuclear testing on Bikini Atoll in 1954, adopted a similar resolution, along with the cities of Fujieda and Fukuroi.

The town assembly in Yoshida, located in a 30-kilometer radius of the power plant, unanimously adopted a resolution and a document urging that the plant be scrapped altogether.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 16, 2012

## **11 people live in no-entry zone within 20 km of Fukushima plant**

FUKUSHIMA (Kyodo) -- Eleven people still live in the government-designated no-entry zone within a 20-kilometer radius of the crippled Fukushima Daiichi nuclear power plant despite a threat of radiation exposure, municipalities officials said Sunday.

The 11 from six households -- six males and five females in their 50s to 90s -- remain in the four municipalities of Tamura, Tomioka, Naraha and Kawauchi, all in Fukushima Prefecture, the municipalities said.

Since April 22, the government has banned 78,000 residents from remaining in the 20-km zone, which fully or partially covers nine municipalities, including the four.

The remaining five municipalities of Minamisoma, Futaba, Okuma, Namie and Katsurao are completely deserted.

Their reasons for staying include reluctance to abandon their homes, need to take care of acquaintances in poor health, and desire to take care of a pet. The four municipalities with residents said they have tried in vain to persuade the eleven to evacuate, but they have not forced residents who chose to stay.

A man in his 50s in the city of Tamura fled in the immediate aftermath of the nuclear crisis, but returned home before the government set the no-entry zone, city officials said. He now lives with three others.

An official at the Tamura city government quoted the man as saying, "Two (of the three at his home) are in poor health, so it would be riskier to try moving them from here."

Another male in his 50s, who has lived alone in the town of Tomioka, posted a video message on YouTube, saying electricity and tap water are not available at his residence.

(Mainichi Japan) January 16, 2012

## **Economy, Trade and Industry Ministry bureaucrats weigh in on nuclear crisis, TPP**

Many of the highly debated issues we face today, such as the nuclear disaster at the Fukushima No. 1 Nuclear Power Plant and the subsequent call for reduced dependence on nuclear power, and the government's decision to enter the Trans-Pacific Partnership (TPP) negotiations, are under the jurisdiction of the Ministry of Economy, Trade and Industry (METI). Amid the turmoil, what is going on in the minds of METI bureaucrats?

One mid-ranking bureaucrat seemed to be questioning how far he can stick to his convictions.

In the novel, "Kanryo tachi no natsu" ("The Summer of the Bureaucrats"), author Saburo Shiroyama portrays a group of bureaucrats working at the then-Ministry of International Trade and Industry. The protagonist confronts politicians' egos head on, flatly telling junior bureaucrats that they are employees not of the minister, but of the state.

Goings-on reminiscent of such scenes from the 1975 novel took place until just recently, apparently, but no longer. And yet, more now than ever, we are in urgent need of a bureaucrat with the passion of the protagonist in the abovementioned novel, which all METI bureaucrats are said to have read.

For example, one METI member once called for the abandonment of the nuclear fuel cycle project, saying, "All we're doing is pumping tax money into it, and getting nothing in return." Many in the ministry agreed, the aforementioned mid-ranking bureaucrat explained.

"However," he continued, "we ultimately seem to have been defeated by the power of politics. As a ministry, we're powerless against politicians, and it may be that we lack the nerve to put ourselves on the line to protect colleagues who speak the truth."

So how is the ministry dealing with the current administration and the ruling Democratic Party of Japan (DPJ)?

"The DPJ is harsh toward so-called "shoeki" (benefits to ministries), such as the practice of "amakudari" (literally "descent from heaven," in which former bureaucrats take advisory posts in the private sector in industries they used to regulate). In the next general election, which will take place next year at the latest, however, the DPJ will likely lose, having been unable to live up to their previous campaign promises. You could say we're all holding our breath and trying to make it until then," the mid-ranking bureaucrat explained.

"I get the feeling that compared to 10 years ago, there are fewer bureaucrats with lofty ambitions lamenting the future of the state," he continued, and pointed out that precisely because of this, it was a shame that former METI bureaucrat Shigeaki Koga resigned from the ministry in protest of the bureaucracy's abuse of power and also called for civil-service reform.

"For a long time, the atmosphere at METI was such that people could voice their opinions fairly freely. With Koga's resignation, though, younger bureaucrats will find it difficult to follow in his footsteps."

Objecting to accusations that bureaucrats are guaranteed a certain status and work in environments more stable than the private sector, he said, "I think the guarantee of bureaucrats' status exists so that no matter how difficult a challenge they are presented with by any administration, they can continue as professionals to say what is right or true."

Asked whether that guarantee was proving effective in the ongoing deliberations about the new energy policy, he said, "I hadn't expected such a nuclear disaster. I had been convinced that the reactors themselves, with their multiple defenses, were safe." He continued, "Some bureaucrats personally believe in abolishing or reducing Japan's dependence on nuclear power, but I get the sense that the ministry as a whole is dominated by the attitude of waiting to see how things go. Moreover, the 'nuclear village' comprising cozy relationships between utilities, former public officials who have "descended from heaven" onto private companies, and politicians remain intact. While many METI bureaucrats are going around apologizing to residents in Fukushima Prefecture, the 'nuclear village' elite who have heretofore promoted nuclear power don't even go to Fukushima, and are instead waiting quietly at their desks in Kasumigaseki (in Tokyo's Chiyoda Ward) for the tides of public opinion to change."

Of course, some METI bureaucrats oppose the move to reduce Japan's nuclear dependence.

One male bureaucrat in his 40s said, "If we are to abandon nuclear energy, power generation using alternative energy sources such as natural energy and fossil fuels will come at high costs. This will pose an obstacle to industrial expansion. If the economy slides, wages will drop and unemployment will

probably rise. That's one option, but is the public ready for something like that? It doesn't seem to be, does it?"

Regarding the announcement made by Tokyo Electric Power Co. (TEPCO), operator of the stricken Fukushima No. 1 Nuclear Power Plant, that it will raise industrial electricity prices by about 20 percent, he said, "High electricity bills will provide corporations with a good excuse to go overseas. Domestic power prices are also likely to rise. Ultimately, it will make life harder for the public."

A power policy, however, cannot be implemented without a certain level of the public's support. The ongoing nuclear disaster seems to have made the public more distrusting of bureaucrats, but bureaucrats also seem to be harboring a sense of distrust toward citizens who are easily swayed by those who say what they want to hear.

As for Japan's decision to enter discussions on the TPP? "I fully support it. Those who object to it claim that the TPP will result in 'an influx of genetically-modified food products and cheap produce from the U.S. and destroy Japanese farming,' but that's an insult to consumers. Consumers have the ability to choose not to buy things they are unsure about. This might be an extreme way to put it, but you can't really stop any agricultural system that comes between inexpensive, high-quality items and consumers from being destroyed."

Another METI bureaucrat, a thirtysomething deputy division chief, said the reason for choosing to work at METI was based on "a desire to be exposed to various job sites."



Holding placards reading, "Protect Japanese land and food," farmers from tsunami-hit Miyagi Prefecture shout slogans against the Trans-Pacific Partnership free trade zone (TPP) on Wednesday, Oct. 26, 2011. (AP Photo/Shizuo Kambayashi)

"Of course, Japan should enter TPP negotiations. If it becomes clear after collecting information and making proposals in negotiations that signing on to the agreement would damage national interests, the decision to pull out can be made then."

"The average age of farmers in Japan is about 65. In other words, with or without the debate over the TPP, a strategy addressing the aging population is an urgent matter. Without classifying Japanese agriculture as part of the manufacturing industry and expanding it by targeting foreign markets, it cannot be expected to survive. In fact, there have been instances in which Japanese apples have been bought at high prices in the Middle East. There are a lot of Japanese cultural and service-oriented

industries that can be exported. It's our job to serve as consultants and help entire industries. It's rewarding."

When conversation wandered toward the anti-nuclear protesters camping out in tents in front of the ministry, however, the aforementioned bureaucrat mumbled, "I can't explain it logically, but I'm sorry that such a disaster has taken place."

"I've never been involved in nuclear administration. But I'm a member of the ministry that's responsible for having promoted nuclear power," he added.

Compared to the Finance Ministry bureaucrats who were interviewed for an article published on Nov. 16, 2011, METI bureaucrats gave the impression of being more candid. One bureaucrat characterized the difference thusly: "The Finance Ministry occupies a passive position, so to speak, since it evaluates the budget requests of various other ministries. METI is the opposite. It's an aggressive administrative body whose role is to come up with ways to rejuvenate industries and bring wealth to the country. (By Yoshiaki Ebata, Evening Edition Department)

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 16, 2012

## Decontamination site in no-go area shown to press

Isaku Kotera / Yomiuri Shimbun Staff Writer

MINAMI-SOMA, Fukushima--A decontamination model project at a site in Minami-Soma City, Fukushima Prefecture, is successfully reducing radiation levels by burying contaminated soil, according to officials involved in the project.

The site, which is inside the 20-kilometer radius no-entry zone around Tokyo Electric Power Co.'s crippled Fukushima No. 1 nuclear power plant, was shown to the media Saturday.

Several heavy machines were used to dig a hole **about 2.5 meters deep** at a city-run sports ground, where contaminated soil will be stored **until it is transferred to a temporary storage facility.**

**Waterproof sheets were laid on the bottom of the hole, in which polypropylene bags, each containing two tons of contaminated soil, were stacked three-high.**

Radiation levels one centimeter above the hole ranged from 0.24 to 0.26 microsieverts per hour. **Project officials said this was 74 percent to 91 percent lower than the radiation levels of the soil inside the bags.**

The project has been consigned to the Japan Atomic Energy Agency.

An agency official said: "The structure is the same as that in the temporary storage facility. After burying the bags, waterproof sheets will be placed on them, and they will be covered with clean soil. This can lower [radiation levels] by 98 percent."

The Minami-Soma government plans to start its own full-scale decontamination work outside the no-entry zone and expanded evacuation zone in February.

The city government plans to start decontamination work after obtaining approval from residents for locations of temporary storage sites for contaminated soil.

However, the city authorities have not been able to obtain residents' consent to go ahead with the work. Consequently, it is possible the schedule might be delayed.

A city government official in charge of the issue said, "Although the storage period is set for about three years, **residents fear the contaminated soil will be left here forever because the site of the intermediate storage facility hasn't been decided.**"

(Jan. 16, 2012)

## **NISA to endorse stress test results on Oi nuclear plant**

The Yomiuri Shimbun

The Nuclear and Industrial Safety Agency has decided to endorse the results of first-stage stress tests submitted by Kansai Electric Power Co. regarding the Nos. 3 and 4 reactors at its Oi nuclear power plant, sources said.

NISA has received such test results for 12 nuclear reactors. Its judgment regarding the plant in Fukui Prefecture will be the first since stress tests were introduced in July to demonstrate the ability of nuclear power plants to withstand severe earthquakes and tsunami.

Clearing the first stage of the tests is a prerequisite for reactivating reactors that have been suspended for regular inspections.

NISA will invite experts from the International Atomic Energy Agency by the end of this month to evaluate the test methods.

Then, after the Cabinet Office's Nuclear Safety Commission has confirmed NISA's screening results, Prime Minister Yoshihiko Noda and three ministers concerned will decide whether reactors can be reactivated.

But local residents and governments also must approve reactivation, so it is unclear whether any nuclear reactors will be able to restart this winter.

Only five of the 54 nuclear reactors nationwide are currently operating. If the remaining five are shut down for regular inspections and the idled ones cannot be restarted, all the reactors in the nation will be idle in late April.

**NISA is a body under the Economy, Trade and Industry Ministry.**

(Jan. 16, 2012)

## **TEPCO submits results of first stress test**

Tokyo Electric Power Company has submitted to the government the results of stress tests on 2 nuclear reactors along the Japan Sea coast.

TEPCO handed over to the Nuclear and Industrial Safety Agency on Monday test results of the No.1 and No.7 reactors at the **Kashiwazaki Kariwa nuclear power plant in Niigata Prefecture.**

It says the tests show that the facilities are capable of surviving an earthquake 1.3 times the strength the plant was designed to withstand. It also says it could endure a tsunami of up to 15 meters - nearly five times that of the safety standard set by the company.

This is the first time TEPCO has filed its test results.

The assessment on the safety of nuclear power plants is a precondition for restarting reactors that have been suspended for regular inspections.

Utilities across Japan have so far submitted stress test results on 14 reactors, which account for nearly 30 percent of the reactors that have been shut down for regular inspections.

TEPCO's senior vice president, Zengo Aizawa told NHK that the utility considers the 2 reactors as being safe.

However, he said the company wants to explain the results to the local authorities and residents, and that it is still not the right time to restart the reactors.

Meanwhile, Niigata Governor Hirohiko Izumida says he questions the wisdom of carrying out such a test when the accident at the Fukushima nuclear plant has not yet been fully inspected.

He says that it's still too early to decide whether to restart the reactors.

Monday, January 16, 2012 19:20 +0900 (JST)

## **TEPCO announces 17% rise in electricity charges for companies**



Tokyo Electric Power Co. headquarters in Tokyo's Chiyoda Ward. (Mainichi)

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Tuesday it will seek an average 17 percent rise in electricity charges for corporate users to finance growing fuel costs stemming from boosting thermal power generation in the wake of the disastrous accident at its Fukushima Daiichi nuclear power plant.

The electricity rate hikes, which take effect April 1, will affect some 240,000 contracts for 50 kilowatts or more, and boost revenue at the company known as TEPCO by 400 billion yen annually.

With all of TEPCO's nuclear reactors expected to be shut down by March for regular checkups or other reasons, TEPCO President Toshio Nishizawa said, "If the current situation continues, we think our business condition would deteriorate further, and at no distant date, fuel procurement and stable supply of electricity may be affected."

"We will continue to do our best to streamline (our operations), but we have to ask for (electricity rate) hikes," Nishizawa said.

Based on the announcement, electricity charges will be lifted by 2.61 yen per kilowatt hour for customers with contracts for less than 2,000 kilowatts, and by 2.58 yen per kwh for customers with contracts for 2,000 kwh or more.

According to the utility, fuel costs for the financial year ending March 31 are expected to increase by about 830 billion yen from the previous year.

TEPCO said in December that it also hopes to raise household electricity bills, but doing so requires government approval, and Economy, Trade and Industry Minister Yukio Edano, whose permission is required, has warned the utility should not easily resort to the measure.

Sources close to the matter have said that TEPCO is considering raising household electricity rates by 10 percent for a certain period from the fall.

The plan is expected to be included in a special business plan for TEPCO, which is to be crafted in March by TEPCO and a state-backed entity providing financial assistance to the utility.

(Mainichi Japan) January 17, 2012

## Radioactive concrete found in new condo

The Yomiuri Shimbun

FUKUSHIMA--High levels of radiation have been detected in a condominium building in Nihonmatsu City, Fukushima Prefecture, which was built in July using concrete mixed with material taken from an evacuation zone created in the aftermath of Japan's nuclear crisis, the city announced.

The announcement, released Sunday, says about 1 microsievert of radiation per hour was detected in a room on the first floor of the three-story building, which has tenants living in 12 units.

The city intends to move four households occupying the building's first floor from the condominium and discuss the problem with the central and prefectural governments.

Concrete used to construct the building included broken pieces of stone quarried from Namie Town, which was included in the government's evacuation zone after the Great East Japan Earthquake due to its proximity to the crippled Fukushima No. 1 nuclear power plant.

This section of the town was made an evacuation zone because annual radiation exposure in the area could be 20 millisieverts or higher. The remainder of the town falls within 20 kilometers of the nuclear plant and is a no-entry area due to health risks.

Sources say after the March 11 disaster, 19 companies in the prefecture accepted about 5,200 tons of broken stone pieces, including those used for the building in Nihonmatsu City, mined and shipped from a quarry in Namie Town.

The Economy, Trade and Industry Ministry has been tracing the final destinations of the possibly contaminated building materials.

The high levels of radiation in the condominium building was **discovered thanks to a city survey on the accumulated exposure of radiation among primary and middle school students**. As part of the survey, a dosimeter attached to a female middle school student living on the first floor of the building recorded up to 1.62 millisieverts of radioactivity for a three-month period from September to November.

The city responded by conducting an investigation into the cause of the exposure. In the air one meter from the building's first floor, it detected 1.16 to 1.24 microsieverts of radiation per hour on Dec. 27, reporting the finding to the prefectural government and the Environment Ministry.

Another test this month detected radioactive cesium in various parts of the building including the concrete foundation below the floor.

The amount of radioactivity in rooms on the second and third floors ranged from 0.10 to 0.38 microsievert per hour, lower than that on the first level.

Radioactivity in the air surrounding the building was found to range from 0.7 to 1.0 microsievert per hour.

The first floor's radioactivity is greater than that found outside the building and is estimated to have an annual level of about 10 millisieverts.

The Cabinet Office's Nuclear Emergency Response Headquarters said this quantity does not pose immediate health risks.

The city said **10 of the 12 households living in the building were displaced from Namie Town and Minami-Soma City, also in the prefecture, after the March 11 disaster.**

A male resident in his 30s on the first floor was clearly disappointed when he said, "I have no option other than moving out if the radiation level doesn't decrease."

"We've also suffered," an employee of the business in Nihonmatsu City that constructed the building said. "But due to our concern for the tenants, we'll solve this problem by deciding as soon as possible to whether rebuild the condominium building or ask residents to move out."

The president of the company that sold the pieces of broken stone said they were shipped from the quarry between March 25 to April 22. The latter date is when the area was designated as part of the expanded evacuation zone.

(Jan. 17, 2012)

## **Government tries to find structures where radioactive gravel was used**

The national government will try to find all structures where **5,200 metric tons of highly radioactive gravel** from near the crisis-hit Fukushima No. 1 Nuclear Power Plant was used and measure the radiation levels there, it has been learned.

The gravel is thought to have made its way to around 200 construction-related businesses. The company that mined the gravel kept it in the town of Namie, which was marked for evacuation. Before the designation on April 22, the company shipped the gravel to 19 companies, from which it spread to well over a hundred others.

The national and Fukushima prefectural governments have begun investigating whether irradiated materials from other mining businesses may have also been shipped. According to the Ministry of Economy, Trade and Industry (METI), there are three mining companies near areas recommended to evacuate because of high radiation levels, and it will look into whether there were shipments made after the nuclear disaster began and measure radiation at the mining sites. If high radiation is found, it will request a stop to shipments.

Standards regarding reuse of sludge or debris from near the nuclear plant were put in place after the start of the nuclear disaster, but none were set for gravel used in concrete. In June last year, METI was told by a mining association that mining companies near the plant had already evacuated and were not making shipments, and METI took no special measures.

A METI official said, "Many thought that unlike sludge and rice straw, which accumulate and concentrate radioactive materials, gravel would have low radiation, as it is sourced by blowing up rocks and any dust that rises is doused with water. Looking back now, maybe we should have been more careful."

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 17, 2012

## **Concrete material distribution to be probed**

Japan's central government and Fukushima Prefecture plan to investigate the distribution of gravel from quarries possibly tainted with radiation from the accident at the Fukushima Daiichi nuclear power plant.

The move comes after higher-than-usual levels of radioactive cesium were detected in concrete used in the construction of an apartment building in Nihonmatsu City.

The concrete was made from crushed stone from a quarry in Namie town, which was designated as an evacuation zone following the nuclear accident.

The state and local governments will investigate the shipments from not only that quarry but 9 other quarries as well.

The quarries are located in and around designated evacuation zones or in places which are identified as radiation hot spots.

It has so far been learned that gravel from the quarry in Namie was sold to at least 200 construction companies and is likely to have been used in the construction of buildings and roads.

Meanwhile, 5 of the 12 families living in the contaminated building say they want to move elsewhere. They were already forced to evacuate their homes near the Fukushima Daiichi plant after the nuclear accident.

Tuesday, January 17, 2012 13:40 +0900 (JST)

## **Preparations going on for reactor endoscopy**

Preparations are under way to use an endoscope to examine the inside of a containment vessel of the damaged No. 2 reactor at the Fukushima Daiichi nuclear power plant.

At the No.1, 2, and 3 reactors of the plant, the nuclear fuel has melted down, but the exact state of the

fuel and details of the inside of the containment vessels are yet to be confirmed. This is causing a big problem for the operator, Tokyo Electric Power Company, in its continued efforts to stabilize the cooling of the reactors and its plans to decommission them. The reactors were damaged by the March 11th earthquake and tsunami.

On Tuesday, **10 groups of 4 workers** each entered the first floor of the No.2 reactor building from the northwestern side. **The workers drilled a hole in the containment vessel to insert an endoscope.** An industrial endoscope that can withstand high levels of radiation will be used.

**The utility says the workers were exposed to up to 3 millisieverts of radiation.** The company says the workers had rehearsed the job at the No. 5 reactor, the same type as the No.2, in order to minimize their exposure.

TEPCO says Tuesday's operation went smoothly and it will insert the endoscope on Thursday as scheduled. It hopes to gain the first internal view of one of the damaged reactors since the accident.

Tuesday, January 17, 2012 20:26 +0900 (JST)

## **Gov't urged to clarify where radioactive gravel has been used**

The national and Fukushima prefectural governments are required to clarify where and how much radioactive gravel shipped from a rock quarry near the tsunami-hit nuclear power station has been used and how far it was contaminated.

Furthermore, they should take measures to protect people who are feared to be exposed to radiation from such gravel.

Gravel contaminated with radioactive substances, which has been shipped from the quarry in Namie, Fukushima Prefecture, has been used for the construction of apartment complexes and the repair of roads designated as school-commuting routes and irrigation canals.

It has been confirmed that a stone processing company in Fukushima Prefecture had shipped about 5,200 metric tons of gravel from the quarry by April 22 last year when the area was designated as a planned evacuation zone following the outbreak of the nuclear crisis. Ready-mix concrete containing the gravel has been supplied to about 200 construction companies.

Some of the gravel was used for the foundation for an apartment complex in Nihonmatsu that was completed in July last year, and higher levels of radiation than outdoors have recently been detected on its first floor. Moreover, higher levels of radiation have been detected from an irrigation canal in Nihonmatsu, which contained gravel shipped from the same company.

The Fukushima Prefectural Government is poised to measure radiation levels at hundreds of structures containing stone materials shipped from the same quarry, including houses and roads. The work should not be prolonged, considering local residents' concerns. Assistance from the national government is indispensable to conduct a speedy survey.

There are other quarries near areas designated as evacuation recommendation areas. The national and prefectural governments should thoroughly check if contaminated stone materials have been shipped from these firms.

In July last year, it came to light that rice straw stored in contaminated areas had been shipped and beef cows that ate it were contaminated with radiation. The latest case is quite similar to the rice straw contamination. If the central and prefectural governments had been aware of the possibility that stone materials were contaminated with radioactive materials and taken prompt action, the spread of damage from contaminated gravel could have been prevented.

The responsibility of these government bodies for the delay in their response is severe. The Economy, Trade and Industry Ministry received a report late last year that high levels of radiation had been detected at the Nihonmatsu apartment complex, but had not launched a survey on radiation levels until around Jan. 10, highlighting its lack of a sense of crisis.

Once contamination is confirmed, the national and local governments need to implement all possible and necessary measures to prevent local residents and other people from being exposed to the radiation, while checking radiation levels. In doing so, they should consider whether simply shielding contaminated structures is sufficient or if such structures must be removed.

Some 10 of 12 households occupying the Nihonmatsu apartment complex are disaster evacuees. Authorities should look for substitute apartments for them if they desire.

If contaminated houses need to be rebuilt, compensation payments to their residents will emerge as a major problem. The national government, Tokyo Electric Power Co. which operates the crippled nuclear plant, and other relevant entities must not place the blame on each other and cause a delay in relief measures.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 18, 2012

## **Radiation-tainted stones used in paths near housing in Fukushima town**

FUKUSHIMA, Japan (Kyodo) -- Radiation-contaminated gravel and stones shipped from a quarry in the evacuation zone near the Fukushima Daiichi nuclear power plant have been used in roads and pathways around houses in a town in Fukushima Prefecture, sources with knowledge of the matter said Wednesday.

The gravel was used for approach lanes to two houses in the town of Kawamata in the prefecture, and asphalt-paved roads owned by the Kawamata municipal government, the sources said.

The gravel using stones in neighboring Namie had been shipped from a quarry company sometime between the occurrence of the nuclear plant crisis, triggered by the March 11 earthquake and tsunami, and the governmental designation of the evacuation zone on April 22, they said.

Namie and parts of Kawamata are located in the evacuation zone set amid the crisis at the Fukushima Daiichi plant.

The latest revelation comes at a time when the government is seeking to identify distribution routes and destinations of such gravel and rocks from the quarry company, as well as other quarries in the area.

The government said Monday it started the probe after it learned in December that a high level of radiation was detected on the first floor of a new condominium in Nihonmatsu, Fukushima, whose concrete foundations were made by incorporating crushed stones from the Namie quarry.

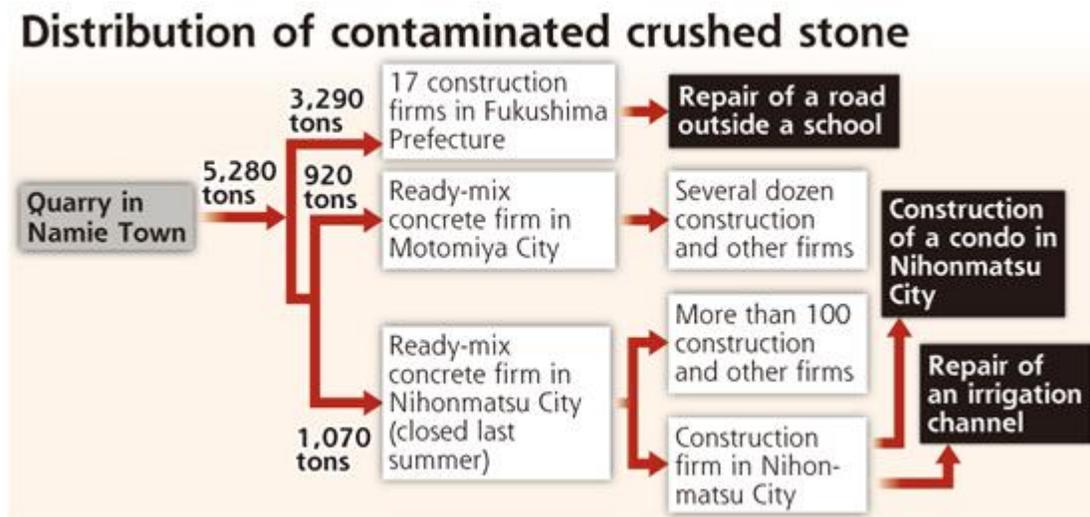
The quarry company, Futaba Saiseiki Kogyo, also said Monday it has shipped a total of 5,280 tons of gravel from Namie to 19 construction companies after the nuclear crisis.

Radiation of up to 1.24 microsieverts per hour, higher than the level outside the condo, was detected after a junior high school girl living in the condo showed cumulative exposure of 1.62 millisieverts in the three months through November.

(Mainichi Japan) January 18, 2012

## Building contamination spreads / Radioactive materials used to repair road and waterway in Fukushima

The Yomiuri Shimbun



Contaminated crushed stone pieces taken from a quarry in the government's expanded evacuation zone following the crisis at the Fukushima No. 1 nuclear plant have been used to repair an irrigation channel and a road outside a school in Nihonmatsu City, Fukushima Prefecture.

The discovery was made after authorities began tracking down the whereabouts of 5,280 tons of the material that was quarried from Namie Town, in the same prefecture, after the stones were used in the construction of a condominium building in Nihonmatsu City, which was later found to contain high levels of radiation. The material is proving difficult to track because it has been sold to more than 100 construction companies throughout the prefecture.

One company said it was part of a group of firms that bought and used about eight tons of the crushed stone pieces to pave a road in front of a primary school in the city's south in April. The work was done to repair cracks caused by the March 11 earthquake and covered a total area of about 80 square meters across three locations along the road.

In a test Monday, the primary school found radioactivity in the air around the repaired road ranged from 0.4 to 0.5 microsievert per hour, almost as same as that detected in neighboring areas. But the school has advised students to walk along the side of the road as a precautionary measure.

The city government said the crushed stone was also mixed with fresh concrete used to repair an irrigation channel in April.

It believes the repaired section of the waterway is contaminated with radioactive cesium. A test conducted this month detected 1.62 to 1.97 microsieverts of radiation per hour at the waterway, higher than the 0.7 to 1.0 microsievert of radiation per hour found in surrounding areas.

The Economy, Trade and Industry Ministry said all the crushed stone pieces in question were shipped from Namie Town to two ready-mix concrete companies, one in Nihonmatsu City and the other in Motomiya City, as well as to 17 construction companies in the prefecture.

The ministry said documents suggest the crushed stone was then sold by the Nihonmatsu company to more than 100 other businesses, while the Motomiya company distributed the material to dozens of firms. It is difficult to establish the exact route of the crushed stone, the ministry added.

The Yomiuri Shimbun spoke to 11 of the 17 construction firms that bought the material, and all said they used the crushed stone in Fukushima Prefecture. A senior official of a Kawamata Town company that bought more than 500 tons of the crushed stone, said the material was used to build roads and there was never any speculation that the material had been contaminated by radioactive substances.

Futaba Saiseiki Kogyo Co. is responsible for operating the quarry and shipping the stone pieces. The company's president, Mitsuru Igari, 50, apologized at a press conference Monday. Igari said he feels sorry for what happened and added that he had pride in the work he was doing because he was helping to rehabilitate the area when others were abandoning it.

===

New houses to be checked

The Fukushima prefectural government started discussing Monday a plan to measure radiation inside houses built throughout the prefecture after the March 11 disaster.

The prefectural government will also study whether to conduct radiation measurements at 10 quarries located in evacuation zones or recommended evacuation areas.

(Jan. 18, 2012)

## **Nuclear reactor operation period could be up to 60 years**

TOKYO (Kyodo) -- The Japanese government said Tuesday nuclear power plant operators could extend the operational life of a reactor by up to 20 years beyond the 40-year limit to be newly introduced under the planned revision of nuclear regulations.

The government is currently crafting bills to enhance nuclear safety regulations in the wake of the disastrous accident at the Fukushima Daiichi nuclear power plant, seeking their passage in the upcoming Diet session.

Under the new legislation, utilities would be allowed to operate a nuclear reactor for 40 years, beginning from the day it passed pre-operation inspections. But if approved by the government, a one-time extension of no more than 20 years would be allowed.

In the approval process, the government would examine the degree of obsolescence of the facility and the operator's technological ability to appropriately maintain it.

Government officials said that utilities would be required to clear "tough standards," but details have yet to be made public.

As for the reason for setting a maximum 20-year extension, one government official said he believes that period is "appropriate when considering the global trend" as seen, for example, in the United States.

But he added that the life span of a reactor would basically be 40 years and approved extensions would be "exceptional" cases.

In announcing the plan to set the 40-year limit earlier this month, nuclear disaster minister Goshi Hosono said approved extensions would be "very rare" under the envisioned regulatory reinforcement.

(Mainichi Japan) January 18, 2012

## **Fujimura:nuke life extension will be limited**

Chief Cabinet Secretary Osamu Fujimura says there has been no basic change in the government's policy to limit the life of nuclear power plants to 40 years.

Fujimura was speaking to reporters on Wednesday. He was referring to the plan by a Cabinet Secretariat taskforce to propose extending the life of nuclear power plants up to 60 years.

He said the 40-year restriction remains the pillar of planned revisions in nuclear safety regulations. He said extension of a nuclear plant's life would be allowed in very few, exceptional cases.

Fujimura added that strict conditions will be in place for approving extensions beyond the 40-year limit.

Wednesday, January 18, 2012 14:34 +0900 (JST)

## **Nuclear power' life extension criticized**

Local Japanese officials are voicing criticism over the central government's plan to extend the life of the nation's nuclear power plants to a maximum of 60 years.

Earlier this month, the government proposed that the life of nuclear plants be set at 40 years, based on a review of safety regulations following the disaster at the Fukushima Daiichi plant. But on Tuesday, the government said that in particular cases, operations can be extended by up to another 20 years.

The governor of Niigata Prefecture, Hirohiko Izumida, said the government's wavering will arouse concern among residents.

He called for an examination of the technical failures that led to the Fukushima disaster, and an investigation into whether the problems were related to the age of the reactors.

The governor of Shiga Prefecture, Yukiko Kada, says extending the life of reactors up to 60 years will make the public uneasy about nuclear safety measures.

She says the government must explain the rationale for the extension, as well as how it originally determined that the operations should last 40 or 60 years.

Mayor Tatsuya Murakami of Tokai Village in Ibaraki Prefecture says adding an additional 20 years to the proposed 40-year limit is a compromise measure that guts the substance of the original plan. He says public confidence in nuclear safety regulations will be lost without a definitive standard for the lifespan of power plants.

Wednesday, January 18, 2012 19:10 +0900 (JST)

## Designated nuclear inspection body has board members from nuclear industry

Nearly half of the board members of the Nuclear Material Control Center (NMCC), the government-designated body to inspect nuclear materials to prevent sensitive materials from being used for military purposes, come from utility and other companies that are subject to its scrutiny and it has received cash contributions worth tens of millions of yen annually from the companies, it has been learned.

The Ministry of Education, Culture, Sports, Science and Technology, which oversees the NMCC, said, "Problems with something like conducting inspections tolerantly have not occurred." But the NMCC is likely to come under fire for having people from companies in the nuclear industry as its executive officers.

NMCC officials accompany inspectors from the International Atomic Energy Agency (IAEA) on their inspections of about 260 facilities such as utility firms and nuclear fuel manufacturers in Japan. They also conduct inspections on consignment from the Ministry of Education, Culture, Sports, Science and Technology.

**Of all the 17 board members at the NMCC, eight are from the nuclear industry.** Of the 15 executive board members including the chairman, six are current or former senior officials of utility firms or the Japan Atomic Energy Agency (JAEA). One auditor is a board member of a utility firm while another is a former employee of a manufacturer of nuclear reactors. Most of the NMCC's annual budget of about 2.98 billion yen (fiscal 2010) came from government subsidies. It also receives membership fees (100,000 yen per lot per annum) of about 96 million yen from supporting members. Most of the supporting members are utility firms and nuclear fuel processing firms that are subject to NMCC inspections, but the NMCC does not release the details.

Masahiro Kikuchi, an executive board member of the NMCC, said, "Executive board members (from organizations that are subject to NMCC inspections) are knowledgeable people who give advice on management. They don't have the authority to make pass-or-fail decisions over inspections. Fees from supporting members are not used for inspections."

The NMCC was jointly established with money from the private sector including utility companies in 1972, with the aim of promoting the peaceful use of nuclear energy. In line with administrative reform, the NMCC was designated as an inspection body under the Nuclear Reactors Regulation Law in 1999. Before the NMCC applied for a designated inspection body, seven of its 12 executive board members were those from nuclear-related companies.

Therefore, it did not meet the requirement stipulated in the 1996 Cabinet decision which said the number of executive board members from the same industry must be less than half of the total executive board members. Hence, the NMCC added two seats to the number of its executive board members and picked two university-related persons as new executive board members before applying for the designated inspection body.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 18, 2012

## **nger spreads as radioactive gravel traced to schools, public road**

NIHONMATSU, Fukushima -- Anger and anxiety are spreading here after highly radioactive gravel from inside the Fukushima nuclear disaster evacuation zone was traced on Jan. 17 to several construction projects in the city, including at local schools.

The contaminated gravel, quarried in the town of Namie, was first discovered in the concrete at a new apartment block. Since then the material has been traced to repairs to a new school route road, a public pool in a neighboring town and a golf course in the prefecture, among other locations. According to the Nihonmatsu Municipal Board of Education, the stone was used in earthquake-proofing projects at the city's elementary and junior high schools.

Staff at Asahi Elementary School taking radiation readings along the school route detected emissions of 0.36-0.60 microsieverts per hour -- or about the same level as the surrounding area -- and the school held a meeting for parents and guardians on the evening of Jan. 17 to explain how the contaminated gravel had wound up in the new road.

Parents apparently asked that the road be torn up and the contaminated stone taken away, among other demands. Asahi's principal responded that it will "report the situation to the city, and the school is also considering its options."

The president of the golf course, meanwhile, was furious after it was found the gravel the course had been using to repair earthquake damage to its golf cart paths was emitting radiation of 1.6-1.8 microsieverts per hour.

"This is very big trouble," the president said. "I don't know if the course can reopen now."

Radiation levels at the public pool in a town next to Nihonmatsu, however, were apparently lower than the surrounding area.

"We were very surprised, but we are dealing with the situation in a cool manner," the town hall said in a statement.

Meanwhile, Nihonmatsu Mayor Keiichi Miho visited the prefectural and national on-site disaster response headquarters to present seven demands, including safety guarantees and compensation to cover moving costs for tenants of the contaminated apartment block, and creation of standards regulating the shipment of construction materials. The prefectural government accepted the demands and plans to pressure the central government, as well as form its own strategy to make sure contaminated materials like the gravel are not overlooked.

The national and prefectural governments have also decided to check an additional 10 stone companies around the evacuation recommendation zones in the cities of Date and Minamisoma for radioactive contamination.

The Ministry of Economy, Trade and Industry has furthermore begun considering creating radiation standards for building materials.

"We will proceed with emergency discussions on whether a standard is needed with the relevant government offices," economy minister Yukio Edano told reporters at a news conference. Moving on Edano's comments, the government's nuclear disaster countermeasures headquarters is set to cooperate on the issue.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 18, 2012

## **Govt says stress tests were appropriate**

Japan's government panel says the safety tests for 2 nuclear reactors were appropriate. It is the first case where the government has given an assessment of such tests.

The Nuclear and Industrial Safety Agency held a meeting of an expert panel on Wednesday to give its assessment of computer-simulated stress tests on 2 reactors at Oi nuclear plant in Fukui Prefecture, along the Japan Sea coast.

People opposed to restarting the reactors staged a protest against the agency's decision not to allow observers at the meeting. So, the agency changed the meeting room and opened discussions after a delay of over 3 hours.

Two of the 8 panel members were absent from the meeting, saying that it is inappropriate to keep out observers.

Industry minister Yukio Edano told reporters that the ministry will release video footage of the meeting on its website as soon as possible.

The agency plans to give its final assessment of the 2 reactors after receiving inspections by the International Atomic Energy Agency later this month.

The government needs to obtain local consent before allowing the resumption of the reactors' operation.

But Fukui Prefecture says stress tests alone are not enough to base a decision on, citing the need for the government to propose new measures based on the accident at the Fukushima Daiichi nuclear plant.

Wednesday, January 18, 2012 22:11 +0900 (JST)

## **Govt proposes nuclear evacuation scale**

Japan's Nuclear Safety Commission has proposed a 3-stage scale for evacuating residents when accidents hit nuclear power plants. It urges immediate evacuation of residents living within about 5 kilometers in the most serious cases.

The commission's task force reached a broad agreement on the plan at a meeting on Wednesday.

An accident will be categorized as a total emergency, an emergency situation involving facility compounds and surrounding areas, or a situation requiring caution. The criteria are based on standards of overseas nuclear safety agencies.

The most serious "total emergency" level will be declared when nuclear fuel is damaged and a release of radioactive substances exceeding government standards is expected.

In the Fukushima Daiichi accident, the authorities are thought to have been unable to accurately predict the amount of radioactive fallout and possible impact.

More discussions on concrete measures to be taken at each accident level are planned ahead of the scheduled launch of a new nuclear safety agency in April.

Wednesday, January 18, 2012 12:50 +0900 (JST)

## **Nuke safety agency under fire for hasty approval of reactor reactivation**

The green light that the nuclear power regulator has given to the reactivation of two reactors before the government issues a final report on the ongoing Fukushima crisis has sparked criticism from citizens' organizations as well as experts.

Questions remain as to how the government will win understanding from local governments that host nuclear plants regarding the reactivation of reactors suspended for regular inspections. The government and power suppliers that own nuclear plants need to overcome a mountain of problems before summer, when demand for electric power will surge.

The Nuclear and Industrial Safety Agency (NISA) has approved the safety assessment that Kansai Electric Power Co. (KEPCO) conducted on the No. 3 and 4 reactors at its Oi Nuclear Power Plant, paving the way for the resumption of operations at these reactors.

During a hearing of the safety assessment, known as a "stress test," citizens groups raised questions about, and bitterly criticized, the way NISA evaluated and approved KEPCO's safety assessment.

"How can you assess the safety of the nuclear plant?" one asked.

"You should allow us to listen to discussions in the meeting room instead of setting up seats for the audience in a separate room," another said.

Experts have raised questions as to the use of the results of the evaluation of the stress tests to deem whether operations at stopped nuclear reactors can be resumed.

"Stress tests are conducted to see how much stress reactors can endure during a severe accident, such as damage to their cores, and doesn't guarantee their safety," says Muneo Morokuzu, professor of nuclear legislation at the University of Tokyo.

The European Union (EU) has conducted stress tests on nuclear reactors since the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant triggered by the March 11 tsunami. However, it has failed to show clear standards for judging whether reactors are safe.

EU officials admit there is no choice but to let regulatory bodies in its respective member countries make judgment at their own discretion.

During deliberations on the results of KEPCO's stress test on Oi's No. 3 and 4 reactors, NISA said that new standards determine whether enough safety measures have been implemented to guarantee that an accident as serious as the Fukushima crisis never happens.

However, NISA-mandated emergency safety measures on reactors to guarantee safety were actually conducted by the electric power companies that own them, which is feared to effectively ensure that all of them will pass the stress tests.

In the meantime, NISA is required to examine power suppliers' assumption of the scale of earthquakes and tsunami that could hit their nuclear power stations based on the current guidelines for the quake resistance of nuclear plants.

However, NISA has only completed its deliberations on such an assumption regarding the No. 1, 5, 6 and 7 reactors at the Kashiwazaki-Kariwa Nuclear Power Plant, the prototype fast-breeder reactor Monju and Japan Nuclear Fuel Ltd.'s spent nuclear fuel reprocessing facility.

Lessons learned from the crisis at the Fukushima plant have not been reflected in NISA's evaluations. Up to 15-meter-high tsunami waves hit the Fukushima nuclear plant, triggering the crisis, even though its operator Tokyo Electric Power Co. assumed that up to 5.7-meter-high tsunami could hit the plant.

Hiromitsu Ino, University of Tokyo professor emeritus on metal materials, expressed anger at NISA's decision.

"It's wrong to draw a conclusion on the safety assessment of nuclear reactors even without setting clear standards for safety. Priority should be placed on reassessing all reactors' safety while taking into consideration lessons learned from the Fukushima crisis," he said. "From the beginning, NISA had intended to give the green light to reactivation."

Professor Morokuzu added, "Comprehensive safety assessment should be conducted, including whether equipment and workers can be mobilized in an appropriate manner in case of unexpected accidents." (By Toshiyasu Kawachi, Tokyo Science and Environment News Department)

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 19, 2012

## **Nuclear agency examines reactor test results amid protest**

TOKYO (Kyodo) -- The Nuclear and Industrial Safety Agency presented a draft report Wednesday that approves the safety test results on two idled reactors at Kansai Electric Power Co.'s Oi plant in Fukui Prefecture at a meeting with experts, which was temporarily blocked due to a civilian protest over its handling of the screening of the report.

It is the first time the agency has made such an evaluation of safety test results on reactors, submitted by a number of utilities so far. The safety tests are required to resume operations of idled reactors in the wake the nuclear crisis at the Fukushima Daiichi power plant.

The agency will work to finalize the report by hearing what the experts have to say.

The meeting was originally scheduled to start at 4:15 p.m., but the start was delayed until around 8 p.m. due to a protest by citizens who were asked to watch the meeting on a real-time monitor set up in a separate room.

The request had been made as the previous meeting that was open to the public was disrupted by some spectators.

On Wednesday, the government's nuclear safety agency held the meeting in a room different from the one originally planned and did not allow attendance by private citizens, largely those who oppose the resumption of reactors. Some of the experts also boycotted the meeting in protest at the agency's tactics.

At a hastily arranged press conference, industry minister Yukio Edano said it was "totally unacceptable" that an opportunity to discuss reactor safety issues scientifically in a peaceful manner had been disrupted.

Edano, who supervises the nuclear safety agency, also said he accepts that there are various opinions about nuclear power.

"Speaking not as a minister, my personal view on the resumption of the reactors is close to those people who are calling for an unreservedly cautious stance (on the issue)," Edano said.

The Nos. 3 and 4 reactors at the Oi plant have been suspended for regular checkups.

The agency said in the draft report that the utility has taken sufficient measures for the two reactors to prevent the sort of situation seen in the Fukushima complex disaster.

The government has required utilities to conduct safety tests for restarting idled reactors in the wake of the nuclear crisis at the Fukushima Daiichi power plant.

The test results on the two reactors at the Oi plant will still have to be approved afterward by the International Atomic Energy Agency and the Nuclear Safety Commission of Japan as well, before the relevant local government decides whether to approve the reactors' resumption.

Kansai Electric has assessed the two reactors as capable of withstanding an earthquake 1.8 times stronger than the maximum presumed quake for the region, and a tsunami wave up to 11.4 meters high -- or four times higher than the maximum presumed level.

(Mainichi Japan) January 19, 2012

## **TEPCO uses endoscope to look inside crippled Fukushima reactor**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Thursday that it has passed an industrial endoscope into one of the reactors that suffered meltdown at the Fukushima Daiichi nuclear power plant in the first attempt by the plant operator to directly check the interiors of the crippled reactors.

The outcome of the 70-minute survey into the No. 2 reactor is expected to be announced later in the day. Confirming the state of the melted fuel is likely to be difficult through the investigation, but the utility may be able to gather more information on the reactor's conditions.

According to officials of the utility, known as TEPCO, the industrial endoscope, 8.5 millimeters in diameter, was to have been inserted into the reactor's primary container through a hole located about 2.5 meters from the floor of the building housing the reactor.

The tip of the endoscope is equipped with a 360-degree-view camera and a thermometer to measure the temperature inside the reactor, and possibly the temperature of the water filling the vessel.

TEPCO has been checking the temperature around the reactor pressure vessel, enclosed inside the primary container, to confirm current measurements, which may have a margin of error of around 20 degrees.

The fuel inside the Nos. 1 to 3 reactors is believed to have melted through the pressure vessels and been accumulating in the outer primary containers after the Fukushima plant lost its key functions to cool the reactors in the wake of the earthquake and tsunami on March 11 last year.

TEPCO has installed a new water circulation system to keep cooling the damaged reactors.

(Mainichi Japan) January 19, 2012

## **TEPCO failed to link data device to backup power**

The operator of the crippled Fukushima Daiichi nuclear power plant says it failed to supply emergency electricity to a device that sends information on the reactors to a government nuclear safety agency.

Tokyo Electric Power Company revealed this at a news conference on Thursday.

The device ceased to send real-time data because it was not connected to a backup power supply and lost electricity immediately after the March 11th 2011 earthquake and tsunami.

The device provides key information including reactor temperatures and radioactivity levels near buildings to the government-controlled Emergency Response Support System, or ERSS.

The lack of real-time data may have affected the government's immediate response to the disaster.

TEPCO says it had planned to connect the device to an emergency power source in November 2010 -- 4 months before the March 11th disaster. The utility says it did not complete the procedure as an available cable was too short to connect the device.

TEPCO adds that it discussed a date for connecting the device with the government's Nuclear and Industrial Safety Agency. But TEPCO says it did not see connecting the device to emergency power as an urgent task.

Senior agency official Yoshinori Moriyama says the agency plans to ensure that all nuclear plants across Japan install backup power and that the agency will diversify methods of data transmission.

Thursday, January 19, 2012 14:28 +0900 (JST)

## **N-reactor lifespan to be 60 yrs**

The Yomiuri Shimbun

## Nuclear reactors in operation for more than 30 years

	Names of reactors	Location	Number of full years in operation
Japan Atomic Power Co.	Tsuruga plant's No. 1 reactor	Fukui Pref.	41 years
	Tokai plant's No. 2 reactor	Ibaraki Pref.	33 years
Tokyo Electric Power Co.	Fukushima No. 1 plant's No. 5 reactor	Fukushima Pref.	33 years
	Fukushima No. 1 plant's No. 6 reactor	Fukushima Pref.	32 years
	Reactor Nos. 1-4 of Fukushima No. 1 plant are scheduled for decommissioning.		
Kansai Electric Power Co.	Mihama plant's No. 1 reactor	Fukui Pref.	41 years
	Mihama plant's No. 2 reactor	Fukui Pref.	39 years
	Mihama plant's No. 3 reactor	Fukui Pref.	35 years
	Takahama plant's No. 1 reactor	Fukui Pref.	37 years
	Takahama plant's No. 2 reactor	Fukui Pref.	36 years
	Oi plant's No. 1 reactor	Fukui Pref.	32 years
	Oi plant's No. 2 reactor	Fukui Pref.	32 years
Chugoku Electric Power Co.	Shimane plant's No. 1 reactor	Shimane Pref.	37 years
Shikoku Electric Power Co.	Ikata plant's No. 1 reactor	Ehime Pref.	34 years
Kyushu Electric Power Co.	Genkai plant's No. 1 reactor	Saga Pref.	36 years
	Genkai plant's No. 2 reactor	Saga Pref.	30 years

The government has decided it will allow the nation's nuclear power reactors to continue operations for a maximum of 60 years by extending the legally permitted period by 20 years as an exceptional measure.

The government initially planned to set the operation limit of nuclear reactors to a maximum 40 years in principle, by revising the Nuclear Reactor Regulation Law.

However, the government said a bill to revise the law will include a provision to allow power companies to extend the period only once by 20 years.

If the bill passes in the next ordinary Diet session, nuclear reactors that clear the government's safety examinations will be allowed to operate for up to 60 years since they first started operations after passing prior examinations.

At a Jan. 6 press conference Goshi Hosono, state minister for nuclear power policy and administration, first announced the revision plan, saying: "An extension is an absolutely exceptional case. The government's basic stance is that nuclear reactors should be decommissioned after the 40-year limit."

Hosono, also the environment minister, emphasized at that time that exceptions are no more than exceptions.

However, a senior Environment Ministry official said, "If an exceptional provision is included in the law, there will be a strong tendency to proactively utilize it."

According to the Cabinet Secretariat's Office for the Preparation of Nuclear Safety Regulatory Organization Reform, the exception clause is modeled after a U.S. system, which limits a reactor's operation period to 40 years, but allows extensions of up to 20 years. "Considering worldwide trends, the stipulation to allow an extension period of 20 years is appropriate," an official of the office explained.

The Cabinet likely will approve the bill by the end of this month.

Nuclear plant operators will apply for the actual extension period for each nuclear reactor to the environment minister.

A new nuclear safety agency to be established in April as an external entity of the Environment Ministry will screen the applications.

The new agency will take several factors into consideration, including each facility's deterioration due to age and whether plant operators have the technical competence to ensure the safety of the reactors during their operation periods.

If the criteria are met, the agency will permit an extension of the operational period for a reactor.

So far, there has been no law that restricts the maximum operating period for nuclear power reactors.

The Nuclear and Industrial Safety Agency has been inspecting reactors that started operating more than 30 years ago every 10 years and has allowed operations to continue for reactors that were judged safe.

(Jan. 19, 2012)

## **Panel: evacuation system unreliable / Government group says SPEEDI cannot accurately predict radiation spread**

The Yomiuri Shimbun

A government commission evaluating guidelines on nuclear disaster management released a plan Wednesday asking authorities to refrain from using SPEEDI, a computer system that judges whether residents should evacuate based on its predictions of radioactive fallout after a nuclear accident.

The working group of the Cabinet Office's Nuclear Safety Commission said, "Predictions made by SPEEDI have a large degree of uncertainty, making it unreliable during times of emergency."

The group recommends judgments about evacuations should be made based on data collected, such as radiation levels, rather than using SPEEDI, which makes predictions of "low reliability."

This view is certain to generate discussion because it runs counter to the findings of a government panel in its interim report last month on the crisis at the Fukushima No. 1 nuclear power plant. The panel said, "If key information predicted by SPEEDI had been provided, people could have chosen more appropriate evacuation routes [in the aftermath of the crisis at Fukushima]."

Under current guidelines, evacuations will be ordered when exposure to radioactivity is expected to reach at least 50 millisieverts, based on SPEEDI predictions and accident circumstances. But there was public criticism over the way the nuclear crisis was handled because SPEEDI predictions were not used for evacuation orders in March last year.

The working group examined the way in which SPEEDI operated during the crisis.

It said the system was unable to get information related to reactor cores at the site of the accident and made calculations based on the input of provisional data. The group concluded that the SPEEDI system was unable to make any accurate predictions regarding the area of radioactive contamination as the materials dispersed during the accident changed frequently due to changes in wind direction.

Toshimitsu Honma, chief of the group and director of the Nuclear Safety Research Center, said if the system has no information on the time when radioactive material is released and the quantity dispersed, SPEEDI "can predict nothing more than wind direction."

The working group made two recommendations in its review of the evacuation instructions in accordance with guidelines of the International Atomic Energy Agency.

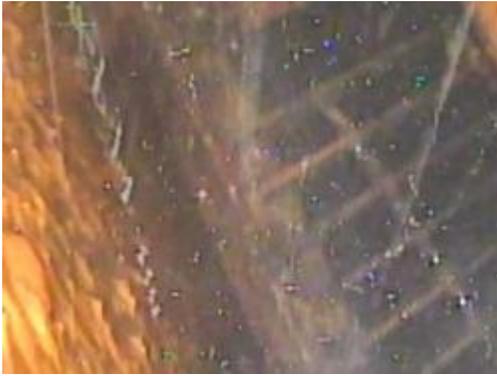
The first is that specific responses should be established in advance for people living within a five-kilometer radius of a nuclear plant. This should include three options, including immediate evacuation in the event of an accident such as the meltdown of a nuclear core.

Secondly, that judgments regarding the evacuation of people living further away be made based on measured data, such as the amount of radioactivity per hour.

The SPEEDI system is expected to continue to be used in the future, but its function is likely to be limited to providing supplementary information. A member of the group said there will be calls to further evaluate SPEEDI, which has cost more than 13 billion yen in development and maintenance expenses.

(Jan. 19, 2012)

## **TEPCO captures images inside crippled Fukushima reactor for 1st time**



This photo taken by a remote-controlled endoscope and released by Tokyo Electric Power Co. (TEPCO) shows scaffolding, the bottom, and the wall inside the beaker-shaped containment vessel of the No. 2 reactor at the damaged Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, north of Tokyo, Thursday, Jan. 19, 2012. (AP Photo/Tokyo Electric Power Co.)

TOKYO (Kyodo) -- Tokyo Electric Power Co. on Thursday passed an industrial endoscope into one of the reactors that suffered meltdown at the Fukushima Daiichi nuclear power plant in the first attempt by the plant operator to directly check the interiors of the crippled reactors.

The 70-minute examination of the No. 2 reactor showed that the inner temperature of the primary container stood at **44.7 C**, not much different from the figure using existing measuring equipment, but **the surface of the water filling the structure appeared to be less than 4 meters above the bottom, lower than the initial rough estimate.**

Tokyo Electric spokesman Junichi Matsumoto said the result does not affect the current assessment that the reactor has achieved a stable state of cold shutdown, while noting major damage to inner pipes has not been confirmed so far.

The endoscope captured images of water dripping from above apparently because of **condensation**, and paint was seen possibly falling off the inner wall of the container in some areas exposed to high temperatures and humidity over the months since the nuclear disaster erupted following the massive earthquake and tsunami on March 11 last year.

The probe was "the first step" to check the condition inside the reactor, Matsumoto said, but added the high humidity and radiation blurred the image.

He also said that **confirming the state of the melted fuel, a key step toward decommissioning the crippled reactors, would require further technology development.**[in other words they don't know what to do]

The fuel inside the No. 2 reactor, as well as inside the No. 1 and No. 3 reactors, is believed to have melted through the pressure vessels and been accumulating in the outer primary containers after the Fukushima plant lost its key functions to cool the reactors in the wake of the natural disasters.

The damaged reactors are leaking water continually injected as a coolant, but the utility known as TEPCO has said the fuel is stably cooled by a water circulation system installed after the accident.



This photo taken by a remote-controlled endoscope and released by Tokyo Electric Power Co. (TEPCO) shows structures assumed to be small-size piping or cable conduits inside the beaker-shaped containment vessel of the No. 2 reactor at the damaged Fukushima Dai-ichi nuclear power plant in Okuma, Fukushima Prefecture, north of Tokyo, Thursday, Jan. 19, 2012. (AP Photo/Tokyo Electric Power Co.)

The endoscope, 8.5 millimeters in diameter, was inserted into the reactor's primary container through a hole located about 2 meters from the floor of the building housing the reactor. The length of the inserted portion of the equipment's tube was about 2 meters.

The latest survey by TEPCO was partly aimed at checking the credibility of the temperature data taken with existing equipment, which were believed to have had a margin of error of around 20 degrees.

But the temperature measured by using the endoscope and the existing equipment differed by only 2.1 C, **suggesting that the existing indicators are working quite well.**

The No. 2 reactor was chosen as the first reactor to probe using the endoscope because work there seemed to go more smoothly than at the other two reactors such as in terms of radiation levels.

(Mainichi Japan) January 20, 2012

### **First video clip of reactor interior released**

The operator of the Fukushima Daiichi nuclear power plant has released a video clip taken inside the damaged No.2 reactor for the first time since the accident last year.

Tokyo Electric Power Company recorded 30 minutes of video by running an optical fiber scope, known as an endoscope, through a hole into the reactor's containment vessel Thursday.

The company released an edited version of the video lasting about one minute on Friday. The footage begins inside the aperture leading to the containment vessel, and as the endoscope reaches the interior, white dots caused by gamma rays immediately appear.

Walls and several pipes are also visible, although most of the images are blurry.

TEPCO says white lines seen in the clip are actually condensed vapor from contaminated water falling like rain.

One of the reasons for shooting the video was to determine the depth of water that has collected on the bottom of the vessel.

TEPCO says the water is less than 4 meters deep. The company was able to make this determination because a foothold located at that height is visible on the video.

Friday, January 20, 2012 13:23 +0900 (JST)

## **TEPCO fails to clearly see inside damaged reactor**

The operator of the crippled Fukushima Daiichi nuclear power plant has failed in an attempt to get clear images from inside a damaged reactor using fiber-optic lines.

Tokyo Electric Power Company is trying to determine the state of nuclear fuel inside the plant's Number 1, 2 and 3 reactors. The fuel melted through the wall of each reactor's core units and fell to the bottom of their containment vessels after the March 11th 2011 earthquake and tsunami.

On Thursday, TEPCO inserted an optical fiber scope known as an endoscope through a hole into the containment vessel of the Number 2 reactor.

Photos taken by a camera attached to the endoscope show parts of walls and pipes inside the containment vessel. But the images were blurred, probably due to radiation and vapor from contaminated water, leaving details, including the surface of the contaminated water, unclear.

TEPCO says that the photos showed no serious damage or deformation to walls and pipes.

The utility also measured the temperature of the inside of the vessel for the first time since the disaster at 44.7 degrees Celsius. The figure almost matches the 42.6 degrees already shown by thermometers around the vessel.

It's the first time that TEPCO has examined the inside of a damaged reactor since the disaster. The company says it must understand the state of the reactors before it can complete its shutdown of the plant.

Thursday, January 19, 2012 20:01 +0900 (JST)

## **Japan to seek data from Ukraine on effects of Chernobyl accident**

TOKYO (Kyodo) -- Japan will begin negotiations with Ukraine later this month for an agreement to obtain data on the effects of low-level radiation exposure and soil contamination accumulated by Kiev since the Chernobyl nuclear meltdown of 1986, government officials said Thursday.

The Japanese government will use the data in treating people exposed to radiation in the Fukushima nuclear crisis, the officials said.

The agreement will cover data on the effects of nuclear accidents on human health and the environment as well as the exchange of researchers and engineers, and joint seminars.

With the Fukushima and Chernobyl disasters both given the maximum crisis severity level of 7 on the international scale, Ukraine's detailed data on treatment and contamination will enable Japan to implement "effective measures" to address the effects of radiation from the Fukushima Daiichi nuclear plant crippled by the March 2011 earthquake and tsunami, a Foreign Ministry official said.

Japanese lawmakers asked the Ukrainian government for its cooperation when they visited the country in October last year.

Entering areas located within a 30-kilometer radius of the Chernobyl nuclear power plant in northern Ukraine is still banned as radioactive substances remain widely scattered.

(Mainichi Japan) January 20, 2012

## **Highly radioactive water found near No.2 reactor**

The operator of the Fukushima Daiichi nuclear power plant has found 500 tons of highly radioactive water near the crippled No.2 reactor.

On December 18th, Tokyo Electric Power Company workers found radioactive water in an underground tunnel at a facility to store highly contaminated water.

Under the government's direction, this month TEPCO started checking whether radioactive water is collecting in the plant's other underground facilities.

On Thursday, the utility found around 500 tons of contaminated water in a pit near the No.2 reactor. The pit has a valve which is used for pumping in seawater.

The analysis of the contaminated water shows it has 16,200 becquerels of radioactive cesium per cubic centimeter. That represents the highest level of radioactive substances found in this month's survey.

TEPCO also detected 600 tons of water containing 860 becquerels of radioactive elements per cubic centimeter in a pit near the No.3 reactor.

The utility says the radioactive water is unlikely to have leaked into the ocean as the density of radioactive materials in seawater near the No.2 and No.3 reactors has remained unchanged.

The company plans to determine how the contaminated water collected in the tunnels.

Friday, January 20, 2012 06:24 +0900 (JST)

## High levels of radiation detected in ash

The Environment Ministry says high levels of radioactive cesium have been found in ash from firewood kept near the crippled nuclear power plant in Fukushima Prefecture, northeastern Japan.

The ministry informed Fukushima and 7 other prefectures that their municipalities should collect and dispose of contaminated ash.

The ministry burned samples of wood kept in gardens of 2 houses in Nihonmatsu City after being asked by the city last November if using the wood in stoves would pose any problems.

The ministry found that the maximum radioactive cesium level of the ash exceeded 40,000 becquerels per kilogram.

The forestry agency last November notified prefectural authorities nationwide that firewood contaminated with over 40 becquerels of radioactive cesium per kilogram should not be distributed.

The wood in question is said to have been taken from nearby forests by residents before the accident at the Fukushima Daiichi nuclear power plant last March.

Thursday, January 19, 2012 18:14 +0900 (JST)

## NISA endorses Oi stress tests / Draft report says Nos. 3, 4 reactors 'ready' for major quake

The Yomiuri Shimbun

The Nuclear and Industrial Safety Agency has prepared a draft report endorsing the results of first-stage stress tests submitted by Kansai Electric Power Co. regarding the Nos. 3 and 4 reactors at its Oi nuclear plant in Fukui Prefecture.

NISA has received test results for 14 domestic reactors, but this is the first report it has drafted on any of the results.

The report was presented Wednesday to a meeting of experts, but the proceedings were delayed when members of an antinuclear citizens group and others forced their way into the venue.

The meeting started 3-1/2 hours later than scheduled due to the disruption, but only four of the eight experts expected to attend were present throughout the entire meeting. Two boycotted because private citizens were barred from attending. Another expert could not participate due to the delay and a fourth left partway through.

Economy, Trade and Industry Minister Yukio Edano held two press conferences regarding the citizens group that caused the turmoil, during which he called their actions "completely unacceptable."

Experts at the meeting raised points related to technology, and NISA is scheduled to hold another meeting Feb. 8.

It will release a final version of its report taking into account such factors as the assessments and advice offered by experts from the International Atomic Energy Agency, who are scheduled to visit Japan from Monday, and the content of the current discussions.

The Cabinet Office's Nuclear Safety Commission will then assess the report, after which Prime Minister Yoshihiko Noda and the three ministers concerned will decide, taking into account the feelings of local authorities, whether the Oi reactors can be restarted.

However, local authorities continue to be reluctant to allow reactivation, so it is unclear whether this process will go smoothly.

Stress tests investigate how well nuclear power plants can withstand earthquakes and tsunami stronger than originally envisioned when the plants were built. They are meant to prove the effectiveness of the emergency safety measures implemented by various utilities after the outbreak of the crisis at the Fukushima No. 1 nuclear power plant operated by Tokyo Electric Power Co.

Clearing the first stage of the tests is a precondition for restarting reactors that have been suspended for regular inspections.

KEPCO compiled the results of a first-stage stress test on the Oi plant's No. 3 reactor in October. According to the data, the entire structure could withstand an earthquake intensity of 1.8 times the envisioned figure of 700 gals, and a tsunami of four times the envisioned height of 2.85 meters.

It presented similar results for the first-stage stress test on reactor No. 4 in November.

NISA evaluated such elements of KEPCO's findings as whether its calculation methods were appropriate, and judged that "[the utility] has implemented measures that would prevent a similar crisis should [the Oi plant] be struck by the kind of earthquake or tsunami that hit the Fukushima No. 1 nuclear power plant."

NISA is a body under the Economy, Trade and Industry Ministry.

(Jan. 20, 2012)

<http://icanps.go.jp/eng/111226ExecutiveSummary.pdf>

**Radiation of 40 microsieverts per hour detected at Namie quarry**

Up to 40 microsieverts of radiation per hour have been detected from gravel at a quarry in Fukushima Prefecture that shipped tainted gravel for construction work, government officials have said.

Officials of the national and Fukushima prefectural governments visited the quarry in the town of Namie near the Fukushima No. 1 nuclear plant -- owned by Futaba Saiseiki Kogyo -- to measure radiation levels.

Between 11 and 40 microsieverts of radiation per hour were detected one meter above gravel held at eight storage sites in the open, while 16 to 21 microsieverts were detected in three locations covered by roofs.

Officials said they will release the results of detailed analysis of the data as early as next week.

About 5,200 metric tons of gravel has been shipped from the quarry and some of it was used in the construction of an apartment complex in Nihonmatsu, Fukushima Prefecture. Ten of 12 households in the complex are disaster evacuees.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 21, 2012

## **Fukushima quarry agents to voluntarily check radiation level**

FUKUSHIMA (Kyodo) -- The association of quarry agents in Fukushima Prefecture has asked its members to voluntarily check the radiation doses of their products to ease public concerns over radioactive contamination of building materials, its officials said Saturday.

The move came after high-level radiation was detected in a condominium in Nihonmatsu, Fukushima, whose foundation was made using concrete containing crushed stone collected from a quarry near the troubled Fukushima Daiichi nuclear power plant.

The association has urged its member agents to measure radiation levels of their stone materials at a research facility of the prefectural government, it said.

The group, however, does not set its own criteria for the radiation level, saying it "is not authorized to do so."

The prefectural government, for its part, **asked the central government last May to show the standard radiation level for building materials** in the wake of the nuclear crisis at the Fukushima complex triggered by the March earthquake and tsunami, **but the state has not yet set them.**

Gravel and crushed stone from the quarry in Namie, Fukushima Prefecture, was also found to have been used to reinforce the earthquake resistance of an elementary school building.

Industry minister Yukio Edano has said he will instruct **Tokyo Electric Power Co., the operator of the complex**, to pay compensation for related damage.

(Mainichi Japan) January 21, 2012

## **Radioactive gravel also used in construction of private house in Fukushima**

FUKUSHIMA -- Highly radioactive gravel from inside the Fukushima nuclear disaster evacuation zone that was traced to several construction projects in Fukushima Prefecture, including apartment buildings and local schools, was also used in the construction of a private house here, it has been learned.

According to Nihonmatsu Municipal Government officials, the contaminated gravel was used in the construction of a private house in the capital city Fukushima, which a local Nihonmatsu building company worked on last April.

Radiation levels detected on the first floor of the house were about four times higher than those in outdoor surrounding areas, city officials said.

While outdoor radiation levels stood at 0.2 microsieverts per hour, those detected in the house's foundations were 1.5 to 1.9 microsieverts per hour and 0.8 to 0.85 microsieverts per hour under the house's floor.

People are still currently living in the house.

Meanwhile, radiation levels in the city of Fukushima vary depending on locations. According to the Ministry of Education, Culture, Sports, Science and Technology (MEXT), recent atmospheric reading emissions -- measured at one-meter above ground -- show doses of 1.2 microsieverts per hour.

Amidst public anger and anxiety, the Nihonmatsu Municipal Government has decided to examine all 224 city construction projects in which work began after the triple disasters last year.

As of present, it has been revealed that the contaminated gravel, originally from a quarry in the town of Namie and kept outdoors even after the outbreak of the nuclear disaster, was used in a total of 108 locations, including four local schools.

**Radiation levels detected in all four schools, however, are not higher than those measured in their outdoor surroundings.**

The Nihonmatsu Municipal Government maintains that with the exception of agricultural canal routes in the city, where detected radiation levels stood higher than in surrounding areas, radiation emissions are not a threat to public safety.

To check whether the contaminated gravel was used in the construction of other private houses, the municipal government will check with construction companies about all residences that were built in Nihonmatsu after the March 11 disasters.

Meanwhile, central and prefectural government officials began a close examination of the gravel in Namie on the morning of Jan. 20. The prefectural government will also conduct radiation emission readings in another 27 gravel pits inside the no-entry and emergency evacuation preparation zones around the crippled Fukushima No. 1 Nuclear Power Plant starting from next week at the earliest.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 20, 2012

## Contaminated crushed stone found in more houses

More buildings containing crushed stone contaminated with radioactive substances have been found in Fukushima Prefecture.

It is believed that the crushed stone used in concrete was contaminated by the nuclear accident at the Fukushima Daiichi nuclear plant in March last year.

The stone comes from a quarry in Namie Town, which was designated as an evacuation zone following the accident.

Earlier this week, high levels of radioactivity were detected in a new apartment building in Nihonmatsu City.

Government officials say stone from the quarry has been sold to more than 200 construction companies in the prefecture, and **was used at about 1,000 sites.**

**Much of it is believed to have been used to repair roads and reinforce river banks, but some was found to have been used to construct or repair at least 49 homes and apartment units in the prefecture.**

In one house in Fukushima City, radioactivity levels up to 0.85 microsieverts per hour were detected which are higher than outside the building.

The central and prefectural governments say no health effects have yet been reported, but that they will investigate when the stone was shipped from the quarry and measure radioactivity levels in the newly built and renovated buildings.

Saturday, January 21, 2012 23:30 +0900 (JST)

## Hosono explains decontamination steps for Fukushima

Japan's Environment Minister Goshi Hosono says the government will step up its efforts to remove radioactive materials from areas near the crippled Fukushima Daiichi nuclear plant.

In a ceremony to mark the opening of the ministry's new office in Fukushima City, Hosono said the government plans to set up 5 branches of the office in Fukushima Prefecture and increase the number

of staff from the current 69 to 200 in April.

The Fukushima Office for Environmental Restoration is being set up to serve as the government's hub for proceeding with radioactive decontamination work.

Hosono added that a timetable for decontamination steps for the government-designated evacuation zone will be drawn up by the end of March.

After the ceremony, Hosono told reporters that he will do more to obtain consent for the planned construction of an intermediate storage facility for radioactive soil.

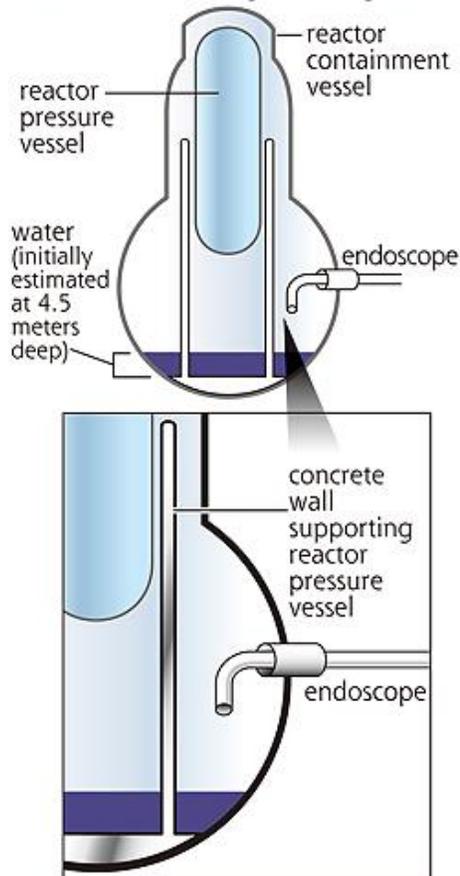
Local municipalities have come out against the government's desire to build the facility in the Futaba district near the nuclear plant.

Saturday, January 21, 2012 14:19 +0900 (JST)

## Water falling like rain inside N-reactor

The Yomiuri Shimbun

### No. 2 reactor at Fukushima No. 1 nuclear power plant



Tokyo Electric Power Co. on Friday released 30 minutes of video footage taken Thursday inside the containment vessel of the Fukushima No. 1 nuclear power plant's No. 2 reactor, the first such images to be released by the utility.

Drops of water fall like rain in the video, which was shot using an industrial endoscope. **The drops were apparently the result of vapor--created by the heat from melted nuclear fuel--that cooled inside the upper part of the reactor containment vessel.**

Strong radiation caused scattered white static in the footage, which displayed the severe environment inside the containment vessel, observers said.

The vessel's pipes did not appear to be significantly damaged, but paint had fallen off the inner wall, due possibly to high temperatures following the outbreak of the nuclear crisis.

The endoscope was inserted about two meters into the containment vessel through a hole about seven meters above the bottom of the containment vessel. **Visibility was about two meters to three meters.**

Melted nuclear fuel is believed to have fallen to the concrete bottom of the containment vessel, but this could not be confirmed.

"Workers can't go into the containment vessel. We need to develop a small robot," said Junichi Matsumoto, acting head of TEPCO's headquarters regarding nuclear plant locations.

Also, the water level inside the reactor was found to be lower than initially estimated. Although TEPCO believed water had collected to a height of 4.5 meters, the examination showed the water height was apparently less than four meters, as the surface of the water was not seen around the iron scaffolding set at a height of four meters.

As one reason why there was less water than TEPCO estimated, the company said the gauge that measures the location of the water's surface did not work accurately.

However, the gauge placed 2.8 meters from the bottom of the vessel indicated a possibility there is water at that level, TEPCO sources said.

"It's quite unlikely nuclear fuel was exposed, as liquid from condensation is dripping down," a TEPCO official said.

(Jan. 21, 2012)

## **Gov't kept Fukushima crisis worst-case scenario under wraps for months**

TOKYO (Kyodo) -- The government kept a worst case scenario for the nuclear crisis at the Fukushima No. 1 power plant under wraps for months after the document was shown to a small group of policymakers in late March, government sources said Saturday.

A private-sector panel looking into the nuclear disaster plans to probe whether the government tried to manipulate information in handling the crisis, by interviewing then Prime Minister Naoto Kan and Goshi Hosono, environment minister who was then adviser to Kan, among other figures. Hosono was in charge of handling the nuclear crisis.

The document, created by Japan Atomic Energy Commission Chairman Shunsuke Kondo at Kan's request, said that in a worst case scenario, radioactive materials would intermittently be released in massive quantities for roughly a year if all workers had to be evacuated from the plant, some 220 kilometers northeast of Tokyo.

After being shown to a small group of senior government officials at Kan's executive office in late March, the document was treated as if it never existed, the sources said, adding that it was not until the end of last year that the document was recognized as an official one.

The document was dated March 25, 2011, two weeks after the massive earthquake and tsunami triggered the country's worst nuclear crisis. It was premised on a scenario in which all plant workers had to be evacuated due to a rise in radiation levels after a hydrogen explosion damaged a containment vessel encasing the plant's No. 1 reactor.

The document said that should such a case occur, residents within a radius of 170 kilometers or more of the plant would be forced to move out, while those within a radius of 250 km of the plant, including Tokyo, would be allowed to leave if they wish.

"It contained such shocking content that we decided to treat it as if it never existed," a senior government official said.

Another government source said, "When the document was presented, there was a discussion about the choice of keeping the existence of the document itself secret."

Kan admitted the existence of a worst case scenario in September, while the government of his successor, Prime Minister Yoshihiko Noda, decided to treat the document as a Cabinet Office document after some parts of it were reported in December.

The atomic energy commission is set up in the Cabinet Office.

At a news conference on Jan. 6, Hosono said, "Because we were told there would be enough time for evacuations (even if things went according to the worst-case scenario), we refrained from disclosing the document for fear its disclosure would cause unnecessary anxieties."

(Mainichi Japan) January 22, 2012

## **Gov't not adding up nuclear workers' radiation doses when not at work**

TOKYO (Kyodo) -- The health ministry has not added up the radiation doses received by workers at the crippled Fukushima Daiichi nuclear power plant while they were evacuated or are not at work,

ministry officials and supporters of the workers said Saturday, prompting concerns about adequacy of the current radiation control.

In a similar manner, the Ministry of Health, Labor and Welfare will not add up radiation doses while workers engage in decontamination efforts around the badly damaged plant in Fukushima Prefecture, which will intensify in the near future.

The ministry currently keeps track of only the radiation doses for nuclear workers when they engage in work. The maximum radiation doses for nuclear workers and those involved in decontamination efforts are 100 millisieverts over five years and 50 millisieverts a year.

The officials said the ministry takes the position that in controlling radiation doses, it makes a distinction between work and personal life because measures taken to alleviate the doses differ between them.

"No matter where they are exposed to radiation, it's the same thing for an individual," said Katsuyasu Iida, who works on securing the health of nuclear plant workers as head of the secretariat for the Tokyo Occupational Safety and Health Center.

Noting that the health ministry is developing a database to record workers' radiation doses separately from the one at the Radiation Effects Association, Iida said that by employing such a database, workers' total radiation doses "should be strictly controlled by adding up doses received when they are not at work."

Those who enter radiation-controlled zones at nuclear plants have a booklet that keeps track of their radiation doses while at work. The data are sent to the Radiation Effects Association in Tokyo to keep track of workers' accumulated doses at whatever plants they go to work at or whatever employer they work for. Those whose radiation doses exceed limits are barred from further work.

All workers at the Fukushima Daiichi plant currently carry dosimeters while they work or move between the plant and an accident response base nearby. Radiation doses during evacuations following the accident and while away from work are being projected on the basis of radiation levels at observation points.

In its report last December, the Fukushima prefectural government estimated that evacuees from 12 municipalities around the plant were externally exposed to up to 19 millisieverts of radiation over the four months from the start of the disaster following the March 11 earthquake and tsunami.

**It is also possible that plant workers who lived nearby were exposed to radiation in the period after the start of the accident as they went about their lives.**

(Mainichi Japan) January 22, 2012

## **IAEA experts to check nuclear test results**

At the request of the Japanese government, UN nuclear experts will review the safety test results of idled nuclear reactors.

Ten officials of the International Atomic Energy Agency left Vienna on Saturday.

The team is scheduled to carry out a 9-day assessment from Monday. The experts will check to see if the safety tests on idled reactors were conducted correctly.

Passing the safety checks is a prerequisite for the idled reactors to resume operation.

The IAEA delegation will visit Kansai Electric Power Company's Ohi nuclear power plant in Fukui Prefecture, central Japan. They will verify the government's recent approval of the safety test results for 2 reactors there.

Chief delegate and Nuclear Installation Safety Division Director James Lyons said his team's mission is to advise the Japanese government based on international standards. He stressed that the final decision of whether or not to restart idled reactors is up to the Japanese government.

Sunday, January 22, 2012 06:27 +0900 (JST)

## **No records of nuclear disaster taskforce meetings**

It has been revealed that the government's nuclear disaster taskforce did not keep any records of its meetings after the Fukushima Daiichi nuclear power plant accident.

Experts say this is a significant loss, as the minutes could help to prevent mistakes from being repeated.

The taskforce, headed by the prime minister and including all the Cabinet members, was launched on the day of the accident on March 11th last year.

It made important decisions, including the designation of evacuation areas, basic policies on decontamination and restrictions on the shipment of agricultural produce.

NHK asked to see the minutes last November, but it only received a list of agenda items for each of the 21 meetings and found there were no other records.

**The person in charge at the government's Nuclear and Industrial Safety Agency, which acts as the secretariat of the taskforce, told NHK that he was too busy to write the minutes.**

The public records management act requires minutes of important meetings to be kept, so the government may achieve accountability and the people may verify the process by which decisions are made.

The Cabinet Office, which is responsible for the management of public records, is interviewing the person in charge at the Nuclear and Industrial Safety Agency.

It is also investigating the lack of minutes for the meetings of the joint taskforce of the Tokyo Electric Power Company and the government, which discussed how to deal with the accident.

Sunday, January 22, 2012 23:27 +0900 (JST)

## **Radioactive crushed stone used in around 60 Fukushima buildings**

FUKUSHIMA, Japan (Kyodo) -- The number of houses and condominiums confirmed to have been built using radiation-contaminated crushed stone quarried near the crippled Fukushima Daiichi nuclear plant has reached around 60 in Fukushima Prefecture, government sources said Sunday.

The sources said the total number of buildings could top 100 if more surveys are conducted on the crushed stone that was shipped from a quarry in Namie located near the plant.

A total of 5,725 tons of crushed stone was shipped from the quarry between the start of the crisis triggered by the March 11 earthquake and tsunami, and the designation by the government of the town as an evacuation zone the following month.

The crushed stone, after being processed into concrete, was used in the construction of infrastructure such as housing, roads and river dikes at nearly 1,000 locations in the prefecture after the March disaster, they said.

A governmental survey covering the period between late March and April 12 showed the contaminated concrete was used to build around 60 houses and condominiums. The material was also shipped and used after that date for many more houses and condominiums, the sources said.

The issue emerged after the city of Nihommatsu said Jan. 15 that the radiation exposure reading inside a unit of a new condominium built with concrete that used crushed stone from Namie was higher than outside the building.

(Mainichi Japan) January 23, 2012

## **IAEA team holds 1st meeting with Japan nuclear agency over safety tests**

TOKYO (Kyodo) -- A delegation of the International Atomic Energy Agency tasked with reviewing the adequacy of Japan's safety tests for nuclear power plants held its first meeting Monday with Tokyo's nuclear safety agency.

At the meeting in Tokyo, Shinichi Kuroki, deputy director-general for nuclear power at the Nuclear and Industrial Safety Agency, told 10 officials of the delegation that Japan has been conducting so-called stress tests, modeled after nuclear safety reviews conducted by the European Union, to learn what can be improved after the Fukushima nuclear accident.

"So far we have been evaluating (the tests) by consulting with domestic experts, but we would like to achieve a higher level of safety by also taking into account international expertise," Kuroki said.

"Opinions we will receive will be reflected in our future evaluation methods so we would like you to evaluate (our tests) rigorously," he said.

James Lyons, nuclear installation safety director of the IAEA's nuclear safety and security department who heads the delegation, said he hopes that productive meetings with the agency will help realize an improvement of nuclear power plants not only in Japan but also throughout the world.

The delegation, which includes some external experts, is scheduled to visit Kansai Electric Power Co.'s Oi nuclear power plant in Fukui Prefecture on Thursday.

For the Oi plant's No. 3 and 4 reactors, currently idled for regular checkups, the agency has compiled a draft report endorsing the results of first-stage safety tests submitted by the utility serving western Japan.

After receiving the IAEA's review, the agency will finalize its report on the two reactors as early as in February.

After undergoing the checks by the Nuclear Safety Commission of Japan, Prime Minister Yoshihiko Noda and relevant ministers will judge whether to approve restarting the reactors.

Economy, Trade and Industry Minister Yukio Edano has said it is necessary to win a certain level of acceptance from local communities to reactivate idled reactors.

The IAEA delegation is scheduled to end its review mission Jan. 31, and is expected to compile a summary report.

In the wake of the nuclear accident at Tokyo Electric Power Co.'s Fukushima Daiichi power plant, triggered by the March 2011 massive earthquake and tsunami, the government has required utilities to conduct computer simulation-based safety tests to check how well their systems to protect fuel rods can withstand earthquakes, tsunami and the loss of power.

Reactors idled for scheduled checkups are subject to the first round of tests, and all reactors are required to undergo the second round of tests.

(Mainichi Japan) January 23, 2012

## **IAEA checks Japan's nuclear safety test results**

The world's nuclear watchdog has begun reviewing the safety test results for 2 of Japan's halted nuclear reactors.

The team of experts from the International Atomic Energy Agency started their 9-day inspection on Monday. They will advise the Japanese government if the test results and the method used were appropriate.

Ninety percent of Japan's nuclear reactors are offline due to concerns that they could be vulnerable to major earthquakes and tsunami. Passing the safety checks is a prerequisite for the idled reactors to resume operation.

The team will examine if the computer-simulated tests for 2 reactors at the Ohi nuclear plant in Central Japan were carried out appropriately in line with international standards.

The government's nuclear safety agency said last week that the operator's tests were conducted correctly.

The IAEA team is interviewing the agency on Monday to find out how it cross-checked the utility's test results. The 10-member team will visit the Ohi plant on Wednesday and Thursday to inspect its anti-tsunami measures.

The head of the team, James Lyons, says they will make a comprehensive evaluation of the safety tests and the way the results are assessed.

Japan's nuclear safety agency says it will finalize its assessment of the 2 reactors in early February, after receiving the IAEA report at the end of this month.

Monday, January 23, 2012 13:57 +0900 (JST)

## **Gov't withheld estimates showing electricity surplus to boost nuclear power: critics**

The government withheld an estimate that there would be no electricity shortages in the upcoming summer in an apparent bid to underscore the need to restart nuclear power plants, it has been learned.

Instead of announcing the realistic estimate, the government announced last summer that electric power supply in the summer of 2012 "will be about 10 percent short across the country." **Furthermore, the released government estimate greatly downplayed the supply of renewable energy, disregarding the country's actual energy status.**

"The released government estimate stresses the need to resume operations of nuclear power plants by underestimating the actual supply capacity," a concerned source has told the Mainichi.

Currently, 49 out of 54 commercial nuclear reactors in Japan are under suspension, with five other reactors anticipating regular inspections. **By this summer, the country will have no nuclear reactors in operation unless some of them are restarted.**

The government's Energy and Environment Council compiled the published estimate in July last year as the council was reviewing the country's energy strategy in the aftermath of the nuclear disaster at the Fukushima No. 1 Nuclear Power Plant, which began in March last year. The council calculated that power supply will be 9.2 percent short at the peak of demand on the assumption that the summer of

2012 will be as hot as the summer of 2010, when temperatures hit record highs, and that all nuclear plants will have been suspended by that time.

Aside from the estimate, then Prime Minister Naoto Kan instructed a team assisting him in the National Policy Unit in late June last year to study the actual status of electric power and supply. The team asked the Economy, Trade and Industry Ministry to submit data supporting the government's estimate, including the installed capacity and operating capacity at each power station and the operational status of renewable energy sources by region, and had the ministry recalculate the estimate.

As a result, it was found that **electric power companies were capable of procuring 7.59 million kilowatts through renewable energy under the current law -- equal to the output of about seven nuclear reactors.** However, the released government estimate stated that utilities were unable to provide renewable energy supplies.

In addition, the released estimate apparently deliberately presumed that some of the thermal power plants would be suspended in August -- a peak-demand period -- for regular inspections and also anticipated that there would be no cut in power use at the time of a power crunch through the supply-demand adjustment arrangement with major electricity contractors. The estimate also played down the supply capacity of pumped-storage hydroelectricity, which utilizes night-time surplus power during the daytime.

**The recalculation found that the country would have a surplus power supply of up to 6 percent even without a government order for power restrictions if renewable energy supply and other elements were factored in. The recalculated data was compiled in August last year and was reported to Prime Minister Kan, but it was never released to the public.**

Satoshi Kusakabe, councilor to the Cabinet Secretariat, who is in charge of the Energy and Environment Council, denied that the government withheld the estimate in order to underscore the need to reactivate suspended nuclear reactors.

"In the nation's decision-making process, we wouldn't be able to later say that we were actually short of power, so we carefully compiled an estimate that had solid figures," he said. "We had no intention of propagating possible supply shortages and cited an increase of renewable energy and thermal power supply as necessary efforts in a countermeasure released in November last year."

Hisashi Kajiyama, research fellow at the Fujitsu Research Institute, who was a member of the team assisting Kan and took part in the recalculation of the estimate, said the initial estimate was biased. "The (released) estimate is based on the extreme presumption that was drawn from claims by utilities. The figures in the estimate led to politicians' remarks approving the restarting of nuclear plants. I assume the Kan administration couldn't release the recalculation because of the chaos in the final days of his administration."

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 23, 2012

## Govt drafts new safety steps for nuclear plants

The Japanese government is calling on local authorities near nuclear power plants to come up with new measures to prepare for possible nuclear accidents.

The government made the request on Monday at a briefing for about 100 local officials on its new draft measures for nuclear accidents. The existing measures have been under review since the accident in Fukushima.

The minister in charge of the nuclear crisis, Goshi Hosono, said the government has renewed its pledge to prevent accidents. He asked the participants to work with the government in drafting new disaster management plans and safety regulations.

The government told the participants that **it plans to increase the number of plant inspectors stationed in the host communities.**

The government will also boost the functions of emergency response centers and relocate them to safer places.

The center near the Fukushima Daiichi nuclear plant became unusable after its accident due to a power outage and high levels of radiation.

**The government plans to widen areas for extensive disaster preparedness from the 10-kilometer radius around nuclear plants to a 30-kilometer radius.**

The government has asked authorities in the expanded areas to come up with new plans by October.

Some participants said the request is being made at short notice. Others asked the government to show them examples of collaboration among municipalities.

Monday, January 23, 2012 19:14 +0900 (JST)

## **YIES / Hosono: Contribute to world through decommissioning**

Hironu Namiki / Daily Yomiuri Staff Writer

Japan should contribute to the world by sharing the experience, knowledge and skills it will acquire through decommissioning the Fukushima No. 1 nuclear power plant, Goshi Hosono, state minister for the nuclear crisis, said Monday in Tokyo.

At a lecture meeting of the Yomiuri International Economic Society, Hosono said it is expected to take 30 to 40 years to decommission the plant.

"The skills we acquire during the process of decommissioning, which will be conducted in the most severe environment, can be applied to nuclear power plants all over the world when they are decommissioned. We need to utilize the experience [of the nuclear crisis] for the future of Japan," Hosono said.

Hosono said that among the various steps of decommissioning, removing melted fuel rods from the reactors would be extremely difficult. He said he wants to use robots and other unmanned machines produced by Japanese companies as much as possible when removing the fuel rods, to demonstrate the high level of Japanese technology.

"Japanese technology is now being questioned because of the [Fukushima] crisis," he said.

Hosono, who also serves as environment minister, said the Environment Ministry would boost its efforts to promote renewable energy.

"The ratio of nuclear power generation is rapidly decreasing in generating electricity [since the outbreak of the nuclear crisis]. However, we should never allow the nation to further shift to fossil fuel," Hosono said.

He also said he will call on the public to continue its efforts to save energy. "Whether or not we conduct planned outages this summer, I want to ask people to voluntarily reduce power consumption," Hosono said.

(Jan. 24, 2012)

## **Minutes of past gov't meetings on Fukushima crisis to be created**

TOKYO (Kyodo) -- Japanese industry minister Yukio Edano on Tuesday apologized for the government's failure to take minutes of meetings of a taskforce dealing with the Fukushima nuclear crisis and said that he has instructed the Nuclear and Industrial Safety Agency to compile them soon based on notes taken by meeting attendees.

Edano said at a press conference that although the meetings were held in emergency situations soon after the accident at the Fukushima Daiichi power plant, the government should have created minutes as soon as possible considering the public interest in the matter and the significant social impact that the handling of the accident has.

"As then-Chief Cabinet Secretary and the current Economy, Trade and Industry Minister, I apologize," he said.

The government taskforce was set up on March 11, when a massive earthquake struck wide areas of northeastern and eastern Japan and ensuing tsunami ravaged Pacific coastal areas of northeastern Japan, triggering the nuclear accident at the Fukushima Daiichi power plant.

Various crisis management decisions were made at the taskforce's meetings, such as setting of the evacuation zone and policies for conducting decontamination work after the leakage of radioactive materials from the crippled power plant.

The nuclear safety agency serves as a secretariat for the taskforce. The industry ministry has the agency under its wing.

"I will have (the agency) make utmost effort" to have the minutes ready for release "next month at the latest," Edano said.

(Mainichi Japan) January 24, 2012

## Radioactive release from Fukushima plant rises

The operator of the crippled Fukushima Daiichi nuclear plant says the amount of radioactive substances being released from the plant has risen slightly. **It attributes the rise to increased human activities onsite.** [???

Tokyo Electric has been measuring the levels of radioactive substances released from damaged reactors at the plant since the accident in March.

The level measured onsite was 800-trillion becquerels per hour immediately after the accident.

Readings continued to decline, and in November and December dropped to 60 million becquerels per hour. That is about one 13 millionth the initial level.

But the company says the levels were slightly up to 70 million becquerels per hour in January.

The company says that radioactive materials around the No. 2 reactor, the surrounding of which is still highly contaminated, were **stirred up** by a number of workers going in and out of the building.

They were working to insert an optical fiberscope into the containment vessel as an initial step toward decommissioning the reactor.

Tuesday, January 24, 2012 11:04 +0900 (JST)

## Another nuclear reactor going offline

Tokyo Electric Power Company plans to shut down a reactor in Niigata Prefecture, central Japan, for a regular inspection on Wednesday. This means **93% of Japan's nuclear reactors will be out of service.**

When TEPCO shuts down **the No.5 reactor of the Kashiwazaki-kariwa nuclear plant**, its No.6 will be the only active reactor providing power to the Tokyo metropolitan area.

All of TEPCO's nuclear power plants in Fukushima Prefecture are out of service due to the accident at

Fukushima Daiichi. The others in the region are undergoing repairs or regular checkups.

TEPCO will boost the capacity of thermal power plants and ask companies and households to save electricity.

Meanwhile, the company has submitted the results of so-called stress tests on the No.1 and No.7 reactors at the Kashiwazaki-kariwa nuclear power plant.

But the local government refuses to give the go-ahead to restart the reactors. It says there has not yet been an adequate investigation of the Fukushima Daiichi accident.

From Wednesday, 50 of Japan's 54 nuclear reactors will be inactive.

Tuesday, January 24, 2012 06:35 +0900 (JST)

## **Nuclear power boosters used climate change to ride to energy supremacy**

In 1997, in the midst of the international negotiations that would eventually result in the Kyoto Protocol, the Japanese delegation was pondering whether it could realistically accept the protocol's main point: a commitment to a 6 percent decrease in greenhouse gas emissions from 1990 levels. They were also grappling with what such a commitment would mean for Japan's energy supplies.

Strangely enough, though the Japanese delegation was grappling with issues of carbon emissions and energy needs, there was not a single representative of the then Environment Agency on hand. Osamu Watanabe, vice minister at the former Ministry of International Trade and Industry at the time of the talks and now president of Japan Petroleum Exploration Co., sums up Japan's thinking like this:

"Taking nuclear power into account was a prerequisite for accepting the 6 percent reduction. **Speaking for the industry ministry, we thought that the more nuclear power we had, the more we could reduce greenhouse gas emissions.**"

Meanwhile, at the Environment Agency -- which became the Environment Ministry in 2001 -- there were many staff who took a more cautious attitude to the promotion of nuclear power. Their skepticism did not, however, often find effective expression.

**"The industry ministry put up a lot of resistance to the Environment Agency getting involved in energy policy,"** a senior agency official from the time says. "We just couldn't get a word in."

The threat of climate change gained traction in the global imagination after the end of the Cold War. And as warming worries grew, nuclear power became an anti-emissions trump card in the eyes of many, fueling a reactor building spree. Another former Environment Ministry official with long experience in climate change policy told the Mainichi, "Government policy came to incorporate promotion of nuclear power. It was taboo for us to even make an issue of it."

Even after the Kyoto Protocol was agreed on, the Environment Agency and its successor ministry had a very rough road trying to defend climate change policies. The agency tried to organize domestic

support for the protocol's ratification, but was met with fierce opposition from the governing party and business world figures who worried about the effects on industry and condemned the protocol as an "unequal treaty."

"We thought getting the protocol ratified was the greatest environmental policy measure we could take, but drawing on nuclear power never entered our minds," the former senior Environment Ministry official says. It was, however, on the minds of some people in government. When the government finalized its basic principles for climate change policy in March 2002, the document included a provision for "promotion of nuclear power," and set a goal of increasing nuclear power output by 30 percent by 2010.

The Environment Agency also came under direct pressure to fall in line behind nuclear power even before the rumblings around the Kyoto Protocol. Just after the 1992 U.N. Earth Summit in Rio de Janeiro, **as the agency was undertaking revisions to laws providing capital to environmental NGOs, it was forced by the then ruling Liberal Democratic Party (LDP) to insert provisions banning funding to groups that were opposed to nuclear power.** Many senior officials were also cornered by governing party lawmakers demanding the agency back nuclear power.

The push for nuclear power deepened when the Democratic Party of Japan came into power in 2009. In September that year, then Prime Minister Yukio Hatoyama declared to the world that Japan would cut its greenhouse gas emissions by 25 percent from 1990 levels by the year 2020. Just after that announcement, speaking on the environmental assessment for the construction of a third reactor at Kyushu Electric Power Co.'s Sendai nuclear power plant, the environment minister stated that "to reduce greenhouse gas emissions and to guarantee safety, steady promotion of nuclear power is necessary." **This was the first time official pronouncements in favor of nuclear power were made over an environmental assessment.**

Even leading Japanese climate scientists were given a part to play in nuclear power promotion. University of Tokyo professor emeritus Ryoichi Yamamoto -- a climate change policy advisor to both the Abe and Fukuda administrations -- put together a 2008 report calling for the expansion of nuclear power as a vital part of global warming strategy when he was chairman of an Atomic Energy Commission panel.

"I thought nuclear power would be a powerful tool," Yamamoto says of the report. "But it can't be controlled when there's an accident, so it can't really be called a 'technology.' I've come to understand that there are ethical considerations with destroying the lives of local residents. I regret that I could not point out those issues when I wrote the report."

Furthermore, "I think the government, which seemed to be blocked and drifting on how to get reactor construction moving and the problems of radioactive waste disposal, just latched onto the global warming issue when climate change countermeasures reached a critical juncture. We thought that the risks of global warming were far greater than those of nuclear power, but in this earthquake-prone nation of Japan, the opposite is true."

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 25, 2012

## Setagaya decontamination work continues 3 months after radioactive radium found



The supermarket in Tokyo's Setagaya Ward remains shut down on Jan. 23 due to ongoing decontamination work. (Mainichi)

Efforts to remove highly radioactive radium from the premises of a supermarket in Tokyo's Setagaya Ward still continue three months after two bottles containing radium 226 were discovered in underground soil there.

The Central Union of Agricultural Co-operatives, which has leased the supermarket land to its operator, has to pay for the decontamination work. But it remains unclear when the operation will finish, and the total costs for the work are expected to reach hundreds of millions of yen.

While checking radiation levels in the area, a local resident detected high levels of radiation within the premises of the supermarket on Oct. 28. The Ministry of Education, Culture, Sports, Science and Technology and other parties then started to check the premises for radiation and detected up to 170 microsieverts per hour of radiation at two spots there. Two bottles containing radium were found beneath the asphalt.

Two weeks later, a private company that specializes in decontamination removed the bottles from the ground. Nevertheless, more than 10 spots where the radiation reading reached more than 0.2 microsieverts per hour were later found. Work still continues to dig up the ground and remove radioactive substances from such things as glass chips and replace soil with dirt brought from elsewhere. It is not clear when the work will finish.

After acquiring the supermarket land from a now-defunct school operator in 1973, the Central Union of Agricultural Co-operatives in Tokyo initially used it as a dormitory for its staff and as a car park before leasing it to the operator of the supermarket. An official of the Central Union of Agricultural Co-

operatives said, "We have never possessed any radium, and we don't know why radium was buried there."

According to science ministry officials in charge of regulating radiation, most radium found abandoned had been acquired by individuals kept at their homes or elsewhere before the radiation law took effect in 1958. The discovery of radium within the supermarket land marks the first case in which a radioactive substance has been found without its owner being identified.

The Central Union of Agricultural Co-operatives, the owner of the supermarket land, is supposed to take responsibility for the decontamination work, but a union official said, "Similar things could happen again in the future. We want the government to consider countermeasures such as bearing decontamination costs."

The Office of Radiation Regulations at the science ministry is concerned about the possibility of more radioactive substances being found without their owners being identified as handy radiation measuring devices have become readily available nowadays. A science ministry official said, "Countermeasures have been discussed within the ministry."

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 25, 2012

## **Village in Fukushima no-go zone to call for residents to return permanently by March**

KAWAUCHI, Fukushima -- Authorities in this village, part of which still stands in the no-go zone around the crippled Fukushima No. 1 Nuclear Power Plant, plan to call on all evacuated residents to return by the end of March, it has been learned.

The local government organized a meeting for residents in January, during which officials explained plans for decontamination procedures and actions that have been taken to secure employment after residents return to the village.

"Most residents seemed to agree with our explanations and plans to a certain extent," said a senior town official, who attended the meeting. Therefore, the municipal government has decided to encourage all residents to return to their homes. After consulting with the municipal assembly and others, the village will report its decision to Fukushima Gov. Yuhei Sato.

On Jan. 31, the municipal government will call on residents to return home, hoping that all evacuees will move back to their homes by the end of March. School and town hall operations will be resumed from April, officials said.

This is the first time for a municipality that fell in the government-designated evacuation zones following the nuclear disaster to announce return plans for its residents.

Kawauchi village, home to approximately 3,000 people, was one of the municipalities that fell within both the government-designated no-go zone and emergency evacuation preparation zones around the troubled nuclear power complex.

Last September, the designation of an emergency evacuation preparation advisory was lifted for the western part of the village. However, even after the advisory was lifted, less than 200 residents returned to their homes. The village's eastern part still remains within the 20-kilometer no-go zone around the damaged nuclear power plant.

All Kawauchi residents evacuated from their homes in the wake of the nuclear crisis, with approximately 80 percent of them currently living in other places within Fukushima Prefecture and 20 percent having moved out of the area.

According to the municipal government's plan, the homes of some 600 households, which fall within the former emergency evacuation preparation zone, will be decontaminated by the end of March. The homes of the approximately 340 remaining households in the zone will be cleaned by the end of the year. Radiation levels, however, in all places there are low, at less than one microsievert per hour.

As for the approximately 160 households whose homes fall within the no-go zone, the local government plans to build temporary housing units in safe areas within the village, where evacuees can restart their lives.

Decontamination of a nursery and schools will be completed within February, officials said, and all administrative organs and other main facilities will resume operations starting from April.

Local authorities also plan to secure employment opportunities for returned residents, including decontamination projects that will offer jobs to some 1,000 people. In the next fiscal year, job openings in metal factories and vegetable cultivating facilities will further expand opportunities, the plan explains.

Meanwhile, however, residents cannot hide their bewilderment over the municipal government's most recent decision.

Shinichi Sakakimoto, 71, a farmer who evacuated to Koriyama in the prefecture following the nuclear disaster, says that he is not sure whether returning home will help him.

"Even if the town hall operates as usual, I don't have a car so it will be very difficult to go shopping to a nearby village," says the man, whose house falls in the former emergency evacuation preparation zone. "I want to go back eventually, but as I won't be able to work on my rice paddies for now, I won't have any income."

A 36-year-old man, whose house falls within the no-go zone, says he thinks the move is too hasty. "I don't believe that the plant has been brought under control. What will happen if another powerful earthquake strikes? This is impossible," he said.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 25, 2012

## **Fukushima panel to finalize report by late July**

A government panel says it will finalize by late July its report on the accident at the Fukushima Daiichi nuclear power plant.

The 9-member panel held a closed-door meeting on Wednesday, the first since it released an interim report in December.

Panel leader Yotaro Hatamura told reporters afterwards that the final report will cover items that were not mentioned in the previous one.

He said the panel will conduct hearings with those who were cabinet ministers at the time of the accident to investigate the government's decision-making process.

The panel will also report on measures taken at the nearby Fukushima Daini plant after the March earthquake and tsunami.

Hatamura said his panel wants to know how information on the accident was provided to local residents. He added that it is also important to verify the extent of the damage and how the chain of responsibility was structured.

The panel plans to invite foreign experts to a meeting in late February to discuss what items should be included in the final report.

In its interim report, the panel criticized plant operator Tokyo Electric Power Company for insufficient anti-disaster measures and responses to the accident. The report also described the government's handling of the crisis, such as issuing evacuation orders, as problematic.

Wednesday, January 25, 2012 20:48 +0900 (JST)

## **Nuclear plants to prepare for faults 5km away**

Japan's nuclear safety agency will instruct utilities nationwide to reassess the earthquake resistance of their nuclear power plants to comply with stricter new standards.

The Nuclear and Industrial Safety Agency says utilities should prepare for fault movements that take place 5 kilometers or more from the plants.

The agency will also ask utilities to prepare for an earthquake stronger than the maximum ever recorded in the vicinity of their nuclear facilities.

Officials will continue to refine the quake-resistance standards for nuclear plants after soliciting more opinions from experts.

The new policy follows recent findings by seismologists. The agency says a magnitude 7 earthquake

that struck Fukushima Prefecture in April last year resulted in the movement of a fault that was thought to be inactive. The fault is located about 50 kilometers from the Fukushima Daiichi nuclear power plant.

The agency added that the active fault could have been found earlier if drilling or other surveys had been conducted.

Wednesday, January 25, 2012 19:50 +0900 (JST)

## **Panel to issue final investigation report on nuclear crisis in July**

TOKYO (Kyodo) -- A government-appointed panel investigating the nuclear crisis at the Fukushima Daiichi power plant will compile its final report by the end of July and hopes to end its probe at that point, panel head Yotaro Hatamura, a professor emeritus at the University of Tokyo, said Wednesday.

The panel also announced that it will hold a two-day meeting in Tokyo from Feb. 24 with at least four overseas experts to review the panel's interim report, released in late December.

During their stay in Japan, Richard Meserve, former chairman of the U.S. Nuclear Regulatory Commission, Andre-Claude Lacoste, the chairman of the French nuclear safety authority, and other foreign experts are also expected to visit the actual site of the world's worst nuclear crisis since the 1986 Chernobyl disaster.

In the process of compiling the final report, the panel plans to conduct hearings with key Cabinet ministers involved in dealing with the nuclear crisis if necessary, Shinji Ogawa, chief of the panel's secretariat said, adding, however, that no specific schedule has been set.

Ogawa also said the government's failure to take minutes during meetings of a task force set up to deal with the crisis is not expected to adversely affect the investigative process.

The task force made important decisions, such as setting evacuation zones around the radiation-leaking plant in Fukushima Prefecture, but it was recently revealed that government officials only recorded items like agenda points during the 23 meetings held.

In late December, the panel issued a 500-page interim report highlighting the poor response of the plant's operator Tokyo Electric Power Co. and the government to the nuclear crisis, triggered by the devastating earthquake and tsunami on March 11 last year.

(Mainichi Japan) January 26, 2012

## **Japan kept silent on worst nuclear crisis scenario**

TOKYO (AP) -- The Japanese government's worst-case scenario at the height of the nuclear crisis last year warned that tens of millions of people, including Tokyo residents, might need to leave their

homes, according to a report obtained by The Associated Press. But fearing widespread panic, officials kept the report secret.

The recent emergence of the 15-page internal document may add to complaints in Japan that the government withheld too much information about the world's worst nuclear accident since Chernobyl.

It also casts doubt about whether the government was sufficiently prepared to cope with what could have been an evacuation of unprecedented scale.

The report was submitted to then-Prime Minister Naoto Kan and his top advisers on March 25, two weeks after the earthquake and tsunami devastated the Fukushima Dai-ichi nuclear power plant, causing three reactors to melt down and generating hydrogen explosions that blew away protective structures.

Workers ultimately were able to bring the reactors under control, but at the time, it was unclear whether emergency measures would succeed. Kan commissioned the report, compiled by the Japan Atomic Energy Commission, to examine what options the government had if those efforts failed.

Authorities evacuated 59,000 residents within 20 kilometers (12 miles) of the Fukushima plant, with thousands more were evacuated from other towns later. The report said there was a chance far larger evacuations could be needed.

The report looked at several ways the crisis could escalate -- explosions inside the reactors, complete meltdowns, and the structural failure of cooling pools used for spent nuclear fuel.

It said that each contingency was possible at the time it was written, and could force all workers to flee the vicinity, meaning the situation at the plant would unfold on its own, unmitigated.

Using matter-of-fact language, diagrams and charts, the report said that if meltdowns spiral out of control, radiation levels could soar.

In that case, it said evacuation orders should be issued for residents within and possibly beyond a 170-kilometer (105 mile) radius of the plant and "voluntary" evacuations should be offered for everyone living within 250 kilometers (155 miles) and even beyond that range.

That's an area that would have included Tokyo and its suburbs, with a population of 35 million people, and other major cities such as Sendai, with a million people, and Fukushima city with 290,000 people.

The report further warned that contaminated areas might not be safe for "several decades."

"We cannot rule out further developments that may lead to an unpredictable situation at Fukushima Dai-ichi nuclear plant, where there has been an accident, and this report outlines a summary of that unpredictable situation," says the document, written by Shunsuke Kondo, head of the commission, which oversees nuclear policy.

After Kan received the report, he and other Japanese officials publicly insisted that there was no need to prepare for wider-scale evacuations.

Rumors of the document grew this month after media reports outlined its findings and an outside panel was created to investigate possible coverups. Kyodo News agency described the contents of the document in detail on Saturday.

The government continues to refuse to make the document public. The AP obtained it Wednesday through a government source, who insisted on anonymity because the document was still categorized as internal.

Goshi Hosono, the Cabinet minister in charge of the nuclear crisis, implicitly acknowledged the document's existence earlier this month, but said the government had felt no need to make it public.

"It was a scenario based on hypothesis, and even in the event of such a development, we were told that residents would have enough time to evacuate," Hosono said.

"We were concerned about the possibility of causing excessive and unnecessary worry if we went ahead and made it public," he said. "That's why we decided not to disclose it."

A Japanese government nuclear policy official, Masato Nakamura, said Wednesday that he stood behind Hosono's decisions on the document.

"It was all his decisions," he said. "We do not disclose all administrative documents."

Japanese authorities and regulators have been repeatedly criticized for how they have handled information amid the unfolding nuclear crisis. Officials initially denied that the reactors had melted down, and have been accused of playing down the health risks of exposure to radiation.

In another example, a radiation warning system known as SPEEDI had identified high-risk areas where thousands of people were continuing to live while the reactors were in critical condition. Officials did not use that data to order evacuations; they have since said it was not accurate enough.

The outside panel investigating the government response to the nuclear crisis has been critical, calling for more transparency in relaying information to the public.

"Risk communication during the disaster cannot be said to have been proper at all," it said in its interim report last month.

(Mainichi Japan) January 26, 2012

## Possible Tokyo Evacuation Was Kept Secret in Nuclear Crisis

By THE ASSOCIATED PRESS

Published: January 25, 2012 - [http://www.nytimes.com/2012/01/26/world/asia/projections-during-nuclear-crisis-included-evacuating-tokyo.html?\\_r=2](http://www.nytimes.com/2012/01/26/world/asia/projections-during-nuclear-crisis-included-evacuating-tokyo.html?_r=2)

TOKYO (AP) — The Japanese government’s worst-case scenario at the height of the nuclear crisis last year warned that tens of millions of people, including residents of Tokyo, might be forced to leave their homes, according to a report. Fearing widespread panic, officials kept the report secret.

The emergence of the 15-page internal document might add to complaints that the government withheld too much information about the meltdown at the Fukushima Daiichi nuclear plant, the world’s worst nuclear accident since the Chernobyl disaster in 1986.

It also casts doubt about whether the government was sufficiently prepared to handle what could have been an evacuation on an extraordinary scale.

The report was submitted to [Naoto Kan](#), the prime minister at the time, and his top advisers on March 25, two weeks after an [earthquake and tsunami](#) devastated the [Fukushima Daiichi](#) nuclear power plant, causing three reactors to melt down and generating hydrogen explosions that blew away protective structures.

Workers ultimately were able to bring the reactors under control, but at the time it was unclear whether those emergency measures would succeed. Mr. Kan commissioned the report, compiled by the [Japan Atomic Energy Commission](#), to examine what options the government had if those efforts failed.

The authorities evacuated 59,000 residents within 12 miles of the Fukushima plant, and thousands more were evacuated from other towns later. The report said, however, there was a chance that far larger evacuations might be necessary.

The report looked at several ways the crisis could escalate — explosions inside the reactors, complete meltdowns, and the structural failure of cooling pools used for spent nuclear fuel.

Using matter-of-fact language, diagrams and charts, the report said that if meltdowns spiraled out of control, radiation levels could soar.

In that case, it said, evacuation orders should be issued for residents within and possibly beyond a 105-mile radius of the plant and “voluntary” evacuations should be available to everyone living within 155 miles and beyond.

That would have included the Tokyo area, with a population of 35 million people, and other major cities like Sendai, with 1 million people.

The report further warned that contaminated areas might not be safe for “several decades.”

“We cannot rule out further developments that may lead to an unpredictable situation at Fukushima Daiichi nuclear plant, where there has been an accident, and this report outlines a summary of that

unpredictable situation,” said the document, which was written by Shunsuke Kondo, the leader of the atomic energy commission.

After Mr. Kan received the report he and other Japanese officials publicly insisted that there was no need to prepare for more widespread evacuations.

Rumors of the report emerged this month after a panel was created to investigate possible cover-ups. The Kyodo News agency first reported on the contents of the document on Saturday.

Nevertheless, the government continues to refuse to make the document public. Goshi Hosono, the cabinet minister in charge of the nuclear crisis, implicitly acknowledged the document’s existence this month, but said the government had felt no need to make it public.

“Even in the event of such a development, we were told that residents would have enough time to evacuate,” Mr. Hosono said.

## **IAEA team inspects 2 idled reactors at Oi nuclear plant**

TSURUGA (Kyodo) -- A delegation of the International Atomic Energy Agency inspected two idled reactors at Kansai Electric Power Co.'s Oi nuclear power plant in Fukui Prefecture on Thursday to check whether Japan has conducted reactor stress tests appropriately in the wake of the Fukushima nuclear crisis.

The IAEA team is tasked with reviewing the adequacy of the method adopted by the Nuclear and Industrial Safety Agency for conducting the test, which is a prerequisite for resuming operation of reactors that have gone offline for scheduled checkups.

James Lyons, nuclear installation safety director of the IAEA's nuclear safety and security department who heads the delegation, said at the beginning of its on-site investigation in the coastal town of Oi in central Japan that the team intends to check how Japanese nuclear power plants have dealt with instructions from the NISA to date.

Japan required utilities to take computer simulation-based safety tests, or so-called stress tests, after Tokyo Electric Power Co.'s Fukushima Daiichi power plant suffered a meltdown accident after the March 2011 quake-tsunami disaster, to check how much leeway their nuclear power plants have to withstand earthquakes, tsunami and the loss of power.

At the four-reactor Oi plant, the Nos. 3 and 4 reactors are in the final stage of stress tests.

Amid heavy snow, the IAEA team observed a drill conducted at the power complex for activating an emergency electricity generator. It also checked what steps the Oi plant has taken to enhance its severe-

accident measures following the Fukushima nuclear crisis and received explanations from officials of Kansai Electric about plant equipment and its safety evaluation of the two idled reactors.

The IAEA inspection came after Kansai Electric evaluated the No. 3 and No. 4 reactors as capable of withstanding an earthquake 1.8 times stronger than the maximum presumed quake for the area and a tsunami wave up to 11.4 meters high, four times higher than the maximum presumed level. The NISA has compiled a draft report endorsing the utility's view.

The Vienna-based IAEA sent the delegation at the request of the Japanese government, and the team is expected to present the results of its review Tuesday.

After receiving the IAEA review, the NISA will finalize its report on the two reactors as early as February and have it checked by the Nuclear Safety Commission of Japan.

Prime Minister Yoshihiko Noda and relevant ministers will then judge whether to approve the reactors' restart, but industry minister Yukio Edano who oversees the NISA has said it is necessary to secure a certain level of acceptance from local communities to reactivate idled reactors.

(Mainichi Japan) January 26, 2012

## **Veteran nuclear experts regret Fukushima crisis, but still see need for reactors**

Veteran nuclear experts who were involved in Japan's atomic energy policy for decades are lamenting the outbreak of the crisis at the Fukushima No. 1 Nuclear Power Plant, but maintain that resource-poor Japan needs nuclear power to support its current standard of living in the future.

In late March 2011, soon after the outbreak of the Fukushima nuclear crisis, an email was sent to about 30 leading figures in nuclear circles in Japan. Attached was a file titled: "Urgent proposals in connection with the accident at the Fukushima nuclear power plant," which began with the sentence: "As figures who have been promoting the peaceful use of nuclear power, we find this accident deeply regrettable, and at the same time we deeply apologize to the public."

The proposals were written mainly by three people -- Shojiro Matsuura, former head of the Nuclear Safety Commission (NSC); Kenji Sumita, former acting NSC chief; and Shunichi Tanaka, former acting chairman of the Atomic Energy Commission of Japan. Some nuclear experts rejected the proposals, asking why they had to apologize. But the proposals were eventually undersigned by 16 leading nuclear experts.

Frustrated over the slow response to the nuclear crisis by the government and Tokyo Electric Power Co. (TEPCO), which operates the damaged Fukushima plant, the nuclear experts pointed out that it was essential to gather knowledge and wisdom from society to come up with a comprehensive and strategic response. The rare proposals made by the experts were released at a news conference on April 1 -- the day when many Cabinet ministers shed their disaster working uniforms and once again wore suits to mark the start of full-fledged reconstruction work. In sharp contrast to the Prime Minister's Office, which was trying to appear and sound calm, Tanaka sternly commented: "Reactor cores have melted to

a considerable extent. I never predicted that we would cause the public so much trouble. We are responsible for promoting nuclear power."

So, how did the 16 nuclear experts see the Fukushima nuclear crisis?

Sumita, who played a leading role in handling the JCO criticality accident in 1999, commented: "We have not applied the lessons learned from the JCO accident in the space of 10 years." He added impatiently, "We've heard utility companies saying, 'What that backcountry company did has nothing to do with us. If we took measures, we would also be seen as being irresponsible.'"

Shinzo Saito, former chairman of the Atomic Energy Society of Japan, stated: "There's a lack of communication between the actual site and top executives at the company headquarters. This is what you might call a 'big company disease.'"

Meanwhile, a former member of the Atomic Energy Commission of Japan said, "It's a world in which everyone understands each other and if someone says something, everything is understood. There have been no constructive discussions, and criticism has never been reflected in policy."

Nevertheless, none of the experts clearly stated that Japan could do without nuclear power.

Shoji Nagamiya, former chairman of the Physical Society of Japan, commented: "Nuclear technology is a major asset to human beings. It is a waste to renounce what we have obtained." Hideki Nariai, former chairman of the Atomic Energy Society of Japan, added, "Atomic power is so wonderful. The global competition for energy has started, so we can't talk about getting rid of nuclear power plants."

In the wake of the outbreak of the Fukushima nuclear crisis, the government set up an advisory council on the prevention of nuclear accidents and appointed Matsuura as head of the council. The advisory council compiled proposals in December aimed at preventing a recurrence of the nuclear disaster, and called for a tentatively titled "Nuclear Regulation Agency" to be set up in April to maintain independence from the nuclear-related companies and break away from Japan's "nuclear village" -- the name given to the nation's pro-nuclear collection of politicians, bureaucrats, academics and utilities.

Looking back over his 76 years, Matsuura said, "As a person who lived through an era of insufficient energy supply, I think that if we were to maintain the current standard of living in Japan with the current population, we would need to secure a source of atomic energy and use it to live while ensuring its safety."

These are the characteristics of the "nuclear village" that the veteran nuclear experts pointed out with deep regret in connection with the Fukushima nuclear crisis. The question remains as to whether these characteristics can be altered in the future.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 26, 2012

## **DPJ endorses revised bill to limit life span of nuclear reactor to 40 years**

The ruling Democratic Party of Japan (DPJ) endorsed a revised Nuclear Reactor Regulation Law on Jan. 25 to limit the operational life of a nuclear reactor to 40 years in principle with "exceptional cases" of approved extension of up to 20 years.

Stressing that the possible extension of a reactor's life span would be "exceptional," the draft legislation stipulates that if a reactor meets the necessary requirements, the environment minister "can approve" the extension of its operational life of no more than 20 years.

Satoshi Arai, head of the DPJ project team on measures against nuclear accidents, said, "We made it clear that it is extremely difficult to operate nuclear reactors for more than 40 years." The government is expected to make a Cabinet decision on related bills soon as it tries to enforce them on April 1.

On exceptional rules, nuclear disaster minister Goshi Hosono said on Jan. 6 that the government would introduce the 40-year limit on the operational life of a nuclear reactor. He said the government planned to set exceptional rules to approve the extension of a reactor's operational life if requested by nuclear plant operators as long as it has no safety problems after checking the degree of deterioration of nuclear facilities and technological capabilities to ensure safety of nuclear facilities. But Hosono did not say for how long the operational life of a reactor could be extended.

However, while Hosono was on an overseas trip, bureaucrats in charge of handling the issue explained that "the extension of up to 20 years can be approved." Amid the confusion, Hosono stressed in Washington D.C. on Jan. 18 that it would be difficult to operate a nuclear reactor for more than 40 years.

According to bills the government presented to a DPJ joint meeting on Jan. 23, the environment minister "has to approve (the extension) if a reactor is deemed to comply with requirements." But the wording was modified after DPJ lawmakers lashed out at the proposal, saying it could be taken to mean a nuclear reactor can be operated for 60 years.

 [Click here for the original Japanese story](#)

(Mainichi Japan) January 26, 2012

## **IAEA inspects Ohi nuclear plant**

A team of International Atomic Energy Agency inspectors has observed a tsunami drill at a nuclear power plant along the Japan Sea coast.

The 10-member team visited the Ohi plant in Fukui Prefecture on Thursday to assess safety measures of the operator, Kansai Electric Power Company.

The utility carried out a drill based on a scenario in which a tsunami cuts the plant off from its outer power supply. Such an outage took place at the Fukushima Daiichi plant last March.

The utility last year reported to the state the outcome of stress tests at the Ohi plant's No. 3 and 4 reactors, saying **they could safely withstand tsunamis up to 11 meters high.**

The government's Nuclear and Industrial Safety Agency concluded that the tests were conducted appropriately.

Team leader James Lyons said the inspectors were convinced that the agency solidly examined the steps taken by the operator.

The inspectors are to finalize their report on January 31st.

Thursday, January 26, 2012 20:01 +0900 (JST)

## Fukushima decontamination plan worked out

Japan's Environment Ministry has compiled a **2-year plan to complete decontamination** of some evacuation zones around the troubled Fukushima Daiichi nuclear plant.

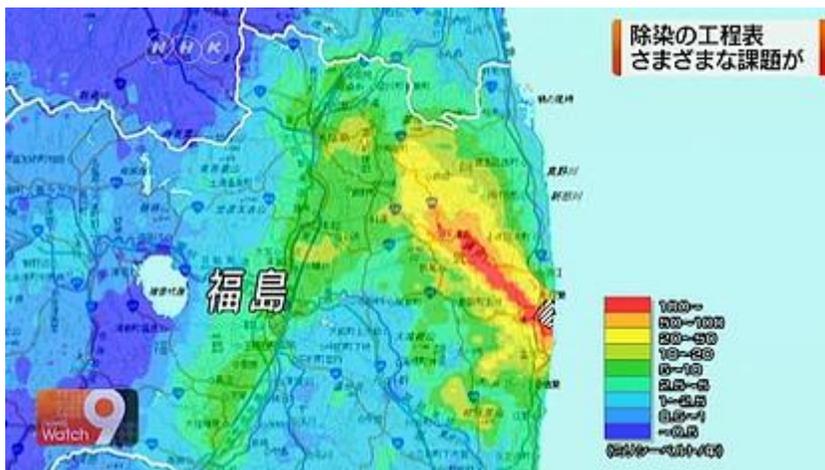
The ministry said on Thursday that the plan is part of an effort to allow evacuees to soon return home from the government's exclusion zone and another mandatory evacuation zone covering 11 municipalities.

A deadline of March 2014 is set for areas with radiation levels up to 50 millisieverts a year.

The ministry says **the plan puts top priority on schools, parks and other facilities for children, as well as hospitals and fire departments.**

The ministry hopes to finalize the schedule by March after consultations with the municipalities.

For areas with radiation levels above 50 millisieverts a year, the ministry says it will implement decontamination model projects to decide how to handle the issue.



Thursday, January 26, 2012 21:02 +0900 (JST)

## **Japan aims to end decontamination work in some evacuation areas by 2014**

TOKYO (Kyodo) -- The Environment Ministry said Thursday it plans to complete decontamination activities in part of the evacuation zones around the crippled Fukushima Daiichi nuclear power plant by March 2014 but left unclear when evacuees would be able to return to their homes.

The ministry plans to start cleaning houses, offices, farm lands and others located in areas with an annual radiation dose of up to 50 millisieverts from around July, according to a road map unveiled the same day. Ministry officials said the government intends to bring the radiation level down to 20 millisieverts or lower.

But the government did not show a detailed cleanup schedule for areas over 50 millisieverts, saying it will consider what to do with such heavily polluted lands after seeing the outcome of decontamination demonstration projects.

"Our main goal is to make it possible for evacuees to return to their homes as early as possible," Environment Minister Goshi Hosono said after the ministry unveiled a decontamination road map, adding that achieving the return of residents affected by a huge nuclear accident is "an unprecedented attempt" in the world.

As for when evacuees would be able to return, Hosono told reporters he would "cautiously make a decision" considering the opinions of the local governments and the people.

"I want to act in line with the wishes of the people as much as possible, but we should not rush them to return when preparation is not enough, including infrastructure and decontamination," he said.

The road map has been created as the government has decided to reclassify existing evacuation zones around the plant into three categories this spring, now that the plant has been brought to a stable state of cold shutdown.

Under the new classification, an area over 50 millisieverts would be designated as a zone where it would be difficult for evacuees to return for a long period, while an area exceeding 20 millisieverts and up to 50 millisieverts would be categorized as a zone where habitation is restricted.

Areas with 20 millisieverts or less would be a zone where the government would allow residents to return in stages.

The government is directly in charge of the decontamination of the evacuation zones.

The Environment Ministry officials said that about 27,000 hectares are seen to be subject to decontamination, including about 9,200 hectares that are expected to be categorized as the "difficult-to-return" zone.

Currently, there are two types of evacuation zones -- namely the no-entry zone set in the 20-kilometer radius of the plant as well as areas outside the no-go zone where radiation exposure is feared to reach 20 millisieverts a year.

(Mainichi Japan) January 27, 2012

## **Suspect cattle still untested / Location of nearly 3,000 cows in radiation scare remains unknown**

The Yomiuri Shimbun

The Health, Labor and Welfare Ministry has been unable to track the distribution routes of nearly 3,000 cows whose meat is suspected to contain high levels of radioactive cesium, ministry officials said.

The ministry wanted to inspect the meat of 4,626 beef cattle from 15 prefectures because it suspected the animals were fed rice straw contaminated by radioactive substances released at the outbreak of the crisis at the Fukushima No. 1 nuclear plant.

The meat of 1,630 cows--about 35 percent--had been inspected as of Wednesday, but the ministry says **the distribution routes of the remaining 2,996 animals remains unknown.**

**The ministry ordered the inspections in July last year**, after discovering that beef from cows shipped from Fukushima Prefecture contained high levels of radioactive cesium.

Later that month, the ministry asked prefectural governments to conduct inspections and release the identification numbers of cows that were suspected to have been fed rice straw exceeding the government provisional limit of 300 becquerels per kilogram. **The local governments carried out the inspections based on information on cattle sales by dealers and wholesalers.**

But the ministry believes that some beef from among the 2,996 cattle had already been consumed by July. It also believes that suspect beef was consumed following instructions to test the meat, because checks were not carried out in time.

Beef from the 4,626 cows is known to have been shipped from 15 prefectures spanning from Hokkaido to Shimane Prefecture.

From July to October, the beef from 1,585 animals had been inspected, and meat from another 45 animals was tested in November, according to reports from prefectural governments. But there have been no inspections of beef from the remaining cattle.

The results from the inspections show meat from 105 cattle in six prefectures--6.4 percent of the 1,630 animals tested--had radioactive cesium exceeding the government's provisional limit of 500 becquerels per kilogram.

By prefecture, 54 of the 105 cows were bred in Miyagi and 21 were shipped from Fukushima. Iwate had 16, followed by Tochigi with 10. Two each were from Yamagata and Akita.

"It took time for the local governments to conduct inspections when more than one prefecture were involved in the beef's shipment and distribution," a ministry official said.

A major factor contributing to the failure of local governments to specify the distribution routes for such a large number of cattle was probably the fact that **the inspections were not legally binding**, the official added.

The Iwate prefectural government has not determined the routes of more than 60 percent of the 529 cows it was ordered to inspect. "As more time passes, we face more difficulties in following up where these cattle were distributed," a prefectural government official said. "But we'll continue our inspections as part of efforts to secure food safety."

Hisa Anan, the chief of the secretariat of the National Liaison Committee of Consumers' Organization, said: "It's irretrievably damaging that some people have consumed the uninspected beef. The government should provide an accurate explanation to consumers."

Hideaki Karaki, an expert in food safety and professor emeritus at the University of Tokyo, said the nation's meat distribution system makes it difficult for authorities to conduct investigations because carcasses are cut into parts that are sent to different areas. "To make matters worse, inspections were delayed and only began four months after the nuclear crisis," he said.

But Karaki said people should be calm despite fears that consumers have eaten the tainted beef. "People would not suffer any health damage unless they consumed a considerable amount of the meat," he said.

(Jan. 27, 2012)

## **2 Frenchmen busted for forging passes to shoot inside Fukushima's no-go zone**

FUKUSHIMA -- Police have sent papers to prosecutors on two French cameramen for forging passes that they used to enter and film in the no-go zone around the crippled Fukushima nuclear plant, it has been learned.

According to police, the pair scanned passes of workers at the Fukushima nuclear power plant, using a computer to forge passes of their own.

Their actions were uncovered when a police officer on patrol in the area spotted the two while they were filming and questioned them.

The Frenchmen were among a group of five men accused of entering the zone without permission to shoot the current conditions at the crippled nuclear plant between Nov. 30 last year and Jan. 3 this year.

Police have sent papers to prosecutors on all five, accusing them of violating the Disaster Countermeasures Basic Act and the Act on Special Measures Concerning Nuclear Emergency Preparedness. The two Frenchmen are additionally accused of using forged private documents.

According to police, there are unpatrolled roads leading into the no-entry zone, which people have used to enter the restricted area.

There have been over 100 trespassing cases by residents and other locals up until now, including cases in which residents have attempted to enter the zone to check on their houses, police said. From a humanitarian standpoint, however, police have not charged any of them, but instead requested that they write explanatory reports for their actions.

(Mainichi Japan) January 27, 2012

## **Japan's plutonium stockpile builds as nuke fuel cycle policy hits dead end**

Japan's stockpile of plutonium had reached 45 metric tons by the end of 2010, inviting suspicion from the international community about what Japan intended to do with the fissile material. As a result, much hope has been pinned on a MOX fuel reactor being built in northern Japan to eventually consume that excess plutonium.

MOX fuel is a mix of plutonium and different uranium oxides produced as waste by conventional reactors, and the Japanese government had hopes that plants that can burn it -- like one now under construction by the firm J-Power in Oma, Aomori Prefecture -- would become the foundations of a new nuclear fuel cycle. That cycle, which would see the spent fuel from conventional nuclear plants used again in MOX-burning plants, has yet to come close to fruition. Meanwhile, reprocessing of spent fuel into plutonium has continued apace, making the entire program a symbol of policy inconsistency.

First of all, the only example of a functioning "full MOX" reactor -- one that burns MOX fuel exclusively -- has been an experimental reactor in France. Furthermore, a MOX fuel reactor core tends to have a smaller margin for error during shutdowns than a uranium-burning core. As such, MOX fuel reactor maker Hitachi-GE Nuclear Energy has said it has increased the capacity of safety valves that bleed off reactor vessel pressure during an emergency by 5 percent and developed high-efficiency control rods -- measures that will allow improvements to existing light boiling water reactors.

"Reactors must be tested and meet minimum standards before they can be used, which requires a certain amount of development funds," explains a Hitachi-GE Nuclear Energy official.

Another MOX option is so-called "pluthermal" reactors, which burn some of the reprocessed fuel. However, the only countries in the world still pursuing the technology are France and Japan.

"Resource-wise, pluthermal reactors have nearly no merit," says former Kyoto University Research Reactor Institute lecturer Keiji Kobayashi.

Furthermore, spent MOX fuel contains many elements that can't be dissolved in the nitric acid used during fuel reprocessing. Disposing of the waste adds to the technology's costs, while a practical disposal method has yet to be developed.

Meanwhile, the chances of directly disposing of plutonium by burying it underground in Japan are just about zero. As such, if "full MOX" reactors don't get up and running, there will be no way for the country to consume the plutonium. On the other hand, if these reactors do go on line, Japan will end up with increasing amounts of spent MOX fuel it has no way of dealing with. In the background of this dilemma is the possible cancelation of the MOX-fueled Monju fast-breeder reactor in Fukui Prefecture.

All in all, Japan's nuclear fuel cycle policy has gone down a blind alley, and shows no signs of finding its way out.

## **Famed Aomori fishing port lives in shadow of new MOX fuel nuclear plant**



J-Power's "full MOX" nuclear plant is seen under construction in Oma, Aomori Prefecture, on Dec. 27, 2011. (Mainichi)

OMA, Aomori -- This town at the top of Aomori Prefecture is known nationwide for its tuna, and indeed the first tuna fish auctioned at Tokyo's Tsukiji Market in 2012 was hauled in by Oma fishermen. There is, however, something else afoot here that has thus far escaped much attention: the building of a MOX fuel-based nuclear plant.

Construction of the reactor was started in 2008 by the Tokyo-based energy firm J-Power, and is designed to burn only MOX fuel -- a mix of plutonium and different oxides of uranium produced as waste from conventional reactors. Called a "full MOX" reactor, it will be the world's first light-water

reactor of its kind to go into commercial service. It is also projected to have the greatest electricity output of any reactor in Japan, at more than 1.38 million kilowatts, and is a major link in Japan's nuclear fuel cycle policy.

The technology faces some serious hurdles, however. For one, the plutonium in the fuel is highly toxic. Furthermore, control rods are less effective in light-water reactor cores burning MOX fuel instead of conventional uranium fuel, while spent MOX fuel also generates more heat and radiation, as well as large amounts of highly radioactive waste. So far, no processing methods have been devised.

In July 2010, the citizens of Hakodate, Hokkaido -- about 18 kilometers across the water from Oma -- filed a lawsuit demanding that permission for construction of the MOX plant be revoked.

"It is technologically hasty and extremely dangerous to build a commercial MOX reactor without even going through the steps of constructing experimental and test reactors," the suit stated. It was also pointed out that this first "full MOX" commercial plant was J-Power's inaugural foray into nuclear power of any kind.

The road to bringing a nuclear station to Oma began in 1976, when the town chamber of commerce and industry petitioned the municipal council to conduct a survey on possible sites for a plant. It also happened to be a time of poor tuna catches.

"It happened in the context of economic anxiety," says one 66-year-old former postal worker who has been fighting the nuclear plant since the beginning. The tuna, however, eventually came back. "If the tuna catch then had been like it is now, Oma would never have invited the plant here," he says.

## **Antinuclear activists refuse to move tents from gov't land**

TOKYO (Kyodo) -- Antinuclear activists rejected a call by the industry ministry to remove their tents from its precincts by 5 p.m. Friday, and continued a four-month-old occupation of ministry grounds to press their demand for the closure of all nuclear power plants in Japan.

The activists said they will not move the tents until the government promises not to allow idled nuclear reactors to resume operating. The ministry said it will not try to evict the activists by force but continue to ask them to remove the tents voluntarily.

On Friday, hundreds of people attended a gathering of antinuclear activists in front of the Ministry of Economy, Trade and Industry, chanting "stop nuclear power plants" and "give us back Fukushima."

Setsuko Kuroda, 61, who attended the gathering from Fukushima Prefecture, said, "Please do not take down our activity's important symbol. What should be taken down are not these tents but the nuclear plants."

The tents were set up last September on the grounds of the trade and industry ministry in Tokyo's Kasumigaseki district, where many government offices are concentrated.

The ministry on Tuesday urged the protesters in writing to remove the tents, citing safety as a reason following a small fire late last year caused by a gasoline-powered generator used by the activists.

Since the radiation-leaking disaster at the Fukushima Daiichi power plant following last March's massive earthquake and tsunami, scenes of civilians holding antinuclear demonstrations in front of the ministry have become commonplace.

The ministry oversees the electricity industry, including the crippled plant's operator Tokyo Electric Power Co., and has the Nuclear and Industrial Safety Agency under its wing.

(Mainichi Japan) January 28, 2012

## **Govt failed to keep records of key nuke meetings**

TOKYO (AP) -- Japan's deputy prime minister acknowledged Friday that the government failed to take minutes of 10 meetings last year on the response to the country's disasters and nuclear crisis and called for officials to compile reports on the meetings retroactively.

The missing minutes have become a hot political debate, with opposition lawmakers saying they are necessary to provide a transparent record of the government's discussion after the March 11 earthquake and tsunami touched off the worst nuclear accident since Chernobyl in 1986.

Deputy Prime Minister Katsuya Okada confirmed Friday at a news conference that the minutes were not fully recorded at the time and called for them to be written up, retroactively, by the end of February. Three of the meetings during the chaotic period had no record at all, not even an agenda, including a government nuclear crisis meeting headed by the prime minister.

Okada has set up a panel to investigate the extent of the problem and its cause.

The missing minutes are the latest example of the government missteps in disclosing information.

Japanese authorities and regulators already have been repeatedly criticized for how they handled information amid the unfolding nuclear crisis. Officials initially denied that the reactors had melted down, and have been accused of playing down the health risks of exposure to radiation.

The government also kept secret a worst-case scenario that tens of millions of people, including Tokyo residents, might need to leave their homes, according to a report obtained recently by The Associated Press.

An outside panel investigating the government response to the nuclear crisis has been critical, calling for more transparency in relaying information to the public.

"Needless to say, keeping records at these meetings is extremely important," Okada said. "Each minister should keep that in mind."

Okada rejected speculation that the nuclear crisis meetings may have intentionally left unrecorded to avoid responsibility. He said the oversights were "unfortunate" developments during the chaotic time

when the Fukushima Dai-ichi nuclear power plant rapidly deteriorated and three of its reactors spiraled into meltdowns.

He said reconstruction of the minutes would be possible through notes and recordings kept by officials who attended the meetings.

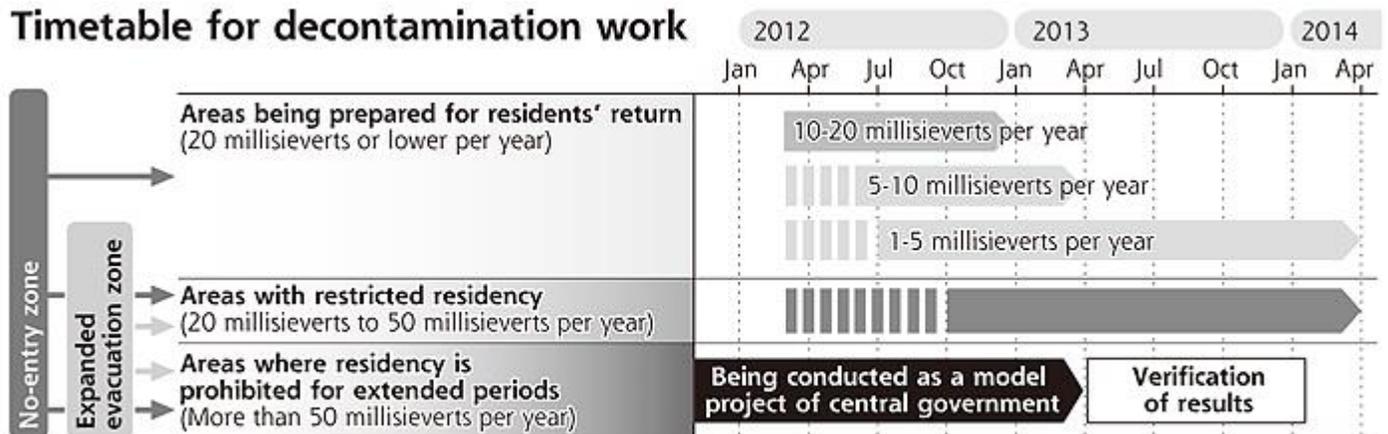
Japan's public records law requires minutes or summaries at key government meetings, but not all of them.

(Mainichi Japan) January 28, 2012

## Less polluted areas to come 1st / Govt releases decontamination schedule for Fukushima Prefecture

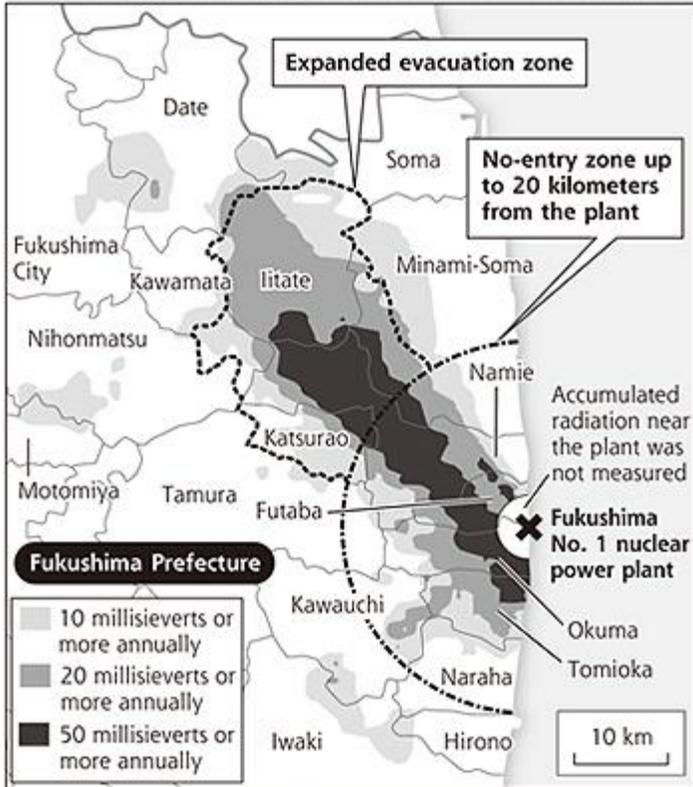
The Yomiuri Shimbun

### Timetable for decontamination work



As annual radiation exposure levels in areas within the expanded evacuation zone are feared to be as high as 20 millisieverts, the areas are expected to be reclassified as areas with restricted residency or where residency is prohibited for extended periods.

## Annual ambient radiation estimates



The map shows radiation doses near the Fukushima No. 1 nuclear power plant based on air monitoring in October and November by the Education, Culture, Sports, Science and Technology Ministry. The colored regions do not correspond to areas where residency is prohibited or limited for extended periods.

The government will prioritize decontamination work in areas of Fukushima Prefecture where the annual level of radiation exposure is 20 millisieverts or less, as part of efforts to allow residents of those areas to return home as soon as possible, according to a timetable released by the Environment Ministry.

The ministry on Thursday unveiled its timetable for decontamination operations in the no-entry and expanded evacuation zones in the prefecture. Entry is limited in these areas following the outbreak of the nuclear crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant.

The no-entry and expanded evacuation zones have been deemed "decontamination special zones" to be decontaminated under the government's direct control. **They are to be reorganized into three zones as of April 1 in accordance with their annual levels of radiation exposure.**

The new categories will be:

- Zones being prepared for residents' return. Annual radiation exposure is 20 millisieverts or lower, and residents are expected to be able to return following the completion of decontamination.
- Zones with restricted residency. Annual radiation exposure is 20 millisieverts to 50 millisieverts, and residents are expected to be able to return in a few years.

-- Zones where residency is prohibited for an extended period. Annual radiation exposure is more than 50 millisieverts and it is expected to be more than five years before residents can return home.

The government plans to complete decontamination work in areas with annual radiation exposure of 20 millisieverts to 50 millisieverts by lowering the level to 20 millisieverts or less--a level at which residence is allowed--by March 2014.

However, **the ministry did not present a concrete plan for the zones with annual radiation levels of more than 50 millisieverts.**

Regarding the zones being prepared for residents' return, the government plans to proceed with decontaminating the areas with higher levels of radiation exposure. It will start decontaminating areas with the highest levels of radiation exposure, from 10 millisieverts to 20 millisieverts, starting around March and aims to complete the operation by the end of this year.

The government will start work in areas with annual radiation exposure of 5 millisieverts to 10 millisieverts once a number of conditions are fulfilled, such as gaining approval from residents. It plans to launch these operations on a full-scale basis around June, and continue through March 2013, according to the timetable.

Regarding the areas with the lowest levels of radiation--from 1 millisievert to 5 millisieverts--full-scale decontamination work will start from around summer, and is scheduled to be completed at the end of March 2014.

However, **the government will prioritize decontamination at schools, parks and other places where children gather, and densely populated urban districts and hospitals.**

Regarding the zones being prepared for residents' return, the government plans to urge people to return after lowering the radiation level as much as possible.

Meanwhile, the government plans to begin a full-scale decontamination operation in the zones with restricted residency starting around autumn and finish at the end of March 2014.

Based on the outcome of decontamination work conducted at the end of last year by the Self-Defense Forces, **the government believes** it is possible to reduce annual radiation exposure in the zones to 20 millisieverts or lower, according to the ministry.

However, **the timetable did not indicate final target levels of radiation in the zones.**

"We're conducting a model project to verify the effect of decontamination. After seeing the results, we plan to incorporate a target level of radiation in the timetable by March this year," an official of the ministry's Environmental Management Bureau said.

Regarding the zones where residency is prohibited for extended periods, the government said it plans to study decontamination measures and other steps.

"By conducting a model project for decontamination, we plan to establish efficient and effective decontamination technologies and measures to ensure safety of workers," the official said.

Carrying out decontamination operations in the zones is expected to be extremely difficult. The government is considering buying or leasing land from residents of these areas.

"A project to have residents return home following a nuclear crisis of this magnitude is unprecedented in the world, so we have to overcome quite high hurdles. We'll make a careful judgment about the timing for residents to return home after considering the opinions of local government heads and residents," Environment Minister Goshi Hosono said.

(Jan. 28, 2012)

## **Free care for Fukushima kids rejected**

The Yomiuri Shimbun

FUKUSHIMA--The government has turned down a request by the Fukushima prefectural government to make medical care free for prefectural residents aged 18 and under.

Tatsuo Hirano, state minister for disaster reconstruction and disaster management, met with Fukushima Gov. Yuhei Sato at the Fukushima prefectural office Saturday to tell him of the government's decision.

"It's necessary to handle this issue carefully because it affects the basis of the medical system," Hirano said. "It would be difficult to implement."

Sato said the government's decision was "extremely regrettable," but indicated he would accept it and instead consider having the prefectural government shoulder the costs itself.

"As a prefectural government, we'll positively consider [making medical care free] ourselves," he said.

Hirano also briefed Sato about the government's plan to provide about 40 billion yen in the second fiscal 2011 supplementary budget for funds the prefecture plans to set up, including money that would be used to help Fukushima Prefecture residents stay healthy and on measures to alleviate damage caused by radiation fears.

(Jan. 29, 2012)

## **Kawauchi govt heading home / Village 1st to return among those forced out by Fukushima N-crisis**

The Yomiuri Shimbun

FUKUSHIMA--The government of a village forced to relocate due to the Fukushima nuclear crisis will return to the village in April, it has been learned, a move it hopes also will encourage residents to come back.

The village of Kawauchi in Fukushima Prefecture will be the first of the nine town and village governments that evacuated their offices to return to its original municipality.

The village functions were moved to Koriyama City in the prefecture because a section of Kawauchi fell inside the government-designated no-entry zone around the crippled Fukushima No. 1 nuclear plant, and the rest was named an emergency evacuation preparation area.

The Kawauchi municipal government has decided it will officially issue a statement Tuesday urging village residents to return.

Kawauchi Mayor Yuko Endo told village assembly members and administrative district leaders about the return plan Friday. Public schools and the village-run clinic will reopen in April.

Most of Kawauchi's 3,000 residents had to evacuate--some to other prefectures--after the March 11 quake and tsunami triggered the crisis at the nuclear plant. Although the emergency evacuation preparation area status was lifted in late September, public facilities and many shops remain closed. Only about 200 people have come back to the village.

In November, the municipal government started decontamination work in the village. It plans to finish decontaminating public facilities and homes of families with children by the end of March, and has set a target of completing the work for the entire emergency evacuation preparation area by the end of December.

Of about 940 houses in this area, the village plans to finish decontaminating about 150 within March. The remainder should be completed by the end of 2012.

The village will ask the central government to complete its decontamination work in the 20-kilometer no-entry zone this year.

(Jan. 29, 2012)

## **Radiation testing on school lunches differs**

The Yomiuri Shimbun

FUKUSHIMA--Municipalities are carrying out tests for radioactive substances on ingredients used in school lunches, but parents are worried whether their children are adequately protected as the tests are conducted in various ways.

According to data compiled by the Fukushima prefectural board of education, 33 of the 59 municipalities in the prefecture test school lunches for radiation.

Using two radiation measuring instruments, the Koriyama municipal government checks school lunches only once a week, although ingredients left over from lunches on the other four school days also are tested. This means that some tests are carried out after the schoolchildren have eaten their lunch.

On Monday, the Sukagawa municipal government will use five measuring instruments to test ingredients two days before lunches are served to children.

The city has set an original limit of up to 10 becquerels per kilogram for lunch ingredients, much stricter than the Health, Labor and Welfare Ministry's new limit for general food items of 100 becquerels per kilogram, which is scheduled to be introduced in April.

Parents are puzzled why some local governments conduct tests after the children have already eaten lunch, while others do so before lunch.

"It's strange why municipalities use different testing methods," a 37-year-old woman living in Koriyama said. "They should test the ingredients before children have lunch."

The woman, who has a 7-year-old daughter, said that in the wake of the disaster at the Fukushima No. 1 nuclear power plant she stopped her daughter from drinking milk with her school lunch.

The Koriyama official said it could not conduct tests before children ate lunch because of the shortage of measuring instruments. But it will start conducting prelunch tests in late February after it purchases two more instruments.

The frequency of tests and imposing becquerel limits on school food also differ depending on the municipality.

The city of Fukushima, which conducts tests just before food is cooked, carries out tests in turn among four school lunch centers and 26 facilities, including primary and middle schools.

The Fukushima municipal government conducts tests about once a week, and has set a limit of 350 becquerels per kilogram.

In Minami-Soma, where part of the city is designated as a no-entry zone, the municipal government started carrying out tests on five school days after lunch from Jan. 16.

The Tomioka municipal government in neighboring Gunma Prefecture is conducting tests only twice a month for cooked school lunch dishes as its agricultural products are checked beforehand to ensure they are safe.

Shinobu Iida, 45, a representative of the group Fukushima Mothers Meeting, said: "Tests should be conducted before schoolchildren eat their lunches. If a strict limit of less than 5 becquerels is introduced, which is the standard for other nations, Fukushima-made agricultural products could be used without fear."

Ryugo Hayano, an expert in nuclear physics at the University of Tokyo, said: "Tests on ingredients before meals engender a sense of safety, but tests after a meal can help prevent long-term internal exposure. With continuous tests on the actual quantity of food served in school dishes, it's possible to gather data about how much children should eat."

(Jan. 29, 2012)

## **IAEA to set up Fukushima office to share info on nuclear crisis**

DAVOS, Switzerland (Kyodo) -- The International Atomic Energy Agency plans to open a branch office in Japan's Fukushima Prefecture to promote international information sharing about the crisis at the Fukushima Daiichi nuclear plant, IAEA chief Yukiya Amano said Saturday.

The plan is being considered at the request of the Japanese government, Amano told Kyodo News in the Swiss resort of Davos, where the annual meeting of the World Economic Forum is being held, noting that the IAEA intends to open the office by the end of this year.

"We have told the Japanese government that the IAEA stands ready to cooperate," Amano said.

The Japanese government apparently expects the IAEA office will enable Tokyo to utilize knowledge of experts at the Vienna-based nuclear watchdog in containing the crisis, and will help it disseminate information about the Fukushima accident and related decontamination work.

"While the headquarters in Vienna will continue to deal with issues related to the decontamination and disposal of spent nuclear fuels, we'll be able to have close contact" with people in Fukushima by opening the local office, said Amano.

The details of the office, including its site, will be decided later, he added.

Japanese Foreign Minister Koichiro Gamba said on Jan. 22 that the government had asked the IAEA to open an office in Fukushima Prefecture.

The IAEA currently has regional offices in Tokyo and Toronto.

(Mainichi Japan) January 29, 2012

## **Frozen water blamed for leaks at Fukushima plant**

Tokyo Electric Power Company has found water leaks in 14 locations at the Fukushima Daiichi nuclear plant.

The utility says the leaks apparently occurred after frozen water ruptured the pipes and the leaked water did not contain any radioactive materials.

Tokyo Electric said about 40 liters of water leaked from a cooling system for a spent fuel pool at the No.4 reactor on Sunday, but the flow stopped when workers closed the valve.

The company said **the leak forced the system to stop for one hour and 40 minutes**, but the pool's temperature did not rise.

Tokyo Electric said 7 tons of water had leaked from the No.6 reactor.

The temperature fell to minus 8 degrees Celsius on Sunday morning near the damaged plant.

Ruptured pipes caused 3 water leaks on the previous day.

Tokyo Electric official Junichi Matsumoto admitted that **the utility failed to take sufficient steps to prevent frozen pipes**. He said it will take quick action to protect the pipes from the cold weather.

Sunday, January 29, 2012

## **Radiation study of wildlife planned in Fukushima**

Japan will launch a comprehensive study to monitor the impact of radiation exposure on wild animals and plants around the damaged nuclear plant in Fukushima.

Fukushima Prefecture requested the study, which will be conducted by the Environment Ministry with the cooperation of the National Institute of Radiological Sciences.

Levels of radioactive cesium in wildlife will be tested at 25 locations, both at land and sea. The proposed testing sites include places with high levels of radiation and areas with less radiation for comparison purposes.

The species to be studied include Japanese red pine and bristlegrass, as well as rats, frogs, and mussels.

They were picked from species designated by the International Commission on Radiological Protection, an organization which deals with effects linked to exposure to radiation.

Collection of some species has already begun. Researchers will check plant and animal appearance, chromosomes, and reproductive function for the influence of any radioactivity from the damaged plant. The rate of germination of seeds will also be studied.

The ministry suggests that the study would have to take into account the effects of weather and other factors on the growth of wildlife. But it says it hopes to provide new insights by accumulating a sizable amount of data.

The ministry plans to compile an interim report by March 2013.

Sunday, January 29, 2012

## **Gov to purchase new cesium detection equipment**

Japan's health ministry will subsidize half the cost of installing highly sensitive radioactive cesium detectors in an effort to strengthen food safety standards nationwide.

Subsidies will be distributed to local governments around the country and tougher safety standards will take effect in April.

Under the new safety standards, general food products will be allowed to contain 100 becquerels of cesium per kilogram, an 80% reduction from the current permissible level.

Baby food and milk will be allowed to contain 50 becquerels and drinking water just 10 becquerels.

The guidelines state if a conventional test detects half the radiation safety level in any food item, then that item should be subject to a stricter screening method.

The health ministry decided that more sensitive equipment is needed, which can detect levels as low as 25 becquerels of cesium.

Some of the devices currently installed in local government offices are unable to measure low levels of cesium or are too slow at taking measurements.

Sunday, January 29, 2012

## **TEPCO ordered to prevent water leaks at reactors**

Japan's nuclear safety agency has instructed the operator of the Fukushima Daiichi nuclear plant to prevent water leaks at the plant.

The move follows the discovery of water leaks on Sunday in 14 locations at the damaged plant.

Tokyo Electric Power Company says about 40 liters of water leaked from a cooling system for a spent fuel pool at the No. 4 reactor, forcing the system to stop for one hour and 40 minutes. The utility also says that 7 tons of water leaked from the No. 6 reactor.

The company says that the leakages apparently occurred after frozen water in pipes loosened the pipes' connections or broke some parts.

The company adds that the leaked water did not contain radioactive materials or had already been processed to remove them.

Similar water leaks occurred in 3 locations at the plant on the previous day.

Responding to the agency's call for preventive measures, TEPCO has decided to conduct frequent checks on early mornings when temperatures often drop below zero and protect pipes from the cold with insulation materials or heaters, if necessary.

The utility says measures are already in place to protect critical systems, such as those used for cooling reactors.

Monday, January 30, 2012

## More water leaks found at Fukushima nuclear plant

More water leaks have been found at the troubled Fukushima Daiichi nuclear power plant.

Tokyo Electric Power Company told reporters on Monday morning that it has discovered 2 additional water leaks at the nuclear plant.

This comes after it was announced on Sunday that **nearly 8 tons of water** was found to have leaked in 14 locations at the plant.

One of the 2 new findings involves about 30 liters of water that has leaked from a device that is removing salt from contaminated water. The other leak is from a valve of a pipe that is injecting water into a reactor.

TEPCO says leaked water has neither spilled out of the plant, nor flowed into the sea.

The utility firm is trying to determine whether water in some of the pipes froze and cracked the pipes, or loosened the pipes' connections.

It plans to quickly implement preventive measures, including carrying out more patrols early in the morning and **wrapping insulation around the pipes and other equipment. !!!!!!!**

The temperature on Monday morning around the plant dropped to minus 8.7 degrees Celsius.

Monday, January 30, 2012

## Japan-made robots ready for Fukushima mission

Japanese researchers have completed the development of 2 new robots for work at the troubled Fukushima Daiichi nuclear power plant.

The robots, built by researchers at Chiba Institute of Technology and other organizations, will succeed Japan's first and sole domestic robot that has been used at the damaged reactor buildings since the nuclear crisis began in March 2011.

The first model began its mission at the power plant in June to measure radioactivity inside buildings and take video footage. But, in October, the device got stuck after becoming tangled in cables.

The new models are about the same size as the first one, but they have 6 rolling belts each that allow them to move freely over debris and up and down staircases.

The robots are designed to prevent themselves from getting tangled in cables. They are also connected through wireless communications, in case one, or both, fail to communicate with the main controller through their cables.

One of the 2 robots is equipped with a new device that allows more accurate measurements of radiation levels. The other carries a new scanner to measure 3-dimensional space.

The 2 robots will be deployed at the Fukushima power plant by mid-March.

Monday, January 30, 2012

## **Japan's nuclear stress tests deemed consistent with IAEA standards**

TOKYO (Kyodo) -- An International Atomic Energy Agency fact-finding team said Tuesday that Japan's nuclear stress tests, a key step for restarting reactors following the Fukushima nuclear crisis, are "generally consistent" with IAEA safety standards.

On the last day of its nine-day mission to Japan to review the tests at nuclear power plants, the IAEA delegation conveyed its findings to the government's Nuclear and Industrial Safety Agency, while also making some recommendations to improve the tests's effectiveness.

"The conclusion of the team is that NISA's instructions and review process for the comprehensive safety assessments are generally consistent with IAEA safety standards," the delegation said in its preliminary report.

Tokyo introduced the stress tests after the meltdown at Tokyo Electric Power Co.'s Fukushima Daiichi power plant in the wake of the March quake-tsunami disaster, to check how much leeway the nation's nuclear power plants have to withstand earthquakes, tsunami and the loss of power.

To confirm if the test method is consistent with global safety standards, the government asked the Vienna-based body to verify them.

But there remains criticism among some local governments hosting nuclear power plants and experts that the stress tests need to reflect the findings that the government's accident investigation team has yet to compile on the Fukushima nuclear crisis.

NISA earlier compiled a draft report endorsing results of first-round stress tests that Kansai Electric Power Co. submitted with regard to the No. 3 and 4 reactors at its Oi power plant in Fukui Prefecture. The two reactors are currently idled for scheduled checkups.

The government's nuclear safety agency is set to finalize the report after studying the IAEA's findings, and will have it checked by the Nuclear Safety Commission of Japan.

James Lyons, nuclear installation safety director of the IAEA's Nuclear Safety and Security Department who heads the delegation, said at a press conference that deciding whether to restart the reactors is up to the Japanese government.

Currently, only three of Japan's 54 commercial reactors are operating. Japanese reactors must shut down for maintenance every 13 months, and so far no idled reactor has passed the stress tests, a prerequisite for resuming operations.

If no idled reactors get approval to restart, Japan will be without any operating reactors by the end of April.

(Mainichi Japan) January 31, 2012

## **Cabinet approves bills to enhance Japan's nuclear regulations**

TOKYO (Kyodo) -- Japan's Cabinet approved bills Tuesday aimed at enhancing nuclear safety regulations following the accident at the Fukushima Daiichi atomic power plant, including a plan to place in principle a 40-year limit on the operation of reactors.

The envisioned regulations leave the possibility of extending a reactor's operational life by up to another 20 years, but the wording in the bills has been clarified in the process of crafting them so that such an extension would be "extremely difficult" to achieve, according to ruling party members.

The bills are also intended to require plant operators to take measures to prevent massive release of radioactive substances into the environment when an accident occurs, while allowing authorities to order the suspension of reactors if facilities do not comply with updated technological standards based on the latest findings.

The bills are expected to be introduced to the ongoing parliamentary session, with the government hoping to launch the new regulatory framework from April, when fiscal 2012 begins.

Under the framework, a new nuclear regulatory agency under the Environment Ministry plays a central role in nuclear safety issues, bringing an end to a situation in which various organizations, such as the science ministry, are involved in the issue.

The current setup of the nuclear safety agency under the Economy, Trade and Industry Ministry, which has the role of promoting nuclear power, has been criticized for lax government supervision of nuclear facilities, and a slow response to the Fukushima accident, triggered by the earthquake and tsunami on March 11 last year.

The government also plans to create a five-member nuclear safety investigation committee, which will oversee the new nuclear agency and would carry out investigations when nuclear accidents occur.

In the course of compiling the bills, the ruling Democratic Party of Japan members have pointed out the need to clarify the portion related to the reactors' operational life amid concerns that the clause on the extension could serve as a "loophole" in continuing the operation of reactors beyond the 40-year-limit.

Reflecting such discussions, one of the bills said that "the period in which reactors can be operated is 40 years" from the day it passes inspection prior to operation, and that authorities "can permit" a one-time extension of no more than 20 years when reactors clear certain safety standards.

Its draft had said that authorities "should permit" an extension when the standards are cleared, according to the DPJ lawmakers.

The government plans to check such aspects as how far reactors have deteriorated with age when deciding extensions, but details are yet to be decided.

Environment Minister Goshi Hosono told a press conference he believes the bills will gain the support of other political parties, considering the "importance" of the issue.

(Mainichi Japan) January 31, 2012

## **Wind power station planned in place of nuclear plant in Wakayama town**

WAKAYAMA -- A company partially financed by Tokyo Electric Power Co. (TEPCO) is planning to build a wind power station in the Wakayama Prefecture town of Hidaka, which has abandoned plans to host a nuclear power plant, it has been learned.

The town is likely to accept the wind power project, with Mayor Yoshio Naka earlier having declared: "The age of nuclear power stations is over."

If the company receives local approval, it will apply to the Wakayama Prefectural Government and other relevant bodies to begin developing the town's Oura district, aiming to launch commercial operation of the power station in 2014. In addition, as a countermeasure against a tsunami that experts predict is highly likely to occur soon in the earthquake-prone Tokai, Tonankai, or Nankai regions, the company will use soil left over from construction to prepare land for temporary housing, and the town will also build a heliport in the area.

The project is being promoted by Tokyo-based Eurus Energy Holdings Corp., the biggest wind farm company in Japan, which is financed by TEPCO and Toyota Tsusho Corp. It plans to build seven wind turbines with a generating capacity of 2,000-2,300 kilowatts in an elevated mountain area, and sell the electricity it produces to Kansai Electric Power Co. The power station will be able to supply electricity for 8,500 to 10,000 homes.

In 1967, the mayor of Hidaka unveiled proposals for the construction of a nuclear power plant. Ahead of the construction work, Kansai Electric Power Co. in 1988 presented the local fisheries cooperative with about 700 million yen. However, divisions over the plans erupted among relatives in the cooperative, and the conflict even spread to wedding ceremonies, funerals, and boat-launching ceremonies. In the 1990s, a mayor opposed to the project was elected, and Naka, who continued that line from 2002, approached Kansai Electric Power Co. soon after assuming office seeking a halt to the project.

In 2005 the government lifted designation of the area as an important site for the development of nuclear power, and the Oura district and the southern Ao district are currently designated as prefectural nature parks.

It is predicted that a powerful Tokai, Tonankai or Nankai region earthquake could bring a tsunami more than 4 meters in height into the area in 30 minutes. After the Great East Japan Earthquake in March 2011, the town was pressured to revise its disaster prevention plans to envisage a magnitude 9-level earthquake, and in line with the establishment of a wind power station, disaster prevention measures are being promoted in the town. Using soil left over from the construction of wind turbines, an area of land measuring about 5,000 square meters will be prepared to make room for a shelter and temporary housing for about 80 households. To secure water in the event of an earthquake, valves allowing the distribution of water to be halted will be placed on water tanks in the district, and new tanks to supply water to temporary housing units will be set up.

(Mainichi Japan) January 31, 2012

## **Govt plans Fukushima decontamination test-run**

Japan's Environment Ministry has unveiled a model project designed to decontaminate areas with high levels of radiation around the crippled Fukushima Daiichi nuclear plant.

In a test-run for a wider clean-up, the ministry will first try to decontaminate 3 closed sections of a national expressway running through the no-entry zone near the plant.

The ministry last week announced a 2-year plan to decontaminate by March 2014 some evacuation zones where radiation levels have dropped below 50 millisieverts per year.

Radiation levels over a total 5 kilometers of expressway slated for the new project have ranged from a little to substantially above 50 millisieverts a year.

The ministry plans to assess the project's effectiveness in a test-run from the middle of March through July.

Tuesday, January 31, 2012

## **Furnace malfunction hobbles Aomori spent nuke fuel reprocessing plant (= entrave)**

AOMORI -- A furnace malfunction at a nuclear fuel reprocessing plant here has stalled a planned trial run of the facility, throwing the future of Japan's nuclear cycle policy into doubt.

Yoshihiko Kawai, president of plant operator Japan Nuclear Fuel Ltd. (JNFL), announced at a regular press briefing on Jan. 30 that a problem with a furnace at the Rokkasho Reprocessing Plant has **forced a halt to the preparatory work for a test of the plant before it officially goes into operation.** The furnace is designed to mix molten glass with highly radioactive liquid waste.

The cause of the malfunction has yet to be determined, with **no prospect of restoring the equipment to operation in the near term,** JNFL said. The technical impasse could prompt calls for a review of the country's nuclear fuel cycle policy, under which spent fuel from conventional nuclear reactors would be reprocessed into MOX plutonium-uranium mixed-oxide fuel for so-called "pluthermal" and "full MOX" reactors.

**The plant has repeatedly delayed a full-scale trial run since December 2008 due to a spate of troubles.** JNFL had taken various corrective measures before starting to check the status of the furnace on Jan. 24 ahead of the planned test.

According to Kawai, plant workers began work with the plant's "B-System" furnace, which has no history of use in trials and is separate from the plant's "A-System," which caused trouble four years ago.

On Jan. 24, when workers started melting beads made from a mixture of glass and nonradioactive mock liquid waste in the furnace and pouring the molten material into a container below, they found the flow gradually slowing down, threatening to block the furnace outlet. Workers suspended the procedure three times and stirred the furnace interior in an attempt to restore function, but the glitch has not yet been fixed. Furthermore, unidentified and unexpected black particles each measuring several millimeters were found in the outflow.

"We will continue our restoration work for a while so that we can recover the equipment and ascertain the cause of the problem in a careful manner," said Kawai. The president also said he would make **efforts to remain on-schedule for a trial run in early February and the completion of the plant in October, ruling out the possibility of suspending the furnace for inspections at the moment.** Regarding the furnace problem's possible effects on the mounting calls for a review of the nation's nuclear fuel cycle policy, Kawai said, "It is important to proceed with our work carefully and without too much strain. We want everyone to understand the situation in terms of advancing the debate as well."

Following plant trouble in 2008, the company has repeatedly conducted experiments using a test furnace in Ibaraki Prefecture and struggled to improve operating methods and devices. In the wake of the nuclear disaster at the Fukushima No. 1 nuclear plant in March 2011, the company had its safety measures updated and approved by Aomori Gov. Shingo Mimura in December that year, ahead of preparations for the plant trial.

President Kawai had stressed in October last year that keeping the nuclear fuel cycle business going "is necessary from the perspective of environmental conservation as well" if compared to burying spent fuel and waste. **He had also said the closure and disassembly of the plant could cost some 1.4 trillion yen, on top of the approximately 2.2 trillion yen that was spent on its construction.** [soyons honnête, c'est ça le problème]

The construction of the Rokkasho reprocessing plant, which ultimately aims to recycle nuclear fuel by extracting plutonium and uranium from spent nuclear fuel, began in 1993 for a planned completion in 1997. **However, an array of troubles, including technical problems and exposure of one worker to high-level radioactive liquid waste, have forced JNFL to postpone official completion as many as 18 times.**

While the government has clearly set forth the promotion of the nuclear fuel cycle in the nation's Framework for Nuclear Energy Policy, protests against the policy have heightened since the outbreak of the Fukushima nuclear disaster. The prototype "Monju" fast-breeder reactor in Fukui Prefecture, which is aimed at efficiently utilizing reprocessed nuclear fuel, has no prospect of restarting. As such, the Japan Atomic Energy Commission has embarked on a full-scale review of the nuclear fuel cycle policy. **The total amount of spent nuclear fuel at nuclear power plants across Japan currently stands at some 14,000 metric tons, with nowhere to go unless reprocessing gets under way.**

(Mainichi Japan) January 31, 2012

# FEVRIER 2012

(jusqu'au 12 février 2011. Après cette date, se reporter aux articles publiés dans le blog *Fukushima Is Still News*, rassemblés dans 16 volumes thématiques : voir le catalogue des livres à télécharger à la fin de ce livre.)

(Mainichi Japan) February 1, 2012

## **Editorial: Nuclear regulatory reform must weed out entrenched interests**

Bills relating to a shift in the nation's nuclear power policy were approved by the Cabinet on Jan. 31. In addition to the establishment of a new nuclear regulatory agency under the Environment Ministry, the government is aiming to legislate the lifespan of nuclear reactors, and require plant operators to outline specific measures against severe nuclear accidents.

Significant harm has been done by allowing the Nuclear and Industrial Safety Agency (NISA), an administrative body tasked to regulate nuclear power safety, to exist under the umbrella of the Ministry of Economy, Trade and Industry (METI), a major promoter of nuclear power. Divorcing nuclear regulation from nuclear promotion and centralizing regulatory duties into one agency stands to reason. Changing the agency's name from the originally proposed "nuclear power safety agency" to "nuclear power regulatory agency" is likewise pertinent, considering the new agency's nature.

However, the mere alteration of a name and rearrangement of an organization will not result overnight in a highly independent agency specializing in regulation. Because many of the new agency staff members are likely to come from NISA, specific measures are necessary to secure the independence of the new body.

It remains unclear how a nuclear safety investigation committee, envisaged in one of the bills approved by the Cabinet, will contribute toward ensuring the safety of nuclear power. Since the Cabinet Office's Nuclear Safety Commission (NSC) lost the confidence of the Japanese public over its response to the ongoing nuclear disaster, the new committee cannot expect to gain it back without demonstrating its independence and competence.

The handling of the continuing nuclear crisis has been problematic particularly due to the government's lack of readiness, which has generated suspicions that the disaster could have been mitigated had the government been more capable of crisis management. Crisis management will be an important duty of the new regulatory agency, and must be attended to adequately.

Meanwhile, some things have slipped through the centralization of regulatory responsibilities. Safety research conducted by the Japan Atomic Energy Agency (JAEA) and the inspections and other safeguards implemented by the Ministry of Education, Culture, Sports, Science and Technology to prevent the diversion of nuclear material toward the production of nuclear weapons will not fall under the jurisdiction of the new regulatory agency. It remains to be seen how these tasks will be integrated into the new scheme.

Included in the latest bills are the designation of a 40-year lifespan for nuclear reactors and the implementation of "back-fit" measures that would hold existing reactors to the latest technological standards. The government claims that the combination of these two mandates would make it extremely difficult for reactors to continue running more than 40 years. The bills, however, include special exemptions allowing reactors to operate for up to 60 years. Stringent criteria must be set to prevent "exceptions" from undermining the rule.

We hope also that the proposed legal reforms lead to a stronger nuclear disaster prevention scheme. In the case of the Fukushima disaster, the off-site emergency response center failed to function. A fundamental review of Japan's nuclear crisis preparedness is imperative. Along with an expansion of disaster protection zones emphasizing nuclear disaster countermeasures, there is a pressing need to reassess national and regional disaster prevention plans.

Numerous corporations and organizations make up the national framework that had heretofore promoted nuclear power, and their role in "amakudari" -- literally "descent from heaven," referring to the practice of former bureaucrats taking advisory posts in industries they previously regulated -- has been pointed out. For effective regulations to gain ground, it is important to extend reform to such organizations with entrenched interests.

## **Radioactive water leaking from inside Fukushima No. 4 reactor**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that it has found radioactive water leaking from a broken pipe connected to the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, about 6 liters of water were found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The utility is looking into the cause of the damage to the pipe and believes it may have some connection with the recent cold weather or the explosions that took place at the plant in the early phase of the nuclear crisis.

The density of radioactive substances included in the water is estimated at 35.5 becquerels per cubic centimeter, according to TEPCO.

(Mainichi Japan) February 1, 2012

## **Kawauchi village in Fukushima calls on evacuees to return home**



Villagers clean the kitchen of their home during a brief visit - their first since the March 11 earthquake and tsunami - to their house located near the Fukushima Dai-ichi nuclear power plant, in Kawauchi, Fukushima prefecture, northern Japan, Tuesday, May 10, 2011. (Pool Photo)

FUKUSHIMA, Japan (Kyodo) -- The mayor of Kawauchi, a village in Fukushima Prefecture whose residents were forced to relocate following the nearby nuclear power plant crisis, called on some 2,600 evacuated villagers Tuesday to return home permanently.

"Let's return starting with those who are ready," Yuko Endo said at a press conference in Fukushima city, marking the first declaration among the nine town and village governments in the prefecture which evacuated their offices that it will return to its original location.

"There are matters of concern but there is no reason why we shouldn't take the first step forward," Endo added.

Chief Cabinet Secretary Osamu Fujimura said at a separate press conference that the declaration is an "important first step toward residents' returning to their home village," and added that the central government will "actively support" the Kawauchi village government's effort.

Kawauchi had about 2,990 residents before Tokyo Electric Power Co.'s Fukushima Daiichi nuclear power plant was crippled by the earthquake and tsunami disaster of March 11, 2011.

About 75 percent of the villagers currently reside in the prefectural city of Koriyama where the Kawauchi government has relocated its functions because the village was partially designated as a no-entry zone set up by the central government around the nuclear power plant while the rest was categorized as an emergency evacuation preparation area.

In addition, a total of 542 Kawauchi residents were residing in 26 prefectures other than Fukushima as of Friday, while some 200 have returned to their homes since the central government lifted its evacuation advisory for the emergency preparation area of the village last September.

In November, the village government began decontamination work for schools and other public facilities in the hope of declaring in December that it would return to the village.

But the declaration was delayed for about a month as decontamination work is taking longer than expected. The work is expected to be completed by the end of March, paving the way for resumption of the village government, schools and other operations at the start of fiscal 2012 on April 1.

Most sections of the village are safe as radiation levels are less than 1 microsievert per hour, according to the Kawauchi government.

But the chances of all residents returning to the village are low in view of lingering radiation concerns.

(Mainichi Japan) February 1, 2012

## **1,704 people seek shutdown of Genkai nuclear plant in largest group suit**

SAGA, Japan (Kyodo) -- A total of 1,704 people from across Japan, the largest number of plaintiffs in a pending nuclear-related suit, sued the government and the operator of the Genkai nuclear power plant in Saga Prefecture on Tuesday, demanding that all four reactors at the plant be halted.

In the suit filed with the Saga District Court against the state and Kyushu Electric Power Co., the plaintiffs from Saga and 28 other prefectures assert the reactors are dangerous and make them feel insecure amid the Fukushima nuclear crisis.

They are also seeking compensation of 10,000 yen each per month covering the period from March 2011, when the crisis erupted at Tokyo Electric Power Co.'s Fukushima Daiichi power plant, until Kyushu Electric suspends operation of the Genkai plant.

"We want the judges to agree that the safety dogma regarding nuclear reactors has collapsed during the trial," said Akira Hasegawa, the plaintiffs' leader and former president of Saga University.

Kyushu Electric said it would look into the suit and act "appropriately." The Ministry of Economy, Trade and Industry declined to comment, saying it has yet to study the complaint.

Another group of around 300 residents also sued Kyushu Electric last month demanding that the utility suspend operation of the Genkai plant.

(Mainichi Japan) February 1, 2012

## **IAEA OK's stress test review process**

The Yomiuri Shimbun

U.N. nuclear experts gave the green light Tuesday to the Nuclear and Industrial Safety Agency's review process of so-called stress tests for nuclear reactors.

"NISA's instructions to power plants and its review process for the comprehensive safety assessments [stress tests] are generally consistent with IAEA safety standards," said James Lyons, the leader of the 10-member team from the International Atomic Energy Agency.

He handed NISA Director General Hiroyuki Fukano a preliminary report summarizing its review of NISA's approach to stress tests conducted by electric power companies.

The Japanese government asked the IAEA to check the review process to increase the tests' credibility.

Stress tests are conducted by power companies to check the safety levels of nuclear power reactors against huge earthquakes and tsunami that exceed prior estimates.

The delegation conducted an on-site inspection at the Oi nuclear power plant's Nos. 3 and 4 reactors in Oi Town in Fukui Prefecture. NISA had already approved the results of stress tests conducted by Kansai Electric Power Co. for both reactors.

The preliminary summary listed four "good practices" by NISA. These include power plant operators' prompt response in addressing emergency safety measures at nuclear power plants based on NISA's instructions following the March 11 accident and a notable level of transparency in consultations with interested parties in relation to stress tests and the agency's review process.

On the other hand, the team identified 11 issues that need to be improved upon. They recommended that NISA should conduct meetings with interested parties near the nuclear facilities that are subject to stress tests in addition to its current activities. The team also recommended that NISA should ensure provisions to mitigate severe accidents are addressed more comprehensively when carrying out secondary assessments of stress tests.

Based on the delegation's preliminary summary, NISA will compile a review report reflecting the IAEA's evaluation on the Oi plant's Nos. 3 and 4 reactors, and submit to the Cabinet Office's Nuclear Safety Commission as early as February.

The commission will check for problems in NISA's review process by setting up a special review panel.

Based on the results of the panel's review and the intent of local governments involved, Prime Minister Yoshihiko Noda and three other concerned ministers will make a final decision on whether to restart the reactors.

(Feb. 1, 2012)

## **No minutes kept on past govt disaster meets**

The Yomiuri Shimbun

The government has not kept minutes of conferences held on eight natural disasters, including the Great Hanshin Earthquake in January 1995, it was learned Tuesday. These meetings were held by emergency response teams created by the government in the aftermath of the disasters.

The latest revelation follows an earlier finding that no minutes were recorded on government conferences held to develop countermeasures in the aftermath of the Great East Japan Earthquake and the crisis at the Fukushima No. 1 nuclear plant. The eight disasters also include an eruption at Mt. Usu in Hokkaido in 2000, an explosion in 2000 on the volcanic island of Miyakejima in Tokyo and the 2004 Niigata Prefecture Chuetsu Earthquake.

(Feb. 1, 2012)

## **Hope growing for indoor farming in disaster-hit Tohoku region**

The Yomiuri Shimbun

Moves to build indoor "vegetable factories" are growing in disaster-hit areas as a measure to revive local agriculture businesses.

In many coastal areas damaged by seawater in the March 11 tsunami, the topsoil has been stripped away in the course of removing disaster debris. The factories, using hydroponic techniques, would enable farmers to cultivate produce without soil.

This has also drawn attention in nuclear crisis-stricken Fukushima Prefecture as a method to produce vegetables in enclosed facilities with an eye toward preventing radiation contamination.

In Sendai, Butai Farm Co., a company growing rice and vegetables on the Sendai Plain and other locations, plans to build an about 20-hectare vegetable factory, the nation's largest. About 30 hectares of the company's farmland were flooded by the tsunami, resulting in losses of more than 200 million yen. Faced with this, Butai Farm President Nobuo Hariu, 50, formed a study group with a major food company and other entities in December to launch the new agriculture initiative.

Hariu said the planned factory could produce more than 100 times the amount of rice as traditional methods in the same area. According to the study group, costs to build the factory would total more than 5 billion yen, but the group has concluded the initiative would be profitable as it can skip work to desalinate soil and make it easier to block radiation.

The group also plans to build facilities to monitor radiation and generate solar power near the factory. The overall area of the compound is expected to be 50 hectares. It plans to start production from next fiscal year after leasing farmland from those affected by the disaster.

"This is a good opportunity to change conventional agriculture," Hariu said. "I'd like to pave the way to the future for the disaster-hit areas and change the current image of agriculture."

He is planning to hire about 500 people, including young farmers, for the project.

Major restaurant chain Saizeria Co. also built a vegetable factory and has started growing tomatoes in a 1.2-hectare facility in Wakabayashi Ward, Sendai, last month. According to Saizeria, the factory's productivity is three times more than that of outdoor farming. It has employed 11 local farmers aged 21 to 42 as trainees.

Meanwhile, the city of Minami-Soma, Fukushima Prefecture, part of which has been designated as a no-entry zone since the nuclear crisis broke out, plans to allocate about 120 million yen in its first draft budget for fiscal 2012 to build a similar factory, where not only vegetables but also flowers, fruit and other farm produce can be grown. The city aims to turn around its agriculture sector, which currently centers on rice production, and create a platform to grow vegetables in winter. It said it also wants to use produce from the factory for school lunches.

The city government plans to take advantage of the central government's subsidies for disaster reconstruction to build the factory in the tsunami-hit coastal area in the city. To prevent soil from being contaminated with radiation, produce will be cultivated in fully enclosed, sterile conditions.

The city plans to complete construction of the plant's first 300-square-meter facility as early as July and publicly seek participants in the initiative such as farming companies. It aims to build more facilities and expand the compound to about 10 hectares within about five years.

Yukinobu Sato, 57, representative of a farming corporation in the city that saw 80 percent of its 45-hectare farmland damaged by the tsunami, has high hopes for the municipality's move.

"As we've also suffered from harmful rumors [due to the nuclear crisis], we've found it difficult to get through the current situation with conventional agriculture," Sato said. "Cultivation under fully closed, antiseptic conditions has potential. I want to consider participating in the initiative."

(Feb. 1, 2012)

## **TEPCO says 8.5 tons of water leaked from Fukushima No. 4 reactor**

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that 8.5 tons of radioactive water leaked from the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant because a pipe connected to the reactor dropped off, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, water was found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The total amount of leakage from the reactor was initially estimated to be 6 liters, but the utility revised the figure later Wednesday, adding that the leakage appears to have started at around 5 p.m. Monday.

The pipe may have dropped off because water inside increased in volume as it turned into ice due to cold temperatures.

The utility plans to check whether there are similar cases in the other crippled reactors.

The Nos. 1 to 3 reactors have fuel inside, which is believed to have melted in the early phase of the nuclear crisis because the plant lost its cooling functions following the natural disasters.

The No. 4 unit also lost the function to cool its spent fuel pool, but no serious damage is believed to have occurred in the fuel stored there.

(Mainichi Japan) February 2, 2012

## **Nuclear safety agency proposes new safeguards**

The government's nuclear agency has made a new proposal to bolster safety at nuclear power plants.

The proposal calls for nuclear plant operators to install various types of backup power generators.

At the Fukushima Daiichi plant, the loss of all power sources in the earthquake and tsunami last March led to meltdowns at its reactors.

The proposal also asks operators to waterproof reactor-cooling facilities to prevent high waves from flooding the buildings.

As for an emergency cooling system to prevent core meltdowns, the proposal recommends the system should be automatically activated in emergencies.

They also stressed the need to secure communication tools such as a TV conference system that can be used in emergencies.

The Nuclear and Industrial Safety Agency presented the 30-point proposal at an expert meeting on Wednesday.

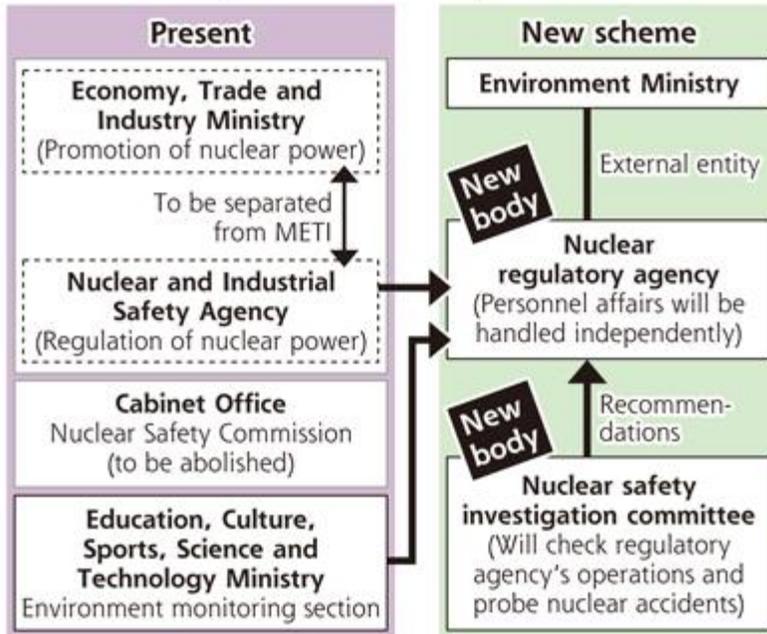
The agency plans to use the expert input to outline a concrete list of new safety measures by the end of March.

Thursday, February 02, 2012 12:03 +0900 (JST)

**Feasibility key for revamped N-safety scheme / New plan obliges operators to take further safety measures; govt could intervene if steps not taken**

Koichi Yasuda and Yoshihiro Kiyonaga / Yomiuri Shimbun Staff Writers

## Nuclear power safety framework



After bills aimed at strengthening nuclear safety regulations were submitted to the Diet on Tuesday, the primary focus has now become how the government plans to ensure nuclear safety under a new framework.

Goshi Hosono, state minister in charge of nuclear policy and administration, backed the government's safety plans drawn up based on lessons from the crisis at the Fukushima No. 1 nuclear power plant.

"If we take people's stern opinions and international scrutiny into consideration, establishing a new safety framework is essential," Hosono said Tuesday. "This is a drastic reform."

The pair of bills includes one to overhaul the current nuclear safety scheme and another to create a nuclear safety investigation committee. Following criticism from home and abroad that the current nuclear watchdog--the Nuclear and Industrial Safety Agency--operates under the Economy, Trade and Industry Ministry that promotes nuclear power, the government plans to launch on April 1 a new nuclear regulatory agency as an external body under the Environment Ministry.

The thrust of the bills is that they legally oblige utilities to take safety precautions and measures to handle a severe accident and allow the government to be more involved in ensuring nuclear safety. Currently, utility firms implement safety measures on their own.

The government's move to revamp the nuclear safety framework came mainly as a result of Tokyo Electric Power Co.'s underestimating the threat of a devastating tsunami and its overconfidence that a serious nuclear accident would not take place. As such factors worsened the situation at Fukushima, the government has apparently concluded that nuclear safety cannot be ensured if such matters are left to the utilities.

The three pillars of the two-bill package are implementing measures against serious nuclear accidents; setting up a so-called backfit system; and setting a 40-year cap on the operation of nuclear reactors. The new laws will restrict power utilities' property rights and business operations to some extent.

The bills oblige utilities to take safety measures, such as installing backup power in preparation for a situation in which a reactor is damaged or other serious nuclear accidents occur, and ensuring a sufficient cooling system.

The backfit system will reflect new safety measures on existing nuclear plants based on the latest expert research on earthquakes and tsunami. The bills stipulate the government can order utilities to halt, revamp or fix their operations if sufficient safety steps are not taken.

Legislating for the first time the life span of nuclear reactors, the government has set the maximum period of operation at "40 years from the day [the reactor] passes an inspection."

University of Tokyo Prof. Hideaki Shiroyama, an expert in public administration, said: "The current law that regulates nuclear reactors centers primarily on preventing a nuclear crisis. So establishing new laws that incorporate measures to ensure public safety from radiation on the assumption that a nuclear accident occurs has great significance."

===

Bills likely to face rough going

The government wants the nuclear regulatory bills to become law by the end of March, but expected resistance from opposition parties could mean the bills are in for a rough ride, observers said.

The opposition parties are calling for revisions to the bills, particularly in regard to the independence of a planned nuclear regulatory agency and the life span of nuclear reactors.

The main opposition Liberal Democratic Party has not yet consolidated its position toward the bills because party members are split over the issue. Some LDP members oppose the government's plan to establish the regulatory agency as an external bureau of the Environment Ministry.

At an LDP meeting Jan. 20, a lawmaker argued against that plan, saying the new agency should be independent from the Environment Ministry because the ministry is not neutral.

New Komeito has not decided on its stance either, but the party favors bolstering regulatory measures. The name of the planned agency is said to have been proposed by the party, so the government and ruling parties are expected to step up efforts to persuade Komeito to support the bills.

Your Party, for its part, is calling for the establishment of an administrative commission empowered to introduce regulations and decide on personnel matters independently, in line with Article 3 of the National Government Organization Law. As a result, Your Party likely will oppose the government-proposed bills in the Diet.

Your Party Secretary General Kenji Eda told a news conference Tuesday that the planned regulatory agency should be "an administrative commission that is independent from the Cabinet, takes a fair and neutral position and can exercise strong authority over ministries and agencies."

(Feb. 2, 2012)

## Evacuated village to reopen from April

The Yomiuri Shimbun



FUKUSHIMA--The mayor of a village near the crippled Fukushima No. 1 nuclear power plant declared Tuesday that local authorities would return in April, and urged residents who have evacuated due to the nuclear crisis to come back.

Kawauchi Mayor Yuko Endo said public facilities, such as schools and clinics, will also resume services in the village.

This is the first time one of the nine municipalities that fell in the government-designated evacuation zones has declared it will return. Most of Kawauchi's 3,000 residents evacuated elsewhere in Fukushima Prefecture--or outside the prefecture--after the nuclear crisis erupted in March.

"I hope residents will return in two or three years," Endo said.

Starting this month, the Kawauchi government will survey residents about their thoughts on returning, and hold meetings with them. The village government will provide dosimeters to returning residents.

Endo plans to move the village government back to its original location on March 24 and 25, and to resume administrative operations in April.

The Kawauchi government office has temporarily been relocated to Koriyama in the prefecture. Many Kawauchi residents have been staying in temporary housing units in Koriyama, and some of the village's services will still be offered in the city even after April.

Kawauchi has been divided into two zones since the nuclear crisis began--the 20-kilometer no-entry zone around the crippled nuclear plant, and the former emergency evacuation preparation zone.

Initially, the mayor planned to declare the return after decontamination work had lowered radiation levels in the village to less than one millisievert a year. However, decontamination work has been delayed partly by heavy snowfall, and it is likely that only public facilities and houses of families with children will be decontaminated by the end of March.

The village government said radiation levels in many residential areas have fallen below one microsievert per hour.

In Tuesday's declaration, Endo accepted that some residents had concerns about returning to the village.

"Those who can return will return," he said. "Those who are still anxious can return after watching the situation for a while."

Although the designation of the emergency evacuation preparation zone was lifted in September, only slightly more than 200 residents have returned to the village.

(Feb. 2, 2012)

## **Declaration 'just the beginning' / Mayor's plea for villagers to return to Kawauchi draws mixed reactions**

The Yomiuri Shimbun

FUKUSHIMA--"The declaration to return home is just the beginning," said Yuko Endo, mayor of Kawauchi, Fukushima Prefecture, in a speech at a press conference encouraging residents who had evacuated amid the Fukushima No. 1 nuclear power plant crisis to return to the village.

The Kawauchi government will reopen the village office and schools in April to prepare for the residents' return. But a complete return of evacuees is problematic, as decontamination work is ongoing.

Parts of Kawauchi fall within the nuclear plant's 20-kilometer no-entry zone, and some residents are concerned about the village's decision. "We can't return home yet," one said.

Tsunehiro Takano, the village's fifth administrative district leader, attended the same press conference as Endo Tuesday at the Fukushima prefectural government's office. Takano, 62, is also chairman of all the administrative district leaders in the village.

"Only people who want to return to Kawauchi should do so and go first. It's important to prepare an environment acceptable to other residents. If nobody returns to the village, no one will end up [following the first returnees]," Takano emphasized.

"It is also our generation that should commit ourselves to decontamination work," he added.

But Norimoto Igari, Kawauchi's third administrative district leader, had a different view.

"Most of the residents, including me, don't want to return," the 68-year-old said.

His administrative district consists of many elderly people living alone.

"If stores don't reopen, elderly people without vehicles will face difficulties buying food," Igari warned.

Hiroichi Watanabe is the village's second administrative district leader and a rice farmer. The village government will order the village's farmers to refrain from planting rice this year.

"We farmers wonder what the point of hurriedly returning to Kawauchi is if we can't sell our rice," Watanabe said.

The answer is more straightforward for Nobuichi Kobayashi, leader of the eighth administrative district, which falls completely within the no-entry zone.

"We can't return," Kobayashi, 66, said.

The municipal government will build temporary housing units in Kawauchi for residents such as Kobayashi. However, according to Kobayashi, "Unless decontamination begins soon, the number of residents who refuse to return will increase."

===

Few kids want to return

Kawauchi has one nursery school, one primary school and one middle school. According to a survey by the village government, only 30 of 210 children want to return to school in Kawauchi from April.

Yoshinobu Ishii, the village schools' superintendent, said, "Even though the student numbers are few, we won't drop the level of our education."

The board of education intends to maintain a class for each grade instead of introducing composite classes comprising students from different grades.

It will also in April transfer the village-run cram school Kogakujuku from Koriyama, Fukushima Prefecture, to the village. Catering to students from the fifth grade of primary school to the third year of middle school, Kogakujuku was operating before the March 11 disaster.

According to the board of education, radiation levels in the Kawauchi Middle School yard dropped to 0.2 microsievert per hour in December, and 0.14 microsievert per hour at Kawauchi Primary School after decontamination had been carried out.

A 34-year-old woman living with her husband, 8-year-old daughter and 5-year-old son in a temporary housing unit in Koriyama after evacuating from her home in the no-entry zone, said: "Even though we can return, we'll have to live in temporary housing. It's difficult for us to return until all the decontamination has been completed."

(Feb. 2, 2012)

## **Govt sticks to 40-year limit for nuclear reactor operations**

The Yomiuri Shimbun

The proposed legal controls of nuclear power plants have many obscure elements in their basic reasoning and criteria.

One of these elements is whether setting an operation period limit of 40 years is reasonable.

Although the government has said the limit was decided on based on precedents set by the West, concrete data proving this has yet to be shown. There is also no convincing explanation about a provision that "allows for an extension of a plant's operations by a maximum of 20 years."

Some observers are also critical of a backfit system that would reflect the latest safety measures on nuclear power plants. They argue that the system could be a loophole in the new legislation and insist that the system will leave it unclear which party is subject to a suspension order.

Goshi Hosono, state minister in charge of nuclear power policy and administration, reiterated at a press conference Tuesday that in principle, any nuclear reactor cannot operate for more than 40 years.

Therefore, it is highly likely that the No. 1 reactor at Japan Atomic Power Co.'s Tsuruga power plant and the No. 1 reactor at Kansai Electric Co.'s Mihama power plant will be decommissioned as they have been operating for over 40 years.

However, details of the new system have yet to be decided. According to a Cabinet Secretariat official, concrete criteria will be "discussed by experts after the [new] nuclear regulatory agency is launched."

Prof. Shigeru Takahashi at Hitotsubashi University, a specialist in laws regulating science and technology, said: "Appropriate criteria is indispensable to securing safety. It's important to hear various opinions [in determining the criteria]. It's also necessary to open up the process."

Drawing up the new criteria and publicizing the laws is expected to take about 10 months. The new regulation system will likely start replacing the current one in February 2013.

Based on new laws, the agency's chief will be authorized to implement regulatory and control measures on nuclear power plants.

"Even if [the reactors] are regulated under the laws, what is ultimately important is which party will perform the task," said Tetsunari Iida, executive director of the Institute for Sustainable Energy Policies, an incorporated nonprofit organization. "The agency's independence will be ensured by choosing the most appropriate person who isn't afraid to say 'no' to both the government and power companies."

Hosono said at the press conference: "I'll choose the first head of the agency from the private sector. I have no intention of choosing a bureaucrat."

However, there are many things that still need to be accomplished before the new agency's inauguration on April 1.

====

KEPCO president bewildered

OSAKA--"I want [the government] to clarify their reasoning and the basis behind [the 40-year operating limit on nuclear reactors]," a bewildered KEPCO President Makoto Yagi said at a press conference Tuesday.

Of KEPCO's 11 nuclear power reactors, the No. 1 reactor at its Mihama plant already reached the 40-year limit in November 2010, but is still running. The plant's No. 2 reactor will reach the limit in July.

Yagi said: "If we, by any chance, apply for a limit extension [for reactors], we will need to go through some procedures and make technical preparations. So I hope [the government] will give us some transition time."

(Feb. 2, 2012)

## **Restarting nuclear reactors faces opposition from local residents**

February 01, 2012 - [http://ajw.asahi.com/article/behind\\_news/politics/AJ201202010040](http://ajw.asahi.com/article/behind_news/politics/AJ201202010040)

The central government is smoothing the way for restarting nuclear power reactors, but gaining the go-ahead from local officials and residents is anything but guaranteed.

The International Atomic Energy Agency said Jan. 31 that Japan's appraisal methods for stress tests conducted by electric power companies are generally appropriate, but **recommended improvements** in seven areas.

A 10-member IAEA delegation, which spent about a week in Japan, submitted an outline of its report to the Nuclear and Industrial Safety Agency.

"We received objective [??] advice from an international organization on our country's nuclear power regulation and evaluation, which has lost public confidence," nuclear accident minister Goshi Hosono said at a news conference.

The same day, the Cabinet submitted to the Diet a bill on nuclear safety reforms, which calls for the creation of a nuclear regulatory agency on April 1.

The new agency, under the Environment Ministry, would take over the authority for nuclear power regulation from the NISA and other government organizations.

The bill would limit the operational life of nuclear power reactors to 40 years in principle, extending it up to 20 years in exceptional cases.

**The government hopes to restart by summer some of the nuclear power reactors currently shut down.**

Prime Minister Yoshihiko Noda has said that if no reactors are restarted, and no effective countermeasures are taken, electricity supplies will fall about 10 percent short of demand this summer.

Officials hope that the IAEA's endorsement of the stress test appraisal methods and the new legislation on nuclear power regulation will help win consent from local officials and residents for restarting those reactors.

**Only three of Japan's 54 nuclear power reactors are in operation because those shut down for regular maintenance cannot be restarted due to concerns following the disaster at the Fukushima No. 1 nuclear power plant.**

**The three on line will be shut down by the end of April.**

The NISA will begin final appraisal of stress tests conducted by Kansai Electric Power Co. on the No. 3 and No. 4 reactors at the Oi nuclear power plant in Fukui Prefecture.

In its draft evaluation, the agency said the test results were appropriate.

A NISA official said the IAEA's recommendation for improvements will not affect the final appraisal of the stress tests for the two reactors.

The NISA will discuss the results of appraisal after hearing from experts on Feb. 8, and submit its report to the Nuclear Safety Commission of Japan.

The commission, which is under the jurisdiction of the Cabinet Office, will convene a meeting of 10 or so experts to discuss the results.

After the commission's evaluation, Noda, Hosono, Chief Cabinet Secretary Osamu Fujimura and industry minister Yukio Edano will decide whether the reactors can be restarted.

**But gaining the approval of local officials and residents will be essential to the process.**

Fukui prefectural government officials have said the stress tests are insufficient as conditions for restarting the nuclear reactors. They called on the central government to present new safety standards based on the accident at the Fukushima No. 1 plant, triggered by the Great East Japan Earthquake last March.

**"Stress tests are computer simulations," Governor Issei Nishikawa said Jan. 11. "They are insufficient as a basis to judge whether reactors can be restarted.**

"The government must establish provisional safety standards based on the lessons from the (Fukushima) accident and evaluate the safety of nuclear power plants."

Hirohiko Izumida, governor of Niigata Prefecture, which hosts Tokyo Electric Power Co.'s Kashiwazaki-Kariwa nuclear power plant, has also said that stress tests are insufficient as conditions for restarting reactors.

"It is meaningless to conduct tests without examining what happened at the Fukushima No.1 plant," Izumida said.

Some of the measures included in the bill on nuclear safety reforms will not be implemented until summer 2013, because it will take up to 15 months to establish detailed standards.

Hiroshi Kawauchi, a Lower House member of the ruling Democratic Party of Japan, said the government should discuss the restart of reactors only after fundamental safety measures are put in place.

Views are also divided among Cabinet ministers.

Fujimura has said the government will judge whether reactors will be restarted as early as February, but Edano has been wary, asking, "Are we allowed to restart reactors while neglecting safety and security?"

## **Fukushima farmers furious over lack of consideration in decontamination subsidies**

FUKUSHIMA -- Municipalities and farmers in Fukushima Prefecture are furious at the national government for ignoring the state of local farmland in extending subsidies for decontamination of areas tainted with radioactive substances.

"A huge machine like that can't enter my rice paddy," lamented a farmer who saw a large machine and a tractor during a demonstration of decontamination work at a rice paddy in Koori, Fukushima Prefecture, in mid-December last year.

The same month, the Environment Ministry worked out guidelines for decontamination, which stipulate that local municipalities should decontaminate areas tainted with radioactive substances from the crippled Fukushima No. 1 Nuclear Power Plant.

Under the guidelines, the national government can extend subsidies for decontamination, on condition that large machines equipped with special agricultural devices are used, that 30-45 centimeters of surface soil is replaced by subsoil, and that about 30 centimeters of surface soil is plowed. The ministry says airborne radiation dosages can be effectively reduced by doing so.

The Fukushima Municipal Government has worked out a specific plan to decontaminate all local farmland between this month and March next year in order to ensure the safety of agricultural products and prevent residents' external exposure to radiation. Shipments of rice grown in some areas of the city have been prohibited because radioactive cesium in excess of the provisional limit set by the national government has been detected.

However, the municipal government has deemed it difficult to replace thick layers of surface soil with subsoil or to plow large portions of farmland according to the guidelines, because most local farmland is divided into small plots and large machinery cannot enter such land. For the time being, the municipal government has decided to plow a layer of surface soil about 12 centimeters deep, using agricultural machinery that local farmers possess.

The national government has offered to extend subsidies to cover the costs of buying zeolite used to absorb radioactive substances only if the surface soil is replaced and plowed in accordance with the Environment Ministry guidelines.

The Fukushima Municipal Government is poised to demand that the central government subsidies cover the purchase of zeolite even if the requirements are not met, on the grounds that spraying zeolite over farmland can help reduce the contamination of agricultural products through radioactive cesium.

However, bureaucratic red tape has posed a stumbling block to such subsidies.

The Environment Ministry, which is aiming primarily to reduce airborne radiation, insists that reducing agricultural products' radiation levels is beyond its jurisdiction.

"Decontamination is aimed at preventing ordinary people's external exposure to radiation. We're aware of the need to prevent agricultural products from being contaminated with radiation, but it's outside our jurisdiction," a ministry official said.

The Agriculture, Forestry and Fisheries Ministry says it is experimenting with various decontamination methods, including those to be employed in small areas of farmland where large machinery cannot be used. If some of these methods prove effective, the ministry will urge the Environment Ministry to incorporate them in its guidelines.

One farmer in his 50s, who owns about 40 hectares of farmland, is furious at the national government for merely discussing plans decided on paper.

He said he was told by an agricultural equipment leasing company that it could lease heavy machinery to him on a contract no shorter than six years.

"It's difficult to introduce large machines such as those weighing six tons into my farmland, and it's also unrealistic even for those who have large areas of farmland to do so," the farmer said. "A desk-based plan that doesn't suit the actual state of farmland is meaningless."

[!\[\]\(fc6f06fd885aaab04dbdd59fadd200cf\_img.jpg\) Click here for the original Japanese story](#)

(Mainichi Japan) February 2, 2012

## Researchers produce device to create biofuel from contaminated lumber



Visiting professor Masaru Ichikawa stands by ethanol-making equipment at Tokyo University of Agriculture. (Mainichi)

A device that can decontaminate radioactive lumber and efficiently create bioethanol from it has been developed by researchers at Tokyo University of Agriculture.

Masaru Ichikawa, a visiting professor at the university who was involved in the development of the machine, touted its usefulness as irradiated lumber and sludge from Fukushima Prefecture continue to accumulate.

"It can kill two birds with one stone and make a positive out of this momentous disaster. I hope it contributes to revival efforts," he said.

In joint research with other universities, Ichikawa in 2009 developed a method of producing bioethanol from lumber and straw that proved more efficient than existing methods. After the lumber or straw is dried and pulverized, it is vaporized into carbon monoxide and hydrogen with water vapor whose temperature ranges between 800 and 1,000 degrees Celsius. A metal catalyst is then applied to produce ethanol with 97 percent purity.

With this method, around 500 kilograms of bioethanol can be produced per metric ton of source material -- four times more than through other methods -- providing hope for the production of low-cost bioethanol.

Ichikawa noted that radioactive cesium from a nuclear accident vaporizes at around 800 degrees Celsius. He improved production of bioethanol by introducing a filter to pick up cesium as the source

materials were being vaporized. In testing he confirmed that 99 percent of cesium was picked up by the filter. Next he wants to try the machine on actual contaminated lumber from Minamisoma, Fukushima Prefecture.

Ichikawa says that according to calculations, 10 kilograms worth of filters should be enough to process around 100,000 metric tons of lumber. Other materials that can be processed include sludge and leaves, neither of which are currently being decontaminated in Fukushima Prefecture. Furthermore, vast amounts of forest there are being left in a contaminated state.

"This technology could solve problems relating to radiation decontamination," says Ichikawa.

 [Click here for the original Japanese story](#)

(Mainichi Japan) February 2, 2012

## Chernobyl experts hopeful on Fukushima



Oleg Nasvit, principal expert of Ukraine's National Institute for Strategic Studies Environmental and Technogenic Safety Department, speaks during an interview with The Associated Press in Tokyo Thursday, Feb. 2, 2012. (AP Photo/Koji Sasahara)

TOKYO (AP) -- Ukrainian nuclear experts say Japanese evacuated from around the stricken Fukushima nuclear plant should be able to return to their homes - unlike the Chernobyl site, which remains inside a wide no-go zone a quarter-century after the accident there.

The public may eventually be able to visit the Fukushima Dai-ichi nuclear power plant, where three reactor cores melted after a tsunami last March 11 knocked out the cooling systems, Oleg Nasvit, a nuclear physicist and radiation expert at Kiev's National Institute for Strategic Studies, said in an interview with The Associated Press.

Ukrainian government officials Nasvit and Dmytro Bobro said a crucial lesson from the 1986 Chernobyl disaster is that the government needs to tell people the truth so that they can make informed decisions about their future.

"Residents can understand the consequences and make realistic decisions only based on accurate information," Bobro said on a visit to Japan to attend a seminar on the Fukushima crisis sponsored by the Japanese government.

Japanese authorities and regulators have been repeatedly criticized for how they handled information during the unfolding nuclear crisis. Officials initially denied that the reactors had melted down, and have been accused of playing down the health risks of exposure to radiation. An outside panel investigating the government response to the nuclear crisis has also called for more transparency in relaying information to the public.

After declaring that the Fukushima plant was stable in December, Japan has set guidelines that allow residents to return to areas with contamination levels below 20 millisieverts per year - about three CAT-scans - which it says is safe, although a further reduction is required.

More than 100,000 people were displaced from a 12-mile (20-kilometer) no-entry zone.

Any decision on whether to allow residents to return should be based on radiation dose levels rather than distance from the plant, Nasvit said.

"If people like to return and they will have a dose of less than 20 millisieverts per year, according to international standards this is possible," Nasvit said. "This is not about this circle of 20 kilometers but it is about the radiological situation. If this is from the radiological point of view permissible, why not return part of this territory to people?"

But further decontamination efforts are a must, he said.

This week, the chief of Kawauchi village, which straddles the exclusion zone around the Fukushima plant, told more than 2,500 residents that returning to areas of the town outside the no-go zone would be safe during an ongoing radioactive decontamination. Mayor Yuko Endo said offices, schools and other public facilities will reopen in April.

About one-third of Kawauchi village lies within the exclusion zone and remains off-limits. Many residents whose homes were outside the exclusion zone chose to move out of the town. They showed mixed reactions, split between their desire to return to their homes and a fear of the effects of radiation on their health, especially for children.

The Chernobyl accident on April 26, 1986, spewed a cloud of radioactive fallout over much of Europe and forced hundreds of thousands from their homes in heavily hit areas of Ukraine, Belarus and western Russia. It has left forests and farmland still contaminated, offering a warning to the Japanese of the potential long-term effects of their own disaster at the Fukushima Dai-ichi nuclear plant.

The Chernobyl accident fostered deep mistrust among many in the affected areas because Soviet leaders waited for days to tell people about the accident, evacuate them from contaminated areas and warn them how to reduce health risks.

The Chernobyl explosion released about 400 times more radiation than the U.S. atomic bomb dropped over Hiroshima. The U.N. World Health Organization said among the 600,000 people most heavily exposed to radiation at Chernobyl, 4,000 more cancer deaths than average are expected.

Japan's government has said that it will take up to 40 years to fully decommission the Fukushima plant, but it is unknown how long it will take to decontaminate the vicinity or how much longer soil, water, air and food sampling must continue.

It may be a long process, but the operator and the government should tackle the problem quickly, based on science, not emotion, the Ukrainian experts said.

"We should not pass the problem on to the next generation," Bobro said.

(Mainichi Japan) February 3, 2012

## **Japan asks IAEA nuclear crisis support network to add new category**

TOKYO (Kyodo) -- Japan has proposed that an international support network for cooperation in responding to nuclear emergencies add the category of bringing an accident under control, sources familiar with the matter said Thursday.

The proposal for the International Atomic Energy Agency's Response Assistance Network was made at an IAEA meeting held in Austria from Tuesday through Thursday, the sources said.

The RANET, with which member nations register their institutions capable of providing support for addressing nuclear emergencies, currently has seven categories such as radiation measurement, environmental contamination research and decontamination.

If the Japanese proposal is accepted, member nations will work together to settle a nuclear accident by providing necessary equipment.

Japan made the proposal in the wake of the nuclear accident at the Fukushima Daiichi power plant crippled by the March 11, 2011 earthquake and tsunami disaster.

RANET, which was founded in 2005 and has 19 members including Japan, the United States and France, will decide whether to accept the proposal before the IAEA's annual meeting to be held possibly in September.

(Mainichi Japan) February 3, 2012

## **Indictment of contractors exposes illicit work at nuke plants**

FUKUOKA -- Three people and two firms were indicted Feb. 2 on charges of dispatching a worker to the Oi Nuclear Power Plant in Fukui Prefecture under a falsified contract in violation of the Employment Security Law.

Those indicted by the Kokura Local Public Prosecutors Office are Hideo Ichise, 58, of Tsuruga, Fukui Prefecture, Yoshimi Tomita, 59, of Maizuru, Kyoto Prefecture, and Kanae Ikegami, 36, of Kitakyushu's Wakamatsu Ward. Prosecutors also indicted Taihei Dengyo Kaisha Ltd., a Tokyo-based power plant construction and maintenance firm, and Takada Kiko, a plumbing firm in Takahama, Fukui Prefecture.

The Kokura Summary Court on Feb. 2 fined Ichise and Tomita and the two firms 500,000 yen each and Ikegami 250,000 yen. Ichise is the Fukui business manager of Taihei Dengyo, and he previously served as the firm's Oi operation chief. Tomita is president of Takada Kiko while Ikegami is an executive of Dream, previously known as Soshin Kogyo, a plumbing and housing equipment firm. She is also the wife of a gang leader with ties to the Kitakyushu-based crime syndicate Kudo-kai.

"Many documents showing illegal labor were found, one after another, during our search. They proved **many years of shady deals**," says a senior officer with the Fukuoka Prefectural Police. **The case sheds light on not just one firm or one nuclear power plant but the nuclear power industry as a whole.**

Sixty-one-year-old Masaki Yoshimura (pseudonym) in Kitakyushu was dispatched to many nuclear power plants in Japan while working for a construction company for a period of 14 years that ended seven years ago. There were many companies involved in his work between his employer and general contractors such as nuclear power plant manufacturers. One of those companies was Taihei Dengyo.

Repairing plumbing was the main part of his job, but instructions came from different companies depending on which nuclear power plants he was working at. Electric power companies, operators of nuclear power plants, paid general contractors a daily pay of 100,000 yen, but Yoshimura got only 18,000 yen. More than 80 percent of his daily wage was siphoned off.

"It's the world of siphoning off. It's a system in which big companies make money handsomely," he says.

The nuclear job scandal involving Taihei Dengyo uncovered the fact that **illegal labor supports nuclear power businesses. Fake contracts and unlicensed dispatches of workers are peppered with acts of siphoning off pay.** These practices have put laborers in an unstable position and invited crime syndicates' involvement.

"The Geiger counters quickly sound, so you can't work for so long. Fifty to 100 people have to work together. People at the bottom of society are there," Yoshimura says.

Radiation zones are divided into a scale from A to D, and workers assigned to D, the highest radiation zone, have to wear protective gear and layers of gloves. "Competent workers brought with them other workers' Geiger counters so they would not to exceed the dosage limits and to improve their work efficiency," Yoshimura said.

**Stopping a nuclear reactor for just one day reportedly results in a loss to the owner of 100 million yen.** A retired electric power company official says, "Electric power companies have repeatedly requested shorter inspections. But **to shorten checks without changing the number of items to inspect, you have to either cut corners or force workers to work throughout the night,**" he says.

According to the Japan Nuclear Energy Safety Organization, **about 90 percent of some 83,000 nuclear power plant workers who were exposed to radiation in fiscal 2009 were not employed directly by nuclear power plant operators. Their average radiation dosage was 3.6 times the level suffered by employees of those operators.**

The Committee on Poverty of the Japan Federation of Bar Associations last year conducted a survey of nuclear power plant workers. Lawyer Tatsuo Watanabe, a member of the committee, says, "From an ethical point of view, we should check unlawful labor at nuclear power plants that is being done for economical reasons."

More than 1,000 workers are necessary for a regular inspection of a nuclear reactor, but postings for these jobs do not show up at job-placement offices. Most part-time nuclear workers find employment through personal connections and introductions. A labor bureau official says: "(The connections) are extra careful to not hurt the electric power companies. Those with strong personal connections have strong solidarity and are tightlipped. They are in a world of their own."

(Mainichi Japan) February 3, 2012

## **Safety checks to begin at Fukushima Daiichi plant**

Japan's nuclear safety agency will begin inspecting the Fukushima Daiichi nuclear plant from Monday to see if it can safely remain in a state of cold shutdown.

Officials from the Nuclear and Industrial Safety Agency plan to check equipment and contingency preparations by examining manuals and interviewing workers during their three-week inspections.

Among the seven types of equipment to be checked is a reactor cooling system that recycles decontaminated water from the facility.

Another is a nitrogen-injection system to prevent hydrogen explosions within the disabled reactors.

Agency officials say they will open the onsite inspections to the media. The checks will be the first safety tests required under law since the March 11th accident.

The government declared on December 16th that the Fukushima Daiichi reactors had achieved a state of cold shutdown.

This means reactor temperatures have stabilized below 100 degrees Celsius, and the release of radioactive substances has been contained.

Friday, February 03, 2012 18:02 +0900 (JST)

## **Falsified labor deals rampant at Japan's nuke plants, says suspect**

A power plant construction and maintenance firm has falsified worker contracts for temporary labor at nuclear plants across Japan for years, according to statements by one of the company's employees charged with involvement in the fraudulent agreements.

Hideo Ichise, 58, and two other people were indicted on Feb. 2 for the dispatch of a worker to the Oi nuclear plant in Fukui Prefecture under a false contract, a violation of the Employment Security Law. Ichise's employer Taihei Dengyo Kaisha Ltd. -- where he now serves as business manager after a stint as the firm's Oi operations chief -- along with Fukui Prefecture-based plumbing company Takada Kiko were also charged.

Investigators have discovered a dossier on falsified worker contracts at more than 30 Taihei Dengyo branches, further suggesting the firm has been involved in illicit labor deals involving nuclear power plants across the country.

Police have furthermore discovered cases of various personnel agencies siphoning off the wages of temporary workers at nuclear plants, while involvement of the Kitakyushu-based crime syndicate Kudo-kai has also been uncovered.

According to investigative sources, Ichise said, "We have participated in (illicit nuclear labor practices at the Oi plant) for many years. We have been doing the same thing at other nuclear power plants."

Taihei Dengyo's operating officer was also quoted as telling police, "Our company alone cannot hire many workers, so we (falsified labor contracts) knowing it was illegal."

Other sources involved in work at nuclear power plants have provided similar information, including one Saga Prefecture man in his 50s who worked at the Genkai Nuclear Power Plant there during regular inspections about three years ago. He was dispatched to a construction company by a temp agent called simply "boss." Although there was ostensibly a contract with the construction company and the man worked directly under a construction company employee, "boss" apparently took 5,000 yen out of his 13,000-yen daily wage.

A year earlier, the Saga man had also worked at the Genkai plant during a regular check as an employee of an electrical firm for about two months. A fellow worker in his 50s had to take more than two weeks off after injuring his ankle at the plant but had to pay his own medical bills.

In this case, the Saga man worked under the guise of the electrical firm. "There were gangsters among those bosses, and sometimes two bosses raked off my wages," the Saga man recalls.

A temporary personnel agency operator says, "Parent companies send us requests for a certain number of workers, and we submit a list of people who then go and work under those parent companies at nuclear power plants. We give the workers their wages after deducting our share." Another agent told the Mainichi, "There are times when gangsters are involved in recruiting workers. It is easy for us to hire them because they save us the trouble."

It is not clear why such unlawful labor practices have been overlooked. An inspector at a labor standards office stated, "It is very difficult to get a full picture of the labor practices at nuclear power plants because corporate parent-subsidiary relations change depending on their line of work. It is also

difficult to conduct surprise on-site inspections of nuclear power plants because advance notification is necessary as part of antiterrorism measures."

Economy, Trade and Industry Minister Yukio Edano instructed electric power companies to abide by the law and bar crime syndicates from involvement in work at nuclear power plants. However Takayoshi Yoroi, a professor emeritus of labor law at Ryukoku University, says, "Falsified labor contracts have been rampant for so long. If the government is dead serious about stamping them out, nuclear power plants will stop running. Power companies and general contractors simply have to directly hire workers, but I wonder if they have the determination to do so."

 [Click here for the original Japanese story](#)

(Mainichi Japan) February 4, 2012

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na016000c.html>

---

## **Plowing technique to fight spread of radiation demonstrated**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na010000c.htm>

IWAKI, Fukushima -- A plowing technique being considered to fight the spread of radiation was demonstrated here on Feb. 2, though some farmers on hand were disappointed.

In the demonstration, four large machines dug up earth from around 30 centimeters deep to replace potentially contaminated topsoil and reduce the amount of radiation crops absorb from it.

According to a prefectural official, radiation readings in the field were 0.3 to 0.42 microsieverts on Feb. 1, and 0.23 to 0.3 microsieverts after the plowing. "There was an effect," the official said.

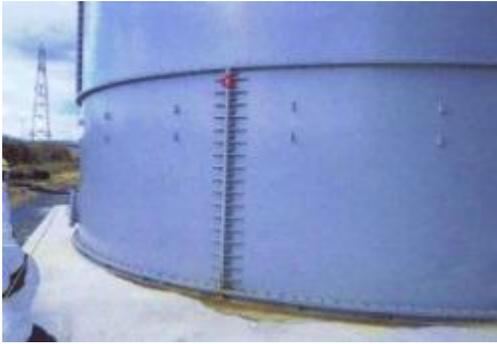
Around 150 people including local farmers gathered to watch the demonstration. Some farmers complained, however, that "expensive machines are necessary" for the plowing technique, and that an overall decontamination plan for the city's fields has still not been decided on.

 [Click here for the original Japanese story](#)

(Mainichi Japan) February 4, 2012

## **More leaks found at crippled Japan nuclear plant**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2g00m0dm015000c.html>



This photo provided by and annotated by Tokyo Electric Power Co. (TEPCO) shows where radioactive water leaked from the tank of a decontamination device at the tsunami-crippled Fukushima Dai-ichi nuclear power plant in Okuma town, Fukushima prefecture, north of Tokyo, Friday, Feb. 3, 2012. (AP Photo/Tokyo Electric Power Co.)

TOKYO (AP) -- Leaks of radioactive water have become more frequent at Japan's crippled nuclear power plant less than two months after it was declared basically stable.

The problem underlines the continuing challenges facing Tokyo Electric Power Co. as it attempts to keep the Fukushima Dai-ichi nuclear plant under control. A massive earthquake and tsunami badly damaged the plant last March, resulting in the melting of three reactor cores.

Workers spotted a leak Friday at a water reprocessing unit which released enough beta rays to cause radiation sickness, TEPCO spokesman Junichi Matsumoto said. He said no one was injured and the leak stopped after bolts were tightened on a tank.

Matsumoto said TEPCO also found that 8.5 tons of radioactive water had leaked earlier in the week after a pipe became detached at Unit 4, one of the plant's six reactors. The company earlier had estimated that only a few gallons (liters) had leaked.

He said officials are investigating the cause of that leak, but that it was unlikely the pipe had been loosened by the many aftershocks that have hit the plant.

The structural integrity of the damaged Unit 4 reactor building has long been a major concern among experts because a collapse of its spent fuel cooling pool could cause a disaster worse than the three reactor meltdowns.

Cold winter weather has also caused water inside pipes to freeze elsewhere at the plant, resulting in leaks in at least 30 locations since late January, Matsumoto said.

Officials have not detected any signs of radioactive water from the leaks reaching the surrounding ocean. Sandbag walls have been built around problem areas as a precaution.

More than 100,000 people around the plant fled their homes after the disaster due to radiation fears.

The government announced in December that the plant had reached "a cold shutdown condition" and is now essentially stable.

On Monday, six inspectors from the government's Nuclear and Industrial Safety Agency will begin an inspection of the plant to ensure its continued stability. They will study the reactors' cooling functions and measures to prevent explosions and nuclear chain reactions, among other steps to keep the plant under control, officials said.

(Mainichi Japan) February 4, 2012

## **US univ. to monitor wildlife in Fukushima**

A US research team will conduct a long-term study on the impact of radiation exposure on wild animals and plants around the Fukushima Daiichi nuclear power plant.

The team from University of South Carolina, led by Professor Timothy Mousseau, will begin the study in Fukushima Prefecture and other areas of Japan in May.

The team has been studying the impact of radioactive fallout from the Chernobyl nuclear accident on wildlife around the plant for more than 13 years.

Its study shows a decrease in the number of birds and insects, as well as abnormalities in animals even in areas with low radiation levels of one to 3 microsieverts per hour.

The team says long-term research is likely to shed light on the impact of low-level radiation from the Fukushima accident on wildlife and that it hopes to cooperate with Japanese researchers.

Professor Mousseau will visit Fukushima later this month in preparation for the study. He says generational change of animals, such as birds, is quicker than that of humans and will provide clues to the impact of radiation on human genes.

Saturday, February 04, 2012 09:35 +0900 (JST)

[http://www3.nhk.or.jp/daily/english/20120204\\_05.html](http://www3.nhk.or.jp/daily/english/20120204_05.html)

## **Govt eyes relaxation of rules on construction of renewable energy plants**

The Yomiuri Shimbun

The government is considering relaxing regulations on building solar power plants and other renewable energy facilities to promote their use in the country, according to government sources.

A Government Revitalization Unit subpanel tasked with discussing deregulation and system reforms intends to exempt solar power generation plants from acreage restrictions in the Factory Location Law.

The subpanel, chaired by Sumitomo Corp. Chairman Motoyuki Oka, has drawn up a plan to relax regulations in 183 energy-related fields. The Government Revitalization Unit is chaired by Prime Minister Yoshihiko Noda.

The reform plan would make it easier to build and promote large-scale solar power generation facilities, known as megasolar plants.

The government intends to approve the plan at a Cabinet meeting by the end of March and take necessary legislative measures, the sources said.

The subpanel has discussed deregulatory measures for encouraging the use of renewable energy since September last year, amid concerns of a prolonged power shortage in the wake of the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant.

The deregulation plan covers solar, geothermal and wind power, as well as other renewable energy sources.

The government hopes the measures will encourage the private sector to enter the renewable energy business and help boost the country's economy.

Currently, the Factory Location Law requires parties wishing to build a solar power plant to submit the plan to relevant local governments if the land on which it is built is more than 9,000 square meters or the facility is greater than 3,000 square meters.

The law also limits the size of a power plant to 50 percent of its land acreage. For instance, a facility built on 9,000 square meters of land should not exceed 4,500 square meters.

If solar plants are exempted from the rules, it would be possible to build larger plants and thereby generate power more efficiently.

Concerning geothermal and wind power generation, the government plans to relax regulations in the Natural Parks Law that restrict the building of renewable energy plants in national parks and quasi-national parks.

Such parks, with their rich natural environment, are seen as suitable sites for geothermal and wind power generation.

The government plans to allow for the construction of power plants in such parks if certain conditions are met.

Concerning hydroelectric power generation, the government intends to relax regulations in the River Law that restrict water intake, to increase the number of small-scale hydroelectric power plants. It also plans to simplify procedures for obtaining water usage rights.

The government also plans to review regulations on the specifications and procurement of next-generation smart meters--which are said to increase energy efficiency--to promote their widespread use.

(Feb. 4, 2012)

## **Survey: 2.3% of farmers produce rice above cesium safety standard**

February 04, 2012 - [http://ajw.asahi.com/article/0311disaster/life\\_and\\_death/AJ201202040050](http://ajw.asahi.com/article/0311disaster/life_and_death/AJ201202040050)

About 2.3 percent of farmers in Fukushima Prefecture yielded rice with radioactive cesium levels exceeding the government's new safety standard, according to prefectural government officials.

The new standard of 100 becquerels per kilogram will take effect in April, replacing the provisional standard of 500 becquerels per kg.

The results of the Fukushima prefectural government's emergency survey, released on Feb. 3, will be used by the central government to decide on areas where farming will be banned this year.

But farmers in areas around the crippled Fukushima No. 1 nuclear power plant are growing impatient with the central government's indecision on the matter. They are also worried that no one will buy their produce over fears of radiation contamination.

According to the survey, which covered about 23,000 rice-growing households in 29 cities, towns and villages, contamination levels exceeded the new standard in rice grown by 545 farmers in 12 municipalities, many of them in northern Fukushima Prefecture.

The survey also showed rice cultivated by 38 farmers in three cities had readings above 500 becquerels per kg.

Radiation levels in rice grown by 84.3 percent of farmers were below measurable limits, according to the survey.

The prefecture conducted the survey after radioactive cesium levels higher than the provisional standard were found in rice grown in the Onami district of Fukushima, the prefectural capital, in November.

The central government said it will prohibit the planting of seeds in areas that are heavily contaminated. But it has not decided which areas should face such restrictions under the new standard.

Agriculture minister Michihiko Kano said in a news conference on Feb. 3 that the government should not impose limits on planting.

"We should respect the feelings of farmers," he said.

A farm ministry official also said the decision for this year would be extremely tough because the lines marking sections under restriction must be drawn within areas where contamination levels are publicized.

The government banned planting last year in areas from where residents had evacuated. But officials at municipalities have already announced plans to go ahead with planting this year, even in areas where contamination levels have exceeded the new limit.

The prefectural chapter of Japan Agricultural Co-operatives is seeking permission to plant in sections of areas where this year's rice crop will likely clear the new safety standard. The chapter said rice paddies will be decontaminated and other measures taken before the planting starts.

The JA group is expected to forbid planting in areas where radiation levels are expected to remain above the safety limit.

In addition, the Fukushima city government is calling on the central government to permit the planting of rice crops that will be used for purposes other than for food.

"If farmers are not allowed to grow rice (this year), it will reduce their willingness to produce," an official in the city's agriculture section said. "Rice fields will also become run-down."

The city governments of Date and Motomiya have already said they will allow farmers to grow rice, in principle, while requiring decontamination of their rice paddies.

However, decontamination work could cause a new problem for the farmers, according to local officials.

"If rice fields are dug up too deeply, they may not be fit for growing the crop with too many rocks turning up," an official said.

The heavily contaminated village of Kawauchi, meanwhile, said it will not allow any planting.

Rice farmers are divided.

A 58-year-old farmer in Date said contamination levels found in his rice were up to slightly more than 100 becquerels per kg under the survey.

He has already ordered seeds and fertilizers for his rice crops this year.

"Unless I can plant this year, my rice paddies will be overrun with weeds," he said. "The fields would not be restored to the original condition for five or 10 years."

He said he is frustrated by the lack of any long-term perspective by authorities over his livelihood.

"Is (the restriction) for just this year or for many more years?" he said. "It would mean a lifetime if the restriction is put in place until there is no more cesium contamination."

Saburo Watanabe, a farmer in Aizubange, where all rice crops were found to be safe, said planting should be banned in areas where contamination levels exceed the new safety standard. He said the image of rice grown in Fukushima Prefecture must be protected.

“Consumers tend to think all rice crops from Fukushima Prefecture are the same,” said Watanabe, 58, who cultivates rice in a 12-heactare field.

He said most of his rice from last year remained unsold.

A 56-year-old farmer in Nihonmatsu said, “I want to grow rice, but we will be in trouble with unsold rice if we push for it and face another bad result.”

The rice in his district in Nihonmatsu was found with contamination levels above the new limit.

(This article was written by Ryo Inoue and Keiichiro Inoue.)

## 573 deaths 'related to nuclear crisis'

The Yomiuri Shimbun

A total of 573 deaths have been certified as "disaster-related" by 13 municipalities affected by the crisis at the crippled Fukushima No. 1 nuclear power plant, according to a Yomiuri Shimbun survey.

This number could rise because certification for 29 people remains pending while further checks are conducted.

The 13 municipalities are three cities--Minami-Soma, Tamura and Iwaki--eight towns and villages in Futaba County--Namie, Futaba, Okuma, Tomioka, Naraha, Hirono, Katsurao and Kawauchi--and Kawamata and Iitate, all in Fukushima Prefecture.

These municipalities are in the no-entry, emergency evacuation preparation or expanded evacuation zones around the nuclear plant, which suffered meltdowns soon after the March 11 disaster.

**A disaster-related death certificate is issued when a death is not directly caused by a tragedy, but by fatigue or the aggravation of a chronic disease due to the disaster.** If a municipality certifies the cause of death is directly associated to a disaster, a condolence grant is paid to the victim's family. If the person was a breadwinner, 5 million yen is paid.

Applications for certification have been filed for 748 people, and 634 of them have been cleared to undergo screening.

Of the 634, 573 deaths were certified as disaster-related, 28 applications were rejected, four cases had to reapply because of flawed paperwork, and 29 remain pending.

In Minami-Soma, a screening panel of doctors, lawyers and other experts examined 251 applications and approved 234 of them. The panel judged two deaths were not eligible for certification and 15 were put on hold.

"During our examination of the applications, we gave emphasis to the conditions at evacuation sites and how they spent their days before they died," a city government official said. "However, the screening process was difficult in cases when people had stayed in evacuation facilities for an extended time and when there was little evidence of where they had been taking shelter."

(Feb. 5, 2012)

## Nuke dangers nowhere near resolved: Kan's crisis adviser

By [REIJI YOSHIDA](http://www.japantimes.co.jp/text/nn20120208f1.html) - <http://www.japantimes.co.jp/text/nn20120208f1.html>

In December, Prime Minister Yoshihiko Noda announced the "conclusion" of the meltdown crisis at the Fukushima No. 1 nuclear plant, saying Tokyo Electric Power Co. was managing to keep the three crippled reactors cool, as well as the facility's spent fuel pools.

But a former special adviser to Naoto Kan, who was prime minister when the crisis started, warned that the situation is far from resolved and said Fukushima has exposed a raft of serious nuclear problems that Japan will have to confront for years.

**"I would say (the crisis) just opened Pandora's box,"** Hiroshi Tasaka, who has a doctorate in nuclear engineering and is now a professor at Tama University, said in a recent interview with The Japan Times.

He was one of a select group who glimpsed the secret worst-case scenario document written up by the Japan Atomic Energy Commission on March 25 that was later reportedly quashed by the government.

According to the scenario, the biggest risk during the meltdown crisis wasn't the reactors themselves but the spent fuel pools sitting atop them, particularly the one above reactor 4, which still contains about 1,500 nuclear fuel assemblies, Tasaka said.

Unlike reactors 1, 2 and 3, the No. 4 unit was offline for regular checks when disaster struck on March 11 and thus didn't suffer a meltdown. But its fuel rods were in the pool outside the reactor, and its coolant water fell dangerously low.

Adding to the danger is that the fuel pool is now directly exposed to the outside environment after a hydrogen explosion blew off the upper part of the reactor building on March 15, Tasaka noted.

The potential heat from the pool was also much higher than other pools because 204 of the 1,535 assemblies were still "new ones" that had been temporarily removed from reactor 4 for regular checks.

The Fukushima crisis has highlighted the dangers of spent fuel pools, which are outside the robust primary containment vessels of the reactors themselves, Tasaka said.

**Under the current circumstances, the nation has no prospect of starting up the experimental high-level nuclear waste processing facility in Rokkasho, Aomori Prefecture, because of both technical difficulties and the sentiments of antinuclear activists.**

This means utilities must store their spent fuel assemblies in cooling pools at their respective reactor sites as a "temporary measure." This situation greatly increased the danger at Fukushima No. 1 on March 11.

"The storage capacities of the spent fuel pools at the nation's nuclear power plants are reaching their limits," Tasaka wrote in a new book, "Kantei Kara Mita Genpatsu Jiko No Shinjitu" ("The Truth About the Nuclear Accident as Viewed From the Prime Minister's Office").

According to Tasaka, the utilities' fuel pools were about 70 percent full on average in 2010, but the figure was 80 percent at Fukushima No. 1.

The makeshift cooling systems set up at Fukushima No. 1 to stabilize the stricken reactors and fuel pools have greatly reduced the possibility of another catastrophe, Tasaka said, but the ad hoc system for decontaminating the coolant water is nevertheless generating large amounts of highly contaminated waste every day.

Making matters worse, the government doesn't have any place to permanently store it, he wrote.

Tasaka is also deeply concerned about the "groundless optimism" displayed by bureaucrats and business leaders as they rush to restart dozens of reactors that remain halted for safety checks since March 11.

"I understand quite well the intentions of the government, which now wants to send out a message of hope. But at this stage, all the risks should be put on the table," he said.

The nation's nuclear regulators must carry out drastic reforms to regain the people's trust. This is an imperative for the government if it wants to keep pushing nuclear power, Tasaka said.

He recalled viewing the government's worst-case scenario in late March. He was officially appointed special adviser to the prime minister on March 29.

The document detailed a hypothetical Fukushima crisis worst case: Eventual contamination from the plant would require the government to assist residents in the Tokyo area to evacuate if they wanted to voluntarily "migrate," based on the same evacuation protocols adopted for the 1986 Chernobyl accident.

The scenario assumed another hydrogen explosion would occur in the reactor 1 building and radiation would force all of the workers at the plant to evacuate.

All of the pools storing hundreds of nuclear fuel assemblies would eventually lose their cooling ability and the assemblies would melt down and breach the pools.

According to Kyodo News, the simulation was "so shocking" that top government officials decided to keep the paper secret by treating it as a mere personal document of Japan Atomic Energy Commission Chairman Shunsuke Kondo, who compiled the simulation. The government only gave it official recognition at the end of December, according to Kyodo.

More than 10 months after he saw the worst-case scenario paper, Tasaka is still not sure if such scary information should immediately be made public during a nuclear plant crisis.

The assumed worst case was extreme and people did not need to immediately flee the Tokyo area even in March or April, Tasaka said. Disclosing the simulation could have caused panic in the capital, he said.

Tasaka was obliged to keep secret what he learned through his work at the prime minister's office and was not in a position to decide what information was to be made public during the crisis.

He said he decided to start talking about the worse-case scenario only after Kan mentioned some of its highlights during an interview with the media in September.

Tasaka believes the media and government should lay some ground rules in advance on what sensitive information should be made clear in a nuclear crisis.

## **Edano key person in Japan's nuclear future, but keeps true intentions hidden 5 ?**

<http://mdn.mainichi.jp/perspectives/news/20120206p2a00m0na002000c.html>

Economy, Trade and Industry Minister Yukio Edano recently revealed in a magazine interview that the prime minister for whom he holds the highest regard is Kantaro Suzuki. I found the mention of a taciturn, sage-like military chancellor by an eloquent lawyer-turned-minister striking.

Suzuki was the prime minister of Japan when it surrendered to end World War II. He was the one who brought the war to a close. So what will Edano end?

"Modernity," he promptly responded when I posed the question to him last weekend.

And what did he mean by "modernity"?

"A society of standardized mass production."

Was that the same as bringing nuclear power to an end?

"Nuclear power is not (our biggest challenge). Rather, energy conservation is."

The aforementioned interview spanned 20 pages in the most recent issue of the magazine G2, and addressed a wide range of topics -- including disillusionment with regime change, energy policy, the Constitution, and Democratic Party of Japan (DPJ) bigwig Ichiro Ozawa. The common thread throughout the entire interview, however, was "the abandonment of modernity." As the interviewer, Katsuyuki Yakushiji, a professor of sociology at Toyo University and a former chief editor of the Asahi Shimbun's political news section, challenged Edano on his highly conceptual remarks.

"So what do you mean by modernization?" Yakushiji asked.

Edano answered: "The economic development process in which we achieve affluence by selling products to other countries."

"Are the things that the DPJ views as problematic, including the widening gap between the rich and the poor and rising unemployment, signs of the contradictions arising (from continued modernization)?" Yakushiji pushed further.

"Countries that have achieved modernity are chased by countries who are newly reaching modernity. When these modern countries try to compete on the same footing as up-and-coming countries, their societies deteriorate. What (former Prime Minister Junichiro) Koizumi did was just that. I think such issues need to be overcome through the creation of a 'postmodern' social system."

Though Suzuki and Edano may seem to have nothing in common at first glance, their similarities become clearer when one focuses on a certain characteristic: they're both key figures in deciding national policy whose real intentions are difficult to read.

Suzuki became prime minister in April 1945, nearing the end of World War II. Cabinet members comprised military and "pro-peace" factions, and the legend goes that Suzuki, a former naval officer, did not reveal his true intentions. Instead, he committed himself to saving the face of those pushing for more fighting, while artfully leading the way to peace.

How about Edano? When it comes down to it, is he for nuclear power, or against it? People on both sides are desperately trying to figure out what lies in the minister's heart of hearts.

Of Japan's 54 nuclear reactors, only three are now running. If they, too, undergo scheduled inspections, all 54 will be out of operation by late April, with no prospects of restarting. Edano had been expected to pour his efforts into talking local municipalities into giving the go-ahead for the restarts, but in a newspaper interview published on Jan. 27, he suggested that Japan would get by fine without nuclear power.

At a press conference on Jan. 18, Edano also made the comment: "Emotionally, I lean toward the notion that we should be as cautious as possible regarding the resumption of operations (of nuclear reactors)." This is the same person, however, who has given his permission to the export of Japan's nuclear technology, and stands by the government's new growth strategy under which the exports will be carried out.

Edano and the DPJ are at the center of contradiction and chaos. Pressed about this, he responded: "The Meiji Restoration was also a time of confusion. Turbulent times themselves are not a problem. What's important is whether our actions lead to the construction of a new era."

It was in explaining to his interviewer that he is currently not aiming to become prime minister that Edano mentioned Suzuki. Suzuki only agreed to take the helm of the Cabinet at the recommendation of the Emperor's advisers and coaxing from the Emperor himself.

"People sought out by the specific era should become prime minister," Edano said. "They are the ones who accomplish great things."

Will this era be calling on Edano? (By Takao Yamada, Expert Senior Writer)

 [Click here for the original Japanese story](#)

(Mainichi Japan) February 6, 2012

## Temperature rises at Fukushima No.2 reactor

The operator of the Fukushima Daiichi nuclear plant says the temperature in the No.2 reactor remains high despite the injection of additional water.

A thermometer at the bottom of the reactor showed 73.3 degrees Celsius on Monday morning. It was **around 45 degrees on January 27th and 71.7 degrees at 4 PM on Sunday.**

Tokyo Electric Power Company began injecting 10.6 tons of water per hour from around 1:30 AM on Monday. **That's one ton more per hour than before.**

The utility says 2 other thermometers placed at the bottom of the reactor have been giving readings of about 44 degrees.

It says the flow of water in the reactor may have changed after plumbing work, causing difficulties in cooling the nuclear fuel.

In December last year, the government and TEPCO declared the 3 reactors at the Fukushima Daiichi plant had been successfully put into a state of cold shutdown as their temperatures had fallen below 100 degrees. But the situation inside the reactors remains unknown.

TEPCO says the regulations set after the state of cold shutdown was achieved require the utility to keep temperatures inside the reactors below 80 degrees.

So it says the No.2 reactor is still in the state of cold shutdown.

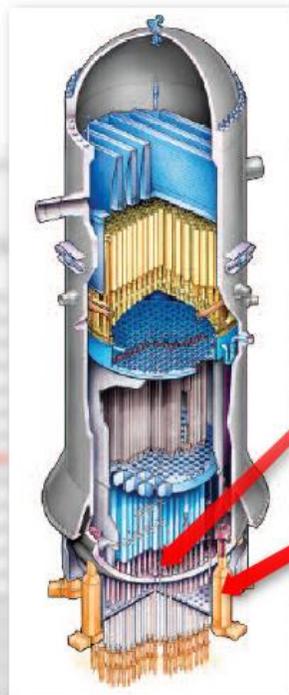
Monday, February 06, 2012 13:12 +0900 (JST)

Fukushima : la température de l'ex-unité n° 2 en nette hausse - autant pour l'"arrêt à froid"  
<http://www.gen4.fr/blog/2012/02/fukushima-la-temp%C3%A9rature-de-lex-unit%C3%A9-n-2-en-nette-hausse-autant-pour-larr%C3%AAt-%C3%A0-froid-1.html>

Plusieurs capteurs de température signalent une augmentation importante et récente de température dans le bas de l'ex-réacteur n° 2

Fukushima Daiichi Nuclear Power Station Unit2

[Note]  
 Some indicators might not be functioning properly be:  
 We comprehensively evaluate situation in plants using



Date	RPV Bottom Part (Wall Above Bottom Head)	RPV Supporting Skirt Upper Part
1/30 5:00	50.4	43.3
1/30 11:00	50.7	44.2
1/30 17:00	50.5	41.9
1/30 23:00	50.4	41.2
1/31 5:00	50.4	42.4
1/31 11:00	50.4	42.8
1/31 17:00	50.4	41.6
1/31 23:00	50.6	41.6
2/1 5:00	50.8	42.6
2/1 11:00	51.3	43.9
2/1 23:00	52.0	44.2
2/2 5:00	52.4	55.7
2/2 11:00	52.9	60.7
2/2 17:00	54.6	56.2
2/2 23:00	55.7	48.1
2/3 5:00	57.4	53.9
2/3 11:00	58.0	63.9
2/3 17:00	61.0	46.0
2/3 23:00	62.6	48.2
2/4 5:00	64.5	46.2
2/4 11:00	64.8	46.3
2/4 17:00	65.1	53.9
2/4 23:00	66.1	51.5
2/5 5:00	67.4	57.8
2/5 11:00	68.6	53.2

Les températures des capteurs *RPV Bottom Part* et *RPV Supporting Skirt* dont les emplacements sont indiqués ci-dessus indiquent une augmentation constante de la température mesurée en ces points **depuis très précisément le 31 janvier à 2300I** (I=JST=heure de Tokyo). Les températures relevées sont passées respectivement de 50.4 à 68.6° C (+36%) et de 41.6 à 53.2°C (+28%).

Il va être difficile à l'opérateur d'utiliser une nouvelle fois la vieille astuce du "capteur déficient" (*CRD Housing Upper Part*) sur ce coup-là puisque les informations reprises par 2 capteurs différents et proches convergent. Comme d'habitude, **Tepco ne sait pas trop ce qui peut bien se passer à l'intérieur de ce machin et essaye juste de tourner un robinet pour voir si "ça donne"**. Voilà une approche aussi scientifique que celle de la poule tombant sur un miroir et admirant son reflet en s'exclamant : "Que cet objet est beau !"

Je vous fais grâce du communiqué de Tepco qui est aussi précis qu'une localisation de flaque de corium égarée ; sachez simplement que l'accroissement de la température leur semble arithmétique et non géométrique, ce qui apparemment les rassure **mais nous, pas trop**.

**Il semblerait que, de l'avis de certains employés Tepco intervenant sur le site, la situation de l'unité n°. 2 soit actuellement encore plus préoccupante que celle de l'unité n°. 4 que nous avons évoquée dans un billet hier.**

Arrêt à froid, qu'ils disaient ?

**EDIT du 6/2 : La température affichée par le capteur RPV/BP continue à augmenter malgré l'augmentation de 1m3/h d'eau "injectée". La température affichée est de 73.3°C à 0700I (source : <http://www3.nhk.or.jp/news/genpatsu-fukushima/20120206/index.html>, japonais)**

## **Govt to create more decontamination bases 2 ?**

[http://www3.nhk.or.jp/daily/english/20120206\\_11.html](http://www3.nhk.or.jp/daily/english/20120206_11.html)

The Environment Ministry plans to decontaminate more public facilities in Fukushima Prefecture to use them as bases for cleaning up radioactive substances.

The government wants to decontaminate no-entry and evacuation zones around the damaged Fukushima Daiichi plant. It hopes to create a safe environment so that residents can return to the area.

The ministry has designated 16 facilities, including schools and assembly halls, as bases for decontamination. Four municipal offices were cleaned up in December.

The operation is to be completed next month.

The government plans to begin radiation monitoring in these zones in a few months, and begin the decontamination process this summer.

Monday, February 06, 2012 11:48 +0900 (JSt)

## **Kyushu men sent to Fukushima nuke plant under falsified labor deals**

<http://mdn.mainichi.jp/mdnnews/news/20120206p2a00m0na013000c.html>

As efforts to tame the crisis at the Fukushima No. 1 nuclear plant continue, laborers from as far as Kyushu have been dispatched there under illegal labor deals and forced to work inside at least one of the crippled plant's highly contaminated reactor buildings.

A man in his 40s from Nagasaki Prefecture recently related how he carried lead sheets weighing some 20 kilograms each up as high as the sixth floor of one building. A Geiger counter dangling from his neck sounded noisily and his mask misted over as temperatures climbed above 30 degrees Celsius.

"I was really angry because I was treated like a slave," Yosuke Nakayama, a pseudonym, said of his some 40 days at the Fukushima plant, starting in July last year.

The lead sheets were installed inside the plant's No. 1 reactor building to block radiation. Nakayama, however, was not angry about the hard work, but about the treatment he received upon returning home to Nagasaki.

He said he was paid 11,000 yen per day he worked for a company six layers down in a seven-layer outsourcing pyramid, with only the top-tier firm receiving orders directly from plant operator Tokyo Electric Power Co. He had been promised 14,000 yen per day, and had also been assured he would not have to enter the reactor buildings.

When Nakayama demanded an explanation for the 3,000 yen difference, his subcontractor mentioned the name of a Fukuoka-based crime syndicate.

"We don't care if yakuza show up," the contractor said, apparently threatening him.

A third-tier company to which Nakayama's employer dispatched laborers via two other firms has been slapped with administrative punishments twice for its ties to crime syndicates.

Contacted by the Mainichi, Nakayama's employer acknowledged the dispatch of workers without a license. "We received about 13,000 yen from a fifth-tier firm and we'd lose money unless we deduct expenses," the company said.

Businesspeople familiar with the Kyushu Electric Power Co.'s Genkai Nuclear Power Plant in Saga Prefecture say a significant number of laborers have been sent to Fukushima.

A utility work firm in Saga has been recruiting laborers from across Kyushu since last December, ostensibly for work at nuclear plants in Kyushu and Shikoku. The names of about 20 laborers are written on the firm's white board, along with their destination: "Fukushima No. 1."

An executive of the firm says it started sending laborers to Fukushima in response to requests from its business partners. "People from Kyushu are in demand because they're serious. We will send them again if requested."

A Saga man in his 30s did a job similar to Nakayama's at the Fukushima plant after being dispatched from a seventh-tier firm. He contacted the company after seeing a posting at a job-placement office and got the Fukushima job.

He received about 300,000 yen for some 40 days of work, and absorbed a radiation dose of some 10 millisieverts. "There are no jobs in my hometown, so it can't be helped," he says, adding he is waiting for another Fukushima assignment.

(Mainichi Japan) February 6, 2012

**All files to nuclear files 102 included**

Feb 8, 2012

## **Nobel Prize winner Oe stresses Japan's ethical responsibility for ending nuclear program**

<http://mdn.mainichi.jp/mdnnews/news/20120208p2a00m0na011000c.html>

Kenzabu Oe, Nobel Prize laureate in literature, said Feb. 8 that Japan has an "ethical responsibility" for abandoning nuclear power in the aftermath of the Fukushima nuclear disaster, just as the country renounced war under the postwar Constitution.

During a press conference at the Foreign Correspondents' Club of Japan (FCCJ), Oe called for an immediate end to nuclear power generation and warned that Japan would suffer another nuclear catastrophe if it tries to resume nuclear power plant operations. "It's important to make a decision now" to abandon nuclear power, he said.

Satoshi Kamata, the founder of the "Sayonara Nuclear Power Plants" campaign, said at the press conference with Oe and Keiko Ochiai -- author, radio personality, and founder and manager of the Crayon House bookstores for children -- that they and other members of the initiative will hold rallies in Tokyo, Niigata, Matsue, Shizuoka, Matsuyama, Sapporo and Saga on Feb. 11 to protest against restarting nuclear reactors.

Kamata, a freelance journalist who has covered the nation's nuclear industry extensively and been a leading critic of Japan's "nuclear village" establishment, said his group will deliver a petition to local governments hosting nuclear plants or located near them to help pursue a society not dependent on nuclear energy.

"What has become clear from the Fukushima nuclear disaster and later developments is this hard fact: there is no nuclear energy that is safe," the petition says. "In other words, nuclear technology and humanity cannot coexist."

The antinuclear group says it has many supporters for its campaign, including Minamisoma Mayor Katsunobu Sakurai in Fukushima Prefecture and Tokai Village Mayor Tatsuya Murakami in Ibaraki Prefecture, in addition to film director Yoji Yamada, actress Sayuri Yoshinaga and other high-profile personalities.

Kamata said his group has collected 5 million signatures so far in a petition calling for a nuclear-free Japan. The campaign is aiming for 10 million names. The group will hold a rally in Koriyama, Fukushima, on March 11, the first anniversary of the Great East Japan Earthquake and tsunami which triggered the crisis at the Fukushima No. 1 Nuclear Power Plant, and a rally in Yoyogi Park in Tokyo on July 16, which the group hopes will draw 100,000 people. (By Shiro Yoneyama, Staff Writer)

## **US approves 1st reactor construction in 34 years**

The US Nuclear Regulatory Commission has approved construction of the first new power reactors in the country in more than 3 decades.

The plan to build 2 reactors at the Vogtle plant in the southern state of Georgia was approved by a majority vote on Thursday.

Unit 3 and Unit 4 at the Vogtle site will be the first reactors built in the US for 34 years. The new models were designed by Westinghouse Electric, a US unit of Toshiba.

Construction could begin as early as this year. If all goes well, the reactors are expected to start operation in 2016.

The US stopped building nuclear plants after the Three Mile Island accident in 1979.

The administration of President Barack Obama says it will take in the lessons learned from the accident at Japan's Fukushima Daiichi power plant. But Obama is sticking to his policy of promoting nuclear power as a way of reducing dependence on oil.

[February 09, 2012](#)

### **Tsunami was up to 21 meters in Fukushima**

<http://www.yomiuri.co.jp/dy/national/T120208006430.htm>

The tsunami that hit Fukushima Prefecture on March 11 was particularly high--possibly up to 21 meters--along the coast in the center of the prefecture where the Fukushima No. 1 nuclear power plant is located, a survey has found.

The height of the tsunami was previously assumed to have been about 15 meters at the nuclear plant, but this could not be confirmed because the area within a 20-kilometer radius of the plant is designated a no-entry zone.

Researchers including Shinji Sato, a professor at the University of Tokyo, obtained permission from local governments to enter this zone, and for the first time since the tsunami, were able to survey coastal areas Monday and Tuesday.

They found that areas struck by higher tsunami were concentrated on the coast in the prefecture's center. For example, at Tomioka, which is eight kilometers south of the nuclear plant, a tsunami height of 21.1 meters was observed.

The maximum height was 10 meters along much of the coast in the prefecture's south.

"It is necessary to do more research on what caused the tsunami to hit the central part of the prefecture particularly hard," Sato said.

(Feb. 9, 2012)

## **Nuclear agency to finalize report endorsing Oi reactors stress tests**

<http://mdn.mainichi.jp/mdnnews/news/20120209p2g00m0dm019000c.html>

TOKYO (Kyodo) -- The government's nuclear safety agency decided Wednesday to soon finalize a draft report endorsing the results of stress tests on two idled reactors at Kansai Electric Power Co.'s Oi power plant in western Japan.

It will be the first time the Nuclear and Industrial Safety Agency or NISA has validated results of reactor stress tests submitted so far by utilities nationwide.

NISA made the decision after presenting and hearing opinions on the draft at a meeting with experts. Its finalized report will then be checked by the Nuclear Safety Commission of Japan.

The Japanese government introduced the stress tests on reactors after the Fukushima nuclear crisis. For utilities, passing the test is a prerequisite for restarting reactors idled for scheduled checkups.

If the commission validates the report, the agency plans to explain the test results to Fukui Prefecture where the Oi nuclear power plant is located.

The government will then decide whether to authorize the restart of the reactors while taking into account local communities' responses. The Fukui prefectural government is cautious about allowing them to operate again.

Given the safety agency's decision, Fukui Gov. Issei Nishikawa reiterated his stance of not allowing the reactors' restart on the basis only of the outcome of the stress tests, saying, "It is the basic premise that a provisional safety standard that reflects lessons learned from Tokyo Electric's Fukushima Daiichi nuclear accident be set up."

For Kansai Electric, which serves western Japan area including Osaka and Kyoto, there have been concerns over electricity supply constraints as 10 of its 11 reactors are currently offline. The utility's only operating reactor, the No. 3 unit at the Takahama power plant also in Fukui, is set to undergo periodic maintenance later this month.

In its draft report, the nuclear safety agency endorsed Kansai Electric's evaluation that the Nos. 3 and 4 reactors at the Oil plant are capable of withstanding an earthquake 1.8 times stronger than the most powerful quake presumed for the area and a tsunami wave up to 11.4 meters high, four times higher than the maximum presumed level.

But NISA also said it needs to confirm the utility's further investigation of tsunami that occurred in the past in nearby areas as well as active faults' connectivity.

Overall, NISA said the Oi plant's Nos. 3 and 4 reactors have taken sufficient measures to prevent the sort of situation seen at Tokyo Electric Power Co.'s Fukushima Daiichi power plant even if they were hit by the same size of earthquake and tsunami that hit the plant in Fukushima Prefecture.

Only three of Japan's 54 commercial reactors are currently in operation as reactors which once enter periodic maintenance, held every 13 months, need to pass the stress test to resume operation.

If no reactors secure approval to restart, Japan will have no operating reactors by the end of April.

The government required utilities to take the stress tests following meltdowns at the Fukushima Daiichi complex, triggered by the March 2011 earthquake and tsunami, in order to check the ability of the country's nuclear power plants to withstand such natural disasters.

At Wednesday's meeting, some experts questioned the agency's endorsement of Kansai Electric's stress tests.

Masashi Goto, a former nuclear power plant design engineer, said that the stress tests are "totally meaningless" as a tool to check the safety of reactors as NISA has yet to decide how much leeway the reactors should have to withstand earthquakes and tsunami.

A NISA official said the level of reactors' ability to withstand emergency on their own, or without help from the outside, as well as the utility's efforts to improve their safety are among key factors that served as basis for the agency's evaluation of stress test results.

NISA's previous meeting with the experts in January was temporarily disrupted due to protests by some citizens, including antinuclear power activists, who were asked not to observe the meeting in the same room with attendants.

NISA continued not to allow general citizens to observe the meeting directly this time and made them watch the meeting through a monitor in a different room. A number of citizens staged antinuclear campaigns in front of the Economy, Trade and Industry Ministry building where the meeting took place.

A delegation from the International Atomic Energy Agency said last week while in Japan that the safety agency's nuclear stress tests are generally consistent with IAEA safety standards, but it also made some recommendations to NISA to improve the effectiveness of the stress tests.

Friday, February 10, 2012 09:53 +0900 (JST)

[http://www3.nhk.or.jp/daily/english/20120210\\_09.html](http://www3.nhk.or.jp/daily/english/20120210_09.html)

February 11, 2012

## **Panel: All N-plant staff should have ID checks**

<http://www.yomiuri.co.jp/dy/national/T120210006052.htm>

A committee of the Cabinet Office's Atomic Energy Commission plans to urge the government to require that nuclear facility operators verify the identity of all workers, in an effort to protect the sites against possible terrorist attacks, it has been learned.

It has come to light that Tokyo Electric Power Co.--the operator of the crippled Fukushima No. 1 nuclear power plant--does not have an adequate system to check the identities of those who access the site.

The utility has been unable to confirm the whereabouts of 10 people who worked at the site after the March 11 earthquake and tsunami triggered the crisis at the plant.

The government is expected to finally start taking serious steps against possible terrorist attacks targeting nuclear facilities as part of its review of safety measures in response to the nuclear crisis.

After the Sept. 11, 2001, terrorist attacks in the United States, nuclear power plants around the world implemented stricter security measures against possible sabotage. The International Atomic Energy Agency revised its guideline titled "The Physical Protection of Nuclear Material and Nuclear Facilities" in February last year, which stipulates that "the identity of all persons entering [facilities] should be verified."

The United States and European countries require nuclear facility operators to examine workers' past records, including checks for criminal activity and drug abuse. In contrast, Japan has had almost no concrete discussions on this issue, mainly because of an emphasis on protecting private information.

When workers enter protected areas at nuclear facilities in Japan, they usually do so in pairs so they can keep watch on each other.

More than 3,000 workers have been engaged in daily recovery activities at the Fukushima No. 1 nuclear power plant since the outbreak of the crisis. TEPCO conducted follow-up investigations into those who had worked at the site and discovered that the whereabouts of 10 workers could not be confirmed.

Moreover, poor security in most areas of the plant except for the central control room has also been identified as a problem. Areas near power supplies and cooling systems could be easily targeted in a terrorist attack, which could possibly result in a core meltdown, according to sources.

Therefore, the committee has decided the government should make it mandatory for nuclear facility operators to verify the identity of all workers in line with the IAEA guideline. This would cover not only employees of nuclear power plant operators, but also those from other companies working for the utilities, the sources said.

(Feb. 11, 2012)

## **Over 100,000 signatures collected for Tokai nuclear plant scrapping**

MITO (Kyodo) -- Civic groups submitted to the Ibaraki governor on Friday about 51,000 signatures and a petition demanding that the Tokai No. 2 nuclear power station be scrapped, bringing the total number of signatures they have collected against the plant operation to more than 100,000.

Last November, about 50,000 signatures against the resumption of the plant's operation, halted since last year, were already submitted to Ibaraki Gov. Masaru Hashimoto.

The petition submitted Friday urges the prefectural government not to allow the Tokai power station to resume operation, saying, "We should not allow a recurrence of the irretrievable sacrifice and loss as experienced in the Fukushima Daiichi nuclear power plant accident."

Having received the signatures and the petition, Katsuyoshi Tan in charge of the prefecture's crisis management said, "The (central) government has not yet announced its decision on resuming operations (of idled nuclear reactors), so we are undecided."

Civic groups are encouraging the prefecture to make "independent" decisions instead of waiting for the central government's policies.

The groups said they used the Internet and took to the streets to gather the signatures and will try to gather more.

(Mainichi Japan) February 11, 2012

---

Dossier n°1

**February 12, 2012**

## **Fukushima No. 2 reactor temperature up to 82C, but not critical: TEPCO**

<http://mdn.mainichi.jp/mdnnews/news/20120212p2g00m0dm020000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Sunday the temperature at the bottom of the No. 2 reactor at its crippled Fukushima No. 1 nuclear plant rose further to 82 C, but the reactor has not gone critical.

While the thermometer reading at shortly after 2 p.m. marked a new high since the reactor attained a cold shutdown in December, the utility known as TEPCO said it has confirmed that sustained nuclear reactions are not taking place in the reactor as **no radioactive xenon has been detected inside its containment vessel.**

TEPCO reported the latest development immediately to the Nuclear and Industrial Safety Agency of the Economy, Trade and Industry Ministry as the temperature exceeded the limit of 80 C designated by the company's safety regulation for maintaining a cold shutdown, it said.

It is considered desirable to keep the temperature below 80 C, while the bottom of a reactor pressure vessel must be kept below 100 C in a stable cold shutdown, in view of the margin of error of thermometers, according to TEPCO officials.

TEPCO plans to increase the amount of water injected as a coolant by 3 tons per hour and pour 1 ton of boric acid later Sunday to prevent any event of criticality.

As a reason for what is causing the temperature rise, TEPCO said it is possible the water flow is unstable and thus failing to cool the reactor stably, while also saying it will check the thermometer for any irregularities. The temperature was measured at 78.3 C at 10 a.m. and fell to 75.4 C at 11 a.m.

The decline occurred after TEPCO on Saturday night increased the amount of water being injected into the reactor to 14.6 tons per hour from 13.6 tons, after seeing the temperature rise to 73.3 C at 9 p.m. It reached 74.9 C at 11 p.m. Saturday. The temperature readings began rising on Feb. 1.

One of the three thermometers at the bottom of the reactor's pressure vessel stayed between 67 C and 71 C from Friday evening to Saturday evening after hitting 73.3 C on Monday.

Readings from two other thermometers that check the temperature at the bottom of the No. 2 reactor vessel were around 35 C, TEPCO said.

The Nos. 1 to 3 reactors at the Fukushima No. 1 plant in northeastern Japan experienced meltdowns as a result of the loss of key cooling functions in the wake of the devastating earthquake and tsunami on March 11 last year.

## Temperature rising at No.2 reactor

[http://www3.nhk.or.jp/daily/english/20120212\\_12.html](http://www3.nhk.or.jp/daily/english/20120212_12.html)

The temperature at the No.2 reactor of the Fukushima Daiichi nuclear power plant **keeps rising even after the injection of more cooling water on Saturday night.**

The plant operator, Tokyo Electric Power Company, or TEPCO, says a thermometer at the bottom of the reactor registered 78.3 degrees Celsius at 10 AM on Sunday.

The reading began to rise in late January to around 70 degrees. TEPCO pumped in more water to push down the temperature, but it rose again on Saturday night to 74.9 degrees.

The temperature continued to climb on Sunday morning to hit its highest level since last December, when the government and TEPCO declared all the reactors were at a state of cold shutdown, with their temperatures below 100 degrees.

**TEPCO denied the possibility of nuclear criticality**, saying 2 other thermometers at the bottom of the reactor show temperatures at around 35 degrees.

It adds that continuous nuclear fission would generate radioactive xenon, but gas samples collected from near the reactor found the element below the detection limit.

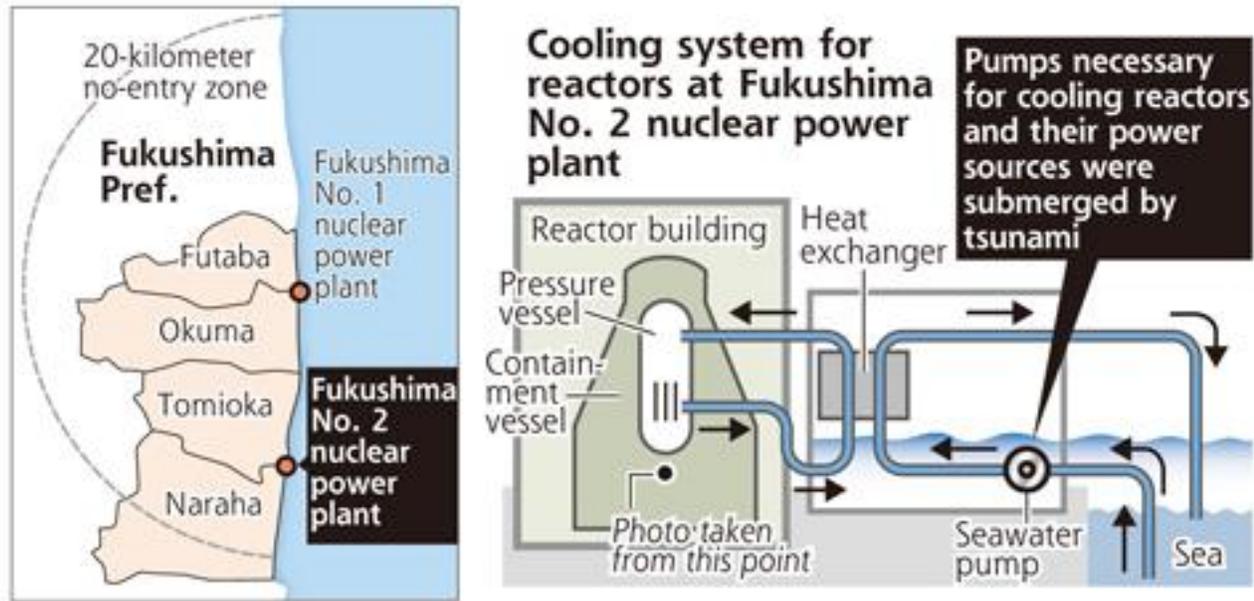
**TEPCO is set to dump in boric acid to prevent any nuclear criticality later on Sunday and increase the volume of cooling water by 3 tons per hour.**

Under new guidelines, **the company must keep reactor temperatures at 80 degrees or below, given thermometers' margin of error of up to 20 degrees.**

February 10, 2012

## Fukushima No. 2 plant was 'near meltdown'

The Yomiuri Shimbun



FUKUSHIMA--The Fukushima No. 2 nuclear power plant was "near meltdown" after being hit by tsunami following the Great East Japan Earthquake on March 11, according to the head of the plant.

The No. 2 plant, on the border of Naraha and Tomioka towns in Fukushima Prefecture, was opened to the media Wednesday for the first time since the disaster. It is **12 kilometers from the Fukushima No. 1 nuclear power plant**, which suffered a meltdown. Both facilities are operated by Tokyo Electric Power Co.

Plant chief Naohiro Masuda, in charge of plant operations since the crisis, told reporters Wednesday, "The No. 2 plant almost suffered the same fate as No. 1 [which led to a severe crisis]."

On March 11, a **9-meter-high tsunami** struck the No. 2 plant, while the No. 1 plant was hit by a 13-meter-high tsunami. The tsunami caused the No. 2 plant's seawater pumps, used to cool reactors, to fail. Of the plant's four reactors, three were in danger of meltdown.

**Luckily, one external high-voltage power line still functioned**, allowing plant staff in the central control room to monitor data on internal reactor temperatures and water levels.

By March 15, the No. 2 plant's four reactors reached a state of cold shutdown without any leakage of radioactive materials.

"[At that point, the situation at the No. 2 plant] was considerably different from the No. 1 plant where it was difficult to know what was going on," Masuda, 53, said.

However, **despite intense efforts by all employees, it took a long time to stabilize the reactors.**

On March 11, **about 2,000 employees** of the No. 2 plant worked to stabilize the reactors. Some employees connected **200-meter sections of cable, each weighing more than a ton, over a distance of nine kilometers.**

Masuda noted the timing of the disaster was critical in saving the plant.

**"We were lucky it happened on a Friday afternoon [and not on a weekend],"** he said.

Masuda pointed out only 40 employees would have been at the plant if the earthquake had occurred in the evening or on a weekend.

"[In that case] it would be have been difficult for us to deal with the disaster," he said.

The Fukushima prefectural government conducted an on-site inspection at the No. 2 plant on Wednesday and repeated a request to TEPCO to decommission the facility.

Masuda did not elaborate and said, "At the moment, I can only say we'll maintain a state of cold shutdown."

The No. 2 plant's No. 1 reactor began operating in 1982. Following the Great East Japan Earthquake, a Nuclear Emergency Situation Declaration was issued for both the No. 1 and No. 2 plants. The declaration was lifted for the No. 2 plant in December.

**February 09, 2012**

## **Prefectural team makes 1st inspection of Fukushima No. 2 nuke plant**

<http://mdn.mainichi.jp/mdnnews/news/20120209p2a00m0na009000c.html>

A team of Fukushima prefectural officials visited the Fukushima No. 2 nuclear plant on Feb. 8, marking the first prefectural inspection of the plant since the March 11, 2011 disasters forced it to shut down.

"Right now, the most important tasks are to keep the reactors in cold shutdown and cool the spent fuel rods while preparing safety measures to deal with any unexpected problems," said the deputy head of

the prefecture's living environment division following the inspection. "I felt that work there to maintain emergency power supplies and prevent flooding of the plant buildings was progressing."

The reactors at the Fukushima No. 2 plant -- about 11 kilometers south of the disaster-struck Fukushima No. 1 nuclear complex -- stopped automatically when the Great East Japan Earthquake hit and are now in cold shutdown, but the plant was very nearly the site of a second nuclear crisis.

In circumstances similar to those at the No. 1 plant, the cooling systems in three of Fukushima No. 2's four reactors failed when the March 11 tsunami hit and knocked out their backup generators. Unlike the situation at the No. 1 plant, however, staff at the No. 2 station managed to patch into external power before the reactor cores could seriously overheat.

In December last year, the government's Nuclear and Industrial Safety Agency officially declared the nuclear emergency at the plant over, while Tokyo Electric Power Co. -- operator of both the Fukushima No. 1 and 2 plants -- has submitted a plan to the agency for maintaining cold shutdown.

Fukushima Prefecture is calling for the shutdown of all nuclear stations in the prefecture, including Fukushima No. 2.

However, Fukushima No. 2 plant director Naohiro Masuda suggested it's too soon to discount restarting the reactors there, saying, "Under present circumstances, it's impossible to say how the reactors here will be dealt with in the future. For now, we have to maintain a steady cold shutdown by transitioning from the temporary cooling equipment we now have in place to proper, permanent equipment."

## Temperature inside reactor stops rising

<http://www.yomiuri.co.jp/dy/national/T120208005861.htm>

The abnormal rise in temperature in a reactor at the Fukushima No. 1 nuclear power plant has stopped, apparently because more water has been injected into the crippled reactor, according to Tokyo Electric Power Co.

TEPCO said the temperature at the base of the No. 2 reactor's pressure vessel had **fallen to 68.5 C at 5 p.m. Tuesday after earlier peaking at 73 C**. However, **the cause of the increased temperature remained unclear**.

Junichi Matsumoto, acting head of TEPCO's headquarters regarding nuclear plant locations, said increasing the amount of water injected hourly into the reactor by three tons to 13.5 tons since 4:30 a.m. Tuesday seemed to be having an effect.

"[The temperature] has begun falling after peaking," Matsumoto said.

Keeping the temperature at the base of the reactors at 100 C or less is a stable state known as cold shutdown. Reaching cold shutdown was a precondition for enabling the government to declare in December that the crisis at the nuclear plant had been brought under control.

TEPCO's guideline stipulates the temperature should be kept at 80 C or lower to allow for possible measurement errors.

The reactor will need to be monitored carefully because the condition inside the reactor's inner part containing melted nuclear fuel is not clear, and the reason for the temperature rise has yet to be pinpointed.

Currently, cooling water is injected into the No. 2 reactor via two piping systems--the coolant water supply system that can deliver water to the vessel's base, and the reactor core water spray system that aims water directly at the reactor core.

The temperature in the pressure vessel's base began rising from 45 C around Jan. 26, when the water injection balance of the two systems was changed several times during pipe repair work.

One of three thermometers installed around the base recorded a temperature increase of nearly 30 C over a little more than 10 days, reaching as high as 73 C at one time.

According to TEPCO, the volume of water being injected was far less than usual. It is possible that the way water was injected into the reactor might have changed around the time of the pipe repairs, and that water did not reach some of the fuel.

TEPCO also speculated that the fuel, which had melted and then solidified, might have cracked due to some shock or dropped down and changed shape.

[February 08, 2012](#)

## **TEPCO injects more water into reactor**

<http://www.yomiuri.co.jp/dy/national/T120207005567.htm>

Tokyo Electric Power Co. has increased the amount of water being injected into the No. 2 reactor at the Fukushima No. 1 nuclear power plant because the temperature at the base of the pressure vessel has been rising, the company said Tuesday.

The 13.5 tons being injected each hour to cool the reactor--an increase of three tons--is the most since the government announced the crippled plant had achieved a stable state of cold shutdown in December.

According to the utility, after increasing the amount of water being injected at 4:30 a.m. Tuesday, the temperature at the vessel's base has been fairly constant: It was 72.2 C at 5 a.m. and 69 C at 10 a.m. The temperature at the base of the vessel had been 45 C as of Jan. 27, but began rising earlier this month. TEPCO is investigating the cause of the higher temperature.

# Temperature decreasing inside Fukushima reactor

[http://www3.nhk.or.jp/daily/english/20120208\\_26.html](http://www3.nhk.or.jp/daily/english/20120208_26.html)

Tokyo Electric Power Company says it has been able to lower the temperature inside the No.2 reactor at the troubled Fukushima Daiichi nuclear power plant by increasing the amount of water being injected into it.

TEPCO had been struggling to deal with rising temperatures inside the reactor. A thermometer located at the bottom of the reactor read 45 degrees Celsius on January 27th, but rose to over 70 degrees on Sunday. The cause is unknown, and two other thermometers at the reactor have shown no such increase.

TEPCO said on Wednesday that the temperature inside the reactor was 66.7 degrees at 5 AM, 5.5 degrees lower than a day earlier. The temperature gradually declined after the company increased the rate of water injection by 3 tons to 13.5 tons per hour on Tuesday.

Such a high rate of injection has not been used since just after the nuclear crisis began last March.

TEPCO says the temperature inside the reactor rose slightly to 68 degrees at 10 AM, but it is still dropping overall.

The utility cannot determine the exact situation inside the reactor or the cause of the temperature rise.

The utility says it will continue to monitor the situation closely while maintaining the current rate of water injection.

## Nuke dangers nowhere near resolved: Kan's crisis adviser

By [REIJI YOSHIDA](http://www.japantimes.co.jp/text/nn20120208f1.html) - <http://www.japantimes.co.jp/text/nn20120208f1.html>

In December, Prime Minister Yoshihiko Noda announced the "conclusion" of the meltdown crisis at the Fukushima No. 1 nuclear plant, saying Tokyo Electric Power Co. was managing to keep the three crippled reactors cool, as well as the facility's spent fuel pools.

But a former special adviser to Naoto Kan, who was prime minister when the crisis started, warned that the situation is far from resolved and said Fukushima has exposed a raft of serious nuclear problems that Japan will have to confront for years.

**"I would say (the crisis) just opened Pandora's box,"** Hiroshi Tasaka, who has a doctorate in nuclear engineering and is now a professor at Tama University, said in a recent interview with The Japan Times.

He was one of a select group who glimpsed the secret worst-case scenario document written up by the Japan Atomic Energy Commission on March 25 that was later reportedly quashed by the government.

According to the scenario, the biggest risk during the meltdown crisis wasn't the reactors themselves but the **spent fuel pools** sitting atop them, particularly the one above reactor 4, which still contains about 1,500 nuclear fuel assemblies, Tasaka said.

Unlike reactors 1, 2 and 3, the No. 4 unit was offline for regular checks when disaster struck on March 11 and thus didn't suffer a meltdown. But its fuel rods were in the pool outside the reactor, and its coolant water fell dangerously low.

Adding to the danger is that the **fuel pool is now directly exposed to the outside environment** after a hydrogen explosion blew off the upper part of the reactor building on March 15, Tasaka noted.

The potential heat from the pool was also much higher than other pools because 204 of the 1,535 assemblies were still "new ones" that had been temporarily removed from reactor 4 for regular checks.

The Fukushima crisis has highlighted the dangers of spent fuel pools, which are outside the robust primary containment vessels of the reactors themselves, Tasaka said.

**Under the current circumstances, the nation has no prospect of starting up the experimental high-level nuclear waste processing facility in Rokkasho, Aomori Prefecture, because of both technical difficulties and the sentiments of antinuclear activists.**

This means utilities must store their spent fuel assemblies in cooling pools at their respective reactor sites as a "temporary measure." This situation greatly increased the danger at Fukushima No. 1 on March 11.

"The storage capacities of the spent fuel pools at the nation's nuclear power plants are reaching their limits," Tasaka wrote in a new book, "Kantei Kara Mita Genpatsu Jiko No Shinjitu" ("The Truth About the Nuclear Accident as Viewed From the Prime Minister's Office").

According to Tasaka, the utilities' fuel pools were about 70 percent full on average in 2010, but the figure was 80 percent at Fukushima No. 1.

The makeshift cooling systems set up at Fukushima No. 1 to stabilize the stricken reactors and fuel pools have greatly reduced the possibility of another catastrophe, Tasaka said, but the ad hoc system for decontaminating the coolant water is nevertheless generating large amounts of highly contaminated waste every day.

Making matters worse, the government doesn't have any place to permanently store it, he wrote.

Tasaka is also deeply concerned about the "groundless optimism" displayed by bureaucrats and business leaders as they rush to restart dozens of reactors that remain halted for safety checks since March 11.

"I understand quite well the intentions of the government, which now wants to send out a message of hope. But at this stage, all the risks should be put on the table," he said.

The nation's nuclear regulators must carry out drastic reforms to regain the people's trust. This is an imperative for the government if it wants to keep pushing nuclear power, Tasaka said.

He recalled viewing the government's worst-case scenario in late March. He was officially appointed special adviser to the prime minister on March 29.

The document detailed a hypothetical Fukushima crisis worst case: Eventual contamination from the plant would require the government to assist residents in the Tokyo area to evacuate if they wanted to voluntarily "migrate," based on the same evacuation protocols adopted for the 1986 Chernobyl accident.

The scenario assumed another hydrogen explosion would occur in the reactor 1 building and radiation would force all of the workers at the plant to evacuate.

All of the pools storing hundreds of nuclear fuel assemblies would eventually lose their cooling ability and the assemblies would melt down and breach the pools.

According to Kyodo News, the simulation was "so shocking" that top government officials decided to keep the paper secret by treating it as a mere personal document of Japan Atomic Energy Commission Chairman Shunsuke Kondo, who compiled the simulation. The government only gave it official recognition at the end of December, according to Kyodo.

More than 10 months after he saw the worst-case scenario paper, Tasaka is still not sure if such scary information should immediately be made public during a nuclear plant crisis.

The assumed worst case was extreme and people did not need to immediately flee the Tokyo area even in March or April, Tasaka said. Disclosing the simulation could have caused panic in the capital, he said.

Tasaka was obliged to keep secret what he learned through his work at the prime minister's office and was not in a position to decide what information was to be made public during the crisis.

He said he decided to start talking about the worse-case scenario only after Kan mentioned some of its highlights during an interview with the media in September.

Tasaka believes the media and government should lay some ground rules in advance on what sensitive information should be made clear in a nuclear crisis.

February 07, 2012

## **Temperature remains high at damaged reactor**

[http://www3.nhk.or.jp/daily/english/20120207\\_21.html](http://www3.nhk.or.jp/daily/english/20120207_21.html)

An unknown rise in temperature at one of the reactors at the damaged Fukushima nuclear plant is troubling its operator. Tokyo Electric says the temperature hasn't gone down even after it increased the volume of cooling water on Tuesday.

One of the thermometers at the bottom of reactor No. 2 at the Fukushima Daiichi plant gradually rose to about 70 degrees Celsius since January 27th. It had stayed around 45 degrees before.

In an effort to lower the temperature, the operator increased the amount of water sprayed on the nuclear fuel by 3 tons to 13.5 tons per hour Tuesday morning.

But Tokyo Electric said readings were down only about 3 degrees after some 5 hours of operation, hardly showing signs of improvement.

The utility said the flow of water in the reactor may have changed after plumbing work in late January, causing difficulties in cooling part of the melted nuclear fuel.

It added that no temperature rise has been observed at 2 other thermometers in the same reactor and that it will continue to carefully monitor the reactor.

TEPCO has been unable to visually confirm conditions inside the reactors since the nuclear disaster last March because of high radiation.

## **TEPCO increases water injection in reactor showing temperature rise**

<http://mdn.mainichi.jp/mdnnews/news/20120207p2g00m0dm147000c.html>

TOKYO (Kyodo) -- Workers at the crippled Fukushima Daiichi power plant on Tuesday raised the amount of water injected into the No. 2 reactor to the highest level since the plant achieved a stable state of cold shutdown in December, as concerns grew over the rising temperature recently detected at the bottom of the reactor's pressure vessel.

Following the move, the temperature measured at the same spot on the vessel dropped to 69.0 C at 10 a.m. from 72.2 C logged at 5 a.m., Junichi Matsumoto, spokesman for plant operator Tokyo Electric Power Co. told a press conference, but added that the company needs more time to assess the effect of the latest step.

"It is difficult to judge whether the temperature is rising or dropping unless we monitor the development for about a day," Matsumoto said.

TEPCO said it increased the amount of injected water at 4:24 a.m. Tuesday. **The No. 2 reactor is now being cooled with the injection of 13.5 tons of water per hour, up from 10.5 tons.**

Nuclear disaster minister Goshi Hosono told a press conference that TEPCO is making utmost efforts to lower the temperature.

Touching on last month's change in the amount of coolant water at the No. 2 reactor for pipe replacement, which is believed to have affected the temperature, Hosono said, "This was a process to enhance stability, but it has become clear that there is a possibility of (replacement work) creating an unstable situation temporarily."

"We have to consider in an even more careful way," he said.

TEPCO's Matsumoto said he believes the No. 2 reactor is maintaining a state of cold shutdown, because the temperature is not rising continuously. Readings on two other thermometers checking the temperature of the bottom of the pressure vessel were around 40 C as of 10 a.m.

A cold shutdown is defined by the Japanese government as a situation in which the bottom part of a reactor pressure vessel is kept below around 100 C and radiation exposure from the release of radioactive substances is significantly held down.

At the Fukushima Daiichi plant in northeastern Japan, the Nos. 1 to 3 reactors have suffered meltdowns as a result of the loss of their key cooling functions in the wake of the devastating earthquake and tsunami on March 11 last year.

TEPCO is now injecting water into the three crippled reactors through a new water circulation system installed after the accident.

February 06, 2012

## Temperature at No.2 reactor remains high

[http://www3.nhk.or.jp/daily/english/20120206\\_29.html](http://www3.nhk.or.jp/daily/english/20120206_29.html)

Attempts to cool the temperature in the No. 2 reactor of the disabled Fukushima Daiichi nuclear power plant have only partially succeeded despite the injection of more cooling water.

The temperature in the reactor has gradually risen from about 45 degrees Celsius registered on January 27th.

In the past 4 days, the temperature has climbed more than 20 degrees to above 70 degrees.

The plant operator, Tokyo Electric Power Company began pumping more water into the reactor at around 1:30 AM on Monday. But at 7 AM, the temperature stood at 73.3 degrees and at 5 PM, 69.2 degrees.

The utility firm says 2 other thermometers elsewhere in the reactor gave readings of about 44 degrees.

TEPCO says the rise in temperatures indicate that the flow of water in the reactor may have changed direction after plumbing work, and is no longer able to properly cool down the melted down nuclear fuel.

However, the utility says radioactive xenon has not been detected in gases around the reactor, and that nuclear criticality is not taking place.

The government and TEPCO announced in December that the 3 troubled reactors at the Fukushima plant had reached a state of cold shutdown with their temperatures below 100 degrees. But the situation inside the reactors remains unclear.

New regulations established after the state of cold shutdown was achieved require the utility to keep temperatures inside the reactors below 80 degrees.

TEPCO says it will increase the amount of water being injecting into the reactor to see if the temperature in the reactor drops.

The government's Nuclear and Industrial Safety Agency says there is a need for a comprehensive study to determine whether the reactor is actually in a state of cold shutdown. It says a brief reading of over 80 degrees on one of the thermometers does not necessarily mean there is trouble in the cooling system.

Meanwhile, the Chairman of the Nuclear Safety Commission, Haruki Madarame, says that a recurrence of nuclear criticality is unlikely.

But he criticized TEPCO and the nuclear safety agency for their handling of the matter. He says they are failing to properly explain the state of the reactors to the people.

## Temperature rises at Fukushima No.2 reactor

[http://www3.nhk.or.jp/daily/english/20120206\\_17.html](http://www3.nhk.or.jp/daily/english/20120206_17.html)

The operator of the Fukushima Daiichi nuclear plant says the temperature in the No.2 reactor remains high despite the injection of additional water.

A thermometer at the bottom of the reactor showed 73.3 degrees Celsius on Monday morning. It was around **45 degrees on January 27th and 71.7 degrees at 4 PM on Sunday.**

Tokyo Electric Power Company began injecting 10.6 tons of water per hour from around 1:30 AM on Monday. **That's one ton more per hour than before.**

The utility says 2 other thermometers placed at the bottom of the reactor have been giving readings of about 44 degrees.

It says the flow of water in the reactor may have changed after plumbing work, causing difficulties in cooling the nuclear fuel.

In December last year, the government and TEPCO declared the 3 reactors at the Fukushima Daiichi plant had been successfully put into a state of cold shutdown as their temperatures had fallen below 100 degrees. But the situation inside the reactors remains unknown.

TEPCO says the regulations set after the state of cold shutdown was achieved require the utility to keep temperatures inside the reactors below 80 degrees.

So it says the No.2 reactor is still in the state of cold shutdown.

February 04, 2012

## More leaks found at crippled Japan nuclear plant

<http://mdn.mainichi.jp/mdnnews/news/20120204p2g00m0dm015000c.html>

TOKYO (AP) -- Leaks of radioactive water have become **more frequent** at Japan's crippled nuclear power plant less than two months after it was declared basically stable.

The problem underlines the continuing challenges facing Tokyo Electric Power Co. as it attempts to keep the Fukushima Dai-ichi nuclear plant under control. A massive earthquake and tsunami badly damaged the plant last March, resulting in the melting of three reactor cores.

**Workers spotted a leak Friday at a water reprocessing unit which released enough beta rays to cause radiation sickness**, TEPCO spokesman Junichi Matsumoto said. He said no one was injured and the leak stopped after bolts were tightened on a tank.

Matsumoto said TEPCO also found that 8.5 tons of radioactive water had leaked earlier in the week after a pipe became detached at Unit 4, one of the plant's six reactors. The company earlier had estimated that only a few gallons (liters) had leaked.

He said officials are investigating the cause of that leak, but that it was unlikely the pipe had been loosened by the many aftershocks that have hit the plant.

**The structural integrity of the damaged Unit 4 reactor building has long been a major concern among experts because a collapse of its spent fuel cooling pool could cause a disaster worse than the three reactor meltdowns.**

Cold winter weather has also caused water inside pipes to freeze elsewhere at the plant, resulting in leaks in at least 30 locations since late January, Matsumoto said.

Officials have not detected any signs of radioactive water from the leaks reaching the surrounding ocean. **Sandbag walls have been built around problem areas as a precaution.** [don't worry, everything is safe]

More than 100,000 people around the plant fled their homes after the disaster due to radiation fears.

The government announced in December that the plant had reached "a cold shutdown condition" and is now essentially stable.

On Monday, six inspectors from the government's Nuclear and Industrial Safety Agency will begin an inspection of the plant to ensure its continued stability. They will study the reactors' cooling functions and measures to prevent explosions and nuclear chain reactions, among other steps to keep the plant under control, officials said.

February 03, 2012

NHK World English

# Safety checks to begin at Fukushima Daiichi plant

Japan's nuclear safety agency will begin inspecting the Fukushima Daiichi nuclear plant from Monday to see if it can safely remain in a state of cold shutdown.

Officials from the Nuclear and Industrial Safety Agency plan to check equipment and contingency preparations by examining manuals and interviewing workers during their three-week inspections.

Among the seven types of equipment to be checked is a reactor cooling system that recycles decontaminated water from the facility.

Another is a nitrogen-injection system to prevent hydrogen explosions within the disabled reactors.

Agency officials say they will open the onsite inspections to the media. The checks will be the first safety tests required under law since the March 11th accident.

The government declared on December 16th that the Fukushima Daiichi reactors had achieved a state of cold shutdown.

This means reactor temperatures have stabilized below 100 degrees Celsius, and the release of radioactive substances has been contained.

February 02, 2012

## TEPCO says 8.5 tons of water leaked from Fukushima No. 4 reactor

<http://mdn.mainichi.jp/mdnnews/news/20120202p2g00m0dm028000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that 8.5 tons of radioactive water leaked from the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant because a pipe connected to the reactor dropped off, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, water was found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The total amount of leakage from the reactor was initially estimated to be 6 liters, but the utility revised the figure later Wednesday, adding that the leakage appears to have started at around 5 p.m. Monday.

The pipe may have dropped off because water inside increased in volume as it turned into ice due to cold temperatures.

The utility plans to check whether there are similar cases in the other crippled reactors.

The Nos. 1 to 3 reactors have fuel inside, which is believed to have melted in the early phase of the nuclear crisis because the plant lost its cooling functions following the natural disasters.

The No. 4 unit also lost the function to cool its spent fuel pool, but no serious damage is believed to have occurred in the fuel stored there.

## **Radioactive water leaking from inside Fukushima No. 4 reactor**

<http://mdn.mainichi.jp/mdnnews/news/20120201p2g00m0dm150000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that it has found radioactive water leaking from a broken pipe connected to the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, about 6 liters of water were found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The utility is looking into the cause of the damage to the pipe and believes it may have some connection with the recent cold weather or the explosions that took place at the plant in the early phase of the nuclear crisis.

The density of radioactive substances included in the water is estimated at 35.5 becquerels per cubic centimeter, according to TEPCO.

January 31, 2012

NHK World English

## **Govt plans Fukushima decontamination test-run**

Japan's Environment Ministry has unveiled a model project designed to decontaminate areas with high levels of radiation around the crippled Fukushima Daiichi nuclear plant.

In a test-run for a wider clean-up, the ministry will first try to decontaminate 3 closed sections of a national expressway running through the no-entry zone near the plant.

The ministry last week announced a 2-year plan to decontaminate by March 2014 some evacuation zones where radiation levels have dropped below 50 millisieverts per year.

Radiation levels over a total 5 kilometers of expressway slated for the new project have ranged from a little to substantially above 50 millisieverts a year.

The ministry plans to assess the project's effectiveness in a test-run from the middle of March through July.

January 30, 2012

## **More water leaks found at Fukushima nuclear plant**

NHK World English

More water leaks have been found at the troubled Fukushima Daiichi nuclear power plant.

Tokyo Electric Power Company told reporters on Monday morning that it has discovered 2 additional water leaks at the nuclear plant.

This comes after it was announced on Sunday that **nearly 8 tons of water** was found to have leaked in 14 locations at the plant.

One of the 2 new findings involves about 30 liters of water that has leaked from a device that is removing salt from contaminated water. The other leak is from a valve of a pipe that is injecting water into a reactor.

TEPCO says leaked water has neither spilled out of the plant, nor flowed into the sea.

The utility firm is trying to determine whether water in some of the pipes froze and cracked the pipes, or loosened the pipes' connections.

It plans to quickly implement preventive measures, including carrying out more patrols early in the morning and **wrapping insulation around the pipes and other equipment. !!!!!!!**

The temperature on Monday morning around the plant dropped to minus 8.7 degrees Celsius.

January 29, 2012

## **TEPCO ordered to prevent water leaks at reactors**

## NHK World English

Japan's nuclear safety agency has instructed the operator of the Fukushima Daiichi nuclear plant to prevent water leaks at the plant.

The move follows the discovery of water leaks on Sunday in 14 locations at the damaged plant.

Tokyo Electric Power Company says about 40 liters of water leaked from a cooling system for a spent fuel pool at the No. 4 reactor, forcing the system to stop for one hour and 40 minutes. The utility also says that 7 tons of water leaked from the No. 6 reactor.

The company says that the leakages apparently occurred after frozen water in pipes loosened the pipes' connections or broke some parts.

The company adds that the leaked water did not contain radioactive materials or had already been processed to remove them.

Similar water leaks occurred in 3 locations at the plant on the previous day.

Responding to the agency's call for preventive measures, TEPCO has decided to conduct frequent checks on early mornings when temperatures often drop below zero and protect pipes from the cold with insulation materials or heaters, if necessary.

The utility says measures are already in place to protect critical systems, such as those used for cooling reactors.

## **Frozen water blamed for leaks at Fukushima plant**

Tokyo Electric Power Company has found water leaks in 14 locations at the Fukushima Daiichi nuclear plant.

The utility says the leaks apparently occurred after frozen water ruptured the pipes and the leaked water did not contain any radioactive materials.

Tokyo Electric said about 40 liters of water leaked from a cooling system for a spent fuel pool at the No.4 reactor on Sunday, but the flow stopped when workers closed the valve.

The company said **the leak forced the system to stop for one hour and 40 minutes**, but the pool's temperature did not rise.

**Tokyo Electric said 7 tons of water had leaked from the No.6 reactor.**

The temperature fell to minus 8 degrees Celsius on Sunday morning near the damaged plant.

Ruptured pipes caused 3 water leaks on the previous day.

Tokyo Electric official Junichi Matsumoto admitted that **the utility failed to take sufficient steps to prevent frozen pipes**. He said it will take quick action to protect the pipes from the cold weather.

---

## Dossier 2

February 11, 2012

### Radioactive waste site opened to media in Okuma

<http://www.yomiuri.co.jp/dy/national/T120210006056.htm>

OKUMA, Fukushima--The government, for the first time, has allowed the media to cover operations to move waste contaminated by radioactive substances to a **baseball stadium being used for temporary storage in the Ottozawa district in Okuma**, Fukushima Prefecture.

The contaminated waste was collected in the government-led model decontamination project conducted in the town.

On Thursday, the bags containing the waste were moved to the site and piled in two designated areas at the town-run stadium, about three kilometers away from the power plant.

Radiation levels exceeded 70 microsieverts per hour in certain areas of the Ottozawa district, the highest level among the government-monitored locations.

Workers in protective clothing and masks used cranes to pile up **bags with the contaminated soil and grass, each weighing about a ton**.

A worker said, "Protective clothing hampers our breathing and it's tough to work because my hands are freezing in these rubber gloves."

Before placing the bags, **four layers of sheeting, including a water-resistant sheet, were spread on the ground to block radiation leaks**. [since when has water-resistant material been able to block radiation ?]

**Later, the pile will be covered by three layers of sheets and soil.**

An official at the Japan Atomic Energy Agency, which handled the operation, said, "It's possible to block 98 percent of radiation [using this system]."

February 09, 2012

## Radioactive waste disposal site unveiled to reporters

<http://mdn.mainichi.jp/mdnnews/news/20120209p2a00m0na013000c.html>

A temporary storage site for radioactive waste generated under a model decontamination project around the disaster-struck Fukushima No. 1 nuclear plant was unveiled to reporters on Feb. 9.

To prevent radioactive materials from contaminating groundwater, temporary disposal sites are lined with waterproof sheets. Materials produced in the decontamination operation -- including earth and plant matter -- are categorized, packed into thick bags and lifted into the disposal site by crane.

"We are building these (temporary disposal) sites in such a way that, even when full of waste, radiation levels won't rise in the surrounding area," a Japan Atomic Energy Agency official in charge of the operation stated.

The model decontamination project started in November last year in 12 municipalities in and around the exclusion zone to find the most effective decontamination and disposal techniques.

 [Click here for the original Japanese story](#)

February 08, 2012

## Nuke dangers nowhere near resolved: Kan's crisis adviser

By [REIJI YOSHIDA](#) - <http://www.japantimes.co.jp/text/nn20120208f1.html>

In December, Prime Minister Yoshihiko Noda announced the "conclusion" of the meltdown crisis at the Fukushima No. 1 nuclear plant, saying Tokyo Electric Power Co. was managing to keep the three crippled reactors cool, as well as the facility's spent fuel pools.

But a former special adviser to Naoto Kan, who was prime minister when the crisis started, warned that **the situation is far from resolved** and said Fukushima has exposed a raft of serious nuclear problems that Japan will have to confront for years.

**"I would say (the crisis) just opened Pandora's box,"** Hiroshi Tasaka, who has a doctorate in nuclear engineering and is now a professor at Tama University, said in a recent interview with The Japan Times.

He was one of a select group who glimpsed the secret worst-case scenario document written up by the Japan Atomic Energy Commission on March 25 that was later reportedly quashed by the government.

According to the scenario, the biggest risk during the meltdown crisis wasn't the reactors themselves but the spent fuel pools sitting atop them, particularly the one above reactor 4, which still contains about 1,500 nuclear fuel assemblies, Tasaka said.

Unlike reactors 1, 2 and 3, the No. 4 unit was offline for regular checks when disaster struck on March 11 and thus didn't suffer a meltdown. But its fuel rods were in the pool outside the reactor, and its coolant water fell dangerously low.

Adding to the danger is that the fuel pool is now directly exposed to the outside environment after a hydrogen explosion blew off the upper part of the reactor building on March 15, Tasaka noted.

The potential heat from the pool was also much higher than other pools because 204 of the 1,535 assemblies were still "new ones" that had been temporarily removed from reactor 4 for regular checks.

The Fukushima crisis has highlighted the dangers of spent fuel pools, which are outside the robust primary containment vessels of the reactors themselves, Tasaka said.

**Under the current circumstances, the nation has no prospect of starting up the experimental high-level nuclear waste processing facility in Rokkasho, Aomori Prefecture, because of both technical difficulties and the sentiments of antinuclear activists.**

This means utilities must store their spent fuel assemblies in cooling pools at their respective reactor sites as a "temporary measure." This situation greatly increased the danger at Fukushima No. 1 on March 11.

"The storage capacities of the spent fuel pools at the nation's nuclear power plants are reaching their limits," Tasaka wrote in a new book, "Kantei Kara Mita Genpatsu Jiko No Shinjitu" ("The Truth About the Nuclear Accident as Viewed From the Prime Minister's Office").

According to Tasaka, the utilities' fuel pools were about 70 percent full on average in 2010, but the figure was 80 percent at Fukushima No. 1.

The makeshift cooling systems set up at Fukushima No. 1 to stabilize the stricken reactors and fuel pools have greatly reduced the possibility of another catastrophe, Tasaka said, but **the ad hoc system for decontaminating the coolant water is nevertheless generating large amounts of highly contaminated waste every day.**

Making matters worse, **the government doesn't have any place to permanently store it**, he wrote.

Tasaka is also deeply concerned about the "groundless optimism" displayed by bureaucrats and business leaders as they rush to restart dozens of reactors that remain halted for safety checks since March 11.

"I understand quite well the intentions of the government, which now wants to send out a message of hope. But at this stage, all the risks should be put on the table," he said.

The nation's nuclear regulators must carry out drastic reforms to regain the people's trust. This is an imperative for the government if it wants to keep pushing nuclear power, Tasaka said.

He recalled viewing the government's worst-case scenario in late March. He was officially appointed special adviser to the prime minister on March 29.

The document detailed a hypothetical Fukushima crisis worst case: Eventual contamination from the plant would require the government to assist residents in the Tokyo area to evacuate if they wanted to voluntarily "migrate," based on the same evacuation protocols adopted for the 1986 Chernobyl accident.

The scenario assumed another hydrogen explosion would occur in the reactor 1 building and radiation would force all of the workers at the plant to evacuate.

All of the pools storing hundreds of nuclear fuel assemblies would eventually lose their cooling ability and the assemblies would melt down and breach the pools.

According to Kyodo News, **the simulation was "so shocking" that top government officials decided to keep the paper secret** by treating it as a mere personal document of Japan Atomic Energy Commission Chairman Shunsuke Kondo, who compiled the simulation. The government only gave it official recognition at the end of December, according to Kyodo.

More than 10 months after he saw the worst-case scenario paper, Tasaka is still not sure if such scary information should immediately be made public during a nuclear plant crisis.

The assumed worst case was extreme and people did not need to immediately flee the Tokyo area even in March or April, Tasaka said. Disclosing the simulation could have caused panic in the capital, he said.

Tasaka was obliged to keep secret what he learned through his work at the prime minister's office and was not in a position to decide what information was to be made public during the crisis.

He said he decided to start talking about the worse-case scenario only after Kan mentioned some of its highlights during an interview with the media in September.

**Tasaka believes the media and government should lay some ground rules in advance on what sensitive information should be made clear in a nuclear crisis.**

February 06, 2012

## **Govt to create more decontamination bases**

[http://www3.nhk.or.jp/daily/english/20120206\\_11.html](http://www3.nhk.or.jp/daily/english/20120206_11.html)

The Environment Ministry plans to decontaminate more public facilities in Fukushima Prefecture to use them as bases for cleaning up radioactive substances.

The government wants to decontaminate no-entry and evacuation zones around the damaged Fukushima Daiichi plant. It hopes to create a safe environment so that residents can return to the area.

The ministry has designated 16 facilities, including schools and assembly halls, as bases for decontamination. Four municipal offices were cleaned up in December.

The operation is to be completed next month.

The government plans to begin radiation monitoring in these zones in a few months, and begin the decontamination process this summer.

February 04, 2012

## **Tokyo gov't unveils transport of incinerated radioactive sludge from sewage plant**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na006000c.html>

Tokyo on Feb. 2 invited reporters to see how ash from incinerated sludge -- including some contaminated with radioactive substances -- is shipped from a sewage plant to be buried at a disposal site outside a breakwater in Tokyo Bay.

The Tokyo Metropolitan Government started burying ash from the incinerator at Akishima in the Tama region of suburban Tokyo in late October last year. In December, it procured gear to separate air from the incinerated sludge and load it into tanker trucks. The Bureau of Sewerage then started transporting the ash from the Tamagawa Joryu Water Reclamation Center to the disposal site.

During the press tour, journalists watched the material being loaded onto the tankers. Radioactive cesium levels in the ash are apparently far below national standards at 1,000 to 2,000 becquerels per kilogram.

The Akishima sewage plant stopped shipping the ash out in May last year and subsequently built up as much as some 420 metric tons of it. The plant will be completely rid of the ash by mid-February.

A total of about 2,600 tons of incinerated sludge are held at six other sewage plants in the Tama region, and the metropolitan government will send the separation gear to those plants to move the ash to the disposal site.

 [Click here for the original Japanese story](#)

January 31, 2012

## **Govt plans Fukushima decontamination test-run**

NHK World English

Japan's Environment Ministry has unveiled a model project designed to decontaminate areas with high levels of radiation around the crippled Fukushima Daiichi nuclear plant.

In a test-run for a wider clean-up, the ministry will first try to decontaminate 3 closed sections of a national expressway running through the no-entry zone near the plant.

The ministry last week announced a 2-year plan to decontaminate by March 2014 some evacuation zones where radiation levels have dropped below 50 millisieverts per year.

Radiation levels over a total 5 kilometers of expressway slated for the new project have ranged from a little to substantially above 50 millisieverts a year.

The ministry plans to assess the project's effectiveness in a test-run from the middle of March through July.

[February 11, 2012](#)

## **Atomic energy commission to recommend background checks for nuclear workers**

<http://mdn.mainichi.jp/mdnnews/news/20120211p2a00m0na002000c.html>

The Japan Atomic Energy Commission (JAEC) on Feb. 10 put together a draft report recommending energy companies be made to do background checks on employees working at important nuclear facilities or with nuclear materials.

Specifics are expected to be ironed out by a new government atomic energy regulatory organ to be established in April.

In January of last year, the International Atomic Energy Agency (IAEA) released a recommendation that the trustworthiness of nuclear employees be checked, and according to the JAEC, background checks on nuclear employees are already performed in most major countries. Such checks were considered in Japan in 2004 by the Ministry of Economy, Trade and Industry, but were not implemented over privacy concerns.

After the meltdowns at the Fukushima No. 1 nuclear plant, the JAEC recommended checks because "implementing counterterrorism measures for nuclear facilities, which can cause serious damage to society, is an urgent matter."

One obstacle to the checks is that it is difficult for power companies to check on workers' criminal records or debts, so police and other authorities would have to help. Furthermore, Tokyo Electric Power Co. could not confirm the identities of some of the workers who had been sent to the Fukushima No. 1 plant in recent background checks, and the JAEC has admitted it would be difficult to put the checks into practice.

 [Click here for the original Japanese story](#)

February 10, 2012

## **Approval near for Oi reactors / Agency says stress test evaluations at N-plant were adequate**

<http://www.yomiuri.co.jp/dy/national/T120209006930.htm>

A government nuclear safety agency has submitted a final draft of an evaluation report that approves the stress test results of the Nos. 3 and 4 reactors at the Oi nuclear power plant in Oi, Fukui Prefecture, to a meeting attended by experts.

The Economy, Trade and Industry Ministry's Nuclear and Industrial Safety Agency has virtually completed its evaluation of the assessment of the reactors run by Kansai Electric Power Co. The agency's approval of the evaluation is one of the preconditions for the government's goal of resuming operations at the reactors.

The reactors have remained out of service after being taken off-line for regular safety checkups.

KEPCO had reported to NISA their stress test results show safety levels at the reactors are appropriate.

At the meeting, NISA officials heard a range of opinions from nuclear experts on the final draft.

NISA will soon compile a final evaluation report and will submit it to the Cabinet Office's Nuclear Safety Commission, which will examine the adequacy of the evaluation.

Prime Minister Yoshihiko Noda and three Cabinet members will decide whether to allow the reactors to resume their operations based on the results of the commission's examination of NISA's report and the opinions of local governments in Fukui Prefecture.

Fukui Gov. Issei Nishikawa requested the government to make the safety criteria based on the knowledge and lessons learned from the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant in the wake of the Great East Japan Earthquake last year.

The government will hold explanation sessions with local governments and residents to improve their understanding about the reactors' possible resumption of operations.

When NISA submitted its final draft to the meeting, some experts required that it be modified.

But NISA plans to continue with plans to complete its final evaluation report because "The report's main objective--deciding that the Oi reactors' safety assessment results are appropriate--will not change," a senior NISA official said.

NISA's final draft says an accident with a severity similar to the problems experienced at the Fukushima No. 1 nuclear plant will not occur at the Oi plant.

The draft also incorporates recommendations made by a delegation from the International Atomic Energy Agency that recently visited Japan.

KEPCO is now researching active faults around the Oi nuclear power plant and past large-scale tsunamis that have been recorded in historical documents.

The final draft also touches on the possibility that the stress test results will change depending on KEPCO's research.

[February 08, 2012](#)

## **N-safety unit to be housed with METI**

<http://www.yomiuri.co.jp/dy/national/T120207005565.htm>

The Environment Ministry is likely to start operations of a new external nuclear regulatory agency to be launched in April at an annex of the Economy, Trade and Industry Ministry that oversees the current nuclear safety body, sources said.

The government wants to establish the new watchdog at a new location to rule out any conflict of interest that the body might have by being associated with METI, a promoter of nuclear power.

But because of difficulties in finding a home for the agency, the government will for the time being likely house the new watchdog at the current Nuclear and Industrial Safety Agency (NISA) premises.

The government has already been criticized because NISA, a nuclear regulator, works under the auspices of METI, and this proximity is seen as having contributed to the crisis at the Fukushima No. 1 nuclear power plant.

Most of NISA's functions will be absorbed by the new agency, which will be staffed by about 500 people.

According to the sources, the new agency will probably be relocated as early as this summer.

Premises housing the new watchdog need sufficient earthquake resistance, must be situated on a lower floor and located near the Prime Minister's Office. Because there are also plans for a new nuclear safety investigation committee to be set up with the agency, at least 6,000 square meters of space is required, the sources said.

The sources said the Environment Ministry found a suitable private building in Tokyo's Shiodome area, but was unable to coordinate the move.

One reason for the ministry's struggle to find suitable premises is that bills to enable the creation of the new nuclear agency and the committee have yet to be passed in the Diet.

"If we decide on the location before Diet deliberations [on the bills], opposition parties would criticize us, saying we're disrespecting the Diet," a senior ministry official said.

## **Air radiation drops after snowfall / But decontamination necessary, levels will rise once snow melts, experts say**

<http://www.yomiuri.co.jp/dy/national/T120207005622.htm>

The Fukushima prefectural government has received many inquiries because air radiation levels across the prefecture following the crisis at the Fukushima No. 1 nuclear power plant declined considerably late January and have since remained constant, perhaps due to fallen snow blocking radiation above the ground.

According to monitoring by the Education, Culture, Sports, Science and Technology Ministry and others, the rate of decline was particularly large in the Akougi district in Namie and the Nagadoro district in Iitate, located in the expanded evacuation zone around the nuclear plant.

Radiation measuring found that the Akougi district had a reading of 19.7 microsieverts per hour in the morning of Jan. 25, down from 30 microsieverts per hour recorded in the morning of Jan. 18.

Air radiation levels also decreased to 5.9 microsieverts per hour from 10 microsieverts per hour over the same period in the Nagadoro district.

It is believed there were no major changes in air radiation levels before Jan. 18 and after Jan. 25.

According to the ministry's Nuclear Emergency Response Headquarters, the decline can be attributed only to snowfall since decontamination operations were not conducted in the areas at the time.

The Fukushima Meteorological Observatory said snow accumulation is not monitored in Namie and Iitate, but temperatures and other factors suggest the town and the village had snow from Jan. 20 to 22.

The prefectural emergency response headquarters said radiation levels also declined in the city of Fukushima. While such levels measured 0.84 microsievert per hour at 6 p.m. on Jan. 21 when snow began to fall, at 9 p.m. on Jan. 22, after snowfall, radiation levels in the air measured 0.62 microsievert per hour.

Farmer Masuo Kaneko, 63, who evacuated to the city from Nagadoro district, said after reading the newspapers he thought the radiation levels were dropping rapidly. But he was disappointed to hear the decline was due to snowfall.

"I expected radiation levels to halve in about two years time," he said.

Tokyo Institute of Technology Associate Professor Keiji Saneyoshi said air radiation levels may halve if about 20 centimeters of snow falls in certain areas. "Yet decontamination work needs to continue since the levels will rise again once the snow melts," Saneyoshi said.

## Cesium detected in worms near Fukushima plant

[http://www3.nhk.or.jp/daily/english/20120208\\_04.html](http://www3.nhk.or.jp/daily/english/20120208_04.html)

Researchers say high levels of radioactive cesium have been detected in earthworms caught in areas around the damaged Fukushima Daiichi plant.

The researchers from the Forestry and Forest Products Research Institute checked cesium levels in earthworm samples they collected at 3 locations.

The institute says about 19,000 becquerels of cesium per kilogram of worms were detected in Kawauchi Village 30 kilometers from the plant, about 1,000 becquerels in Otama Village, 70 kilometers from the plant, and 290 in Tadami Town, 130 kilometers away.

The institute says the cesium levels rise in proportion to the radioactive levels of top soil containing decomposed leaves, the worms' feed.

The reading in Kawauchi was higher than the 146,000 becquerels per kilogram detected in a wild boar in Fukushima Prefecture. The radioactive level in the animal is 30 times the official limit.

The chief researcher at the institute, Motohiro Hasegawa, says **boars, birds and other forest animals feed on earthworms**. He says **the radioactive impact on these creatures will need to be constantly monitored to prevent contamination through the food chain**.

February 07, 2012

## Gov't to set up radiation yardstick for shipping Fukushima stones

<http://mdn.mainichi.jp/mdnnews/news/20120207p2g00m0dm102000c.html>

TOKYO (Kyodo) -- The Japanese government plans to set up a radiation yardstick for shipping stones given the detection of a relatively high level of radiation in gravel, used as building materials, from near the crippled Fukushima Daiichi nuclear power plant, industry minister Yukio Edano said Tuesday.

The government will set up a panel to create such a standard by the end of next month. **The yardstick is expected to apply mainly to quarries in Fukushima Prefecture**, but details will be discussed at the panel's meetings.

The government has been checking distribution routes of crushed stones from quarries in Fukushima since the detection of the building materials suspected to have been radioactively contaminated.

The gravel used was shipped from a quarry within the evacuation zone near the stricken plant sometime between the beginning of the nuclear crisis and the government's designation of the evacuation zone on April 22.

The crisis was triggered by the earthquake and tsunami on March 11.

**So far, a relatively high level of radiation has been detected at 22 locations in Fukushima Prefecture, mostly resident houses**, according to government checkups, jointly conducted by local municipalities.

**Crushed stones suspected to have been radioactively contaminated may have been used at more than 1,000 construction sites, and so far the measurement of radiation levels has been conducted at only 10 percent of them.**

The government will speed up its radiation check process to complete it by the end of March, Edano said.

February 06, 2012

## **High radioactive cesium levels detected in worms 20 km from nuke plant**

<http://mdn.mainichi.jp/mdnnews/news/20120206p2a00m0na008000c.html>

Radioactive cesium registering some 20,000 becquerels per kilogram has been found in worms 20 kilometers from the damaged Fukushima No. 1 nuclear plant.

The cesium was detected by a team including Motohiro Hasegawa, chief researcher in soil zoology at Japan's Forestry and Forest Products Research Institute. **Worms are a source of food for many wild animals, and it is feared that radiation could gradually accumulate in the bodies of animals throughout the food chain.**

The research team's findings will be announced at a meeting of the Ecological Society of Japan, to commence in the Shiga Prefecture city of Otsu on March 17.

Researchers dug up between 40 and 100 worms in national forests in the Fukushima Prefecture village of Kawauchi, which lies partly in the exclusion zone around the nuclear plant; the village of Otama, located 60 kilometers from the plant; and the town of Tadami, about 150 kilometers from the plant, between late August and late September last year.

The worms in Kawauchi registered 20,000 becquerels per kilogram of radiation. In Otama the level was around 1,000 becquerels per kilogram, while in Tadami 290 becquerels per kilogram was recorded.

The airborne radiation dose in Kawauchi at the time of the investigation was 3.11 microsieverts per hour, while in Otama, it was 0.33 microsieverts per hour, and in Tadami it was 0.12 microsieverts per hour. **The figures show radioactive cesium concentration was greatest in the areas where airborne radiation dosage was highest.**

In surveys conducted by the Forestry Agency between August and September last year, radioactivity of 1.38 million becquerels per square meter of soil was measured in Kawauchi, compared with between about 80,000 and 120,000 becquerels in Otama, and 20,000 becquerels in Tadami.

**Much of the radioactive substances released from the plant in the nuclear disaster remains on fallen leaves. It is thought that worms have ingested the organic matter formed from the breakdown of these leaves.**

 [Click here for the original Japanese story](#)

## Govt to measure radiation levels in no-fly zone

[http://www3.nhk.or.jp/daily/english/20120206\\_08.html](http://www3.nhk.or.jp/daily/english/20120206_08.html)

Japan's government will measure radiation levels around the troubled Fukushima Daiichi nuclear plant as a step toward revising the no-fly zone over the site.

**No aircraft has been allowed to fly within a 20-kilometer radius of the plant since the nuclear accident.**

The government says it will revise the no-fly zone as it confirmed in December that the nuclear reactors have now reached a state of cold shutdown.

Starting Monday and continuing for several days, helicopters flying at an altitude of about 300 meters will collect air samples around the plant to measure radiation levels.

There are no specific standards on radiation levels for the designation of no-fly zones. The government plans to revise its earlier decision based on data collected during the flights.

February 04, 2012

## Plowing technique to fight spread of radiation demonstrated

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na010000c.htm>

IWAKI, Fukushima -- A plowing technique being considered to fight the spread of radiation was demonstrated here on Feb. 2, though some farmers on hand were disappointed.

In the demonstration, four large machines dug up earth from around 30 centimeters deep to replace potentially contaminated topsoil and reduce the amount of radiation crops absorb from it.

According to a prefectural official, radiation readings in the field were 0.3 to 0.42 microsieverts on Feb. 1, and 0.23 to 0.3 microsieverts after the plowing. "There was an effect," the official said.

Around 150 people including local farmers gathered to watch the demonstration. Some farmers complained, however, that "expensive machines are necessary" for the plowing technique, and that an overall decontamination plan for the city's fields has still not been decided on.

 [Click here for the original Japanese story](#)

## **US univ. to monitor wildlife in Fukushima**

[http://www3.nhk.or.jp/daily/english/20120204\\_05.html](http://www3.nhk.or.jp/daily/english/20120204_05.html)

A US research team will conduct a long-term study on the impact of radiation exposure on wild animals and plants around the Fukushima Daiichi nuclear power plant.

The team from University of South Carolina, led by Professor Timothy Mousseau, will begin the study in Fukushima Prefecture and other areas of Japan in May.

The team has been studying the impact of radioactive fallout from the Chernobyl nuclear accident on wildlife around the plant for more than 13 years.

Its study shows a decrease in the number of birds and insects, as well as abnormalities in animals even in areas with low radiation levels of one to 3 microsieverts per hour.

The team says long-term research is likely to shed light on the impact of low-level radiation from the Fukushima accident on wildlife and that it hopes to cooperate with Japanese researchers.

Professor Mousseau will visit Fukushima later this month in preparation for the study. He says generational change of animals, such as birds, is quicker than that of humans and will provide clues to the impact of radiation on human genes.

**January 31, 2012**

## **Japan's nuclear stress tests deemed consistent with IAEA standards**

<http://mdn.mainichi.jp/mdnnews/news/20120131p2g00m0dm081000c.html>

TOKYO (Kyodo) -- An International Atomic Energy Agency fact-finding team said Tuesday that Japan's nuclear stress tests, a key step for restarting reactors following the Fukushima nuclear crisis, are "generally consistent" with IAEA safety standards.

On the last day of its nine-day mission to Japan to review the tests at nuclear power plants, the IAEA delegation conveyed its findings to the government's Nuclear and Industrial Safety Agency, while also making some recommendations to improve the tests's effectiveness.

"The conclusion of the team is that NISA's instructions and review process for the comprehensive safety assessments are generally consistent with IAEA safety standards," the delegation said in its preliminary report.

Tokyo introduced the stress tests after the meltdown at Tokyo Electric Power Co.'s Fukushima Daiichi power plant in the wake of the March quake-tsunami disaster, to check how much leeway the nation's nuclear power plants have to withstand earthquakes, tsunami and the loss of power.

To confirm if the test method is consistent with global safety standards, the government asked the Vienna-based body to verify them.

But there remains criticism among some local governments hosting nuclear power plants and experts that the stress tests need to reflect the findings that the government's accident investigation team has yet to compile on the Fukushima nuclear crisis.

NISA earlier compiled a draft report endorsing results of first-round stress tests that Kansai Electric Power Co. submitted with regard to the No. 3 and 4 reactors at its Oi power plant in Fukui Prefecture. The two reactors are currently idled for scheduled checkups.

The government's nuclear safety agency is set to finalize the report after studying the IAEA's findings, and will have it checked by the Nuclear Safety Commission of Japan.

James Lyons, nuclear installation safety director of the IAEA's Nuclear Safety and Security Department who heads the delegation, said at a press conference that deciding whether to restart the reactors is up to the Japanese government.

Currently, only three of Japan's 54 commercial reactors are operating. Japanese reactors must shut down for maintenance every 13 months, and so far no idled reactor has passed the stress tests, a prerequisite for resuming operations.

If no idled reactors get approval to restart, Japan will be without any operating reactors by the end of April.

Dossier 4

February 12,2012

## **Tokyo gov. opposes 'N-vote'**

<http://www.yomiuri.co.jp/dy/national/T120211003443.htm>

Tokyo Gov. Shintaro Ishihara has spoken against establishing an ordinance to hold a referendum among residents of the capital on whether the operation of nuclear power plants should be allowed.

"It's impossible to create such an ordinance, and I have no intention of doing so," Ishihara said during a regular press conference Friday.

Ishihara's comments came as it appeared likely a citizens advocacy group that aims to bring about the referendum in Tokyo would succeed in its campaign to collect the number of signatures legally required to directly petition the metropolitan government to establish an ordinance.

The citizens group is called "Let's Decide Together/Citizen-initiated National Referendum on Nuclear Power."

Ishihara criticized activity against nuclear power, saying: "The most troublesome thing among humans is sentiment. Because Japanese have the trauma of atomic bombs, people speak [against nuclear power plants] out of fear.

"The progress of human beings has been achieved through their own development of technology, overcoming setbacks and failures."

If the group submits a direct petition for a referendum ordinance to the governor, Ishihara will have to submit a bill for the ordinance to the Tokyo Metropolitan Assembly with his opinion attached.

The assembly will then deliberate whether to create such an ordinance.

<http://mdn.mainichi.jp/mdnnews/news/20120212p2a00m0na007000c.html>

## **From atomic bombings to nuclear disaster: director turns camera toward Fukushima**

**Director Hidetaka Inazuka**, known for his documentary on the late double atomic bomb survivor Tsutomu Yamaguchi, has turned his attention toward Fukushima Prefecture, covering the prefecture in a new film on people exposed to radiation from the crippled Fukushima No. 1 Nuclear Power Plant.

The 61-year-old filmmaker's new work is titled "Fukushima 2011: Hibaku ni Sarasareta Hitobito no Kiroku" (Fukushima 2011: Records of people exposed to radiation). It follows survivors of the atomic bombing of Hiroshima and Nagasaki who are now living in Fukushima, as well as the people facing radioactive contamination of their hometowns. The film is **due to be screened across Japan from mid-March**. It will also be shown at the Los Angeles Japanese Film Festival in April.

One subject of the new documentary is a man in his 80s who survived the atomic bombing of Hiroshima at an army barracks in the city.

"Even when there were explosions at the nuclear power plant I didn't feel scared. I've been hit by a bombing before, and it's 30 kilometers (from my place to the nuclear plant)," he says.

After the war, the man took up dairy farming, but the nuclear disaster triggered by the March 2011 Great East Japan Earthquake and tsunami forced him to abandon his business.

"I had 46 cows, but I sold them off for 800,000 yen. I can get by for a year or two, but there's no telling what's in store after that. I think about my children and grandchildren every day," he tells the camera.

In April last year, Inazuka visited the United States for a screening of his documentary "Twice Bombed: A Legacy of Yamaguchi Tsutomu." The film traces Yamaguchi's activities speaking about surviving the atomic bombings of both Hiroshima and Nagasaki. Yamaguchi died in 2010 at the age of 93. The documentary was well received in the United States, but after the outbreak of the Fukushima nuclear disaster, Japanese people in the U.S. complained that the effects of radiation were not being properly communicated in Japan.

Hearing such complaints, Inazuka recalled the words of Yamaguchi: "The world in which people live must be nuclear-free. We can't prevent (nuclear) accidents with current technology. If we don't become nuclear-free, the downfall of mankind will draw closer."

In May last year, Inazuka visited Fukushima Prefecture, and he focused his camera on the people in the municipality of Iitate before the whole village was evacuated, as well as on people in the city of Soma and other areas where many were killed by the March 11, 2011 tsunami. The film covers people's efforts to restore and revitalize their hometowns, where bonds between families and communities have been severed as a result of the disaster.

Included in the film is 69-year-old Hiromi Sato, a restaurant operator in the city of Minamisoma.

"My neighbors starting leaving, and everyone sent me emails saying 'get out of there' so I started to get scared," she says. "But I didn't want to live in a shelter." She reopened her restaurant after the "Golden Week" string of public holidays in May 2011.

"There are various circumstances among the people who stay, those who leave, and those who return," Inazuka says. "I want to cover the people who are confronting the issues of life wholeheartedly."

 [Click here for the original Japanese story](#)

## **Nobel laureate, citizens call for abolition of nuclear power**

<http://mdn.mainichi.jp/mdnnews/news/20120212p2g00m0dm021000c.html>

TOKYO (Kyodo) -- An antinuclear civic group led by **Nobel literature laureate Kenzaburo Oe** and other celebrities held rallies in Tokyo and Niigata Prefecture on Saturday calling for the abolition of nuclear reactors in the aftermath of radiation leaks at the Fukushima No. 1 power plant.

Addressing the protesters gathered at Yoyogi Park in Tokyo, who numbered around 12,000, according to the organizers, Oe insisted on the abolishment of nuclear reactors.

"We will be handing nuclear waste generated from the nuclear reactors to our grandchildren. This is unethical conduct," Oe said.

The rallies were held as part of the group's campaign to collect 10 million signatures against nuclear power to submit it to the prime minister and the chiefs of both chambers of the Diet. The executive committee for the "10 Million People's Action to say Goodbye to Nuclear Power Plant" campaign said earlier it has gathered about 4 million signatures so far in sympathy with its goal to abolish all 54 commercial reactors in Japan.

Taro Yamamoto, an actor who is known as an anti-nuclear advocate, also took part in the rally.

"If a massive earthquake occurs now, our country will be finished. We cannot have the nuclear reactors resume their operations," he told the protesters.

On March 11, the first anniversary since the disastrous earthquake and tsunami prompted the worst nuclear crisis since Chernobyl at Tokyo Electric Power Co.'s Fukushima No. 1 Nuclear Power Plant, the group plans to hold a rally in Koriyama in Fukushima Prefecture.

February 11, 2012

## **Citizens group runs full-page anti-nuclear ad in Mainichi**

<http://mdn.mainichi.jp/mdnnews/news/20120211p2a00m0na004000c.html>



The ad carried in the Feb. 11 morning edition of the Mainichi Shimbun.

A citizens group formed by intellectuals Shinichi Nakazawa, Tatsuru Uchida, and writer Seiko Ito ran a full-page anti-nuclear power ad in the Feb. 11 edition of the Mainichi Shimbun.

The ad reads in large print, "We aim for a Japan with no nuclear power plants." Nakazawa says the ad "is valuable in that it makes the opinions of people below the surface (of public discourse) visible through newspapers."

The ad was endorsed by some 150 people, mainly musicians and others in the arts, as well as around 20 organizations.

"To be ethical towards the future, we have to change direction," says Ito.

 [Click here for the original Japanese story](#)

February 10, 2012

## **TEPCO has paid 229.2 billion yen in damages for nuclear crisis**

<http://mdn.mainichi.jp/mdnnews/news/20120210p2a00m0na007000c.html>

Tokyo Electric Power Co. (TEPCO), operator of the crippled Fukushima No. 1 nuclear plant, has paid approximately 229.2 billion yen in damages to victims so far, a company executive said.

As of Feb. 7, the company had received about 86,500 claims for compensation for financial losses the applicants say were caused by the nuclear disaster triggered by the March 11, 2011 tsunami. The company has paid compensation to about 45,900 of the applicants -- about 30,000 individuals and 15,900 companies and other organizations -- through settlements, managing director Naomi Hirose told the government's nuclear crisis damage dispute examination panel on Feb. 9.

If compensation paid earlier by the utility as a provisional measure is included, the figure rises to some 370.5 billion yen.

 [Click here for the original Japanese story](#)

## **Municipalities dissatisfied with gov't's rice-planting restriction: survey**

<http://mdn.mainichi.jp/mdnnews/news/20120210p2a00m0na011000c.html>

FUKUSHIMA -- Of the 12 local municipalities where rice harvested in 2011 was found to have cesium levels that would prohibit them from planting rice this spring, 11 are critical of the government's stand, a Mainichi survey has found.

The national government's new radiation standard of 100 becquerels per kilogram is set to take effect in April. The current provisional limit is 500 becquerels per kilogram.

Over 100 becquerels of radioactive cesium per kilogram of rice has been found in 12 municipalities in Fukushima Prefecture. Eleven of these municipalities are dissatisfied with the planting restriction in districts where cesium levels fell between 100 and 500 becquerels per kilogram, and four are appealing for permission to plant rice in districts where cesium levels surpass the current provisional maximum of 500 becquerels per kilogram.

The Ministry of Agriculture, Forestry and Fisheries is set to incorporate the demands of various municipalities in drawing up planting regulations this month, but it appears reaching an agreement that will satisfy all parties will be difficult.

The agriculture ministry has already announced plans to restrict the 2012 planting of rice in districts where over 500 becquerels of radioactive cesium per kilogram of rice has been detected. As for areas where rice was found to have cesium levels between 100 and 500 becquerels per kilogram, the ministry is in talks with local municipalities to restrict planting in areas with large concentrations of farms exceeding 100 becquerels, and to permit planting in less concentrated areas.

Of the 12 municipalities affected and surveyed, the city of Nihonmatsu did not submit responses. The remaining 11 cities, towns and villages said they want planting to continue in areas where between 100 and 500 becquerels of cesium per kilogram of rice was found, citing farmers' diminishing motivation to work and deteriorating farm conditions as reasons to do so. "The population is quickly aging, and it wouldn't be practical for (the national government) to come back to us several years later and tell us we can start planting again," an Otama village official said.

With the exception of farms in the cities of Fukushima, Date and Nihonmatsu, where over 500 becquerels of cesium per kilogram of rice was detected, only a few farms in the remaining nine municipalities were found to have rice with over 100 becquerels of cesium per kilogram. In the village of Nishigo, only three of 483 farmers there harvested rice with over 100 becquerels per kilogram, with the maximum being 155 becquerels. Local officials believe that if farms are thoroughly decontaminated prior to planting, and once testing of all bags of rice begins as planned in fiscal 2012, the risks of any contaminated rice reaching the market can be avoided.

The cities of Fukushima and Date, along with the towns of Kawamata and Kunimi, said that planting should not be restricted for farms with rice exceeding 500 becquerels of cesium per kilogram. Fukushima city officials seek permission to grow rice for research purposes, while Date city officials emphasize that rice farmers live for rice cultivation, even if prices are lowered. Meanwhile, Kunimi officials stated that if rice planting is going to be restricted this year, "the national government should shoulder the burden of decontamination so that there is hope for 2013 and beyond."

In November 2011, rice harvested in the Onami district of the city of Fukushima was found to have more than the provisional permissible amount of radioactive cesium. Emergency tests were subsequently conducted on rice from 23,247 farms in 29 municipalities. Over 100 becquerels of cesium per kilogram of rice was found from some of the farms in 12 cities, towns, and villages.

 [Click here for the original Japanese story](#)

February 09, 2012

## **Govt asks Fukushima to restrict rice planting**

<http://www.yomiuri.co.jp/dy/national/T120208005350.htm>

FUKUSHIMA--The government has asked local municipalities in Fukushima Prefecture to refrain from planting rice this year in districts where radioactive cesium exceeding the government's new limit was found in last year's harvests, according to government sources.

The restriction applies to districts in which rice harvests cultivated in 2011 were found to contain **100 becquerels per kilogram or more of radioactive cesium.**

Some of last year's harvests of unpolished rice in the prefecture were found to contain radioactive cesium exceeding the government's previous interim limit of 500 becquerels per kilogram.

Results of research by the prefectural government showed that rice harvests containing radioactive cesium over the new limit of 100 becquerels per kilogram were found in 583 farming households in 65 districts in 12 municipalities.

The prefectural government said about 59,000 farming households in 371 districts in 48 municipalities in the prefecture planted rice in 2011.

The research was conducted on 23,247 households in 151 districts in 29 municipalities in the prefecture.

**If the central government's plan is implemented, the restriction will likely be imposed on most of the districts, with a few exceptions.**

The central government in December decided restrictions would be necessary if levels of radioactive cesium in harvests exceeded the interim limit.

For cases in which the amount of radiation exceeds the new limit, the central government said it would consult the prefectural and municipal governments.

Officials from the Agriculture, Forestry and Fisheries Ministry visited the Date city government office on Friday to brief Date officials on the restrictions on rice cultivation.

The ministry officials said the government wants to restrict rice planting in six districts where 500 becquerels per kilogram or more of radioactive cesium were detected, and six additional districts where between 100 becquerels and 500 becquerels were detected. The town comprises 21 districts.

But the officials also told the city government that the restriction may not be imposed in districts with levels of radioactive substances above the new limit if the number of questionable spots were limited and if there was clear evidence of a reduction in the quantity of radioactive cesium.

Based on such criteria, **about 850 hectares, or more than 60 percent, of all rice paddies in the city will be restricted from growing rice this year.**

However, in two affected districts, the detected levels exceeded the new limit in only one or two rice paddies, and the amount of excess cesium was limited.

An official of the ministry said the restriction would not apply to the two districts if it could be shown that "proper cultivation would prevent contamination [of the rice]."

The central government's policy was reported to the city's assembly on Tuesday.

Mayor Shoji Nishida opposed the restrictions, saying the city could not accept the central government's request. "The measure will rob farmers of their morale and increase the amount of unused farmland," the mayor said.

He indicated an intention to work with nearby municipal governments, including the Fukushima city government, to urge the central government to allow rice planting in all areas in the prefecture.

Ministry officials also visited the Kunimi town government in the prefecture on Friday.

Kunimi officials said the ministry officials presented the plan to restrict rice cultivation in the town's districts where 100 becquerels or more of radioactive cesium were detected in last year's rice harvests.

The ministry officials told the town government that in principle the restrictions would apply to those districts, and showed which ones would be subject to the curbs.

February 08, 2012

## **70% of nuclear reactor hosts cautious on restart**

[http://www3.nhk.or.jp/daily/english/20120208\\_28.html](http://www3.nhk.or.jp/daily/english/20120208_28.html)

An NHK survey has found that more than 70 percent of Japanese municipalities that host nuclear power plants are cautious about restarting the reactors.

51 of Japan's 54 nuclear reactors are currently out of operation. Restarting them would require the approval of local municipalities.

NHK surveyed 29 municipalities, **excluding those in Fukushima Prefecture.**

5 of them, or 17 percent, said they would give the go-ahead for the reactors to resume operation. But 21 municipalities, or 72 percent, said they wouldn't allow it, or that they cannot yet decide.

Municipalities that expressed caution said they cannot be sure whether the reactors are really safe, and cited the difficulty of persuading residents while the government has yet to decide on its nuclear policy.

Asked what is needed beside stress tests to restart the reactors, 48 percent said a satisfactory investigation into the accident at Fukushima Daiichi plant, and understanding by local residents. 38 percent cited new government safety regulations.

**The municipalities stressed their concern over reactor safety, and demanded more government accountability.**

# Child population drops in disaster-hit prefectures

[http://www3.nhk.or.jp/daily/english/20120208\\_05.html](http://www3.nhk.or.jp/daily/english/20120208_05.html)

The number of children has significantly decreased in 3 Japanese prefectures hit by the March 11th disaster.

The Education Ministry says the child population as of May 1st in Iwate, Miyagi and Fukushima fell by more than 27,000 from a year earlier to about 834,000.

Fukushima saw the biggest fall of 5.8 percent, or more than 17,000, followed by a decrease of 2.3 percent in Iwate and minus 1.7 percent in Miyagi.

The ministry says the nuclear accident at the Fukushima Daiichi plant is to blame for an 11-percent decline in the number of kindergarteners and a nearly 8-percent drop in the elementary school population in the prefecture.

It says smaller children are more vulnerable to radiation and are likely to have been evacuated to other prefectures.

The child population in the 3 prefectures had been falling even before the disaster due to the low birthrate.

February 06, 2012

## **1.5-fold rise eyed for nuke plant operators' payments to damages fund**

<http://mdn.mainichi.jp/mdnnews/news/20120206p2g00m0dm003000c.html>

TOKYO (Kyodo) -- The government has decided on a plan to require that Japan's 12 nuclear power plant operators contribute a total of 150 billion yen annually from fiscal 2012 to a state-backed facility to help Tokyo Electric Power Co. meet huge compensation payments over the crisis at its Fukushima Daiichi nuclear plant, one and a half times the initially planned amount, sources familiar with the matter said Sunday.

The government will ask for larger contributions than previously sought because of growing calls for smooth compensation payments to victims of the crisis triggered by the earthquake and tsunami on March 11, 2011, the sources said.

The contribution program is intended to divide the burden from the Fukushima crisis among all nuclear reactor operators and covers nine of Japan's 10 electric power companies, excluding Okinawa Electric Power Co., which does not operate a nuclear power plant. The fund also covers Japan Atomic Power Co., Electric Power Development Co. and Japan Nuclear Fuel Ltd.

The government will finalize details of the program, including the planned increase in contributions, by the end of fiscal 2011 to March 31.

Contributions by the 12 companies became mandatory with the establishment of the Nuclear Damage Liability Facilitation Fund on Sept. 12. For fiscal 2011, the 12 companies are required to contribute a total of just over 70 billion yen to the state-backed fund for the period since its establishment.

Tokyo Electric would contribute 50 billion yen to the fund annually, the highest among the 12 companies, starting in fiscal 2012, and Kansai Electric Power Co. would contribute the second-largest sum of 25.8 billion yen as it operates more nuclear plants than other utilities.

Other expected contributions include 13.8 billion yen from Kyushu Electric Power Co., 13.0 billion yen from Chubu Electric Power Co. and 8.7 billion yen from Tohoku Electric Power Co.

There is opposition among government officials to increasing contributions to the fund amid concern that utilities could be prompted to raise electricity charges, the sources said. But the government intends to go ahead with the increase, expecting that electricity charges will be held in check as the Ministry of Economy, Trade and Industry is reviewing utilities' calculation of costs for setting power bills.

February 05, 2012

## **573 deaths 'related to nuclear crisis'**

<http://www.yomiuri.co.jp/dy/national/T120204003191.htm>

A total of 573 deaths have been certified as "disaster-related" by 13 municipalities affected by the crisis at the crippled Fukushima No. 1 nuclear power plant, according to a Yomiuri Shimbun survey.

This number could rise because certification for 29 people remains pending while further checks are conducted.

The 13 municipalities are three cities--Minami-Soma, Tamura and Iwaki--eight towns and villages in Futaba County--Namie, Futaba, Okuma, Tomioka, Naraha, Hirono, Katsurao and Kawauchi--and Kawamata and Iitate, all in Fukushima Prefecture.

These municipalities are in the no-entry, emergency evacuation preparation or expanded evacuation zones around the nuclear plant, which suffered meltdowns soon after the March 11 disaster.

**A disaster-related death certificate is issued when a death is not directly caused by a tragedy, but by fatigue or the aggravation of a chronic disease due to the disaster.** If a municipality certifies the cause of death is directly associated to a disaster, a condolence grant is paid to the victim's family. If the person was a breadwinner, 5 million yen is paid.

Applications for certification have been filed for 748 people, and 634 of them have been cleared to undergo screening.

Of the 634, 573 deaths were certified as disaster-related, 28 applications were rejected, four cases had to reapply because of flawed paperwork, and 29 remain pending.

In Minami-Soma, a screening panel of doctors, lawyers and other experts examined 251 applications and approved 234 of them. The panel judged two deaths were not eligible for certification and 15 were put on hold.

"During our examination of the applications, we gave emphasis to the conditions at evacuation sites and how they spent their days before they died," a city government official said. "However, the screening process was difficult in cases when people had stayed in evacuation facilities for an extended time and when there was little evidence of where they had been taking shelter."

February 04, 2012

## **Survey: 2.3% of farmers produce rice above cesium safety standard**

[http://ajw.asahi.com/article/0311disaster/life\\_and\\_death/AJ201202040050](http://ajw.asahi.com/article/0311disaster/life_and_death/AJ201202040050)

About 2.3 percent of farmers in Fukushima Prefecture yielded rice with radioactive cesium levels exceeding the government's new safety standard, according to prefectural government officials.

The new standard of 100 becquerels per kilogram will take effect in April, replacing the provisional standard of 500 becquerels per kg.

The results of the Fukushima prefectural government's emergency survey, released on Feb. 3, will be used by the central government to decide on areas where farming will be banned this year.

But farmers in areas around the crippled Fukushima No. 1 nuclear power plant are growing impatient with the central government's indecision on the matter. They are also worried that no one will buy their produce over fears of radiation contamination.

According to the survey, which covered about 23,000 rice-growing households in 29 cities, towns and villages, contamination levels exceeded the new standard in rice grown by 545 farmers in 12 municipalities, many of them in northern Fukushima Prefecture.

The survey also showed rice cultivated by 38 farmers in three cities had readings above 500 becquerels per kg.

Radiation levels in rice grown by 84.3 percent of farmers were below measurable limits, according to the survey.

The prefecture conducted the survey after radioactive cesium levels higher than the provisional standard were found in rice grown in the Onami district of Fukushima, the prefectural capital, in November.

The central government said it will prohibit the planting of seeds in areas that are heavily contaminated. But it has not decided which areas should face such restrictions under the new standard.

Agriculture minister Michihiko Kano said in a news conference on Feb. 3 that the government should not impose limits on planting.

“We should respect the feelings of farmers,” he said.

A farm ministry official also said the decision for this year would be extremely tough because the lines marking sections under restriction must be drawn within areas where contamination levels are publicized.

The government banned planting last year in areas from where residents had evacuated. But officials at municipalities have already announced plans to go ahead with planting this year, even in areas where contamination levels have exceeded the new limit.

The prefectural chapter of Japan Agricultural Co-operatives is seeking permission to plant in sections of areas where this year’s rice crop will likely clear the new safety standard. The chapter said rice paddies will be decontaminated and other measures taken before the planting starts.

The JA group is expected to forbid planting in areas where radiation levels are expected to remain above the safety limit.

In addition, the Fukushima city government is calling on the central government to permit the planting of rice crops that will be used for purposes other than for food.

“If farmers are not allowed to grow rice (this year), it will reduce their willingness to produce,” an official in the city’s agriculture section said. “Rice fields will also become run-down.”

The city governments of Date and Motomiya have already said they will allow farmers to grow rice, in principle, while requiring decontamination of their rice paddies.

However, decontamination work could cause a new problem for the farmers, according to local officials.

“If rice fields are dug up too deeply, they may not be fit for growing the crop with too many rocks turning up,” an official said.

The heavily contaminated village of Kawauchi, meanwhile, said it will not allow any planting.

Rice farmers are divided.

A 58-year-old farmer in Date said contamination levels found in his rice were up to slightly more than 100 becquerels per kg under the survey.

He has already ordered seeds and fertilizers for his rice crops this year.

“Unless I can plant this year, my rice paddies will be overrun with weeds,” he said. “The fields would not be restored to the original condition for five or 10 years.”

He said he is frustrated by the lack of any long-term perspective by authorities over his livelihood.

“Is (the restriction) for just this year or for many more years?” he said. “It would mean a lifetime if the restriction is put in place until there is no more cesium contamination.”

Saburo Watanabe, a farmer in Aizubange, where all rice crops were found to be safe, said planting should be banned in areas where contamination levels exceed the new safety standard. He said the image of rice grown in Fukushima Prefecture must be protected.

“Consumers tend to think all rice crops from Fukushima Prefecture are the same,” said Watanabe, 58, who cultivates rice in a 12-hectare field.

He said most of his rice from last year remained unsold.

A 56-year-old farmer in Nihonmatsu said, “I want to grow rice, but we will be in trouble with unsold rice if we push for it and face another bad result.”

The rice in his district in Nihonmatsu was found with contamination levels above the new limit.

(This article was written by Ryo Inoue and Keiichiro Inoue.)

February 02, 2012

## **Evacuated village to reopen from April**

<http://www.yomiuri.co.jp/dy/national/T120201006980.htm>



FUKUSHIMA--The mayor of a village near the crippled Fukushima No. 1 nuclear power plant declared Tuesday that local authorities would return in April, and urged residents who have evacuated due to the nuclear crisis to come back.

Kawauchi Mayor Yuko Endo said public facilities, such as schools and clinics, will also resume services in the village.

This is the first time one of the nine municipalities that fell in the government-designated evacuation zones has declared it will return. Most of Kawauchi's 3,000 residents evacuated elsewhere in Fukushima Prefecture--or outside the prefecture--after the nuclear crisis erupted in March.

"I hope residents will return in two or three years," Endo said.

Starting this month, the Kawauchi government will survey residents about their thoughts on returning, and hold meetings with them. The village government will provide dosimeters to returning residents.

Endo plans to move the village government back to its original location on March 24 and 25, and to resume administrative operations in April.

The Kawauchi government office has temporarily been relocated to Koriyama in the prefecture. Many Kawauchi residents have been staying in temporary housing units in Koriyama, and some of the village's services will still be offered in the city even after April.

Kawauchi has been divided into two zones since the nuclear crisis began--the 20-kilometer no-entry zone around the crippled nuclear plant, and the former emergency evacuation preparation zone.

Initially, the mayor planned to declare the return after decontamination work had lowered radiation levels in the village to less than one millisievert a year. However, decontamination work has been delayed partly by heavy snowfall, and it is likely that only public facilities and houses of families with children will be decontaminated by the end of March.

The village government said radiation levels in many residential areas have fallen below one microsievert per hour.

In Tuesday's declaration, Endo accepted that some residents had concerns about returning to the village.

"Those who can return will return," he said. "Those who are still anxious can return after watching the situation for a while."

Although the designation of the emergency evacuation preparation zone was lifted in September, only slightly more than 200 residents have returned to the village.

## **Declaration 'just the beginning' / Mayor's plea for villagers to return to Kawauchi draws mixed reactions**

<http://www.yomiuri.co.jp/dy/national/T120201006236.htm>

FUKUSHIMA--"The declaration to return home is just the beginning," said Yuko Endo, mayor of Kawauchi, Fukushima Prefecture, in a speech at a press conference encouraging residents who had evacuated amid the Fukushima No. 1 nuclear power plant crisis to return to the village.

The Kawauchi government will reopen the village office and schools in April to prepare for the residents' return. But a complete return of evacuees is problematic, as decontamination work is ongoing.

Parts of Kawauchi fall within the nuclear plant's 20-kilometer no-entry zone, and some residents are concerned about the village's decision. "We can't return home yet," one said.

Tsunehiro Takano, the village's fifth administrative district leader, attended the same press conference as Endo Tuesday at the Fukushima prefectural government's office. Takano, 62, is also chairman of all the administrative district leaders in the village.

"Only people who want to return to Kawauchi should do so and go first. It's important to prepare an environment acceptable to other residents. If nobody returns to the village, no one will end up [following the first returnees]," Takano emphasized.

"It is also our generation that should commit ourselves to decontamination work," he added.

But Norimoto Igari, Kawauchi's third administrative district leader, had a different view.

"Most of the residents, including me, don't want to return," the 68-year-old said.

His administrative district consists of many elderly people living alone.

"If stores don't reopen, elderly people without vehicles will face difficulties buying food," Igari warned.

Hiroichi Watanabe is the village's second administrative district leader and a rice farmer. The village government will order the village's farmers to refrain from planting rice this year.

"We farmers wonder what the point of hurriedly returning to Kawauchi is if we can't sell our rice," Watanabe said.

The answer is more straightforward for Nobuichi Kobayashi, leader of the eighth administrative district, which falls completely within the no-entry zone.

"We can't return," Kobayashi, 66, said.

The municipal government will build temporary housing units in Kawauchi for residents such as Kobayashi. However, according to Kobayashi, "Unless decontamination begins soon, the number of residents who refuse to return will increase."

===

Few kids want to return

Kawauchi has one nursery school, one primary school and one middle school. According to a survey by the village government, only 30 of 210 children want to return to school in Kawauchi from April.

Yoshinobu Ishii, the village schools' superintendent, said, "Even though the student numbers are few, we won't drop the level of our education."

The board of education intends to maintain a class for each grade instead of introducing composite classes comprising students from different grades.

It will also in April transfer the village-run cram school Kogakujuku from Koriyama, Fukushima Prefecture, to the village. Catering to students from the fifth grade of primary school to the third year of middle school, Kogakujuku was operating before the March 11 disaster.

According to the board of education, radiation levels in the Kawauchi Middle School yard dropped to 0.2 microsievert per hour in December, and 0.14 microsievert per hour at Kawauchi Primary School after decontamination had been carried out.

A 34-year-old woman living with her husband, 8-year-old daughter and 5-year-old son in a temporary housing unit in Koriyama after evacuating from her home in the no-entry zone, said: "Even though we

can return, we'll have to live in temporary housing. It's difficult for us to return until all the decontamination has been completed."

February 01, 2012

## **Kawauchi village in Fukushima calls on evacuees to return home**

<http://mdn.mainichi.jp/mdnnews/news/20120201p2g00m0dm113000c.html>

FUKUSHIMA, Japan (Kyodo) -- The mayor of Kawauchi, a village in Fukushima Prefecture whose residents were forced to relocate following the nearby nuclear power plant crisis, called on some 2,600 evacuated villagers Tuesday to return home permanently.

"Let's return starting with those who are ready," Yuko Endo said at a press conference in Fukushima city, marking the first declaration among the nine town and village governments in the prefecture which evacuated their offices that it will return to its original location.

"There are matters of concern but there is no reason why we shouldn't take the first step forward," Endo added.

Chief Cabinet Secretary Osamu Fujimura said at a separate press conference that the declaration is an "important first step toward residents' returning to their home village," and added that the central government will "actively support" the Kawauchi village government's effort.

Kawauchi had about 2,990 residents before Tokyo Electric Power Co.'s Fukushima Daiichi nuclear power plant was crippled by the earthquake and tsunami disaster of March 11, 2011.

About 75 percent of the villagers currently reside in the prefectural city of Koriyama where the Kawauchi government has relocated its functions because the village was partially designated as a no-entry zone set up by the central government around the nuclear power plant while the rest was categorized as an emergency evacuation preparation area.

In addition, a total of 542 Kawauchi residents were residing in 26 prefectures other than Fukushima as of Friday, while some 200 have returned to their homes since the central government lifted its evacuation advisory for the emergency preparation area of the village last September.

In November, the village government began decontamination work for schools and other public facilities in the hope of declaring in December that it would return to the village.

But the declaration was delayed for about a month as decontamination work is taking longer than expected. The work is expected to be completed by the end of March, paving the way for resumption of the village government, schools and other operations at the start of fiscal 2012 on April 1.

Most sections of the village are safe as radiation levels are less than 1 microsievert per hour, according to the Kawauchi government.

But the chances of all residents returning to the village are low in view of lingering radiation concerns.

February 12, 2012

## **TEPCO provided radiation map to U.S. before Japanese public**

<http://mdn.mainichi.jp/mdnnews/news/20120212p2g00m0dm019000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. provided a contamination survey map of its crippled Fukushima No. 1 nuclear plant to the U.S. nuclear regulator nearly a month before its official disclosure to the public in Japan in late April last year, company officials said.

The revelation follows a series of revelations that the government data from the System for Prediction of Environmental Emergency Dose Information and the Japan Meteorological Agency's data on the projected radiation spread were provided to the United States and other international institutes before disclosure of the information in Japan.

TEPCO started making the map which described the amount of radiation at up to 150 spots around the buildings in the power plant site on March 22 and provided it the same day to the U.S. Nuclear Regulatory Commission at the request of its staff members dispatched to Japan after the March 11 earthquake and tsunami triggered the nuclear crisis, the officials said.

TEPCO officials and NRC staffers continued to share updated versions of the map almost every day via e-mail, they said.

TEPCO only started providing the data to Japan's Nuclear and Industrial Safety Agency on March 23. It waited until April 24 to make the map public, only after the media reported details of the map a day before.

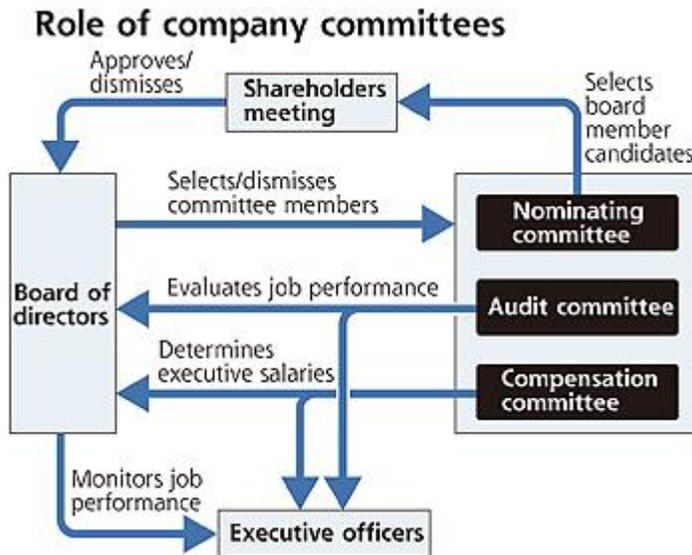
An official at TEPCO's public relations department said the company had provided data on the radiation amount at the Fukushima No. 1 complex at press conferences even before the official disclosure of the map, adding the utility "received advice" from the NRC.

February 11, 2012

<http://www.yomiuri.co.jp/dy/national/T120210006779.htm>

## Govt to make TEPCO more transparent / 3 committees to oversee management

The Yomiuri Shimbun



The government plans to require Tokyo Electric Power Co., operator of the crippled Fukushima No. 1 nuclear power plant, to introduce a committee governance structure to increase management transparency.

The policy is included in the draft comprehensive special business plan, which will be compiled by the government's Nuclear Damage Liability Facilitation Fund and TEPCO in March.

TEPCO Chairman Tsunehisa Katsumata is set to resign to take responsibility for the nuclear crisis. His successor will be recruited from outside the company to increase the transparency of TEPCO's management.

TEPCO tentatively decided Thursday to accept the fund's demand that it hold a one-third stake in the utility through a capital injection using taxpayers' money.

With the veto power that comes with a one-third stake, the fund will be able to overturn decisions in shareholders meetings concerning TEPCO's management policy.

The government decided TEPCO's opaque management practices--including high labor costs and donations as part of its expenses that are used to determine electricity charges--need to be changed if the utility is to regain public trust.

By making it possible for outside entities to oversee TEPCO's management system, the government aims to make it easier to gain the public's understanding over using public funds to assist TEPCO.

In addition to introducing a committee system, the draft plan for new management will introduce an internal company system to encourage TEPCO's internal divisions to compete with one another to reduce costs.

Concerning a financial assistance scheme for TEPCO, the fund will inject 1 trillion yen as additional capital while banks will loan a total of 1 trillion yen.

Alternatively, the banks could buy TEPCO's bonds, instead of extending loans.

To minimize the burden on the banks, hundreds of billions of yen out of the 1 trillion yen will be set aside as a line of credit from which TEPCO would be able to borrow money when necessary.

The fund plans to present the scheme to banks in the near future.

On Thursday night, a TEPCO executive said, "We assume the government wants to hold at least one-third [of a stake in TEPCO] through the injection of capital, as that percentage comes with veto power."

However, the government demands at least a majority of voting rights in TEPCO, which still leaves some gaps between the two parties' positions.

Under the committee-company system, TEPCO will have three committees within the board of directors--the nominating committee, which selects and dismisses members of the board; the audit committee overseeing the work of board members; and the compensation committee, which determines board members' salaries.

For all three committees, more than half of the members will be outside directors.

Under the system, executive officers will be appointed to carry out separate functions of business operations from the board of directors, which oversees management.

(Feb. 11, 2012)

February 07, 2012

## **Pro-nuclear energy town councillor's firm had 700 million yen in nuke plant contracts**

<http://mdn.mainichi.jp/mdnnews/news/20120207p2a00m0na023000c.html>

TAKAHAMA, Fukui -- A town assembly member here calling for the continuation of nuclear power is also president of a company that has received at least 700 million yen in nuclear-related construction contracts, it has been learned.

Akio Awano, 62, is vice-speaker of the municipal assembly of Takahama, which hosts a Kansai Electric Power Co. nuclear plant. He is also part of a local organization promoting nuclear power plants.

According to the Fukui Prefectural Government and other sources, Awano's firm, a metal processing company, has around 15 employees and earned about 200 million yen in fiscal 2010. It has an office in the Takahama nuclear plant and has expanded its business on a diet of nuclear plant-related construction.

Construction records show that Kansai Electric began contracting Awano's firm directly in the 1990s, and has forked out some 536 million yen to the company for 67 jobs in the past five years. Furthermore, Awano's company took 66 subcontracted jobs at the utility over the same period. Most local construction businesses get at most about 15 power company jobs per year.

In September of last year, Awano submitted a written statement seeking continuation of nuclear power generation, including the restart of Takahama plant reactors off-line for regular inspections. The statement was approved by an overwhelming majority of the town assembly.

However, Fukui Gov. Issei Nishikawa has said, "Unless the national government submits new safety standards reflecting the knowledge gained from the Fukushima nuclear disaster, I cannot agree" to a restart of the reactors. Oi and Mihama, two other towns in Fukui Prefecture also hosting nuclear facilities, have not passed resolutions in favor of restarting reactors.

Awano has defended himself by saying, "I submitted the statement after looking at the country's energy situation and judging that nuclear power is necessary. My actions as an assembly member and my management of the company are completely separate, and I was not influenced by the construction contracts."

The No. 1, 2, and 4 reactors at the Takahama plant are off-line for inspections. In January Kansai Electric submitted a safety evaluation of the No. 1 reactor to the Nuclear and Industrial Safety Agency, a prerequisite for it to be restarted. The agency and the Nuclear Safety Commission of Japan will look at the evaluation and Prime Minister Yoshihiko Noda will make a decision on the restart based on local opinions.

Kansai Electric has declined to comment on individual contracts, saying only that its business partners are "evaluated and registered in a fair manner, with the most appropriate company for a construction job chosen and contracted."

 [Click here for the original Japanese story](#)

February 06, 2012

## **Nuke plant operators paid \$2 bil. to localities**

[http://www3.nhk.or.jp/daily/english/20120206\\_27.html](http://www3.nhk.or.jp/daily/english/20120206_27.html)

Newly disclosed documents show that nuclear power plant operators in Japan have paid more than 2 billion dollars to local authorities hosting their facilities **over the past 4 decades**.

NHK obtained information about the payments from 44 prefectures and municipalities based on the information disclosure system.

The information shows that the payments have reached 2.1 billion dollars since construction of nuclear plants began in the late 1960s.

Of the amount, Tokyo Electric Power Company which operates the disabled Fukushima Daiichi nuclear plant paid nearly 460 million dollars. Other utilities have continued making payments ever since the accident at the plant.

**Power companies pay the money to promote the construction of nuclear plants.** Some local governments ask for donations to invest the money in the regional economies.

**The utilities view the payments as part of the cost of generating power and pass the expense on in utility fees.**

But an economy ministry panel said last week that the payments should not be counted as a cost.

Host communities have spent the money in various ways. They include public works projects, events and scholarships as well as statues of animation characters and promotional videos.

**The host communities also receive subsidies from the central government,** but the payments decrease in stages. Until 2003, they were only allowed to use the money to construct public facilities.

The payments are apparently convenient for some communities that are struggling to find ways to maintain the facilities.

## **Kyushu men sent to Fukushima nuke plant under falsified labor deals**

<http://mdn.mainichi.jp/mdnnews/news/20120206p2a00m0na013000c.html>

As efforts to tame the crisis at the Fukushima No. 1 nuclear plant continue, laborers from as far as Kyushu have been dispatched there under illegal labor deals and forced to work inside at least one of the crippled plant's highly contaminated reactor buildings.

A man in his 40s from Nagasaki Prefecture recently related how he carried lead sheets weighing some 20 kilograms each up as high as the sixth floor of one building. A Geiger counter dangling from his neck sounded noisily and his mask misted over as temperatures climbed above 30 degrees Celsius.

"I was really angry because I was treated like a slave," Yosuke Nakayama, a pseudonym, said of his some 40 days at the Fukushima plant, starting in July last year.

The lead sheets were installed inside the plant's No. 1 reactor building to block radiation. Nakayama, however, was not angry about the hard work, but about the treatment he received upon returning home to Nagasaki.

He said he was paid 11,000 yen per day he worked for a company six layers down in a seven-layer outsourcing pyramid, with only the top-tier firm receiving orders directly from plant operator Tokyo Electric Power Co. He had been promised 14,000 yen per day, and had also been assured he would not have to enter the reactor buildings.

When Nakayama demanded an explanation for the 3,000 yen difference, his subcontractor mentioned the name of a Fukuoka-based crime syndicate.

"We don't care if yakuza show up," the contractor said, apparently threatening him.

A third-tier company to which Nakayama's employer dispatched laborers via two other firms has been slapped with administrative punishments twice for its ties to crime syndicates.

Contacted by the Mainichi, Nakayama's employer acknowledged the dispatch of workers without a license. "We received about 13,000 yen from a fifth-tier firm and we'd lose money unless we deduct expenses," the company said.

Businesspeople familiar with the Kyushu Electric Power Co.'s Genkai Nuclear Power Plant in Saga Prefecture say a significant number of laborers have been sent to Fukushima.

A utility work firm in Saga has been recruiting laborers from across Kyushu since last December, ostensibly for work at nuclear plants in Kyushu and Shikoku. The names of about 20 laborers are written on the firm's white board, along with their destination: "Fukushima No. 1."

An executive of the firm says it started sending laborers to Fukushima in response to requests from its business partners. "People from Kyushu are in demand because they're serious. We will send them again if requested."

A Saga man in his 30s did a job similar to Nakayama's at the Fukushima plant after being dispatched from a seventh-tier firm. He contacted the company after seeing a posting at a job-placement office and got the Fukushima job.

He received about 300,000 yen for some 40 days of work, and absorbed a radiation dose of some 10 millisieverts. "There are no jobs in my hometown, so it can't be helped," he says, adding he is waiting for another Fukushima assignment.

February 04, 2012

## **Falsified labor deals rampant at Japan's nuke plants, says suspect**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na016000c.html>

A power plant construction and maintenance firm has falsified worker contracts for temporary labor at nuclear plants across Japan for years, according to statements by one of the company's employees charged with involvement in the fraudulent agreements.

Hideo Ichise, 58, and two other people were indicted on Feb. 2 for the dispatch of a worker to the Oi nuclear plant in Fukui Prefecture under a false contract, a violation of the Employment Security Law. Ichise's employer Taihei Dengyo Kaisha Ltd. -- where he now serves as business manager after a stint as the firm's Oi operations chief -- along with Fukui Prefecture-based plumbing company Takada Kiko were also charged.

Investigators have discovered a dossier on falsified worker contracts at more than 30 Taihei Dengyo branches, further suggesting the firm has been involved in illicit labor deals involving nuclear power plants across the country.

Police have furthermore discovered cases of various personnel agencies siphoning off the wages of temporary workers at nuclear plants, while involvement of the Kitakyushu-based crime syndicate Kudo-kai has also been uncovered.

According to investigative sources, Ichise said, "We have participated in (illicit nuclear labor practices at the Oi plant) for many years. We have been doing the same thing at other nuclear power plants."

Taihei Dengyo's operating officer was also quoted as telling police, "Our company alone cannot hire many workers, so we (falsified labor contracts) knowing it was illegal."

Other sources involved in work at nuclear power plants have provided similar information, including one Saga Prefecture man in his 50s who worked at the Genkai Nuclear Power Plant there during regular inspections about three years ago. He was dispatched to a construction company by a temp agent called simply "boss." Although there was ostensibly a contract with the construction company and the man worked directly under a construction company employee, "boss" apparently took 5,000 yen out of his 13,000-yen daily wage.

A year earlier, the Saga man had also worked at the Genkai plant during a regular check as an employee of an electrical firm for about two months. A fellow worker in his 50s had to take more than two weeks off after injuring his ankle at the plant but had to pay his own medical bills.

In this case, the Saga man worked under the guise of the electrical firm. "There were gangsters among those bosses, and sometimes two bosses raked off my wages," the Saga man recalls.

A temporary personnel agency operator says, "Parent companies send us requests for a certain number of workers, and we submit a list of people who then go and work under those parent companies at nuclear power plants. We give the workers their wages after deducting our share." Another agent told the Mainichi, "There are times when gangsters are involved in recruiting workers. It is easy for us to hire them because they save us the trouble."

It is not clear why such unlawful labor practices have been overlooked. An inspector at a labor standards office stated, "It is very difficult to get a full picture of the labor practices at nuclear power plants because corporate parent-subsidiary relations change depending on their line of work. It is also difficult to conduct surprise on-site inspections of nuclear power plants because advance notification is necessary as part of antiterrorism measures."

Economy, Trade and Industry Minister Yukio Edano instructed electric power companies to abide by the law and bar crime syndicates from involvement in work at nuclear power plants. However

Takayoshi Yoroi, a professor emeritus of labor law at Ryukoku University, says, "Falsified labor contracts have been rampant for so long. If the government is dead serious about stamping them out, nuclear power plants will stop running. Power companies and general contractors simply have to directly hire workers, but I wonder if they have the determination to do so."

 [Click here for the original Japanese story](#)

February 03, 2012

## Indictment of contractors exposes illicit work at nuke plants

<http://mdn.mainichi.jp/mdnnews/news/20120203p2a00m0na018000c.html>

FUKUOKA -- Three people and two firms were indicted Feb. 2 on charges of dispatching a worker to the Oi Nuclear Power Plant in Fukui Prefecture under a falsified contract in violation of the Employment Security Law.

Those indicted by the Kokura Local Public Prosecutors Office are Hideo Ichise, 58, of Tsuruga, Fukui Prefecture, Yoshimi Tomita, 59, of Maizuru, Kyoto Prefecture, and Kanae Ikegami, 36, of Kitakyushu's Wakamatsu Ward. Prosecutors also indicted Taihei Dengyo Kaisha Ltd., a Tokyo-based power plant construction and maintenance firm, and Takada Kiko, a plumbing firm in Takahama, Fukui Prefecture.

The Kokura Summary Court on Feb. 2 fined Ichise and Tomita and the two firms 500,000 yen each and Ikegami 250,000 yen. Ichise is the Fukui business manager of Taihei Dengyo, and he previously served as the firm's Oi operation chief. Tomita is president of Takada Kiko while Ikegami is an executive of Dream, previously known as Soshin Kogyo, a plumbing and housing equipment firm. She is also the wife of a gang leader with ties to the Kitakyushu-based crime syndicate Kudo-kai.

"Many documents showing illegal labor were found, one after another, during our search. They proved **many years of shady deals,**" says a senior officer with the Fukuoka Prefectural Police. **The case sheds light on not just one firm or one nuclear power plant but the nuclear power industry as a whole.**

Sixty-one-year-old Masaki Yoshimura (pseudonym) in Kitakyushu was dispatched to many nuclear power plants in Japan while working for a construction company for a period of 14 years that ended seven years ago. There were many companies involved in his work between his employer and general contractors such as nuclear power plant manufacturers. One of those companies was Taihei Dengyo.

Repairing plumbing was the main part of his job, but instructions came from different companies depending on which nuclear power plants he was working at. Electric power companies, operators of nuclear power plants, paid general contractors a daily pay of 100,000 yen, but Yoshimura got only 18,000 yen. More than 80 percent of his daily wage was siphoned off.

"It's the world of siphoning off. It's a system in which big companies make money handsomely," he says.

The nuclear job scandal involving Taihei Dengyo uncovered the fact that **illegal labor supports nuclear power businesses.** Fake contracts and unlicensed dispatches of workers are peppered with acts

of siphoning off pay. These practices have put laborers in an unstable position and invited crime syndicates' involvement.

"The Geiger counters quickly sound, so you can't work for so long. Fifty to 100 people have to work together. People at the bottom of society are there," Yoshimura says.

Radiation zones are divided into a scale from A to D, and workers assigned to D, the highest radiation zone, have to wear protective gear and layers of gloves. "Competent workers brought with them other workers' Geiger counters so they would not to exceed the dosage limits and to improve their work efficiency," Yoshimura said.

Stopping a nuclear reactor for just one day reportedly results in a loss to the owner of 100 million yen. A retired electric power company official says, "Electric power companies have repeatedly requested shorter inspections. But to shorten checks without changing the number of items to inspect, you have to either cut corners or force workers to work throughout the night," he says.

According to the Japan Nuclear Energy Safety Organization, about 90 percent of some 83,000 nuclear power plant workers who were exposed to radiation in fiscal 2009 were not employed directly by nuclear power plant operators. **Their average radiation dosage was 3.6 times the level suffered by employees of those operators.**

The Committee on Poverty of the Japan Federation of Bar Associations last year conducted a survey of nuclear power plant workers. Lawyer Tatsuo Watanabe, a member of the committee, says, "From an ethical point of view, we should check unlawful labor at nuclear power plants that is being done for economical reasons."

More than 1,000 workers are necessary for a regular inspection of a nuclear reactor, but postings for these jobs do not show up at job-placement offices. Most part-time nuclear workers find employment through personal connections and introductions. A labor bureau official says: "(The connections) are extra careful to not hurt the electric power companies. Those with strong personal connections have strong solidarity and are tightlipped. They are in a world of their own."

February 01, 2012

## **Editorial: Nuclear regulatory reform must weed out entrenched interests**

<http://mdn.mainichi.jp/perspectives/news/20120201p2a00m0na004000c.html>

Bills relating to a shift in the nation's nuclear power policy were approved by the Cabinet on Jan. 31. In addition to the establishment of a new nuclear regulatory agency under the Environment Ministry, the government is aiming to legislate the lifespan of nuclear reactors, and require plant operators to outline specific measures against severe nuclear accidents.

Significant harm has been done by allowing the Nuclear and Industrial Safety Agency (NISA), an administrative body tasked to regulate nuclear power safety, to exist under the umbrella of the Ministry of Economy, Trade and Industry (METI), a major promoter of nuclear power. Divorcing nuclear

regulation from nuclear promotion and centralizing regulatory duties into one agency stands to reason. Changing the agency's name from the originally proposed "nuclear power safety agency" to "nuclear power regulatory agency" is likewise pertinent, considering the new agency's nature.

However, the mere alteration of a name and rearrangement of an organization will not result overnight in a highly independent agency specializing in regulation. Because many of the new agency staff members are likely to come from NISA, specific measures are necessary to secure the independence of the new body.

It remains unclear how a nuclear safety investigation committee, envisaged in one of the bills approved by the Cabinet, will contribute toward ensuring the safety of nuclear power. Since the Cabinet Office's Nuclear Safety Commission (NSC) lost the confidence of the Japanese public over its response to the ongoing nuclear disaster, the new committee cannot expect to gain it back without demonstrating its independence and competence.

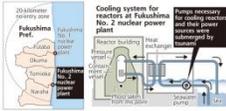
The handling of the continuing nuclear crisis has been problematic particularly due to the government's lack of readiness, which has generated suspicions that the disaster could have been mitigated had the government been more capable of crisis management. Crisis management will be an important duty of the new regulatory agency, and must be attended to adequately.

Meanwhile, some things have slipped through the centralization of regulatory responsibilities. Safety research conducted by the Japan Atomic Energy Agency (JAEA) and the inspections and other safeguards implemented by the Ministry of Education, Culture, Sports, Science and Technology to prevent the diversion of nuclear material toward the production of nuclear weapons will not fall under the jurisdiction of the new regulatory agency. It remains to be seen how these tasks will be integrated into the new scheme.

Included in the latest bills are the designation of a 40-year lifespan for nuclear reactors and the implementation of "back-fit" measures that would hold existing reactors to the latest technological standards. The government claims that the combination of these two mandates would make it extremely difficult for reactors to continue running more than 40 years. The bills, however, include special exemptions allowing reactors to operate for up to 60 years. Stringent criteria must be set to prevent "exceptions" from undermining the rule.

We hope also that the proposed legal reforms lead to a stronger nuclear disaster prevention scheme. In the case of the Fukushima disaster, the off-site emergency response center failed to function. A fundamental review of Japan's nuclear crisis preparedness is imperative. Along with an expansion of disaster protection zones emphasizing nuclear disaster countermeasures, there is a pressing need to reassess national and regional disaster prevention plans.

Numerous corporations and organizations make up the national framework that had heretofore promoted nuclear power, and their role in "amakudari" -- literally "descent from heaven," referring to the practice of former bureaucrats taking advisory posts in industries they previously regulated -- has been pointed out. For effective regulations to gain ground, it is important to extend reform to such organizations with entrenched interests.



February 12, 2012

## Fukushima No. 2 reactor temperature up to 82C, but not critical: TEPCO

<http://mdn.mainichi.jp/mdnnews/news/20120212p2g00m0dm020000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Sunday the temperature at the bottom of the No. 2 reactor at its crippled Fukushima No. 1 nuclear plant rose further to 82 C, but the reactor has not gone critical.

While the thermometer reading at shortly after 2 p.m. marked a new high since the reactor attained a cold shutdown in December, the utility known as TEPCO said it has confirmed that sustained nuclear reactions are not taking place in the reactor as **no radioactive xenon has been detected inside its containment vessel.**

TEPCO reported the latest development immediately to the Nuclear and Industrial Safety Agency of the Economy, Trade and Industry Ministry as the temperature exceeded the limit of 80 C designated by the company's safety regulation for maintaining a cold shutdown, it said.

It is considered desirable to keep the temperature below 80 C, while the bottom of a reactor pressure vessel must be kept below 100 C in a stable cold shutdown, in view of the margin of error of thermometers, according to TEPCO officials.

TEPCO plans to increase the amount of water injected as a coolant by 3 tons per hour and pour 1 ton of boric acid later Sunday to prevent any event of criticality.

As a reason for what is causing the temperature rise, TEPCO said it is possible the water flow is unstable and thus failing to cool the reactor stably, while also saying it will check the thermometer for any irregularities. The temperature was measured at 78.3 C at 10 a.m. and fell to 75.4 C at 11 a.m.

The decline occurred after TEPCO on Saturday night increased the amount of water being injected into the reactor to 14.6 tons per hour from 13.6 tons, after seeing the temperature rise to 73.3 C at 9 p.m. It reached 74.9 C at 11 p.m. Saturday. The temperature readings began rising on Feb. 1.

One of the three thermometers at the bottom of the reactor's pressure vessel stayed between 67 C and 71 C from Friday evening to Saturday evening after hitting 73.3 C on Monday.

Readings from two other thermometers that check the temperature at the bottom of the No. 2 reactor vessel were around 35 C, TEPCO said.

The Nos. 1 to 3 reactors at the Fukushima No. 1 plant in northeastern Japan experienced meltdowns as a result of the loss of key cooling functions in the wake of the devastating earthquake and tsunami on March 11 last year.

## Temperature rising at No.2 reactor

[http://www3.nhk.or.jp/daily/english/20120212\\_12.html](http://www3.nhk.or.jp/daily/english/20120212_12.html)

The temperature at the No.2 reactor of the Fukushima Daiichi nuclear power plant **keeps rising even after the injection of more cooling water on Saturday night.**

The plant operator, Tokyo Electric Power Company, or TEPCO, says a thermometer at the bottom of the reactor registered 78.3 degrees Celsius at 10 AM on Sunday.

The reading began to rise in late January to around 70 degrees. TEPCO pumped in more water to push down the temperature, but it rose again on Saturday night to 74.9 degrees.

The temperature continued to climb on Sunday morning to hit its highest level since last December, when the government and TEPCO declared all the reactors were at a state of cold shutdown, with their temperatures below 100 degrees.

**TEPCO denied the possibility of nuclear criticality**, saying 2 other thermometers at the bottom of the reactor show temperatures at around 35 degrees.

It adds that continuous nuclear fission would generate radioactive xenon, but gas samples collected from near the reactor found the element below the detection limit.

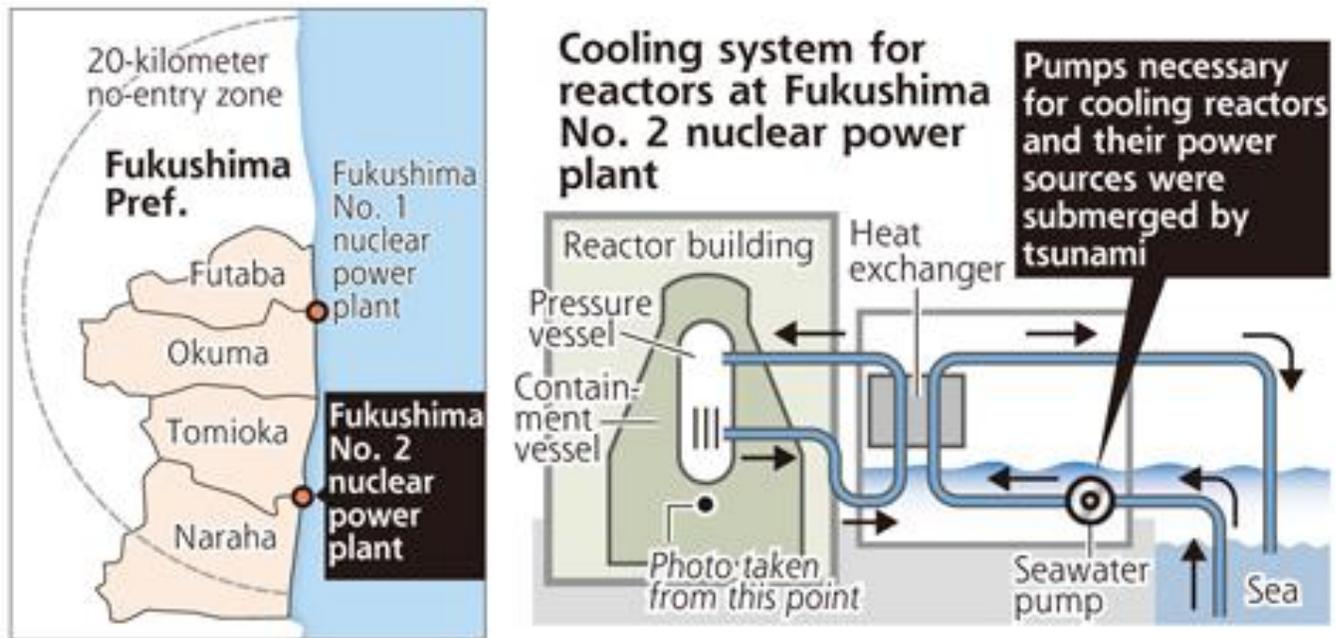
**TEPCO is set to dump in boric acid to prevent any nuclear criticality later on Sunday and increase the volume of cooling water by 3 tons per hour.**

Under new guidelines, **the company must keep reactor temperatures at 80 degrees or below, given thermometers' margin of error of up to 20 degrees.**

February 10, 2012

## Fukushima No. 2 plant was 'near meltdown'

The Yomiuri Shimbun



FUKUSHIMA--The Fukushima No. 2 nuclear power plant was "near meltdown" after being hit by tsunami following the Great East Japan Earthquake on March 11, according to the head of the plant.

The No. 2 plant, on the border of Naraha and Tomioka towns in Fukushima Prefecture, was opened to the media Wednesday for the first time since the disaster. It is **12 kilometers from the Fukushima No. 1 nuclear power plant**, which suffered a meltdown. Both facilities are operated by Tokyo Electric Power Co.

Plant chief Naohiro Masuda, in charge of plant operations since the crisis, told reporters Wednesday, "The No. 2 plant almost suffered the same fate as No. 1 [which led to a severe crisis]."

On March 11, a **9-meter-high tsunami** struck the No. 2 plant, while the No. 1 plant was hit by a 13-meter-high tsunami. The tsunami caused the No. 2 plant's seawater pumps, used to cool reactors, to fail. Of the plant's four reactors, three were in danger of meltdown.

**Luckily, one external high-voltage power line still functioned**, allowing plant staff in the central control room to monitor data on internal reactor temperatures and water levels.

By March 15, the No. 2 plant's four reactors reached a state of cold shutdown without any leakage of radioactive materials.

"[At that point, the situation at the No. 2 plant] was considerably different from the No. 1 plant where it was difficult to know what was going on," Masuda, 53, said.

However, **despite intense efforts by all employees, it took a long time to stabilize the reactors.**

On March 11, **about 2,000 employees** of the No. 2 plant worked to stabilize the reactors. Some employees connected **200-meter sections of cable, each weighing more than a ton, over a distance of nine kilometers.**

Masuda noted the timing of the disaster was critical in saving the plant.

**"We were lucky it happened on a Friday afternoon [and not on a weekend],"** he said.

Masuda pointed out only 40 employees would have been at the plant if the earthquake had occurred in the evening or on a weekend.

"[In that case] it would be have been difficult for us to deal with the disaster," he said.

The Fukushima prefectural government conducted an on-site inspection at the No. 2 plant on Wednesday and repeated a request to TEPCO to decommission the facility.

Masuda did not elaborate and said, "At the moment, I can only say we'll maintain a state of cold shutdown."

The No. 2 plant's No. 1 reactor began operating in 1982. Following the Great East Japan Earthquake, a Nuclear Emergency Situation Declaration was issued for both the No. 1 and No. 2 plants. The declaration was lifted for the No. 2 plant in December.

**February 09, 2012**

## **Prefectural team makes 1st inspection of Fukushima No. 2 nuke plant**

<http://mdn.mainichi.jp/mdnnews/news/20120209p2a00m0na009000c.html>

A team of Fukushima prefectural officials visited the Fukushima No. 2 nuclear plant on Feb. 8, marking the first prefectural inspection of the plant since the March 11, 2011 disasters forced it to shut down.

"Right now, the most important tasks are to keep the reactors in cold shutdown and cool the spent fuel rods while preparing safety measures to deal with any unexpected problems," said the deputy head of the prefecture's living environment division following the inspection. "I felt that work there to maintain emergency power supplies and prevent flooding of the plant buildings was progressing."

The reactors at the Fukushima No. 2 plant -- about 11 kilometers south of the disaster-struck Fukushima No. 1 nuclear complex -- stopped automatically when the Great East Japan Earthquake hit and are now in cold shutdown, but the plant was very nearly the site of a second nuclear crisis.

In circumstances similar to those at the No. 1 plant, the cooling systems in three of Fukushima No. 2's four reactors failed when the March 11 tsunami hit and knocked out their backup generators. Unlike the situation at the No. 1 plant, however, staff at the No. 2 station managed to patch into external power before the reactor cores could seriously overheat.

In December last year, the government's Nuclear and Industrial Safety Agency officially declared the nuclear emergency at the plant over, while Tokyo Electric Power Co. -- operator of both the Fukushima No. 1 and 2 plants -- has submitted a plan to the agency for maintaining cold shutdown.

Fukushima Prefecture is calling for the shutdown of all nuclear stations in the prefecture, including Fukushima No. 2.

However, Fukushima No. 2 plant director Naohiro Masuda suggested it's too soon to discount restarting the reactors there, saying, "Under present circumstances, it's impossible to say how the reactors here will be dealt with in the future. For now, we have to maintain a steady cold shutdown by transitioning from the temporary cooling equipment we now have in place to proper, permanent equipment."

 [Click here for the original Japanese story](#)

## Temperature inside reactor stops rising

<http://www.yomiuri.co.jp/dy/national/T120208005861.htm>

The abnormal rise in temperature in a reactor at the Fukushima No. 1 nuclear power plant has stopped, apparently because more water has been injected into the crippled reactor, according to Tokyo Electric Power Co.

TEPCO said the temperature at the base of the No. 2 reactor's pressure vessel had **fallen to 68.5 C at 5 p.m. Tuesday after earlier peaking at 73 C.** However, **the cause of the increased temperature remained unclear.**

Junichi Matsumoto, acting head of TEPCO's headquarters regarding nuclear plant locations, said increasing the amount of water injected hourly into the reactor by three tons to 13.5 tons since 4:30 a.m. Tuesday seemed to be having an effect.

"[The temperature] has begun falling after peaking," Matsumoto said.

Keeping the temperature at the base of the reactors at 100 C or less is a stable state known as cold shutdown. Reaching cold shutdown was a precondition for enabling the government to declare in December that the crisis at the nuclear plant had been brought under control.

TEPCO's guideline stipulates the temperature should be kept at 80 C or lower to allow for possible measurement errors.

The reactor will need to be monitored carefully because the condition inside the reactor's inner part containing melted nuclear fuel is not clear, and the reason for the temperature rise has yet to be pinpointed.

Currently, cooling water is injected into the No. 2 reactor via two piping systems--the coolant water supply system that can deliver water to the vessel's base, and the reactor core water spray system that aims water directly at the reactor core.

The temperature in the pressure vessel's base began rising from 45 C around Jan. 26, when the water injection balance of the two systems was changed several times during pipe repair work.

One of three thermometers installed around the base recorded a temperature increase of nearly 30 C over a little more than 10 days, reaching as high as 73 C at one time.

According to TEPCO, the volume of water being injected was far less than usual. It is possible that the way water was injected into the reactor might have changed around the time of the pipe repairs, and that water did not reach some of the fuel.

TEPCO also speculated that the fuel, which had melted and then solidified, might have cracked due to some shock or dropped down and changed shape.

[February 08, 2012](#)

## **TEPCO injects more water into reactor**

<http://www.yomiuri.co.jp/dy/national/T120207005567.htm>

Tokyo Electric Power Co. has increased the amount of water being injected into the No. 2 reactor at the Fukushima No. 1 nuclear power plant because the temperature at the base of the pressure vessel has been rising, the company said Tuesday.

The 13.5 tons being injected each hour to cool the reactor--an increase of three tons--is the most since the government announced the crippled plant had achieved a stable state of cold shutdown in December.

According to the utility, after increasing the amount of water being injected at 4:30 a.m. Tuesday, the temperature at the vessel's base has been fairly constant: It was 72.2 C at 5 a.m. and 69 C at 10 a.m. The temperature at the base of the vessel had been 45 C as of Jan. 27, but began rising earlier this month. TEPCO is investigating the cause of the higher temperature.

# Temperature decreasing inside Fukushima reactor

[http://www3.nhk.or.jp/daily/english/20120208\\_26.html](http://www3.nhk.or.jp/daily/english/20120208_26.html)

Tokyo Electric Power Company says it has been able to lower the temperature inside the No.2 reactor at the troubled Fukushima Daiichi nuclear power plant by increasing the amount of water being injected into it.

TEPCO had been struggling to deal with rising temperatures inside the reactor. A thermometer located at the bottom of the reactor read 45 degrees Celsius on January 27th, but rose to over 70 degrees on Sunday. The cause is unknown, and two other thermometers at the reactor have shown no such increase.

TEPCO said on Wednesday that the temperature inside the reactor was 66.7 degrees at 5 AM, 5.5 degrees lower than a day earlier. The temperature gradually declined after the company increased the rate of water injection by 3 tons to 13.5 tons per hour on Tuesday.

Such a high rate of injection has not been used since just after the nuclear crisis began last March.

TEPCO says the temperature inside the reactor rose slightly to 68 degrees at 10 AM, but it is still dropping overall.

The utility cannot determine the exact situation inside the reactor or the cause of the temperature rise.

The utility says it will continue to monitor the situation closely while maintaining the current rate of water injection.

## Nuke dangers nowhere near resolved: Kan's crisis adviser

By [REIJI YOSHIDA](http://www.japantimes.co.jp/text/nn20120208f1.html) - <http://www.japantimes.co.jp/text/nn20120208f1.html>

In December, Prime Minister Yoshihiko Noda announced the "conclusion" of the meltdown crisis at the Fukushima No. 1 nuclear plant, saying Tokyo Electric Power Co. was managing to keep the three crippled reactors cool, as well as the facility's spent fuel pools.

But a former special adviser to Naoto Kan, who was prime minister when the crisis started, warned that the situation is far from resolved and said Fukushima has exposed a raft of serious nuclear problems that Japan will have to confront for years.

**"I would say (the crisis) just opened Pandora's box,"** Hiroshi Tasaka, who has a doctorate in nuclear engineering and is now a professor at Tama University, said in a recent interview with The Japan Times.

He was one of a select group who glimpsed the secret worst-case scenario document written up by the Japan Atomic Energy Commission on March 25 that was later reportedly quashed by the government.

According to the scenario, the biggest risk during the meltdown crisis wasn't the reactors themselves but the **spent fuel pools** sitting atop them, particularly the one above reactor 4, which still contains about 1,500 nuclear fuel assemblies, Tasaka said.

Unlike reactors 1, 2 and 3, the No. 4 unit was offline for regular checks when disaster struck on March 11 and thus didn't suffer a meltdown. But its fuel rods were in the pool outside the reactor, and its coolant water fell dangerously low.

Adding to the danger is that the **fuel pool is now directly exposed to the outside environment** after a hydrogen explosion blew off the upper part of the reactor building on March 15, Tasaka noted.

The potential heat from the pool was also much higher than other pools because 204 of the 1,535 assemblies were still "new ones" that had been temporarily removed from reactor 4 for regular checks.

The Fukushima crisis has highlighted the dangers of spent fuel pools, which are outside the robust primary containment vessels of the reactors themselves, Tasaka said.

**Under the current circumstances, the nation has no prospect of starting up the experimental high-level nuclear waste processing facility in Rokkasho, Aomori Prefecture, because of both technical difficulties and the sentiments of antinuclear activists.**

This means utilities must store their spent fuel assemblies in cooling pools at their respective reactor sites as a "temporary measure." This situation greatly increased the danger at Fukushima No. 1 on March 11.

"The storage capacities of the spent fuel pools at the nation's nuclear power plants are reaching their limits," Tasaka wrote in a new book, "Kantei Kara Mita Genpatsu Jiko No Shinjitu" ("The Truth About the Nuclear Accident as Viewed From the Prime Minister's Office").

According to Tasaka, the utilities' fuel pools were about 70 percent full on average in 2010, but the figure was 80 percent at Fukushima No. 1.

The makeshift cooling systems set up at Fukushima No. 1 to stabilize the stricken reactors and fuel pools have greatly reduced the possibility of another catastrophe, Tasaka said, but the ad hoc system for decontaminating the coolant water is nevertheless generating large amounts of highly contaminated waste every day.

Making matters worse, the government doesn't have any place to permanently store it, he wrote.

Tasaka is also deeply concerned about the "groundless optimism" displayed by bureaucrats and business leaders as they rush to restart dozens of reactors that remain halted for safety checks since March 11.

"I understand quite well the intentions of the government, which now wants to send out a message of hope. But at this stage, all the risks should be put on the table," he said.

The nation's nuclear regulators must carry out drastic reforms to regain the people's trust. This is an imperative for the government if it wants to keep pushing nuclear power, Tasaka said.

He recalled viewing the government's worst-case scenario in late March. He was officially appointed special adviser to the prime minister on March 29.

The document detailed a hypothetical Fukushima crisis worst case: Eventual contamination from the plant would require the government to assist residents in the Tokyo area to evacuate if they wanted to voluntarily "migrate," based on the same evacuation protocols adopted for the 1986 Chernobyl accident.

The scenario assumed another hydrogen explosion would occur in the reactor 1 building and radiation would force all of the workers at the plant to evacuate.

All of the pools storing hundreds of nuclear fuel assemblies would eventually lose their cooling ability and the assemblies would melt down and breach the pools.

According to Kyodo News, the simulation was "so shocking" that top government officials decided to keep the paper secret by treating it as a mere personal document of Japan Atomic Energy Commission Chairman Shunsuke Kondo, who compiled the simulation. The government only gave it official recognition at the end of December, according to Kyodo.

More than 10 months after he saw the worst-case scenario paper, Tasaka is still not sure if such scary information should immediately be made public during a nuclear plant crisis.

The assumed worst case was extreme and people did not need to immediately flee the Tokyo area even in March or April, Tasaka said. Disclosing the simulation could have caused panic in the capital, he said.

Tasaka was obliged to keep secret what he learned through his work at the prime minister's office and was not in a position to decide what information was to be made public during the crisis.

He said he decided to start talking about the worse-case scenario only after Kan mentioned some of its highlights during an interview with the media in September.

Tasaka believes the media and government should lay some ground rules in advance on what sensitive information should be made clear in a nuclear crisis.

February 07, 2012

## **Temperature remains high at damaged reactor**

[http://www3.nhk.or.jp/daily/english/20120207\\_21.html](http://www3.nhk.or.jp/daily/english/20120207_21.html)

An unknown rise in temperature at one of the reactors at the damaged Fukushima nuclear plant is troubling its operator. Tokyo Electric says the temperature hasn't gone down even after it increased the volume of cooling water on Tuesday.

One of the thermometers at the bottom of reactor No. 2 at the Fukushima Daiichi plant gradually rose to about 70 degrees Celsius since January 27th. It had stayed around 45 degrees before.

In an effort to lower the temperature, the operator increased the amount of water sprayed on the nuclear fuel by 3 tons to 13.5 tons per hour Tuesday morning.

But **Tokyo Electric said readings were down only about 3 degrees after some 5 hours of operation, hardly showing signs of improvement.**

The utility said the flow of water in the reactor may have changed after plumbing work in late January, causing difficulties in cooling part of the melted nuclear fuel.

It added that no temperature rise has been observed at 2 other thermometers in the same reactor and that it will continue to carefully monitor the reactor.

TEPCO has been unable to visually confirm conditions inside the reactors since the nuclear disaster last March because of high radiation.

## **TEPCO increases water injection in reactor showing temperature rise**

<http://mdn.mainichi.jp/mdnnews/news/20120207p2g00m0dm147000c.html>

TOKYO (Kyodo) -- Workers at the crippled Fukushima Daiichi power plant on Tuesday raised the amount of water injected into the No. 2 reactor to the highest level since the plant achieved a stable state of cold shutdown in December, as concerns grew over the rising temperature recently detected at the bottom of the reactor's pressure vessel.

Following the move, the temperature measured at the same spot on the vessel dropped to 69.0 C at 10 a.m. from 72.2 C logged at 5 a.m., Junichi Matsumoto, spokesman for plant operator Tokyo Electric Power Co. told a press conference, but added that the company needs more time to assess the effect of the latest step.

"It is difficult to judge whether the temperature is rising or dropping unless we monitor the development for about a day," Matsumoto said.

TEPCO said it increased the amount of injected water at 4:24 a.m. Tuesday. **The No. 2 reactor is now being cooled with the injection of 13.5 tons of water per hour, up from 10.5 tons.**

Nuclear disaster minister Goshi Hosono told a press conference that TEPCO is making utmost efforts to lower the temperature.

Touching on last month's change in the amount of coolant water at the No. 2 reactor for pipe replacement, which is believed to have affected the temperature, Hosono said, "This was a process to enhance stability, but it has become clear that there is a possibility of (replacement work) creating an unstable situation temporarily."

"We have to consider in an even more careful way," he said.

TEPCO's Matsumoto said he believes the No. 2 reactor is maintaining a state of cold shutdown, because the temperature is not rising continuously. Readings on two other thermometers checking the temperature of the bottom of the pressure vessel were around 40 C as of 10 a.m.

A cold shutdown is defined by the Japanese government as a situation in which the bottom part of a reactor pressure vessel is kept below around 100 C and radiation exposure from the release of radioactive substances is significantly held down.

At the Fukushima Daiichi plant in northeastern Japan, the Nos. 1 to 3 reactors have suffered meltdowns as a result of the loss of their key cooling functions in the wake of the devastating earthquake and tsunami on March 11 last year.

TEPCO is now injecting water into the three crippled reactors through a new water circulation system installed after the accident.

February 06, 2012

## Temperature at No.2 reactor remains high

[http://www3.nhk.or.jp/daily/english/20120206\\_29.html](http://www3.nhk.or.jp/daily/english/20120206_29.html)

Attempts to cool the temperature in the No. 2 reactor of the disabled Fukushima Daiichi nuclear power plant have only partially succeeded despite the injection of more cooling water.

The temperature in the reactor has gradually risen from about 45 degrees Celsius registered on January 27th.

In the past 4 days, the temperature has climbed more than 20 degrees to above 70 degrees.

The plant operator, Tokyo Electric Power Company began pumping more water into the reactor at around 1:30 AM on Monday. But at 7 AM, the temperature stood at 73.3 degrees and at 5 PM, 69.2 degrees.

The utility firm says 2 other thermometers elsewhere in the reactor gave readings of about 44 degrees.

TEPCO says the rise in temperatures indicate that the flow of water in the reactor may have changed direction after plumbing work, and is no longer able to properly cool down the melted down nuclear fuel.

However, the utility says radioactive xenon has not been detected in gases around the reactor, and that nuclear criticality is not taking place.

The government and TEPCO announced in December that the 3 troubled reactors at the Fukushima plant had reached a state of cold shutdown with their temperatures below 100 degrees. But the situation inside the reactors remains unclear.

New regulations established after the state of cold shutdown was achieved require the utility to keep temperatures inside the reactors below 80 degrees.

TEPCO says it will increase the amount of water being injecting into the reactor to see if the temperature in the reactor drops.

The government's Nuclear and Industrial Safety Agency says there is a need for a comprehensive study to determine whether the reactor is actually in a state of cold shutdown. It says a brief reading of over 80 degrees on one of the thermometers does not necessarily mean there is trouble in the cooling system.

Meanwhile, the Chairman of the Nuclear Safety Commission, Haruki Madarame, says that a recurrence of nuclear criticality is unlikely.

But he criticized TEPCO and the nuclear safety agency for their handling of the matter. He says they are failing to properly explain the state of the reactors to the people.

## Temperature rises at Fukushima No.2 reactor

[http://www3.nhk.or.jp/daily/english/20120206\\_17.html](http://www3.nhk.or.jp/daily/english/20120206_17.html)

The operator of the Fukushima Daiichi nuclear plant says the temperature in the No.2 reactor remains high despite the injection of additional water.

A thermometer at the bottom of the reactor showed 73.3 degrees Celsius on Monday morning. It was around **45 degrees on January 27th and 71.7 degrees at 4 PM on Sunday.**

Tokyo Electric Power Company began injecting 10.6 tons of water per hour from around 1:30 AM on Monday. **That's one ton more per hour than before.**

The utility says 2 other thermometers placed at the bottom of the reactor have been giving readings of about 44 degrees.

It says the flow of water in the reactor may have changed after plumbing work, causing difficulties in cooling the nuclear fuel.

In December last year, the government and TEPCO declared the 3 reactors at the Fukushima Daiichi plant had been successfully put into a state of cold shutdown as their temperatures had fallen below 100 degrees. But the situation inside the reactors remains unknown.

TEPCO says the regulations set after the state of cold shutdown was achieved require the utility to keep temperatures inside the reactors below 80 degrees.

So it says the No.2 reactor is still in the state of cold shutdown.

February 04, 2012

## More leaks found at crippled Japan nuclear plant

<http://mdn.mainichi.jp/mdnnews/news/20120204p2g00m0dm015000c.html>

TOKYO (AP) -- Leaks of radioactive water have become **more frequent** at Japan's crippled nuclear power plant less than two months after it was declared basically stable.

The problem underlines the continuing challenges facing Tokyo Electric Power Co. as it attempts to keep the Fukushima Dai-ichi nuclear plant under control. A massive earthquake and tsunami badly damaged the plant last March, resulting in the melting of three reactor cores.

**Workers spotted a leak Friday at a water reprocessing unit which released enough beta rays to cause radiation sickness**, TEPCO spokesman Junichi Matsumoto said. He said no one was injured and the leak stopped after bolts were tightened on a tank.

Matsumoto said TEPCO also found that 8.5 tons of radioactive water had leaked earlier in the week after a pipe became detached at Unit 4, one of the plant's six reactors. The company earlier had estimated that only a few gallons (liters) had leaked.

He said officials are investigating the cause of that leak, but that it was unlikely the pipe had been loosened by the many aftershocks that have hit the plant.

**The structural integrity of the damaged Unit 4 reactor building has long been a major concern among experts because a collapse of its spent fuel cooling pool could cause a disaster worse than the three reactor meltdowns.**

Cold winter weather has also caused water inside pipes to freeze elsewhere at the plant, resulting in leaks in at least 30 locations since late January, Matsumoto said.

Officials have not detected any signs of radioactive water from the leaks reaching the surrounding ocean. **Sandbag walls have been built around problem areas as a precaution.** [don't worry, everything is safe]

More than 100,000 people around the plant fled their homes after the disaster due to radiation fears.

The government announced in December that the plant had reached "a cold shutdown condition" and is now essentially stable.

On Monday, six inspectors from the government's Nuclear and Industrial Safety Agency will begin an inspection of the plant to ensure its continued stability. They will study the reactors' cooling functions and measures to prevent explosions and nuclear chain reactions, among other steps to keep the plant under control, officials said.

February 03, 2012

NHK World English

# Safety checks to begin at Fukushima Daiichi plant

Japan's nuclear safety agency will begin inspecting the Fukushima Daiichi nuclear plant from Monday to see if it can safely remain in a state of cold shutdown.

Officials from the Nuclear and Industrial Safety Agency plan to check equipment and contingency preparations by examining manuals and interviewing workers during their three-week inspections.

Among the seven types of equipment to be checked is a reactor cooling system that recycles decontaminated water from the facility.

Another is a nitrogen-injection system to prevent hydrogen explosions within the disabled reactors.

Agency officials say they will open the onsite inspections to the media. The checks will be the first safety tests required under law since the March 11th accident.

The government declared on December 16th that the Fukushima Daiichi reactors had achieved a state of cold shutdown.

This means reactor temperatures have stabilized below 100 degrees Celsius, and the release of radioactive substances has been contained.

February 02, 2012

## TEPCO says 8.5 tons of water leaked from Fukushima No. 4 reactor

<http://mdn.mainichi.jp/mdnnews/news/20120202p2g00m0dm028000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that 8.5 tons of radioactive water leaked from the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant because a pipe connected to the reactor dropped off, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, water was found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The total amount of leakage from the reactor was initially estimated to be 6 liters, but the utility revised the figure later Wednesday, adding that the leakage appears to have started at around 5 p.m. Monday.

The pipe may have dropped off because water inside increased in volume as it turned into ice due to cold temperatures.

The utility plans to check whether there are similar cases in the other crippled reactors.

The Nos. 1 to 3 reactors have fuel inside, which is believed to have melted in the early phase of the nuclear crisis because the plant lost its cooling functions following the natural disasters.

The No. 4 unit also lost the function to cool its spent fuel pool, but no serious damage is believed to have occurred in the fuel stored there.

## **Radioactive water leaking from inside Fukushima No. 4 reactor**

<http://mdn.mainichi.jp/mdnnews/news/20120201p2g00m0dm150000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that it has found radioactive water leaking from a broken pipe connected to the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, about 6 liters of water were found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The utility is looking into the cause of the damage to the pipe and believes it may have some connection with the recent cold weather or the explosions that took place at the plant in the early phase of the nuclear crisis.

The density of radioactive substances included in the water is estimated at 35.5 becquerels per cubic centimeter, according to TEPCO.

January 31, 2012

NHK World English

## **Govt plans Fukushima decontamination test-run**

Japan's Environment Ministry has unveiled a model project designed to decontaminate areas with high levels of radiation around the crippled Fukushima Daiichi nuclear plant.

In a test-run for a wider clean-up, the ministry will first try to decontaminate 3 closed sections of a national expressway running through the no-entry zone near the plant.

The ministry last week announced a 2-year plan to decontaminate by March 2014 some evacuation zones where radiation levels have dropped below 50 millisieverts per year.

Radiation levels over a total 5 kilometers of expressway slated for the new project have ranged from a little to substantially above 50 millisieverts a year.

The ministry plans to assess the project's effectiveness in a test-run from the middle of March through July.

January 30, 2012

## **More water leaks found at Fukushima nuclear plant**

NHK World English

More water leaks have been found at the troubled Fukushima Daiichi nuclear power plant.

Tokyo Electric Power Company told reporters on Monday morning that it has discovered 2 additional water leaks at the nuclear plant.

This comes after it was announced on Sunday that **nearly 8 tons of water** was found to have leaked in 14 locations at the plant.

One of the 2 new findings involves about 30 liters of water that has leaked from a device that is removing salt from contaminated water. The other leak is from a valve of a pipe that is injecting water into a reactor.

TEPCO says leaked water has neither spilled out of the plant, nor flowed into the sea.

The utility firm is trying to determine whether water in some of the pipes froze and cracked the pipes, or loosened the pipes' connections.

It plans to quickly implement preventive measures, including carrying out more patrols early in the morning and **wrapping insulation around the pipes and other equipment.** !!!!!!!

The temperature on Monday morning around the plant dropped to minus 8.7 degrees Celsius.

January 29, 2012

## **TEPCO ordered to prevent water leaks at reactors**

## NHK World English

Japan's nuclear safety agency has instructed the operator of the Fukushima Daiichi nuclear plant to prevent water leaks at the plant.

The move follows the discovery of water leaks on Sunday in 14 locations at the damaged plant.

Tokyo Electric Power Company says about 40 liters of water leaked from a cooling system for a spent fuel pool at the No. 4 reactor, forcing the system to stop for one hour and 40 minutes. The utility also says that 7 tons of water leaked from the No. 6 reactor.

The company says that the leakages apparently occurred after frozen water in pipes loosened the pipes' connections or broke some parts.

The company adds that the leaked water did not contain radioactive materials or had already been processed to remove them.

Similar water leaks occurred in 3 locations at the plant on the previous day.

Responding to the agency's call for preventive measures, TEPCO has decided to conduct frequent checks on early mornings when temperatures often drop below zero and protect pipes from the cold with insulation materials or heaters, if necessary.

The utility says measures are already in place to protect critical systems, such as those used for cooling reactors.

## **Frozen water blamed for leaks at Fukushima plant**

Tokyo Electric Power Company has found water leaks in 14 locations at the Fukushima Daiichi nuclear plant.

The utility says the leaks apparently occurred after frozen water ruptured the pipes and the leaked water did not contain any radioactive materials.

Tokyo Electric said about 40 liters of water leaked from a cooling system for a spent fuel pool at the No.4 reactor on Sunday, but the flow stopped when workers closed the valve.

The company said **the leak forced the system to stop for one hour and 40 minutes**, but the pool's temperature did not rise.

**Tokyo Electric said 7 tons of water had leaked from the No.6 reactor.**

The temperature fell to minus 8 degrees Celsius on Sunday morning near the damaged plant.

Ruptured pipes caused 3 water leaks on the previous day.

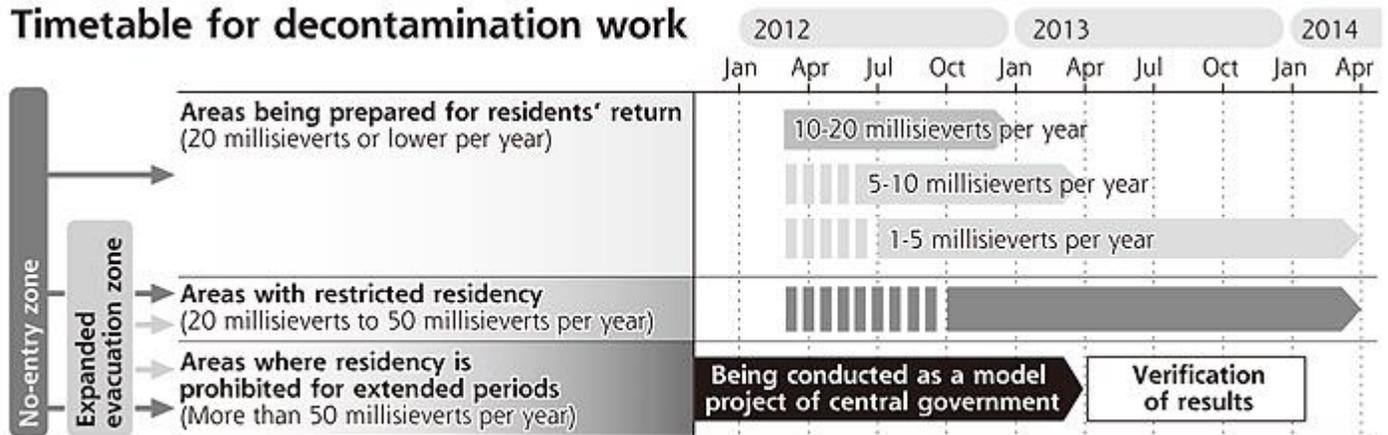
Tokyo Electric official Junichi Matsumoto admitted that **the utility failed to take sufficient steps to prevent frozen pipes**. He said it will take quick action to protect the pipes from the cold weather.

January 28, 2012

## Less polluted areas to come 1st / Govt releases decontamination schedule for Fukushima Prefecture

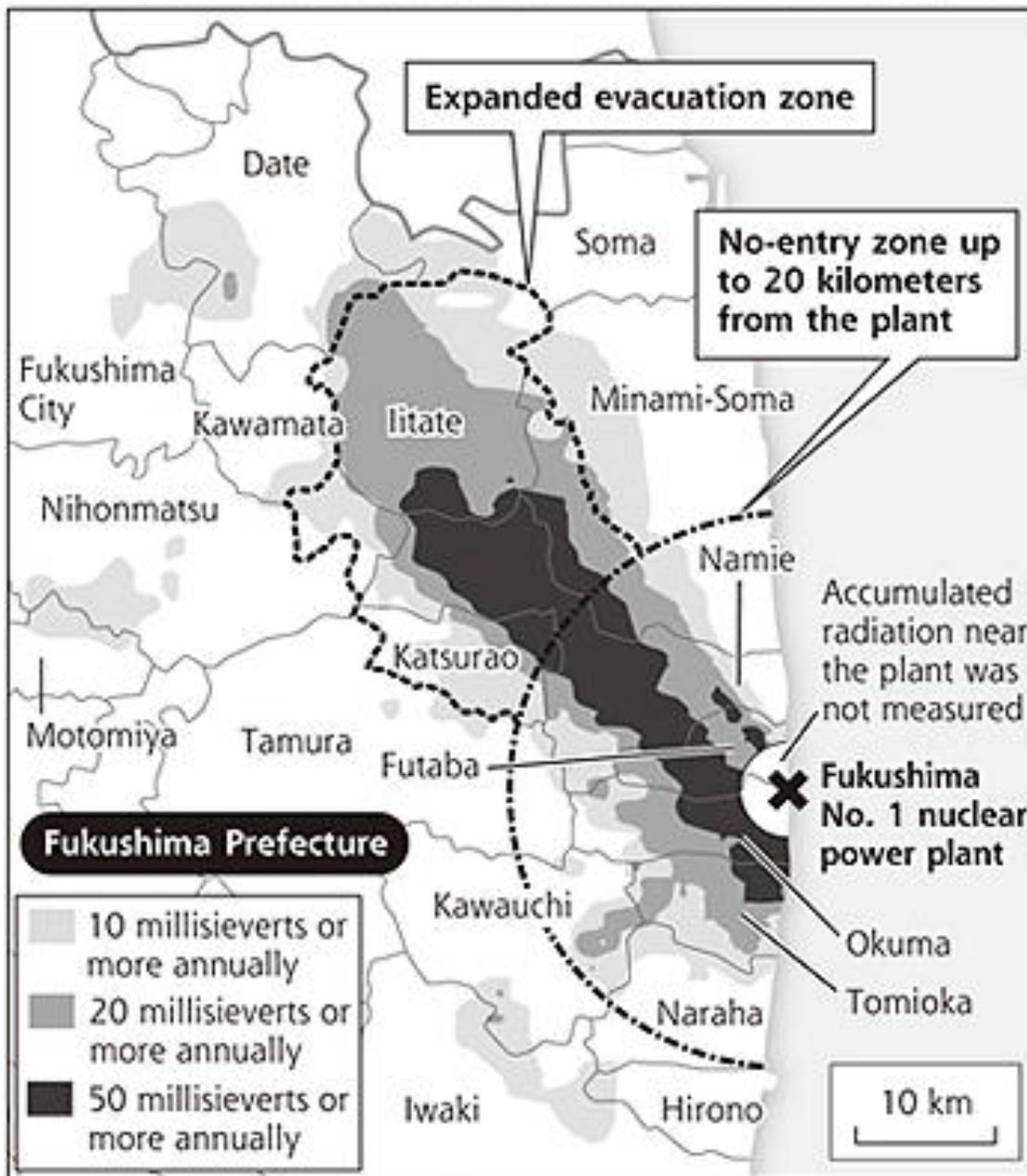
<http://www.yomiuri.co.jp/dy/national/T120127006480.htm>

### Timetable for decontamination work



As annual radiation exposure levels in areas within the expanded evacuation zone are feared to be as high as 20 millisieverts, the areas are expected to be reclassified as areas with restricted residency or where residency is prohibited for extended periods.

# Annual ambient radiation estimates



The map shows radiation doses near the Fukushima No. 1 nuclear power plant based on air monitoring in October and November by the Education, Culture, Sports, Science and Technology Ministry. The colored regions do not correspond to areas where residency is prohibited or limited for extended periods.

The government will prioritize decontamination work in areas of Fukushima Prefecture where the annual level of radiation exposure is 20 millisieverts or less, as part of efforts to allow residents of those areas to return home as soon as possible, according to a timetable released by the Environment Ministry.

The ministry on Thursday unveiled its timetable for decontamination operations in the no-entry and expanded evacuation zones in the prefecture. Entry is limited in these areas following the outbreak of the nuclear crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant.

The no-entry and expanded evacuation zones have been deemed "decontamination special zones" to be decontaminated under the government's direct control. **They are to be reorganized into three zones as of April 1 in accordance with their annual levels of radiation exposure.**

The new categories will be:

-- Zones being prepared for residents' return. Annual radiation exposure is 20 millisieverts or lower, and residents are expected to be able to return following the completion of decontamination.

-- Zones with restricted residency. Annual radiation exposure is 20 millisieverts to 50 millisieverts, and residents are expected to be able to return in a few years.

-- Zones where residency is prohibited for an extended period. Annual radiation exposure is more than 50 millisieverts and it is expected to be more than five years before residents can return home.

The government plans to complete decontamination work in areas with annual radiation exposure of 20 millisieverts to 50 millisieverts by lowering the level to 20 millisieverts or less--a level at which residence is allowed--by March 2014.

However, **the ministry did not present a concrete plan for the zones with annual radiation levels of more than 50 millisieverts.**

Regarding the zones being prepared for residents' return, the government plans to proceed with decontaminating the areas with higher levels of radiation exposure. It will start decontaminating areas with the highest levels of radiation exposure, from 10 millisieverts to 20 millisieverts, starting around March and aims to complete the operation by the end of this year.

The government will start work in areas with annual radiation exposure of 5 millisieverts to 10 millisieverts once a number of conditions are fulfilled, such as gaining approval from residents. It plans to launch these operations on a full-scale basis around June, and continue through March 2013, according to the timetable.

Regarding the areas with the lowest levels of radiation--from 1 millisievert to 5 millisieverts--full-scale decontamination work will start from around summer, and is scheduled to be completed at the end of March 2014.

However, **the government will prioritize decontamination at schools, parks and other places where children gather, and densely populated urban districts and hospitals.**

Regarding the zones being prepared for residents' return, the government plans to urge people to return after lowering the radiation level as much as possible.

Meanwhile, the government plans to begin a full-scale decontamination operation in the zones with restricted residency starting around autumn and finish at the end of March 2014.

Based on the outcome of decontamination work conducted at the end of last year by the Self-Defense Forces, **the government believes** it is possible to reduce annual radiation exposure in the zones to 20 millisieverts or lower, according to the ministry.

However, **the timetable did not indicate final target levels of radiation in the zones.**

"We're conducting a model project to verify the effect of decontamination. After seeing the results, we plan to incorporate a target level of radiation in the timetable by March this year," an official of the ministry's Environmental Management Bureau said.

Regarding the zones where residency is prohibited for extended periods, the government said it plans to study decontamination measures and other steps.

"By conducting a model project for decontamination, we plan to establish efficient and effective decontamination technologies and measures to ensure safety of workers," the official said.

Carrying out decontamination operations in the zones is expected to be extremely difficult. The government is considering buying or leasing land from residents of these areas.

"A project to have residents return home following a nuclear crisis of this magnitude is unprecedented in the world, so we have to overcome quite high hurdles. We'll make a careful judgment about the timing for residents to return home after considering the opinions of local government heads and residents," Environment Minister Goshi Hosono said.

January 29, 2012

## **TEPCO ordered to prevent water leaks at reactors**

NHK World English

Japan's nuclear safety agency has instructed the operator of the Fukushima Daiichi nuclear plant to prevent water leaks at the plant.

The move follows the discovery of water leaks on Sunday in 14 locations at the damaged plant.

Tokyo Electric Power Company says about 40 liters of water leaked from a cooling system for a spent fuel pool at the No. 4 reactor, forcing the system to stop for one hour and 40 minutes. The utility also says that 7 tons of water leaked from the No. 6 reactor.

The company says that the leakages apparently occurred after frozen water in pipes loosened the pipes' connections or broke some parts.

The company adds that the leaked water did not contain radioactive materials or had already been processed to remove them.

Similar water leaks occurred in 3 locations at the plant on the previous day.

Responding to the agency's call for preventive measures, TEPCO has decided to conduct frequent checks on early mornings when temperatures often drop below zero and protect pipes from the cold with insulation materials or heaters, if necessary.

The utility says measures are already in place to protect critical systems, such as those used for cooling reactors.

## **Frozen water blamed for leaks at Fukushima plant**

Tokyo Electric Power Company has found water leaks in 14 locations at the Fukushima Daiichi nuclear plant.

The utility says the leaks apparently occurred after frozen water ruptured the pipes and the leaked water did not contain any radioactive materials.

Tokyo Electric said about 40 liters of water leaked from a cooling system for a spent fuel pool at the No.4 reactor on Sunday, but the flow stopped when workers closed the valve.

The company said **the leak forced the system to stop for one hour and 40 minutes**, but the pool's temperature did not rise.

**Tokyo Electric said 7 tons of water had leaked from the No.6 reactor.**

The temperature fell to minus 8 degrees Celsius on Sunday morning near the damaged plant.

Ruptured pipes caused 3 water leaks on the previous day.

Tokyo Electric official Junichi Matsumoto admitted that **the utility failed to take sufficient steps to prevent frozen pipes**. He said it will take quick action to protect the pipes from the cold weather.

January 30, 2012

## **More water leaks found at Fukushima nuclear plant**

NHK World English

More water leaks have been found at the troubled Fukushima Daiichi nuclear power plant.

Tokyo Electric Power Company told reporters on Monday morning that it has discovered 2 additional water leaks at the nuclear plant.

This comes after it was announced on Sunday that **nearly 8 tons of water** was found to have leaked in 14 locations at the plant.

One of the 2 new findings involves about 30 liters of water that has leaked from a device that is removing salt from contaminated water. The other leak is from a valve of a pipe that is injecting water into a reactor.

TEPCO says leaked water has neither spilled out of the plant, nor flowed into the sea.

The utility firm is trying to determine whether water in some of the pipes froze and cracked the pipes, or loosened the pipes' connections.

It plans to quickly implement preventive measures, including carrying out more patrols early in the morning and **wrapping insulation around the pipes and other equipment. !!!!!!!**

The temperature on Monday morning around the plant dropped to minus 8.7 degrees Celsius.

January 31, 2012

## **Japan's nuclear stress tests deemed consistent with IAEA standards**

<http://mdn.mainichi.jp/mdnnews/news/20120131p2g00m0dm081000c.html>

TOKYO (Kyodo) -- An International Atomic Energy Agency fact-finding team said Tuesday that Japan's nuclear stress tests, a key step for restarting reactors following the Fukushima nuclear crisis, are "generally consistent" with IAEA safety standards.

On the last day of its nine-day mission to Japan to review the tests at nuclear power plants, the IAEA delegation conveyed its findings to the government's Nuclear and Industrial Safety Agency, while also making some recommendations to improve the tests's effectiveness.

"The conclusion of the team is that NISA's instructions and review process for the comprehensive safety assessments are generally consistent with IAEA safety standards," the delegation said in its preliminary report.

Tokyo introduced the stress tests after the meltdown at Tokyo Electric Power Co.'s Fukushima Daiichi power plant in the wake of the March quake-tsunami disaster, to check how much leeway the nation's nuclear power plants have to withstand earthquakes, tsunami and the loss of power.

To confirm if the test method is consistent with global safety standards, the government asked the Vienna-based body to verify them.

But there remains criticism among some local governments hosting nuclear power plants and experts that the stress tests need to reflect the findings that the government's accident investigation team has yet to compile on the Fukushima nuclear crisis.

NISA earlier compiled a draft report endorsing results of first-round stress tests that Kansai Electric Power Co. submitted with regard to the No. 3 and 4 reactors at its Oi power plant in Fukui Prefecture. The two reactors are currently idled for scheduled checkups.

The government's nuclear safety agency is set to finalize the report after studying the IAEA's findings, and will have it checked by the Nuclear Safety Commission of Japan.

James Lyons, nuclear installation safety director of the IAEA's Nuclear Safety and Security Department who heads the delegation, said at a press conference that deciding whether to restart the reactors is up to the Japanese government.

Currently, only three of Japan's 54 commercial reactors are operating. Japanese reactors must shut down for maintenance every 13 months, and so far no idled reactor has passed the stress tests, a prerequisite for resuming operations.

If no idled reactors get approval to restart, Japan will be without any operating reactors by the end of April.

January 31, 2012

January 31, 2012

# Govt plans Fukushima decontamination test-run

NHK World English

Japan's Environment Ministry has unveiled a model project designed to decontaminate areas with high levels of radiation around the crippled Fukushima Daiichi nuclear plant.

In a test-run for a wider clean-up, the ministry will first try to decontaminate 3 closed sections of a national expressway running through the no-entry zone near the plant.

The ministry last week announced a 2-year plan to decontaminate by March 2014 some evacuation zones where radiation levels have dropped below 50 millisieverts per year.

Radiation levels over a total 5 kilometers of expressway slated for the new project have ranged from a little to substantially above 50 millisieverts a year.

The ministry plans to assess the project's effectiveness in a test-run from the middle of March through July.

February 01, 2012

## Radioactive water leaking from inside Fukushima No. 4 reactor

<http://mdn.mainichi.jp/mdnnews/news/20120201p2g00m0dm150000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that it has found radioactive water leaking from a broken pipe connected to the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, about 6 liters of water were found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The utility is looking into the cause of the damage to the pipe and believes it may have some connection with the recent cold weather or the explosions that took place at the plant in the early phase of the nuclear crisis.

The density of radioactive substances included in the water is estimated at 35.5 becquerels per cubic centimeter, according to TEPCO.

## **Kawauchi village in Fukushima calls on evacuees to return home**

<http://mdn.mainichi.jp/mdnnews/news/20120201p2g00m0dm113000c.html>

FUKUSHIMA, Japan (Kyodo) -- The mayor of Kawauchi, a village in Fukushima Prefecture whose residents were forced to relocate following the nearby nuclear power plant crisis, called on some 2,600 evacuated villagers Tuesday to return home permanently.

"Let's return starting with those who are ready," Yuko Endo said at a press conference in Fukushima city, marking the first declaration among the nine town and village governments in the prefecture which evacuated their offices that it will return to its original location.

"There are matters of concern but there is no reason why we shouldn't take the first step forward," Endo added.

Chief Cabinet Secretary Osamu Fujimura said at a separate press conference that the declaration is an "important first step toward residents' returning to their home village," and added that the central government will "actively support" the Kawauchi village government's effort.

Kawauchi had about 2,990 residents before Tokyo Electric Power Co.'s Fukushima Daiichi nuclear power plant was crippled by the earthquake and tsunami disaster of March 11, 2011.

About 75 percent of the villagers currently reside in the prefectural city of Koriyama where the Kawauchi government has relocated its functions because the village was partially designated as a no-entry zone set up by the central government around the nuclear power plant while the rest was categorized as an emergency evacuation preparation area.

In addition, a total of 542 Kawauchi residents were residing in 26 prefectures other than Fukushima as of Friday, while some 200 have returned to their homes since the central government lifted its evacuation advisory for the emergency preparation area of the village last September.

In November, the village government began decontamination work for schools and other public facilities in the hope of declaring in December that it would return to the village.

But the declaration was delayed for about a month as decontamination work is taking longer than expected. The work is expected to be completed by the end of March, paving the way for resumption of the village government, schools and other operations at the start of fiscal 2012 on April 1.

Most sections of the village are safe as radiation levels are less than 1 microsievert per hour, according to the Kawauchi government.

But the chances of all residents returning to the village are low in view of lingering radiation concerns.

## **Editorial: Nuclear regulatory reform must weed out entrenched interests**

<http://mdn.mainichi.jp/perspectives/news/20120201p2a00m0na004000c.html>

Bills relating to a shift in the nation's nuclear power policy were approved by the Cabinet on Jan. 31. In addition to the establishment of a new nuclear regulatory agency under the Environment Ministry, the government is aiming to legislate the lifespan of nuclear reactors, and require plant operators to outline specific measures against severe nuclear accidents.

Significant harm has been done by allowing the Nuclear and Industrial Safety Agency (NISA), an administrative body tasked to regulate nuclear power safety, to exist under the umbrella of the Ministry of Economy, Trade and Industry (METI), a major promoter of nuclear power. Divorcing nuclear regulation from nuclear promotion and centralizing regulatory duties into one agency stands to reason. Changing the agency's name from the originally proposed "nuclear power safety agency" to "nuclear power regulatory agency" is likewise pertinent, considering the new agency's nature.

However, the mere alteration of a name and rearrangement of an organization will not result overnight in a highly independent agency specializing in regulation. Because many of the new agency staff members are likely to come from NISA, specific measures are necessary to secure the independence of the new body.

It remains unclear how a nuclear safety investigation committee, envisaged in one of the bills approved by the Cabinet, will contribute toward ensuring the safety of nuclear power. Since the Cabinet Office's Nuclear Safety Commission (NSC) lost the confidence of the Japanese public over its response to the ongoing nuclear disaster, the new committee cannot expect to gain it back without demonstrating its independence and competence.

The handling of the continuing nuclear crisis has been problematic particularly due to the government's lack of readiness, which has generated suspicions that the disaster could have been mitigated had the government been more capable of crisis management. Crisis management will be an important duty of the new regulatory agency, and must be attended to adequately.

Meanwhile, some things have slipped through the centralization of regulatory responsibilities. Safety research conducted by the Japan Atomic Energy Agency (JAEA) and the inspections and other safeguards implemented by the Ministry of Education, Culture, Sports, Science and Technology to prevent the diversion of nuclear material toward the production of nuclear weapons will not fall under the jurisdiction of the new regulatory agency. It remains to be seen how these tasks will be integrated into the new scheme.

Included in the latest bills are the designation of a 40-year lifespan for nuclear reactors and the implementation of "back-fit" measures that would hold existing reactors to the latest technological standards. The government claims that the combination of these two mandates would make it

extremely difficult for reactors to continue running more than 40 years. The bills, however, include special exemptions allowing reactors to operate for up to 60 years. Stringent criteria must be set to prevent "exceptions" from undermining the rule.

We hope also that the proposed legal reforms lead to a stronger nuclear disaster prevention scheme. In the case of the Fukushima disaster, the off-site emergency response center failed to function. A fundamental review of Japan's nuclear crisis preparedness is imperative. Along with an expansion of disaster protection zones emphasizing nuclear disaster countermeasures, there is a pressing need to reassess national and regional disaster prevention plans.

Numerous corporations and organizations make up the national framework that had heretofore promoted nuclear power, and their role in "amakudari" -- literally "descent from heaven," referring to the practice of former bureaucrats taking advisory posts in industries they previously regulated -- has been pointed out. For effective regulations to gain ground, it is important to extend reform to such organizations with entrenched interests.

February 02, 2012

February 02, 2012

## **TEPCO says 8.5 tons of water leaked from Fukushima No. 4 reactor**

<http://mdn.mainichi.jp/mdnnews/news/20120202p2g00m0dm028000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Wednesday that 8.5 tons of radioactive water leaked from the No. 4 reactor of the crisis-hit Fukushima Daiichi power plant because a pipe connected to the reactor dropped off, but added that the liquid has not flowed outside the reactor building.

At the time of the devastating earthquake and tsunami last March 11, the reactor's fuel rods were in its spent fuel pool due to maintenance work that was taking place. The water contains radioactive materials as it is mixed up with water that is in contact with the fuel in the spent fuel tank.

According to the utility known as TEPCO, water was found to have leaked onto the floor of the No. 4 unit building at 10:30 p.m. Tuesday. The leak was stopped at 10:43 p.m. by closing a valve, officials said.

The total amount of leakage from the reactor was initially estimated to be 6 liters, but the utility revised the figure later Wednesday, adding that the leakage appears to have started at around 5 p.m. Monday.

The pipe may have dropped off because water inside increased in volume as it turned into ice due to cold temperatures.

The utility plans to check whether there are similar cases in the other crippled reactors.

The Nos. 1 to 3 reactors have fuel inside, which is believed to have melted in the early phase of the nuclear crisis because the plant lost its cooling functions following the natural disasters.

The No. 4 unit also lost the function to cool its spent fuel pool, but no serious damage is believed to have occurred in the fuel stored there.

## Evacuated village to reopen from April

<http://www.yomiuri.co.jp/dy/national/T120201006980.htm>



FUKUSHIMA--The mayor of a village near the crippled Fukushima No. 1 nuclear power plant declared Tuesday that local authorities would return in April, and urged residents who have evacuated due to the nuclear crisis to come back.

Kawauchi Mayor Yuko Endo said public facilities, such as schools and clinics, will also resume services in the village.

This is the first time one of the nine municipalities that fell in the government-designated evacuation zones has declared it will return. Most of Kawauchi's 3,000 residents evacuated elsewhere in Fukushima Prefecture--or outside the prefecture--after the nuclear crisis erupted in March.

"I hope residents will return in two or three years," Endo said.

Starting this month, the Kawauchi government will survey residents about their thoughts on returning, and hold meetings with them. The village government will provide dosimeters to returning residents.

Endo plans to move the village government back to its original location on March 24 and 25, and to resume administrative operations in April.

The Kawauchi government office has temporarily been relocated to Koriyama in the prefecture. Many Kawauchi residents have been staying in temporary housing units in Koriyama, and some of the village's services will still be offered in the city even after April.

Kawauchi has been divided into two zones since the nuclear crisis began--the 20-kilometer no-entry zone around the crippled nuclear plant, and the former emergency evacuation preparation zone.

Initially, the mayor planned to declare the return after decontamination work had lowered radiation levels in the village to less than one millisievert a year. However, decontamination work has been delayed partly by heavy snowfall, and it is likely that only public facilities and houses of families with children will be decontaminated by the end of March.

The village government said radiation levels in many residential areas have fallen below one microsievert per hour.

In Tuesday's declaration, Endo accepted that some residents had concerns about returning to the village.

"Those who can return will return," he said. "Those who are still anxious can return after watching the situation for a while."

Although the designation of the emergency evacuation preparation zone was lifted in September, only slightly more than 200 residents have returned to the village.

## **Declaration 'just the beginning' / Mayor's plea for villagers to return to Kawauchi draws mixed reactions**

<http://www.yomiuri.co.jp/dy/national/T120201006236.htm>

FUKUSHIMA--"The declaration to return home is just the beginning," said Yuko Endo, mayor of Kawauchi, Fukushima Prefecture, in a speech at a press conference encouraging residents who had evacuated amid the Fukushima No. 1 nuclear power plant crisis to return to the village.

The Kawauchi government will reopen the village office and schools in April to prepare for the residents' return. But a complete return of evacuees is problematic, as decontamination work is ongoing.

Parts of Kawauchi fall within the nuclear plant's 20-kilometer no-entry zone, and some residents are concerned about the village's decision. "We can't return home yet," one said.

Tsunehiro Takano, the village's fifth administrative district leader, attended the same press conference as Endo Tuesday at the Fukushima prefectural government's office. Takano, 62, is also chairman of all the administrative district leaders in the village.

"Only people who want to return to Kawauchi should do so and go first. It's important to prepare an environment acceptable to other residents. If nobody returns to the village, no one will end up [following the first returnees]," Takano emphasized.

"It is also our generation that should commit ourselves to decontamination work," he added.

But Norimoto Igari, Kawauchi's third administrative district leader, had a different view.

"Most of the residents, including me, don't want to return," the 68-year-old said.

His administrative district consists of many elderly people living alone.

"If stores don't reopen, elderly people without vehicles will face difficulties buying food," Igari warned.

Hiroichi Watanabe is the village's second administrative district leader and a rice farmer. The village government will order the village's farmers to refrain from planting rice this year.

"We farmers wonder what the point of hurriedly returning to Kawauchi is if we can't sell our rice," Watanabe said.

The answer is more straightforward for Nobuichi Kobayashi, leader of the eighth administrative district, which falls completely within the no-entry zone.

"We can't return," Kobayashi, 66, said.

The municipal government will build temporary housing units in Kawauchi for residents such as Kobayashi. However, according to Kobayashi, "Unless decontamination begins soon, the number of residents who refuse to return will increase."

===

Few kids want to return

Kawauchi has one nursery school, one primary school and one middle school. According to a survey by the village government, only 30 of 210 children want to return to school in Kawauchi from April.

Yoshinobu Ishii, the village schools' superintendent, said, "Even though the student numbers are few, we won't drop the level of our education."

The board of education intends to maintain a class for each grade instead of introducing composite classes comprising students from different grades.

It will also in April transfer the village-run cram school Kogakujuku from Koriyama, Fukushima Prefecture, to the village. Catering to students from the fifth grade of primary school to the third year of middle school, Kogakujuku was operating before the March 11 disaster.

According to the board of education, radiation levels in the Kawauchi Middle School yard dropped to 0.2 microsievert per hour in December, and 0.14 microsievert per hour at Kawauchi Primary School after decontamination had been carried out.

A 34-year-old woman living with her husband, 8-year-old daughter and 5-year-old son in a temporary housing unit in Koriyama after evacuating from her home in the no-entry zone, said: "Even though we can return, we'll have to live in temporary housing. It's difficult for us to return until all the decontamination has been completed."

February 03, 2012

NHK World English

## **Safety checks to begin at Fukushima Daiichi plant**

Japan's nuclear safety agency will begin inspecting the Fukushima Daiichi nuclear plant from Monday to see if it can safely remain in a state of cold shutdown.

Officials from the Nuclear and Industrial Safety Agency plan to check equipment and contingency preparations by examining manuals and interviewing workers during their three-week inspections.

Among the seven types of equipment to be checked is a reactor cooling system that recycles decontaminated water from the facility.

Another is a nitrogen-injection system to prevent hydrogen explosions within the disabled reactors.

**Agency officials say they will open the onsite inspections to the media.** The checks will be the first safety tests required under law since the March 11th accident.

The government declared on December 16th that the Fukushima Daiichi reactors had achieved a state of cold shutdown.

This means reactor temperatures have stabilized below 100 degrees Celsius, and the release of radioactive substances has been contained.

# Indictment of contractors exposes illicit work at nuke plants

<http://mdn.mainichi.jp/mdnnews/news/20120203p2a00m0na018000c.html>

FUKUOKA -- Three people and two firms were indicted Feb. 2 on charges of dispatching a worker to the Oi Nuclear Power Plant in Fukui Prefecture under a falsified contract in violation of the Employment Security Law.

Those indicted by the Kokura Local Public Prosecutors Office are Hideo Ichise, 58, of Tsuruga, Fukui Prefecture, Yoshimi Tomita, 59, of Maizuru, Kyoto Prefecture, and Kanae Ikegami, 36, of Kitakyushu's Wakamatsu Ward. Prosecutors also indicted Taihei Dengyo Kaisha Ltd., a Tokyo-based power plant construction and maintenance firm, and Takada Kiko, a plumbing firm in Takahama, Fukui Prefecture.

The Kokura Summary Court on Feb. 2 fined Ichise and Tomita and the two firms 500,000 yen each and Ikegami 250,000 yen. Ichise is the Fukui business manager of Taihei Dengyo, and he previously served as the firm's Oi operation chief. Tomita is president of Takada Kiko while Ikegami is an executive of Dream, previously known as Soshin Kogyo, a plumbing and housing equipment firm. She is also the wife of a gang leader with ties to the Kitakyushu-based crime syndicate Kudo-kai.

"Many documents showing illegal labor were found, one after another, during our search. They proved **many years of shady deals,**" says a senior officer with the Fukuoka Prefectural Police. **The case sheds light on not just one firm or one nuclear power plant but the nuclear power industry as a whole.**

Sixty-one-year-old Masaki Yoshimura (pseudonym) in Kitakyushu was dispatched to many nuclear power plants in Japan while working for a construction company for a period of 14 years that ended seven years ago. There were many companies involved in his work between his employer and general contractors such as nuclear power plant manufacturers. One of those companies was Taihei Dengyo.

Repairing plumbing was the main part of his job, but instructions came from different companies depending on which nuclear power plants he was working at. Electric power companies, operators of nuclear power plants, paid general contractors a daily pay of 100,000 yen, but Yoshimura got only 18,000 yen. More than 80 percent of his daily wage was siphoned off.

"It's the world of siphoning off. It's a system in which big companies make money handsomely," he says.

The nuclear job scandal involving Taihei Dengyo uncovered the fact that **illegal labor supports nuclear power businesses. Fake contracts and unlicensed dispatches of workers are peppered with acts of siphoning off pay.** These practices have put laborers in an unstable position and invited crime syndicates' involvement.

"The Geiger counters quickly sound, so you can't work for so long. Fifty to 100 people have to work together. People at the bottom of society are there," Yoshimura says.

Radiation zones are divided into a scale from A to D, and workers assigned to D, the highest radiation zone, have to wear protective gear and layers of gloves. "Competent workers brought with them other

workers' Geiger counters so they would not to exceed the dosage limits and to improve their work efficiency," Yoshimura said.

Stopping a nuclear reactor for just one day reportedly results in a loss to the owner of 100 million yen. A retired electric power company official says, "Electric power companies have repeatedly requested shorter inspections. But to shorten checks without changing the number of items to inspect, you have to either cut corners or force workers to work throughout the night," he says.

According to the Japan Nuclear Energy Safety Organization, about 90 percent of some 83,000 nuclear power plant workers who were exposed to radiation in fiscal 2009 were not employed directly by nuclear power plant operators. Their average radiation dosage was 3.6 times the level suffered by employees of those operators.

The Committee on Poverty of the Japan Federation of Bar Associations last year conducted a survey of nuclear power plant workers. Lawyer Tatsuo Watanabe, a member of the committee, says, "From an ethical point of view, we should check unlawful labor at nuclear power plants that is being done for economical reasons."

More than 1,000 workers are necessary for a regular inspection of a nuclear reactor, but postings for these jobs do not show up at job-placement offices. Most part-time nuclear workers find employment through personal connections and introductions. A labor bureau official says: "(The connections) are extra careful to not hurt the electric power companies. Those with strong personal connections have strong solidarity and are tightlipped. They are in a world of their own."

February 04, 2012

## **Plowing technique to fight spread of radiation demonstrated**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na010000c.htm>

IWAKI, Fukushima -- A plowing technique being considered to fight the spread of radiation was demonstrated here on Feb. 2, though some farmers on hand were disappointed.

In the demonstration, four large machines dug up earth from around 30 centimeters deep to replace potentially contaminated topsoil and reduce the amount of radiation crops absorb from it.

According to a prefectural official, radiation readings in the field were 0.3 to 0.42 microsieverts on Feb. 1, and 0.23 to 0.3 microsieverts after the plowing. "There was an effect," the official said.

Around 150 people including local farmers gathered to watch the demonstration. Some farmers complained, however, that "expensive machines are necessary" for the plowing technique, and that an overall decontamination plan for the city's fields has still not been decided on.

 [Click here for the original Japanese story](#)

## **US univ. to monitor wildlife in Fukushima**

[http://www3.nhk.or.jp/daily/english/20120204\\_05.html](http://www3.nhk.or.jp/daily/english/20120204_05.html)

A US research team will conduct a long-term study on the impact of radiation exposure on wild animals and plants around the Fukushima Daiichi nuclear power plant.

The team from University of South Carolina, led by Professor Timothy Mousseau, will begin the study in Fukushima Prefecture and other areas of Japan in May.

The team has been studying the impact of radioactive fallout from the Chernobyl nuclear accident on wildlife around the plant for more than 13 years.

Its study shows a decrease in the number of birds and insects, as well as abnormalities in animals even in areas with low radiation levels of one to 3 microsieverts per hour.

The team says long-term research is likely to shed light on the impact of low-level radiation from the Fukushima accident on wildlife and that it hopes to cooperate with Japanese researchers.

Professor Mousseau will visit Fukushima later this month in preparation for the study. He says generational change of animals, such as birds, is quicker than that of humans and will provide clues to the impact of radiation on human genes.

But there remains criticism among some local governments hosting nuclear power plants and experts that the stress tests need to reflect the findings that the government's accident investigation team has yet to compile on the Fukushima nuclear crisis.

NISA earlier compiled a draft report endorsing results of first-round stress tests that Kansai Electric Power Co. submitted with regard to the No. 3 and 4 reactors at its Oi power plant in Fukui Prefecture. The two reactors are currently idled for scheduled checkups.

The government's nuclear safety agency is set to finalize the report after studying the IAEA's findings, and will have it checked by the Nuclear Safety Commission of Japan.

James Lyons, nuclear installation safety director of the IAEA's Nuclear Safety and Security Department who heads the delegation, said at a press conference that deciding whether to restart the reactors is up to the Japanese government.

Currently, only three of Japan's 54 commercial reactors are operating. Japanese reactors must shut down for maintenance every 13 months, and so far no idled reactor has passed the stress tests, a prerequisite for resuming operations.

If no idled reactors get approval to restart, Japan will be without any operating reactors by the end of April.

February 04, 2012

February 04, 2012

## **Falsified labor deals rampant at Japan's nuke plants, says suspect**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na016000c.html>

A power plant construction and maintenance firm has falsified worker contracts for temporary labor at nuclear plants across Japan for years, according to statements by one of the company's employees charged with involvement in the fraudulent agreements.

Hideo Ichise, 58, and two other people were indicted on Feb. 2 for the dispatch of a worker to the Oi nuclear plant in Fukui Prefecture under a false contract, a violation of the Employment Security Law. Ichise's employer Taihei Dengyo Kaisha Ltd. -- where he now serves as business manager after a stint as the firm's Oi operations chief -- along with Fukui Prefecture-based plumbing company Takada Kiko were also charged.

Investigators have discovered a dossier on falsified worker contracts at more than 30 Taihei Dengyo branches, further suggesting the firm has been involved in illicit labor deals involving nuclear power plants across the country.

Police have furthermore discovered cases of various personnel agencies siphoning off the wages of temporary workers at nuclear plants, while involvement of the Kitakyushu-based crime syndicate Kudo-kai has also been uncovered.

According to investigative sources, Ichise said, "We have participated in (illicit nuclear labor practices at the Oi plant) for many years. We have been doing the same thing at other nuclear power plants."

Taihei Dengyo's operating officer was also quoted as telling police, "Our company alone cannot hire many workers, so we (falsified labor contracts) knowing it was illegal."

Other sources involved in work at nuclear power plants have provided similar information, including one Saga Prefecture man in his 50s who worked at the Genkai Nuclear Power Plant there during regular inspections about three years ago. He was dispatched to a construction company by a temp agent called simply "boss." Although there was ostensibly a contract with the construction company and the man worked directly under a construction company employee, "boss" apparently took 5,000 yen out of his 13,000-yen daily wage.

A year earlier, the Saga man had also worked at the Genkai plant during a regular check as an employee of an electrical firm for about two months. A fellow worker in his 50s had to take more than two weeks off after injuring his ankle at the plant but had to pay his own medical bills.

In this case, the Saga man worked under the guise of the electrical firm. "There were gangsters among those bosses, and sometimes two bosses raked off my wages," the Saga man recalls.

A temporary personnel agency operator says, "Parent companies send us requests for a certain number of workers, and we submit a list of people who then go and work under those parent companies at nuclear power plants. We give the workers their wages after deducting our share." Another agent told the Mainichi, "There are times when gangsters are involved in recruiting workers. It is easy for us to hire them because they save us the trouble."

It is not clear why such unlawful labor practices have been overlooked. An inspector at a labor standards office stated, "It is very difficult to get a full picture of the labor practices at nuclear power plants because corporate parent-subsidiary relations change depending on their line of work. It is also difficult to conduct surprise on-site inspections of nuclear power plants because advance notification is necessary as part of antiterrorism measures."

Economy, Trade and Industry Minister Yukio Edano instructed electric power companies to abide by the law and bar crime syndicates from involvement in work at nuclear power plants. However Takayoshi Yoroi, a professor emeritus of labor law at Ryukoku University, says, "Falsified labor contracts have been rampant for so long. If the government is dead serious about stamping them out, nuclear power plants will stop running. Power companies and general contractors simply have to directly hire workers, but I wonder if they have the determination to do so."

## **Tokyo gov't unveils transport of incinerated radioactive sludge from sewage plant**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2a00m0na006000c.html>

Tokyo on Feb. 2 invited reporters to see how ash from incinerated sludge -- including some contaminated with radioactive substances -- is shipped from a sewage plant to be buried at a disposal site outside a breakwater in Tokyo Bay.

The Tokyo Metropolitan Government started burying ash from the incinerator at Akishima in the Tama region of suburban Tokyo in late October last year. In December, it procured gear to separate air from the incinerated sludge and load it into tanker trucks. The Bureau of Sewerage then started transporting the ash from the Tamagawa Joryu Water Reclamation Center to the disposal site.

During the press tour, journalists watched the material being loaded onto the tankers. Radioactive cesium levels in the ash are apparently far below national standards at 1,000 to 2,000 becquerels per kilogram.

The Akishima sewage plant stopped shipping the ash out in May last year and subsequently built up as much as some 420 metric tons of it. The plant will be completely rid of the ash by mid-February.

A total of about 2,600 tons of incinerated sludge are held at six other sewage plants in the Tama region, and the metropolitan government will send the separation gear to those plants to move the ash to the disposal site.

February 04, 2012

February 04, 2012

## **More leaks found at crippled Japan nuclear plant**

<http://mdn.mainichi.jp/mdnnews/news/20120204p2g00m0dm015000c.html>

TOKYO (AP) -- Leaks of radioactive water have become **more frequent** at Japan's crippled nuclear power plant less than two months after it was declared basically stable.

The problem underlines the continuing challenges facing Tokyo Electric Power Co. as it attempts to keep the Fukushima Dai-ichi nuclear plant under control. A massive earthquake and tsunami badly damaged the plant last March, resulting in the melting of three reactor cores.

**Workers spotted a leak Friday at a water reprocessing unit which released enough beta rays to cause radiation sickness**, TEPCO spokesman Junichi Matsumoto said. He said no one was injured and the leak stopped after bolts were tightened on a tank.

Matsumoto said TEPCO also found that 8.5 tons of radioactive water had leaked earlier in the week after a pipe became detached at Unit 4, one of the plant's six reactors. The company earlier had estimated that only a few gallons (liters) had leaked.

He said officials are investigating the cause of that leak, but that it was unlikely the pipe had been loosened by the many aftershocks that have hit the plant.

**The structural integrity of the damaged Unit 4 reactor building has long been a major concern among experts because a collapse of its spent fuel cooling pool could cause a disaster worse than the three reactor meltdowns.**

Cold winter weather has also caused water inside pipes to freeze elsewhere at the plant, resulting in leaks in at least 30 locations since late January, Matsumoto said.

Officials have not detected any signs of radioactive water from the leaks reaching the surrounding ocean. **Sandbag walls have been built around problem areas as a precaution.** [don't worry, everything is safe]

More than 100,000 people around the plant fled their homes after the disaster due to radiation fears.

The government announced in December that the plant had reached "a cold shutdown condition" and is now essentially stable.

On Monday, six inspectors from the government's Nuclear and Industrial Safety Agency will begin an inspection of the plant to ensure its continued stability. They will study the reactors' cooling functions and measures to prevent explosions and nuclear chain reactions, among other steps to keep the plant under control, officials said.

## **Survey: 2.3% of farmers produce rice above cesium safety standard**

[http://ajw.asahi.com/article/0311disaster/life\\_and\\_death/AJ201202040050](http://ajw.asahi.com/article/0311disaster/life_and_death/AJ201202040050)

About 2.3 percent of farmers in Fukushima Prefecture yielded rice with radioactive cesium levels exceeding the government's new safety standard, according to prefectural government officials.

The new standard of 100 becquerels per kilogram will take effect in April, replacing the provisional standard of 500 becquerels per kg.

The results of the Fukushima prefectural government's emergency survey, released on Feb. 3, will be used by the central government to decide on areas where farming will be banned this year.

But farmers in areas around the crippled Fukushima No. 1 nuclear power plant are growing impatient with the central government's indecision on the matter. They are also worried that no one will buy their produce over fears of radiation contamination.

According to the survey, which covered about 23,000 rice-growing households in 29 cities, towns and villages, contamination levels exceeded the new standard in rice grown by 545 farmers in 12 municipalities, many of them in northern Fukushima Prefecture.

The survey also showed rice cultivated by 38 farmers in three cities had readings above 500 becquerels per kg.

Radiation levels in rice grown by 84.3 percent of farmers were below measurable limits, according to the survey.

The prefecture conducted the survey after radioactive cesium levels higher than the provisional standard were found in rice grown in the Onami district of Fukushima, the prefectural capital, in November.

The central government said it will prohibit the planting of seeds in areas that are heavily contaminated. But it has not decided which areas should face such restrictions under the new standard.

Agriculture minister Michihiko Kano said in a news conference on Feb. 3 that the government should not impose limits on planting.

“We should respect the feelings of farmers,” he said.

A farm ministry official also said the decision for this year would be extremely tough because the lines marking sections under restriction must be drawn within areas where contamination levels are publicized.

The government banned planting last year in areas from where residents had evacuated. But officials at municipalities have already announced plans to go ahead with planting this year, even in areas where contamination levels have exceeded the new limit.

The prefectural chapter of Japan Agricultural Co-operatives is seeking permission to plant in sections of areas where this year’s rice crop will likely clear the new safety standard. The chapter said rice paddies will be decontaminated and other measures taken before the planting starts.

The JA group is expected to forbid planting in areas where radiation levels are expected to remain above the safety limit.

In addition, the Fukushima city government is calling on the central government to permit the planting of rice crops that will be used for purposes other than for food.

“If farmers are not allowed to grow rice (this year), it will reduce their willingness to produce,” an official in the city’s agriculture section said. “Rice fields will also become run-down.”

The city governments of Date and Motomiya have already said they will allow farmers to grow rice, in principle, while requiring decontamination of their rice paddies.

However, decontamination work could cause a new problem for the farmers, according to local officials.

“If rice fields are dug up too deeply, they may not be fit for growing the crop with too many rocks turning up,” an official said.

The heavily contaminated village of Kawauchi, meanwhile, said it will not allow any planting.

Rice farmers are divided.

A 58-year-old farmer in Date said contamination levels found in his rice were up to slightly more than 100 becquerels per kg under the survey.

He has already ordered seeds and fertilizers for his rice crops this year.

“Unless I can plant this year, my rice paddies will be overrun with weeds,” he said. “The fields would not be restored to the original condition for five or 10 years.”

He said he is frustrated by the lack of any long-term perspective by authorities over his livelihood.

“Is (the restriction) for just this year or for many more years?” he said. “It would mean a lifetime if the restriction is put in place until there is no more cesium contamination.”

Saburo Watanabe, a farmer in Aizubange, where all rice crops were found to be safe, said planting should be banned in areas where contamination levels exceed the new safety standard. He said the image of rice grown in Fukushima Prefecture must be protected.

“Consumers tend to think all rice crops from Fukushima Prefecture are the same,” said Watanabe, 58, who cultivates rice in a 12-hectare field.

He said most of his rice from last year remained unsold.

A 56-year-old farmer in Nihonmatsu said, “I want to grow rice, but we will be in trouble with unsold rice if we push for it and face another bad result.”

The rice in his district in Nihonmatsu was found with contamination levels above the new limit.

(This article was written by Ryo Inoue and Keiichiro Inoue.)

February 05, 2012

## **573 deaths 'related to nuclear crisis'**

<http://www.yomiuri.co.jp/dy/national/T120204003191.htm>

A total of 573 deaths have been certified as "disaster-related" by 13 municipalities affected by the crisis at the crippled Fukushima No. 1 nuclear power plant, according to a Yomiuri Shimbun survey.

This number could rise because certification for 29 people remains pending while further checks are conducted.

The 13 municipalities are three cities--Minami-Soma, Tamura and Iwaki--eight towns and villages in Futaba County--Namie, Futaba, Okuma, Tomioka, Naraha, Hirono, Katsurao and Kawauchi--and Kawamata and Iitate, all in Fukushima Prefecture.

These municipalities are in the no-entry, emergency evacuation preparation or expanded evacuation zones around the nuclear plant, which suffered meltdowns soon after the March 11 disaster.

**A disaster-related death certificate is issued when a death is not directly caused by a tragedy, but by fatigue or the aggravation of a chronic disease due to the disaster.** If a municipality certifies the cause of death is directly associated to a disaster, a condolence grant is paid to the victim's family. If the person was a breadwinner, 5 million yen is paid.

Applications for certification have been filed for 748 people, and 634 of them have been cleared to undergo screening.

Of the 634, 573 deaths were certified as disaster-related, 28 applications were rejected, four cases had to reapply because of flawed paperwork, and 29 remain pending.

In Minami-Soma, a screening panel of doctors, lawyers and other experts examined 251 applications and approved 234 of them. The panel judged two deaths were not eligible for certification and 15 were put on hold.

"During our examination of the applications, we gave emphasis to the conditions at evacuation sites and how they spent their days before they died," a city government official said. "However, the screening process was difficult in cases when people had stayed in evacuation facilities for an extended time and when there was little evidence of where they had been taking shelter."

February 06, 2012

## **High radioactive cesium levels detected in worms 20 km from nuke plant**

<http://mdn.mainichi.jp/mdnnews/news/20120206p2a00m0na008000c.html>

Radioactive cesium registering some 20,000 becquerels per kilogram has been found in worms 20 kilometers from the damaged Fukushima No. 1 nuclear plant.

The cesium was detected by a team including Motohiro Hasegawa, chief researcher in soil zoology at Japan's Forestry and Forest Products Research Institute. **Worms are a source of food for many wild animals, and it is feared that radiation could gradually accumulate in the bodies of animals throughout the food chain.**

The research team's findings will be announced at a meeting of the Ecological Society of Japan, to commence in the Shiga Prefecture city of Otsu on March 17.

Researchers dug up between 40 and 100 worms in national forests in the Fukushima Prefecture village of Kawauchi, which lies partly in the exclusion zone around the nuclear plant; the village of Otama,

located 60 kilometers from the plant; and the town of Tadami, about 150 kilometers from the plant, between late August and late September last year.

The worms in Kawauchi registered 20,000 becquerels per kilogram of radiation. In Otama the level was around 1,000 becquerels per kilogram, while in Tadami 290 becquerels per kilogram was recorded.

The airborne radiation dose in Kawauchi at the time of the investigation was 3.11 microsieverts per hour, while in Otama, it was 0.33 microsieverts per hour, and in Tadami it was 0.12 microsieverts per hour. **The figures show radioactive cesium concentration was greatest in the areas where airborne radiation dosage was highest.**

In surveys conducted by the Forestry Agency between August and September last year, radioactivity of 1.38 million becquerels per square meter of soil was measured in Kawauchi, compared with between about 80,000 and 120,000 becquerels in Otama, and 20,000 becquerels in Tadami.

**Much of the radioactive substances released from the plant in the nuclear disaster remains on fallen leaves. It is thought that worms have ingested the organic matter formed from the breakdown of these leaves.**

February 06, 2012

## **Temperature at No.2 reactor remains high**

[http://www3.nhk.or.jp/daily/english/20120206\\_29.html](http://www3.nhk.or.jp/daily/english/20120206_29.html)

Attempts to cool the temperature in the No. 2 reactor of the disabled Fukushima Daiichi nuclear power plant have only partially succeeded despite the injection of more cooling water.

The temperature in the reactor has gradually risen from about 45 degrees Celsius registered on January 27th.

In the past 4 days, the temperature has climbed more than 20 degrees to above 70 degrees.

The plant operator, Tokyo Electric Power Company began pumping more water into the reactor at around 1:30 AM on Monday. But at 7 AM, the temperature stood at 73.3 degrees and at 5 PM, 69.2 degrees.

The utility firm says 2 other thermometers elsewhere in the reactor gave readings of about 44 degrees.

**TEPCO says the rise in temperatures indicate that the flow of water in the reactor may have changed direction after plumbing work, and is no longer able to properly cool down the melted down nuclear fuel.**

However, the utility says radioactive xenon has not been detected in gases around the reactor, and that nuclear criticality is not taking place.

The government and TEPCO announced in December that the 3 troubled reactors at the Fukushima plant had reached a state of cold shutdown with their temperatures below 100 degrees. But the situation inside the reactors remains unclear.

New regulations established after the state of cold shutdown was achieved require the utility to keep temperatures inside the reactors below 80 degrees.

TEPCO says it will increase the amount of water being injecting into the reactor to see if the temperature in the reactor drops.

The government's Nuclear and Industrial Safety Agency says there is a need for a comprehensive study to determine whether the reactor is actually in a state of cold shutdown. It says a brief reading of over 80 degrees on one of the thermometers does not necessarily mean there is trouble in the cooling system.

Meanwhile, the Chairman of the Nuclear Safety Commission, Haruki Madarame, says that a recurrence of nuclear criticality is unlikely.

But he criticized TEPCO and the nuclear safety agency for their handling of the matter. He says they are failing to properly explain the state of the reactors to the people.

## Temperature rises at Fukushima No.2 reactor

[http://www3.nhk.or.jp/daily/english/20120206\\_17.html](http://www3.nhk.or.jp/daily/english/20120206_17.html)

The operator of the Fukushima Daiichi nuclear plant says the temperature in the No.2 reactor remains high despite the injection of additional water.

A thermometer at the bottom of the reactor showed 73.3 degrees Celsius on Monday morning. It was around **45 degrees on January 27th and 71.7 degrees at 4 PM on Sunday.**

Tokyo Electric Power Company began injecting 10.6 tons of water per hour from around 1:30 AM on Monday. **That's one ton more per hour than before.**

The utility says 2 other thermometers placed at the bottom of the reactor have been giving readings of about 44 degrees.

It says the flow of water in the reactor may have changed after plumbing work, causing difficulties in cooling the nuclear fuel.

In December last year, the government and TEPCO declared the 3 reactors at the Fukushima Daiichi plant had been successfully put into a state of cold shutdown as their temperatures had fallen below 100 degrees. But the situation inside the reactors remains unknown.

TEPCO says the regulations set after the state of cold shutdown was achieved require the utility to keep temperatures inside the reactors below 80 degrees.

So it says the No.2 reactor is still in the state of cold shutdown.

## **1.5-fold rise eyed for nuke plant operators' payments to damages fund**

<http://mdn.mainichi.jp/mdnnews/news/20120206p2g00m0dm003000c.html>

TOKYO (Kyodo) -- The government has decided on a plan to require that Japan's 12 nuclear power plant operators contribute a total of 150 billion yen annually from fiscal 2012 to a state-backed facility to help Tokyo Electric Power Co. meet huge compensation payments over the crisis at its Fukushima Daiichi nuclear plant, one and a half times the initially planned amount, sources familiar with the matter said Sunday.

The government will ask for larger contributions than previously sought because of growing calls for smooth compensation payments to victims of the crisis triggered by the earthquake and tsunami on March 11, 2011, the sources said.

The contribution program is intended to divide the burden from the Fukushima crisis among all nuclear reactor operators and covers nine of Japan's 10 electric power companies, excluding Okinawa Electric Power Co., which does not operate a nuclear power plant. The fund also covers Japan Atomic Power Co., Electric Power Development Co. and Japan Nuclear Fuel Ltd.

The government will finalize details of the program, including the planned increase in contributions, by the end of fiscal 2011 to March 31.

Contributions by the 12 companies became mandatory with the establishment of the Nuclear Damage Liability Facilitation Fund on Sept. 12. For fiscal 2011, the 12 companies are required to contribute a total of just over 70 billion yen to the state-backed fund for the period since its establishment.

Tokyo Electric would contribute 50 billion yen to the fund annually, the highest among the 12 companies, starting in fiscal 2012, and Kansai Electric Power Co. would contribute the second-largest sum of 25.8 billion yen as it operates more nuclear plants than other utilities.

Other expected contributions include 13.8 billion yen from Kyushu Electric Power Co., 13.0 billion yen from Chubu Electric Power Co. and 8.7 billion yen from Tohoku Electric Power Co.

There is opposition among government officials to increasing contributions to the fund amid concern that utilities could be prompted to raise electricity charges, the sources said. But the government intends to go ahead with the increase, expecting that electricity charges will be held in check as the Ministry of Economy, Trade and Industry is reviewing utilities' calculation of costs for setting power bills.

## **Nuke plant operators paid \$2 bil. to localities**

[http://www3.nhk.or.jp/daily/english/20120206\\_27.html](http://www3.nhk.or.jp/daily/english/20120206_27.html)

Newly disclosed documents show that nuclear power plant operators in Japan have paid more than 2 billion dollars to local authorities hosting their facilities **over the past 4 decades**.

NHK obtained information about the payments from 44 prefectures and municipalities based on the information disclosure system.

The information shows that the payments have reached 2.1 billion dollars since construction of nuclear plants began in the late 1960s.

Of the amount, Tokyo Electric Power Company which operates the disabled Fukushima Daiichi nuclear plant paid nearly 460 million dollars. Other utilities have continued making payments ever since the accident at the plant.

**Power companies pay the money to promote the construction of nuclear plants.** Some local governments ask for donations to invest the money in the regional economies.

**The utilities view the payments as part of the cost of generating power and pass the expense on in utility fees.**

But an economy ministry panel said last week that the payments should not be counted as a cost.

Host communities have spent the money in various ways. They include public works projects, events and scholarships as well as statues of animation characters and promotional videos.

**The host communities also receive subsidies from the central government,** but the payments decrease in stages. Until 2003, they were only allowed to use the money to construct public facilities.

The payments are apparently convenient for some communities that are struggling to find ways to maintain the facilities.

## **Kyushu men sent to Fukushima nuke plant under falsified labor deals**

<http://mdn.mainichi.jp/mdnnews/news/20120206p2a00m0na013000c.html>

As efforts to tame the crisis at the Fukushima No. 1 nuclear plant continue, laborers from as far as Kyushu have been dispatched there under illegal labor deals and forced to work inside at least one of the crippled plant's highly contaminated reactor buildings.

A man in his 40s from Nagasaki Prefecture recently related how he carried lead sheets weighing some 20 kilograms each up as high as the sixth floor of one building. A Geiger counter dangling from his neck sounded noisily and his mask misted over as temperatures climbed above 30 degrees Celsius.

"I was really angry because I was treated like a slave," Yosuke Nakayama, a pseudonym, said of his some 40 days at the Fukushima plant, starting in July last year.

The lead sheets were installed inside the plant's No. 1 reactor building to block radiation. Nakayama, however, was not angry about the hard work, but about the treatment he received upon returning home to Nagasaki.

He said he was paid 11,000 yen per day he worked for a company six layers down in a seven-layer outsourcing pyramid, with only the top-tier firm receiving orders directly from plant operator Tokyo Electric Power Co. He had been promised 14,000 yen per day, and had also been assured he would not have to enter the reactor buildings.

When Nakayama demanded an explanation for the 3,000 yen difference, his subcontractor mentioned the name of a Fukuoka-based crime syndicate.

"We don't care if yakuza show up," the contractor said, apparently threatening him.

A third-tier company to which Nakayama's employer dispatched laborers via two other firms has been slapped with administrative punishments twice for its ties to crime syndicates.

Contacted by the Mainichi, Nakayama's employer acknowledged the dispatch of workers without a license. "We received about 13,000 yen from a fifth-tier firm and we'd lose money unless we deduct expenses," the company said.

Businesspeople familiar with the Kyushu Electric Power Co.'s Genkai Nuclear Power Plant in Saga Prefecture say a significant number of laborers have been sent to Fukushima.

A utility work firm in Saga has been recruiting laborers from across Kyushu since last December, ostensibly for work at nuclear plants in Kyushu and Shikoku. The names of about 20 laborers are written on the firm's white board, along with their destination: "Fukushima No. 1."

An executive of the firm says it started sending laborers to Fukushima in response to requests from its business partners. "People from Kyushu are in demand because they're serious. We will send them again if requested."

A Saga man in his 30s did a job similar to Nakayama's at the Fukushima plant after being dispatched from a seventh-tier firm. He contacted the company after seeing a posting at a job-placement office and got the Fukushima job.

He received about 300,000 yen for some 40 days of work, and absorbed a radiation dose of some 10 millisieverts. "There are no jobs in my hometown, so it can't be helped," he says, adding he is waiting for another Fukushima assignment.

## **Govt to create more decontamination bases**

[http://www3.nhk.or.jp/daily/english/20120206\\_11.html](http://www3.nhk.or.jp/daily/english/20120206_11.html)

The Environment Ministry plans to decontaminate more public facilities in Fukushima Prefecture to use them as bases for cleaning up radioactive substances.

The government wants to decontaminate no-entry and evacuation zones around the damaged Fukushima Daiichi plant. It hopes to create a safe environment so that residents can return to the area.

**The ministry has designated 16 facilities, including schools and assembly halls, as bases for decontamination.** Four municipal offices were cleaned up in December.

The operation is to be completed next month.

The government plans to begin radiation monitoring in these zones in a few months, and begin the decontamination process this summer.

February 07, 2012

February 07, 2012

## **Temperature remains high at damaged reactor**

[http://www3.nhk.or.jp/daily/english/20120207\\_21.html](http://www3.nhk.or.jp/daily/english/20120207_21.html)

An unknown rise in temperature at one of the reactors at the damaged Fukushima nuclear plant is troubling its operator. Tokyo Electric says the temperature hasn't gone down even after it increased the volume of cooling water on Tuesday.

One of the thermometers at the bottom of reactor No. 2 at the Fukushima Daiichi plant gradually rose to about 70 degrees Celsius since January 27th. It had stayed around 45 degrees before.

In an effort to lower the temperature, the operator increased the amount of water sprayed on the nuclear fuel by 3 tons to 13.5 tons per hour Tuesday morning.

**But Tokyo Electric said readings were down only about 3 degrees after some 5 hours of operation, hardly showing signs of improvement.**

The utility said the flow of water in the reactor may have changed after plumbing work in late January, causing difficulties in cooling part of the melted nuclear fuel.

It added that no temperature rise has been observed at 2 other thermometers in the same reactor and that it will continue to carefully monitor the reactor.

TEPCO has been unable to visually confirm conditions inside the reactors since the nuclear disaster last March because of high radiation.

## TEPCO increases water injection in reactor showing temperature rise

<http://mdn.mainichi.jp/mdnnews/news/20120207p2g00m0dm147000c.html>

TOKYO (Kyodo) -- Workers at the crippled Fukushima Daiichi power plant on Tuesday raised the amount of water injected into the No. 2 reactor to the highest level since the plant achieved a stable state of cold shutdown in December, as concerns grew over the rising temperature recently detected at the bottom of the reactor's pressure vessel.

Following the move, the temperature measured at the same spot on the vessel dropped to 69.0 C at 10 a.m. from 72.2 C logged at 5 a.m., Junichi Matsumoto, spokesman for plant operator Tokyo Electric Power Co. told a press conference, but added that the company needs more time to assess the effect of the latest step.

"It is difficult to judge whether the temperature is rising or dropping unless we monitor the development for about a day," Matsumoto said.

TEPCO said it increased the amount of injected water at 4:24 a.m. Tuesday. **The No. 2 reactor is now being cooled with the injection of 13.5 tons of water per hour, up from 10.5 tons.**

Nuclear disaster minister Goshi Hosono told a press conference that TEPCO is making utmost efforts to lower the temperature.

Touching on last month's change in the amount of coolant water at the No. 2 reactor for pipe replacement, which is believed to have affected the temperature, Hosono said, "This was a process to enhance stability, but it has become clear that there is a possibility of (replacement work) creating an unstable situation temporarily."

"We have to consider in an even more careful way," he said.

**TEPCO's Matsumoto said he believes the No. 2 reactor is maintaining a state of cold shutdown, because the temperature is not rising continuously.** Readings on two other thermometers checking the temperature of the bottom of the pressure vessel were around 40 C as of 10 a.m.

A cold shutdown is defined by the Japanese government as a situation in which the bottom part of a reactor pressure vessel is kept below around 100 C and radiation exposure from the release of radioactive substances is significantly held down.

At the Fukushima Daiichi plant in northeastern Japan, the Nos. 1 to 3 reactors have suffered meltdowns as a result of the loss of their key cooling functions in the wake of the devastating earthquake and tsunami on March 11 last year.

TEPCO is now injecting water into the three crippled reactors through a new water circulation system installed after the accident.

## Gov't to set up radiation yardstick for shipping Fukushima stones

<http://mdn.mainichi.jp/mdnnews/news/20120207p2g00m0dm102000c.html>

TOKYO (Kyodo) -- The Japanese government plans to set up a radiation yardstick for shipping stones given the detection of a relatively high level of radiation in gravel, used as building materials, from near the crippled Fukushima Daiichi nuclear power plant, industry minister Yukio Edano said Tuesday.

The government will set up a panel to create such a standard by the end of next month. **The yardstick is expected to apply mainly to quarries in Fukushima Prefecture**, but details will be discussed at the panel's meetings.

The government has been checking distribution routes of crushed stones from quarries in Fukushima since the detection of the building materials suspected to have been radioactively contaminated.

The gravel used was shipped from a quarry within the evacuation zone near the stricken plant sometime between the beginning of the nuclear crisis and the government's designation of the evacuation zone on April 22.

The crisis was triggered by the earthquake and tsunami on March 11.

**So far, a relatively high level of radiation has been detected at 22 locations in Fukushima Prefecture, mostly resident houses**, according to government checkups, jointly conducted by local municipalities.

**Crushed stones suspected to have been radioactively contaminated may have been used at more than 1,000 construction sites, and so far the measurement of radiation levels has been conducted at only 10 percent of them.**

The government will speed up its radiation check process to complete it by the end of March, Edano said.

February 07, 2012

## Pro-nuclear energy town councillor's firm had 700 million yen in nuke plant contracts

<http://mdn.mainichi.jp/mdnnews/news/20120207p2a00m0na023000c.html>

TAKAHAMA, Fukui -- A town assembly member here calling for the continuation of nuclear power is also president of a company that has received at least 700 million yen in nuclear-related construction contracts, it has been learned.

Akio Awano, 62, is vice-speaker of the municipal assembly of Takahama, which hosts a Kansai Electric Power Co. nuclear plant. He is also part of a local organization promoting nuclear power plants.

According to the Fukui Prefectural Government and other sources, Awano's firm, a metal processing company, has around 15 employees and earned about 200 million yen in fiscal 2010. It has an office in the Takahama nuclear plant and has expanded its business on a diet of nuclear plant-related construction.

Construction records show that Kansai Electric began contracting Awano's firm directly in the 1990s, and has forked out some 536 million yen to the company for 67 jobs in the past five years. Furthermore, Awano's company took 66 subcontracted jobs at the utility over the same period. Most local construction businesses get at most about 15 power company jobs per year.

In September of last year, Awano submitted a written statement seeking continuation of nuclear power generation, including the restart of Takahama plant reactors off-line for regular inspections. The statement was approved by an overwhelming majority of the town assembly.

However, Fukui Gov. Issei Nishikawa has said, "Unless the national government submits new safety standards reflecting the knowledge gained from the Fukushima nuclear disaster, I cannot agree" to a restart of the reactors. Oi and Mihama, two other towns in Fukui Prefecture also hosting nuclear facilities, have not passed resolutions in favor of restarting reactors.

Awano has defended himself by saying, "I submitted the statement after looking at the country's energy situation and judging that nuclear power is necessary. My actions as an assembly member and my management of the company are completely separate, and I was not influenced by the construction contracts."

The No. 1, 2, and 4 reactors at the Takahama plant are off-line for inspections. In January Kansai Electric submitted a safety evaluation of the No. 1 reactor to the Nuclear and Industrial Safety Agency, a prerequisite for it to be restarted. The agency and the Nuclear Safety Commission of Japan will look at the evaluation and Prime Minister Yoshihiko Noda will make a decision on the restart based on local opinions.

Kansai Electric has declined to comment on individual contracts, saying only that its business partners are "evaluated and registered in a fair manner, with the most appropriate company for a construction job chosen and contracted."

## **Govt to measure radiation levels in no-fly zone**

[http://www3.nhk.or.jp/daily/english/20120206\\_08.html](http://www3.nhk.or.jp/daily/english/20120206_08.html)

Japan's government will measure radiation levels around the troubled Fukushima Daiichi nuclear plant as a step toward revising the no-fly zone over the site.

**No aircraft has been allowed to fly within a 20-kilometer radius of the plant since the nuclear accident.**

The government says it will revise the no-fly zone as it confirmed in December that the nuclear reactors have now reached a state of cold shutdown.

Starting Monday and continuing for several days, helicopters flying at an altitude of about 300 meters will collect air samples around the plant to measure radiation levels.

There are no specific standards on radiation levels for the designation of no-fly zones. The government plans to revise its earlier decision based on data collected during the flights.

February 7, 2012

## **N-safety unit to be housed with METI**

<http://www.yomiuri.co.jp/dy/national/T120207005565.htm>

The Environment Ministry is likely to start operations of a new external nuclear regulatory agency to be launched in April at an annex of the Economy, Trade and Industry Ministry that oversees the current nuclear safety body, sources said.

The government wants to establish the new watchdog at a new location to rule out any conflict of interest that the body might have by being associated with METI, a promoter of nuclear power.

But because of difficulties in finding a home for the agency, the government will for the time being likely house the new watchdog at the current Nuclear and Industrial Safety Agency (NISA) premises.

The government has already been criticized because NISA, a nuclear regulator, works under the auspices of METI, and this proximity is seen as having contributed to the crisis at the Fukushima No. 1 nuclear power plant.

Most of NISA's functions will be absorbed by the new agency, which will be staffed by about 500 people.

According to the sources, the new agency will probably be relocated as early as this summer.

Premises housing the new watchdog need sufficient earthquake resistance, must be situated on a lower floor and located near the Prime Minister's Office. Because there are also plans for a new nuclear safety investigation committee to be set up with the agency, at least 6,000 square meters of space is required, the sources said.

The sources said the Environment Ministry found a suitable private building in Tokyo's Shiodome area, but was unable to coordinate the move.

One reason for the ministry's struggle to find suitable premises is that bills to enable the creation of the new nuclear agency and the committee have yet to be passed in the Diet.

"If we decide on the location before Diet deliberations [on the bills], opposition parties would criticize us, saying we're disrespecting the Diet," a senior ministry official said.

## **Air radiation drops after snowfall / But decontamination necessary, levels will rise once snow melts, experts say**

<http://www.yomiuri.co.jp/dy/national/T120207005622.htm>

The Fukushima prefectural government has received many inquiries because air radiation levels across the prefecture following the crisis at the Fukushima No. 1 nuclear power plant declined considerably late January and have since remained constant, perhaps due to fallen snow blocking radiation above the ground.

According to monitoring by the Education, Culture, Sports, Science and Technology Ministry and others, the rate of decline was particularly large in the Akougi district in Namie and the Nagadoro district in Iitate, located in the expanded evacuation zone around the nuclear plant.

Radiation measuring found that the Akougi district had a reading of 19.7 microsieverts per hour in the morning of Jan. 25, down from 30 microsieverts per hour recorded in the morning of Jan. 18.

Air radiation levels also decreased to 5.9 microsieverts per hour from 10 microsieverts per hour over the same period in the Nagadoro district.

It is believed there were no major changes in air radiation levels before Jan. 18 and after Jan. 25.

According to the ministry's Nuclear Emergency Response Headquarters, the decline can be attributed only to snowfall since decontamination operations were not conducted in the areas at the time.

The Fukushima Meteorological Observatory said snow accumulation is not monitored in Namie and Iitate, but temperatures and other factors suggest the town and the village had snow from Jan. 20 to 22.

The prefectural emergency response headquarters said radiation levels also declined in the city of Fukushima. While such levels measured 0.84 microsievert per hour at 6 p.m. on Jan. 21 when snow began to fall, at 9 p.m. on Jan. 22, after snowfall, radiation levels in the air measured 0.62 microsievert per hour.

Farmer Masuo Kaneko, 63, who evacuated to the city from Nagadoro district, said after reading the newspapers he thought the radiation levels were dropping rapidly. But he was disappointed to hear the decline was due to snowfall.

"I expected radiation levels to halve in about two years time," he said.

Tokyo Institute of Technology Associate Professor Keiji Saneyoshi said air radiation levels may halve if about 20 centimeters of snow falls in certain areas. "Yet decontamination work needs to continue since the levels will rise again once the snow melts," Saneyoshi said.

[February 08, 2012](#)

## **70% of nuclear reactor hosts cautious on restart**

[http://www3.nhk.or.jp/daily/english/20120208\\_28.html](http://www3.nhk.or.jp/daily/english/20120208_28.html)

An NHK survey has found that more than 70 percent of Japanese municipalities that host nuclear power plants are cautious about restarting the reactors.

51 of Japan's 54 nuclear reactors are currently out of operation. Restarting them would require the approval of local municipalities.

NHK surveyed 29 municipalities, **excluding those in Fukushima Prefecture.**

5 of them, or 17 percent, said they would give the go-ahead for the reactors to resume operation. But 21 municipalities, or 72 percent, said they wouldn't allow it, or that they cannot yet decide.

Municipalities that expressed caution said they cannot be sure whether the reactors are really safe, and cited the difficulty of persuading residents while the government has yet to decide on its nuclear policy.

Asked what is needed beside stress tests to restart the reactors, 48 percent said a satisfactory investigation into the accident at Fukushima Daiichi plant, and understanding by local residents. 38 percent cited new government safety regulations.

**The municipalities stressed their concern over reactor safety, and demanded more government accountability.**

## **Child population drops in disaster-hit prefectures**

[http://www3.nhk.or.jp/daily/english/20120208\\_05.html](http://www3.nhk.or.jp/daily/english/20120208_05.html)

The number of children has significantly decreased in 3 Japanese prefectures hit by the March 11th disaster.

The Education Ministry says the child population as of May 1st in Iwate, Miyagi and Fukushima fell by

more than 27,000 from a year earlier to about 834,000.

Fukushima saw the biggest fall of 5.8 percent, or more than 17,000, followed by a decrease of 2.3 percent in Iwate and minus 1.7 percent in Miyagi.

The ministry says the nuclear accident at the Fukushima Daiichi plant is to blame for an 11-percent decline in the number of kindergarteners and a nearly 8-percent drop in the elementary school population in the prefecture.

It says smaller children are more vulnerable to radiation and are likely to have been evacuated to other prefectures.

The child population in the 3 prefectures had been falling even before the disaster due to the low birthrate.

## **Nuke dangers nowhere near resolved: Kan's crisis adviser**

By [REIJI YOSHIDA](http://www.japantimes.co.jp/text/nn20120208f1.html) - <http://www.japantimes.co.jp/text/nn20120208f1.html>

In December, Prime Minister Yoshihiko Noda announced the "conclusion" of the meltdown crisis at the Fukushima No. 1 nuclear plant, saying Tokyo Electric Power Co. was managing to keep the three crippled reactors cool, as well as the facility's spent fuel pools.

But a former special adviser to Naoto Kan, who was prime minister when the crisis started, warned that **the situation is far from resolved** and said Fukushima has exposed a raft of serious nuclear problems that Japan will have to confront for years.

**"I would say (the crisis) just opened Pandora's box,"** Hiroshi Tasaka, who has a doctorate in nuclear engineering and is now a professor at Tama University, said in a recent interview with The Japan Times.

He was one of a select group who glimpsed the secret worst-case scenario document written up by the Japan Atomic Energy Commission on March 25 that was later reportedly quashed by the government.

**According to the scenario, the biggest risk during the meltdown crisis wasn't the reactors themselves but the spent fuel pools sitting atop them, particularly the one above reactor 4, which still contains about 1,500 nuclear fuel assemblies,** Tasaka said.

Unlike reactors 1, 2 and 3, the No. 4 unit was offline for regular checks when disaster struck on March 11 and thus didn't suffer a meltdown. But its fuel rods were in the pool outside the reactor, and its coolant water fell dangerously low.

Adding to the danger is that the fuel pool is now directly exposed to the outside environment after a hydrogen explosion blew off the upper part of the reactor building on March 15, Tasaka noted.

The potential heat from the pool was also much higher than other pools because 204 of the 1,535 assemblies were still "new ones" that had been temporarily removed from reactor 4 for regular checks.

**The Fukushima crisis has highlighted the dangers of spent fuel pools**, which are outside the robust primary containment vessels of the reactors themselves, Tasaka said.

**Under the current circumstances, the nation has no prospect of starting up the experimental high-level nuclear waste processing facility in Rokkasho, Aomori Prefecture, because of both technical difficulties and the sentiments of antinuclear activists.**

This means utilities must store their spent fuel assemblies in cooling pools at their respective reactor sites as a "temporary measure." This situation greatly increased the danger at Fukushima No. 1 on March 11.

**"The storage capacities of the spent fuel pools at the nation's nuclear power plants are reaching their limits,"** Tasaka wrote in a new book, "Kantei Kara Mita Genpatsu Jiko No Shinjitu" ("The Truth About the Nuclear Accident as Viewed From the Prime Minister's Office").

According to Tasaka, the utilities' fuel pools were about 70 percent full on average in 2010, but the figure was 80 percent at Fukushima No. 1.

The makeshift cooling systems set up at Fukushima No. 1 to stabilize the stricken reactors and fuel pools have greatly reduced the possibility of another catastrophe, Tasaka said, but **the ad hoc system for decontaminating the coolant water is nevertheless generating large amounts of highly contaminated waste every day.**

Making matters worse, **the government doesn't have any place to permanently store it**, he wrote.

Tasaka is also deeply concerned about the "groundless optimism" displayed by bureaucrats and business leaders as they rush to restart dozens of reactors that remain halted for safety checks since March 11.

"I understand quite well the intentions of the government, which now wants to send out a message of hope. But at this stage, all the risks should be put on the table," he said.

The nation's nuclear regulators must carry out drastic reforms to regain the people's trust. This is an imperative for the government if it wants to keep pushing nuclear power, Tasaka said.

He recalled viewing the government's worst-case scenario in late March. He was officially appointed special adviser to the prime minister on March 29.

The document detailed a hypothetical Fukushima crisis worst case: Eventual contamination from the plant would require the government to assist residents in the Tokyo area to evacuate if they wanted to voluntarily "migrate," based on the same evacuation protocols adopted for the 1986 Chernobyl accident.

The scenario assumed another hydrogen explosion would occur in the reactor 1 building and radiation would force all of the workers at the plant to evacuate.

All of the pools storing hundreds of nuclear fuel assemblies would eventually lose their cooling ability and the assemblies would melt down and breach the pools.

According to Kyodo News, **the simulation was "so shocking" that top government officials decided to keep the paper secret** by treating it as a mere personal document of Japan Atomic Energy Commission Chairman Shunsuke Kondo, who compiled the simulation. The government only gave it official recognition at the end of December, according to Kyodo.

More than 10 months after he saw the worst-case scenario paper, Tasaka is still not sure if such scary information should immediately be made public during a nuclear plant crisis.

The assumed worst case was extreme and people did not need to immediately flee the Tokyo area even in March or April, Tasaka said. Disclosing the simulation could have caused panic in the capital, he said.

Tasaka was obliged to keep secret what he learned through his work at the prime minister's office and was not in a position to decide what information was to be made public during the crisis.

He said he decided to start talking about the worse-case scenario only after Kan mentioned some of its highlights during an interview with the media in September.

**Tasaka believes the media and government should lay some ground rules in advance on what sensitive information should be made clear in a nuclear crisis.**

## Cesium detected in worms near Fukushima plant

[http://www3.nhk.or.jp/daily/english/20120208\\_04.html](http://www3.nhk.or.jp/daily/english/20120208_04.html)

Researchers say high levels of radioactive cesium have been detected in earthworms caught in areas around the damaged Fukushima Daiichi plant.

The researchers from the Forestry and Forest Products Research Institute checked cesium levels in earthworm samples they collected at 3 locations.

The institute says about 19,000 becquerels of cesium per kilogram of worms were detected in Kawauchi Village 30 kilometers from the plant, about 1,000 becquerels in Otama Village, 70 kilometers from the plant, and 290 in Tadami Town, 130 kilometers away.

**The institute says the cesium levels rise in proportion to the radioactive levels of top soil containing decomposed leaves, the worms' feed.**

The reading in Kawauchi was higher than the 146,000 becquerels per kilogram detected in a wild boar in Fukushima Prefecture. The radioactive level in the animal is 30 times the official limit.

The chief researcher at the institute, Motohiro Hasegawa, says **boars, birds and other forest animals feed on earthworms**. He says **the radioactive impact on these creatures will need to be constantly monitored to prevent contamination through the food chain**.

## **Tokyo gov. opposes 'N-vote'**

<http://www.yomiuri.co.jp/dy/national/T120211003443.htm>

Tokyo Gov. Shintaro Ishihara has spoken against establishing an ordinance to hold a referendum among residents of the capital on whether the operation of nuclear power plants should be allowed.

"It's impossible to create such an ordinance, and I have no intention of doing so," Ishihara said during a regular press conference Friday.

Ishihara's comments came as it appeared likely a citizens advocacy group that aims to bring about the referendum in Tokyo would succeed in its campaign to collect the number of signatures legally required to directly petition the metropolitan government to establish an ordinance.

The citizens group is called "Let's Decide Together/Citizen-initiated National Referendum on Nuclear Power."

Ishihara criticized activity against nuclear power, saying: "The most troublesome thing among humans is sentiment. Because Japanese have the trauma of atomic bombs, people speak [against nuclear power plants] out of fear.

"The progress of human beings has been achieved through their own development of technology, overcoming setbacks and failures."

If the group submits a direct petition for a referendum ordinance to the governor, Ishihara will have to submit a bill for the ordinance to the Tokyo Metropolitan Assembly with his opinion attached.

The assembly will then deliberate whether to create such an ordinance.

## **Nobel Prize winner Oe stresses Japan's ethical responsibility for ending nuclear program**

<http://mdn.mainichi.jp/mdnnews/news/20120208p2a00m0na011000c.html>

Kenzabu Oe, Nobel Prize laureate in literature, said Feb. 8 that Japan has an "ethical responsibility" for abandoning nuclear power in the aftermath of the Fukushima nuclear disaster, just as the country renounced war under the postwar Constitution.

During a press conference at the Foreign Correspondents' Club of Japan (FCCJ), Oe called for an immediate end to nuclear power generation and warned that Japan would suffer another nuclear catastrophe if it tries to resume nuclear power plant operations. "It's important to make a decision now" to abandon nuclear power, he said.

Satoshi Kamata, the founder of the "Sayonara Nuclear Power Plants" campaign, said at the press conference with Oe and Keiko Ochiai -- author, radio personality, and founder and manager of the Crayon House bookstores for children -- that they and other members of the initiative will hold rallies in Tokyo, Niigata, Matsue, Shizuoka, Matsuyama, Sapporo and Saga on Feb. 11 to protest against restarting nuclear reactors.

Kamata, a freelance journalist who has covered the nation's nuclear industry extensively and been a leading critic of Japan's "nuclear village" establishment, said his group will deliver a petition to local governments hosting nuclear plants or located near them to help pursue a society not dependent on nuclear energy.

"What has become clear from the Fukushima nuclear disaster and later developments is this hard fact: there is no nuclear energy that is safe," the petition says. "In other words, nuclear technology and humanity cannot coexist."

The antinuclear group says it has many supporters for its campaign, including Minamisoma Mayor Katsunobu Sakurai in Fukushima Prefecture and Tokai Village Mayor Tatsuya Murakami in Ibaraki Prefecture, in addition to film director Yoji Yamada, actress Sayuri Yoshinaga and other high-profile personalities.

Kamata said his group has collected 5 million signatures so far in a petition calling for a nuclear-free Japan. The campaign is aiming for 10 million names. The group will hold a rally in Koriyama, Fukushima, on March 11, the first anniversary of the Great East Japan Earthquake and tsunami which triggered the crisis at the Fukushima No. 1 Nuclear Power Plant, and a rally in Yoyogi Park in Tokyo on July 16, which the group hopes will draw 100,000 people. (By Shiro Yoneyama, Staff Writer)

## **US approves 1st reactor construction in 34 years**

The US Nuclear Regulatory Commission has approved construction of the first new power reactors in the country in more than 3 decades.

The plan to build 2 reactors at the Vogtle plant in the southern state of Georgia was approved by a majority vote on Thursday.

Unit 3 and Unit 4 at the Vogtle site will be the first reactors built in the US for 34 years. The new models were designed by Westinghouse Electric, a US unit of Toshiba.

Construction could begin as early as this year. If all goes well, the reactors are expected to start operation in 2016.

The US stopped building nuclear plants after the Three Mile Island accident in 1979.

The administration of President Barack Obama says it will take in the lessons learned from the accident at Japan's Fukushima Daiichi power plant. But Obama is sticking to his policy of promoting nuclear power as a way of reducing dependence on oil.

February 09, 2012

## **Govt asks Fukushima to restrict rice planting**

<http://www.yomiuri.co.jp/dy/national/T120208005350.htm>

FUKUSHIMA--The government has asked local municipalities in Fukushima Prefecture to refrain from planting rice this year in districts where radioactive cesium exceeding the government's new limit was found in last year's harvests, according to government sources.

The restriction applies to districts in which rice harvests cultivated in 2011 were found to contain **100 becquerels per kilogram or more of radioactive cesium**.

Some of last year's harvests of unpolished rice in the prefecture were found to contain radioactive cesium exceeding the government's previous interim limit of 500 becquerels per kilogram.

Results of research by the prefectural government showed that rice harvests containing radioactive cesium over the new limit of 100 becquerels per kilogram were found in 583 farming households in 65 districts in 12 municipalities.

The prefectural government said about 59,000 farming households in 371 districts in 48 municipalities in the prefecture planted rice in 2011.

The research was conducted on 23,247 households in 151 districts in 29 municipalities in the prefecture.

**If the central government's plan is implemented, the restriction will likely be imposed on most of the districts, with a few exceptions.**

The central government in December decided restrictions would be necessary if levels of radioactive cesium in harvests exceeded the interim limit.

For cases in which the amount of radiation exceeds the new limit, the central government said it would consult the prefectural and municipal governments.

Officials from the Agriculture, Forestry and Fisheries Ministry visited the Date city government office on Friday to brief Date officials on the restrictions on rice cultivation.

The ministry officials said the government wants to restrict rice planting in six districts where 500 becquerels per kilogram or more of radioactive cesium were detected, and six additional districts where between 100 becquerels and 500 becquerels were detected. The town comprises 21 districts.

But the officials also told the city government that the restriction may not be imposed in districts with levels of radioactive substances above the new limit if the number of questionable spots were limited and if there was clear evidence of a reduction in the quantity of radioactive cesium.

Based on such criteria, **about 850 hectares, or more than 60 percent, of all rice paddies in the city will be restricted from growing rice this year.**

However, in two affected districts, the detected levels exceeded the new limit in only one or two rice paddies, and the amount of excess cesium was limited.

An official of the ministry said the restriction would not apply to the two districts if it could be shown that "proper cultivation would prevent contamination [of the rice]."

The central government's policy was reported to the city's assembly on Tuesday.

Date Mayor Shoji Nishida opposed the restrictions, saying the city could not accept the central government's request. **"The measure will rob farmers of their morale and increase the amount of unused farmland,"** the mayor said.

He indicated an intention to work with nearby municipal governments, including the Fukushima city government, to urge the central government to allow rice planting in all areas in the prefecture.

Ministry officials also visited the Kunimi town government in the prefecture on Friday.

Kunimi officials said the ministry officials presented the plan to restrict rice cultivation in the town's districts where 100 becquerels or more of radioactive cesium were detected in last year's rice harvests.

The ministry officials told the town government that in principle the restrictions would apply to those districts, and showed which ones would be subject to the curbs.

## **Tsunami was up to 21 meters in Fukushima**

<http://www.yomiuri.co.jp/dy/national/T120208006430.htm>

The tsunami that hit Fukushima Prefecture on March 11 was particularly high--possibly up to 21 meters--along the coast in the center of the prefecture where the Fukushima No. 1 nuclear power plant is located, a survey has found.

The height of the tsunami was previously assumed to have been about 15 meters at the nuclear plant, but this could not be confirmed because the area within a 20-kilometer radius of the plant is designated a no-entry zone.

Researchers including Shinji Sato, a professor at the University of Tokyo, obtained permission from local governments to enter this zone, and for the first time since the tsunami, were able to survey coastal areas Monday and Tuesday.

They found that areas struck by higher tsunami were concentrated on the coast in the prefecture's center. For example, at Tomioka, which is eight kilometers south of the nuclear plant, a tsunami height of 21.1 meters was observed.

The maximum height was 10 meters along much of the coast in the prefecture's south.

"It is necessary to do more research on what caused the tsunami to hit the central part of the prefecture particularly hard," Sato said.

## Temperature inside reactor stops rising

<http://www.yomiuri.co.jp/dy/national/T120208005861.htm>

The abnormal rise in temperature in a reactor at the Fukushima No. 1 nuclear power plant has stopped, apparently because more water has been injected into the crippled reactor, according to Tokyo Electric Power Co.

TEPCO said the temperature at the base of the No. 2 reactor's pressure vessel had **fallen to 68.5 C at 5 p.m. Tuesday after earlier peaking at 73 C.** However, **the cause of the increased temperature remained unclear.**

Junichi Matsumoto, acting head of TEPCO's headquarters regarding nuclear plant locations, said increasing the amount of water injected hourly into the reactor by three tons to 13.5 tons since 4:30 a.m. Tuesday seemed to be having an effect.

"[The temperature] has begun falling after peaking," Matsumoto said.

Keeping the temperature at the base of the reactors at 100 C or less is a stable state known as cold shutdown. Reaching cold shutdown was a precondition for enabling the government to declare in December that the crisis at the nuclear plant had been brought under control.

TEPCO's guideline stipulates the temperature should be kept at 80 C or lower to allow for possible measurement errors.

The reactor will need to be monitored carefully because the condition inside the reactor's inner part containing melted nuclear fuel is not clear, and the reason for the temperature rise has yet to be pinpointed.

Currently, cooling water is injected into the No. 2 reactor via two piping systems--the coolant water supply system that can deliver water to the vessel's base, and the reactor core water spray system that aims water directly at the reactor core.

The temperature in the pressure vessel's base began rising from 45 C around Jan. 26, when the water injection balance of the two systems was changed several times during pipe repair work.

One of three thermometers installed around the base recorded a temperature increase of nearly 30 C over a little more than 10 days, reaching as high as 73 C at one time.

According to TEPCO, the volume of water being injected was far less than usual. It is possible that the way water was injected into the reactor might have changed around the time of the pipe repairs, and that water did not reach some of the fuel.

TEPCO also speculated that the fuel, which had melted and then solidified, might have cracked due to some shock or dropped down and changed shape.

[February 08, 2012](#)

## **TEPCO injects more water into reactor**

<http://www.yomiuri.co.jp/dy/national/T120207005567.htm>

Tokyo Electric Power Co. has increased the amount of water being injected into the No. 2 reactor at the Fukushima No. 1 nuclear power plant because the temperature at the base of the pressure vessel has been rising, the company said Tuesday.

The 13.5 tons being injected each hour to cool the reactor--an increase of three tons--is the most since the government announced the crippled plant had achieved a stable state of cold shutdown in December.

According to the utility, after increasing the amount of water being injected at 4:30 a.m. Tuesday, the temperature at the vessel's base has been fairly constant: It was 72.2 C at 5 a.m. and 69 C at 10 a.m. The temperature at the base of the vessel had been 45 C as of Jan. 27, but began rising earlier this month. TEPCO is investigating the cause of the higher temperature.

## **Temperature decreasing inside Fukushima reactor**

[http://www3.nhk.or.jp/daily/english/20120208\\_26.html](http://www3.nhk.or.jp/daily/english/20120208_26.html)

Tokyo Electric Power Company says it has been able to lower the temperature inside the No.2 reactor at the troubled Fukushima Daiichi nuclear power plant by increasing the amount of water being injected into it.

TEPCO had been struggling to deal with rising temperatures inside the reactor. A thermometer located at the bottom of the reactor read 45 degrees Celsius on January 27th, but rose to over 70 degrees on Sunday. The cause is unknown, and two other thermometers at the reactor have shown no such increase.

TEPCO said on Wednesday that the temperature inside the reactor was 66.7 degrees at 5 AM, 5.5 degrees lower than a day earlier. The temperature gradually declined after the company increased the rate of water injection by 3 tons to 13.5 tons per hour on Tuesday.

Such a high rate of injection has not been used since just after the nuclear crisis began last March.

TEPCO says the temperature inside the reactor rose slightly to 68 degrees at 10 AM, but it is still dropping overall.

The utility cannot determine the exact situation inside the reactor or the cause of the temperature rise.

The utility says it will continue to monitor the situation closely while maintaining the current rate of water injection.

## **Nuke dangers nowhere near resolved: Kan's crisis adviser**

By [REIJI YOSHIDA](http://www.japantimes.co.jp/text/nn20120208f1.html) - <http://www.japantimes.co.jp/text/nn20120208f1.html>

In December, Prime Minister Yoshihiko Noda announced the "conclusion" of the meltdown crisis at the Fukushima No. 1 nuclear plant, saying Tokyo Electric Power Co. was managing to keep the three crippled reactors cool, as well as the facility's spent fuel pools.

But a former special adviser to Naoto Kan, who was prime minister when the crisis started, warned that the situation is far from resolved and said Fukushima has exposed a raft of serious nuclear problems that Japan will have to confront for years.

**"I would say (the crisis) just opened Pandora's box,"** Hiroshi Tasaka, who has a doctorate in nuclear engineering and is now a professor at Tama University, said in a recent interview with The Japan Times.

He was one of a select group who glimpsed the secret worst-case scenario document written up by the Japan Atomic Energy Commission on March 25 that was later reportedly quashed by the government.

**According to the scenario, the biggest risk during the meltdown crisis wasn't the reactors themselves but the spent fuel pools sitting atop them, particularly the one above reactor 4, which still contains about 1,500 nuclear fuel assemblies, Tasaka said.**

Unlike reactors 1, 2 and 3, the No. 4 unit was offline for regular checks when disaster struck on March 11 and thus didn't suffer a meltdown. But its fuel rods were in the pool outside the reactor, and its coolant water fell dangerously low.

Adding to the danger is that the **fuel pool is now directly exposed to the outside environment** after a hydrogen explosion blew off the upper part of the reactor building on March 15, Tasaka noted.

The potential heat from the pool was also much higher than other pools because 204 of the 1,535 assemblies were still "new ones" that had been temporarily removed from reactor 4 for regular checks.

The Fukushima crisis has highlighted the dangers of spent fuel pools, which are outside the robust primary containment vessels of the reactors themselves, Tasaka said.

**Under the current circumstances, the nation has no prospect of starting up the experimental high-level nuclear waste processing facility in Rokkasho, Aomori Prefecture, because of both technical difficulties and the sentiments of antinuclear activists.**

This means utilities must store their spent fuel assemblies in cooling pools at their respective reactor sites as a "temporary measure." This situation greatly increased the danger at Fukushima No. 1 on March 11.

"The storage capacities of the spent fuel pools at the nation's nuclear power plants are reaching their limits," Tasaka wrote in a new book, "Kantei Kara Mita Genpatsu Jiko No Shinjitu" ("The Truth About the Nuclear Accident as Viewed From the Prime Minister's Office").

According to Tasaka, the utilities' fuel pools were about 70 percent full on average in 2010, but the figure was 80 percent at Fukushima No. 1.

The makeshift cooling systems set up at Fukushima No. 1 to stabilize the stricken reactors and fuel pools have greatly reduced the possibility of another catastrophe, Tasaka said, but the ad hoc system for decontaminating the coolant water is nevertheless generating large amounts of highly contaminated waste every day.

Making matters worse, the government doesn't have any place to permanently store it, he wrote.

Tasaka is also deeply concerned about the "groundless optimism" displayed by bureaucrats and business leaders as they rush to restart dozens of reactors that remain halted for safety checks since March 11.

"I understand quite well the intentions of the government, which now wants to send out a message of hope. But at this stage, all the risks should be put on the table," he said.

The nation's nuclear regulators must carry out drastic reforms to regain the people's trust. This is an imperative for the government if it wants to keep pushing nuclear power, Tasaka said.

He recalled viewing the government's worst-case scenario in late March. He was officially appointed special adviser to the prime minister on March 29.

The document detailed a hypothetical Fukushima crisis worst case: Eventual contamination from the plant would require the government to assist residents in the Tokyo area to evacuate if they wanted to voluntarily "migrate," based on the same evacuation protocols adopted for the 1986 Chernobyl accident.

The scenario assumed another hydrogen explosion would occur in the reactor 1 building and radiation would force all of the workers at the plant to evacuate.

All of the pools storing hundreds of nuclear fuel assemblies would eventually lose their cooling ability and the assemblies would melt down and breach the pools.

According to Kyodo News, the simulation was "so shocking" that top government officials decided to keep the paper secret by treating it as a mere personal document of Japan Atomic Energy Commission Chairman Shunsuke Kondo, who compiled the simulation. The government only gave it official recognition at the end of December, according to Kyodo.

More than 10 months after he saw the worst-case scenario paper, Tasaka is still not sure if such scary information should immediately be made public during a nuclear plant crisis.

The assumed worst case was extreme and people did not need to immediately flee the Tokyo area even in March or April, Tasaka said. Disclosing the simulation could have caused panic in the capital, he said.

Tasaka was obliged to keep secret what he learned through his work at the prime minister's office and was not in a position to decide what information was to be made public during the crisis.

He said he decided to start talking about the worse-case scenario only after Kan mentioned some of its highlights during an interview with the media in September.

Tasaka believes the media and government should lay some ground rules in advance on what sensitive information should be made clear in a nuclear crisis.

[February 09, 2012](#)

## **Prefectural team makes 1st inspection of Fukushima No. 2 nuke plant**

<http://mdn.mainichi.jp/mdnnews/news/20120209p2a00m0na009000c.html>

A team of Fukushima prefectural officials visited the Fukushima No. 2 nuclear plant on Feb. 8, marking the first prefectural inspection of the plant since the March 11, 2011 disasters forced it to shut down.

"Right now, the most important tasks are to keep the reactors in cold shutdown and cool the spent fuel rods while preparing safety measures to deal with any unexpected problems," said the deputy head of the prefecture's living environment division following the inspection. "I felt that work there to maintain emergency power supplies and prevent flooding of the plant buildings was progressing."

The reactors at the Fukushima No. 2 plant -- about 11 kilometers south of the disaster-struck Fukushima No. 1 nuclear complex -- stopped automatically when the Great East Japan Earthquake hit and are now in cold shutdown, but the plant was very nearly the site of a second nuclear crisis.

In circumstances similar to those at the No. 1 plant, the cooling systems in three of Fukushima No. 2's four reactors failed when the March 11 tsunami hit and knocked out their backup generators. Unlike the situation at the No. 1 plant, however, staff at the No. 2 station managed to patch into external power before the reactor cores could seriously overheat.

In December last year, the government's Nuclear and Industrial Safety Agency officially declared the nuclear emergency at the plant over, while Tokyo Electric Power Co. -- operator of both the Fukushima No. 1 and 2 plants -- has submitted a plan to the agency for maintaining cold shutdown.

Fukushima Prefecture is calling for the shutdown of all nuclear stations in the prefecture, including Fukushima No. 2.

However, Fukushima No. 2 plant director Naohiro Masuda suggested it's too soon to discount restarting the reactors there, saying, "Under present circumstances, it's impossible to say how the reactors here will be dealt with in the future. For now, we have to maintain a steady cold shutdown by transitioning from the temporary cooling equipment we now have in place to proper, permanent equipment."

## **Nuclear agency to finalize report endorsing Oi reactors stress tests**

<http://mdn.mainichi.jp/mdnnews/news/20120209p2g00m0dm019000c.html>

TOKYO (Kyodo) -- The government's nuclear safety agency decided Wednesday to soon finalize a draft report endorsing the results of stress tests on two idled reactors at Kansai Electric Power Co.'s Oi power plant in western Japan.

It will be the first time the Nuclear and Industrial Safety Agency or NISA has validated results of reactor stress tests submitted so far by utilities nationwide.

NISA made the decision after presenting and hearing opinions on the draft at a meeting with experts. Its finalized report will then be checked by the Nuclear Safety Commission of Japan.

The Japanese government introduced the stress tests on reactors after the Fukushima nuclear crisis. For utilities, passing the test is a prerequisite for restarting reactors idled for scheduled checkups.

If the commission validates the report, the agency plans to explain the test results to Fukui Prefecture where the Oi nuclear power plant is located.

The government will then decide whether to authorize the restart of the reactors while taking into account local communities' responses. The Fukui prefectural government is cautious about allowing them to operate again.

Given the safety agency's decision, Fukui Gov. Issei Nishikawa reiterated his stance of not allowing the reactors' restart on the basis only of the outcome of the stress tests, saying, "It is the basic premise that a provisional safety standard that reflects lessons learned from Tokyo Electric's Fukushima Daiichi nuclear accident be set up."

For Kansai Electric, which serves western Japan area including Osaka and Kyoto, there have been concerns over electricity supply constraints as 10 of its 11 reactors are currently offline. The utility's only operating reactor, the No. 3 unit at the Takahama power plant also in Fukui, is set to undergo periodic maintenance later this month.

In its draft report, the nuclear safety agency endorsed Kansai Electric's evaluation that the Nos. 3 and 4 reactors at the Oil plant are capable of withstanding an earthquake 1.8 times stronger than the most powerful quake presumed for the area and a tsunami wave up to 11.4 meters high, four times higher than the maximum presumed level.

But NISA also said it needs to confirm the utility's further investigation of tsunami that occurred in the past in nearby areas as well as active faults' connectivity.

Overall, NISA said the Oi plant's Nos. 3 and 4 reactors have taken sufficient measures to prevent the sort of situation seen at Tokyo Electric Power Co.'s Fukushima Daiichi power plant even if they were hit by the same size of earthquake and tsunami that hit the plant in Fukushima Prefecture.

Only three of Japan's 54 commercial reactors are currently in operation as reactors which once enter periodic maintenance, held every 13 months, need to pass the stress test to resume operation.

If no reactors secure approval to restart, Japan will have no operating reactors by the end of April.

The government required utilities to take the stress tests following meltdowns at the Fukushima Daiichi complex, triggered by the March 2011 earthquake and tsunami, in order to check the ability of the country's nuclear power plants to withstand such natural disasters.

At Wednesday's meeting, some experts questioned the agency's endorsement of Kansai Electric's stress tests.

Masashi Goto, a former nuclear power plant design engineer, said that the stress tests are "totally meaningless" as a tool to check the safety of reactors as NISA has yet to decide how much leeway the reactors should have to withstand earthquakes and tsunami.

A NISA official said the level of reactors' ability to withstand emergency on their own, or without help from the outside, as well as the utility's efforts to improve their safety are among key factors that served as basis for the agency's evaluation of stress test results.

NISA's previous meeting with the experts in January was temporarily disrupted due to protests by some citizens, including antinuclear power activists, who were asked not to observe the meeting in the same room with attendants.

NISA continued not to allow general citizens to observe the meeting directly this time and made them watch the meeting through a monitor in a different room. A number of citizens staged antinuclear campaigns in front of the Economy, Trade and Industry Ministry building where the meeting took place.

A delegation from the International Atomic Energy Agency said last week while in Japan that the safety agency's nuclear stress tests are generally consistent with IAEA safety standards, but it also made some recommendations to NISA to improve the effectiveness of the stress tests.

## **Radioactive waste disposal site unveiled to reporters**

<http://mdn.mainichi.jp/mdnnews/news/20120209p2a00m0na013000c.html>

A temporary storage site for radioactive waste generated under a model decontamination project around the disaster-struck Fukushima No. 1 nuclear plant was unveiled to reporters on Feb. 9.

To prevent radioactive materials from contaminating groundwater, temporary disposal sites are lined with waterproof sheets. Materials produced in the decontamination operation -- including earth and plant matter -- are categorized, packed into thick bags and lifted into the disposal site by crane.

"We are building these (temporary disposal) sites in such a way that, even when full of waste, radiation levels won't rise in the surrounding area," a Japan Atomic Energy Agency official in charge of the operation stated.

The model decontamination project started in November last year in 12 municipalities in and around the exclusion zone to find the most effective decontamination and disposal techniques.

## **Approval near for Oi reactors / Agency says stress test evaluations at N-plant were adequate**

<http://www.yomiuri.co.jp/dy/national/T120209006930.htm>

A government nuclear safety agency has submitted a final draft of an evaluation report that approves the stress test results of the Nos. 3 and 4 reactors at the Oi nuclear power plant in Oi, Fukui Prefecture, to a meeting attended by experts.

The Economy, Trade and Industry Ministry's Nuclear and Industrial Safety Agency has virtually completed its evaluation of the assessment of the reactors run by Kansai Electric Power Co. The agency's approval of the evaluation is one of the preconditions for the government's goal of resuming operations at the reactors.

The reactors have remained out of service after being taken off-line for regular safety checkups.

KEPCO had reported to NISA their stress test results show safety levels at the reactors are appropriate.

At the meeting, NISA officials heard a range of opinions from nuclear experts on the final draft.

NISA will soon compile a final evaluation report and will submit it to the Cabinet Office's Nuclear Safety Commission, which will examine the adequacy of the evaluation.

Prime Minister Yoshihiko Noda and three Cabinet members will decide whether to allow the reactors to resume their operations based on the results of the commission's examination of NISA's report and the opinions of local governments in Fukui Prefecture.

Fukui Gov. Issei Nishikawa requested the government to make the safety criteria based on the knowledge and lessons learned from the crisis at Tokyo Electric Power Co.'s Fukushima No. 1 nuclear power plant in the wake of the Great East Japan Earthquake last year.

The government will hold explanation sessions with local governments and residents to improve their understanding about the reactors' possible resumption of operations.

When NISA submitted its final draft to the meeting, some experts required that it be modified.

But NISA plans to continue with plans to complete its final evaluation report because "The report's main objective--deciding that the Oi reactors' safety assessment results are appropriate--will not change," a senior NISA official said.

NISA's final draft says an accident with a severity similar to the problems experienced at the Fukushima No. 1 nuclear plant will not occur at the Oi plant.

The draft also incorporates recommendations made by a delegation from the International Atomic Energy Agency that recently visited Japan.

KEPCO is now researching active faults around the Oi nuclear power plant and past large-scale tsunamis that have been recorded in historical documents.

The final draft also touches on the possibility that the stress test results will change depending on KEPCO's research.

[February 10, 2012](#)

## **TEPCO has paid 229.2 billion yen in damages for nuclear crisis**

<http://mdn.mainichi.jp/mdnnews/news/20120210p2a00m0na007000c.html>

Tokyo Electric Power Co. (TEPCO), operator of the crippled Fukushima No. 1 nuclear plant, has paid approximately 229.2 billion yen in damages to victims so far, a company executive said.

As of Feb. 7, the company had received about 86,500 claims for compensation for financial losses the applicants say were caused by the nuclear disaster triggered by the March 11, 2011 tsunami. The company has paid compensation to about 45,900 of the applicants -- about 30,000 individuals and 15,900 companies and other organizations -- through settlements, managing director Naomi Hirose told the government's nuclear crisis damage dispute examination panel on Feb. 9.

If compensation paid earlier by the utility as a provisional measure is included, the figure rises to some 370.5 billion yen.

## **Municipalities dissatisfied with gov't's rice-planting restriction: survey**

<http://mdn.mainichi.jp/mdnnews/news/20120210p2a00m0na011000c.html>

FUKUSHIMA -- Of the 12 local municipalities where rice harvested in 2011 was found to have cesium levels that would prohibit them from planting rice this spring, 11 are critical of the government's stand, a Mainichi survey has found.

The national government's new radiation standard of 100 becquerels per kilogram is set to take effect in April. The current provisional limit is 500 becquerels per kilogram.

Over 100 becquerels of radioactive cesium per kilogram of rice has been found in 12 municipalities in Fukushima Prefecture. Eleven of these municipalities are dissatisfied with the planting restriction in districts where cesium levels fell between 100 and 500 becquerels per kilogram, and four are appealing for permission to plant rice in districts where cesium levels surpass the current provisional maximum of 500 becquerels per kilogram.

The Ministry of Agriculture, Forestry and Fisheries is set to incorporate the demands of various municipalities in drawing up planting regulations this month, but it appears reaching an agreement that will satisfy all parties will be difficult.

The agriculture ministry has already announced plans to restrict the 2012 planting of rice in districts where over 500 becquerels of radioactive cesium per kilogram of rice has been detected. As for areas where rice was found to have cesium levels between 100 and 500 becquerels per kilogram, the ministry is in talks with local municipalities to restrict planting in areas with large concentrations of farms exceeding 100 becquerels, and to permit planting in less concentrated areas.

Of the 12 municipalities affected and surveyed, the city of Nihonmatsu did not submit responses. The remaining 11 cities, towns and villages said they want planting to continue in areas where between 100 and 500 becquerels of cesium per kilogram of rice was found, citing farmers' diminishing motivation to work and deteriorating farm conditions as reasons to do so. "The population is quickly aging, and it wouldn't be practical for (the national government) to come back to us several years later and tell us we can start planting again," an Otama village official said.

With the exception of farms in the cities of Fukushima, Date and Nihonmatsu, where over 500 becquerels of cesium per kilogram of rice was detected, only a few farms in the remaining nine municipalities were found to have rice with over 100 becquerels of cesium per kilogram. In the village of Nishigo, only three of 483 farmers there harvested rice with over 100 becquerels per kilogram, with the maximum being 155 becquerels. Local officials believe that if farms are thoroughly decontaminated prior to planting, and once testing of all bags of rice begins as planned in fiscal 2012, the risks of any contaminated rice reaching the market can be avoided.

The cities of Fukushima and Date, along with the towns of Kawamata and Kunimi, said that planting should not be restricted for farms with rice exceeding 500 becquerels of cesium per kilogram. Fukushima city officials seek permission to grow rice for research purposes, while Date city officials emphasize that rice farmers live for rice cultivation, even if prices are lowered. Meanwhile, Kunimi officials stated that if rice planting is going to be restricted this year, "the national government should shoulder the burden of decontamination so that there is hope for 2013 and beyond."

In November 2011, rice harvested in the Onami district of the city of Fukushima was found to have more than the provisional permissible amount of radioactive cesium. Emergency tests were subsequently conducted on rice from 23,247 farms in 29 municipalities. Over 100 becquerels of cesium per kilogram of rice was found from some of the farms in 12 cities, towns, and villages.

## Radioactive waste site opened to media in Okuma

<http://www.yomiuri.co.jp/dy/national/T120210006056.htm>

OKUMA, Fukushima--The government, for the first time, has allowed the media to cover operations to move waste contaminated by radioactive substances to a **baseball stadium being used for temporary storage in the Ottozawa district in Okuma**, Fukushima Prefecture.

The contaminated waste was collected in the government-led model decontamination project conducted in the town.

On Thursday, the bags containing the waste were moved to the site and piled in two designated areas at the town-run stadium, about three kilometers away from the power plant.

Radiation levels exceeded 70 microsieverts per hour in certain areas of the Ottozawa district, the highest level among the government-monitored locations.

Workers in protective clothing and masks used cranes to pile up **bags with the contaminated soil and grass, each weighing about a ton.**

A worker said, "Protective clothing hampers our breathing and it's tough to work because my hands are freezing in these rubber gloves."

Before placing the bags, **four layers of sheeting, including a water-resistant sheet, were spread on the ground to block radiation leaks.** [since when has water-resistant material been able to block radiation ?]

**Later, the pile will be covered by three layers of sheets and soil.**

An official at the Japan Atomic Energy Agency, which handled the operation, said, "It's possible to block 98 percent of radiation [using this system]."

## Govt to make TEPCO more transparent / 3 committees to oversee management

<http://www.yomiuri.co.jp/dy/national/T120210006779.htm>



The government plans to require Tokyo Electric Power Co., operator of the crippled Fukushima No. 1 nuclear power plant, to introduce a committee governance structure to increase management transparency.

The policy is included in the draft comprehensive special business plan, which will be compiled by the government's Nuclear Damage Liability Facilitation Fund and TEPCO in March.

TEPCO Chairman Tsunehisa Katsumata is set to resign to take responsibility for the nuclear crisis. His successor will be recruited from outside the company to increase the transparency of TEPCO's management.

TEPCO tentatively decided Thursday to accept the fund's demand that it hold a one-third stake in the utility through a capital injection using taxpayers' money.

With the veto power that comes with a one-third stake, the fund will be able to overturn decisions in shareholders meetings concerning TEPCO's management policy.

The government decided TEPCO's opaque management practices--including high labor costs and donations as part of its expenses that are used to determine electricity charges--need to be changed if the utility is to regain public trust.

By making it possible for outside entities to oversee TEPCO's management system, the government aims to make it easier to gain the public's understanding over using public funds to assist TEPCO.

In addition to introducing a committee system, the draft plan for new management will introduce an internal company system to encourage TEPCO's internal divisions to compete with one another to reduce costs.

Concerning a financial assistance scheme for TEPCO, the fund will inject 1 trillion yen as additional capital while banks will loan a total of 1 trillion yen.

Alternatively, the banks could buy TEPCO's bonds, instead of extending loans.

To minimize the burden on the banks, hundreds of billions of yen out of the 1 trillion yen will be set aside as a line of credit from which TEPCO would be able to borrow money when necessary.

The fund plans to present the scheme to banks in the near future.

On Thursday night, a TEPCO executive said, "We assume the government wants to hold at least one-third [of a stake in TEPCO] through the injection of capital, as that percentage comes with veto power."

However, the government demands at least a majority of voting rights in TEPCO, which still leaves some gaps between the two parties' positions.

Under the committee-company system, TEPCO will have three committees within the board of directors--the nominating committee, which selects and dismisses members of the board; the audit committee overseeing the work of board members; and the compensation committee, which determines board members' salaries.

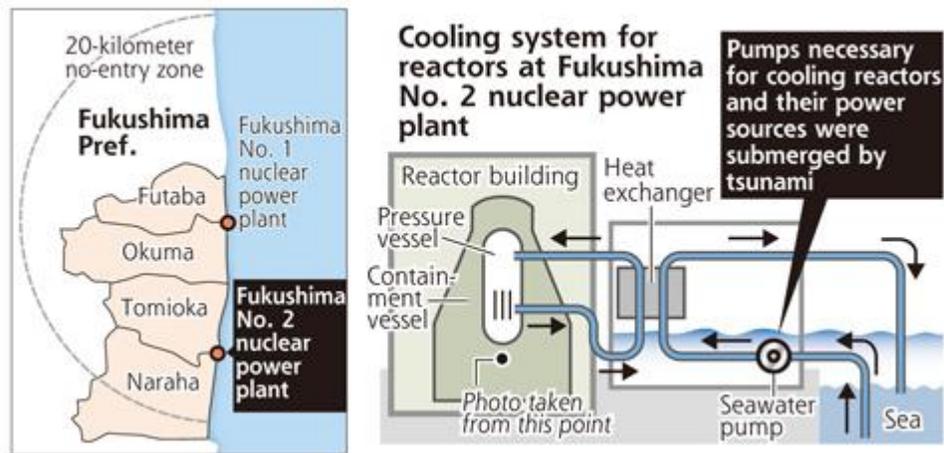
For all three committees, more than half of the members will be outside directors.

Under the system, executive officers will be appointed to carry out separate functions of business operations from the board of directors, which oversees management.

February 10, 2012

## Fukushima No. 2 plant was 'near meltdown'

The Yomiuri Shimbun



FUKUSHIMA--The Fukushima No. 2 nuclear power plant was "near meltdown" after being hit by tsunami following the Great East Japan Earthquake on March 11, according to the head of the plant.

The No. 2 plant, on the border of Naraha and Tomioka towns in Fukushima Prefecture, was opened to the media Wednesday for the first time since the disaster. It is **12 kilometers from the Fukushima No. 1 nuclear power plant**, which suffered a meltdown. Both facilities are operated by Tokyo Electric Power Co.

Plant chief Naohiro Masuda, in charge of plant operations since the crisis, told reporters Wednesday, "The No. 2 plant almost suffered the same fate as No. 1 [which led to a severe crisis]."

On March 11, a **9-meter-high tsunami** struck the No. 2 plant, while the No. 1 plant was hit by a 13-meter-high tsunami. The tsunami caused the No. 2 plant's seawater pumps, used to cool reactors, to fail. Of the plant's four reactors, three were in danger of meltdown.

**Luckily, one external high-voltage power line still functioned**, allowing plant staff in the central control room to monitor data on internal reactor temperatures and water levels.

By March 15, the No. 2 plant's four reactors reached a state of cold shutdown without any leakage of radioactive materials.

"[At that point, the situation at the No. 2 plant] was considerably different from the No. 1 plant where it was difficult to know what was going on," Masuda, 53, said.

However, **despite intense efforts by all employees, it took a long time to stabilize the reactors.**

On March 11, **about 2,000 employees** of the No. 2 plant worked to stabilize the reactors. Some employees connected **200-meter sections of cable, each weighing more than a ton, over a distance of nine kilometers.**

Masuda noted the timing of the disaster was critical in saving the plant.

**"We were lucky it happened on a Friday afternoon [and not on a weekend],"** he said.

Masuda pointed out only 40 employees would have been at the plant if the earthquake had occurred in the evening or on a weekend.

"[In that case] it would be have been difficult for us to deal with the disaster," he said.

The Fukushima prefectural government conducted an on-site inspection at the No. 2 plant on Wednesday and repeated a request to TEPCO to decommission the facility.

Masuda did not elaborate and said, "At the moment, I can only say we'll maintain a state of cold shutdown."

The No. 2 plant's No. 1 reactor began operating in 1982. Following the Great East Japan Earthquake, a Nuclear Emergency Situation Declaration was issued for both the No. 1 and No. 2 plants. The declaration was lifted for the No. 2 plant in December.

February 11, 2012

## **Atomic energy commission to recommend background checks for nuclear workers**

<http://mdn.mainichi.jp/mdnnews/news/20120211p2a00m0na002000c.html>

The Japan Atomic Energy Commission (JAEC) on Feb. 10 put together a draft report recommending energy companies be made to do background checks on employees working at important nuclear facilities or with nuclear materials.

Specifics are expected to be ironed out by a new government atomic energy regulatory organ to be established in April.

In January of last year, the International Atomic Energy Agency (IAEA) released a recommendation that the trustworthiness of nuclear employees be checked, and according to the JAEC, background checks on nuclear employees are already performed in most major countries. Such checks were

considered in Japan in 2004 by the Ministry of Economy, Trade and Industry, but were not implemented over privacy concerns.

After the meltdowns at the Fukushima No. 1 nuclear plant, the JAEC recommended checks because "implementing counterterrorism measures for nuclear facilities, which can cause serious damage to society, is an urgent matter."

One obstacle to the checks is that it is difficult for power companies to check on workers' criminal records or debts, so police and other authorities would have to help. Furthermore, Tokyo Electric Power Co. could not confirm the identities of some of the workers who had been sent to the Fukushima No. 1 plant in recent background checks, and the JAEC has admitted it would be difficult to put the checks into practice.

February 11, 2012

### **Panel: All N-plant staff should have ID checks**

<http://www.yomiuri.co.jp/dy/national/T120210006052.htm>

A committee of the Cabinet Office's Atomic Energy Commission plans to urge the government to require that nuclear facility operators verify the identity of all workers, in an effort to protect the sites against possible terrorist attacks, it has been learned.

It has come to light that Tokyo Electric Power Co.--the operator of the crippled Fukushima No. 1 nuclear power plant--does not have an adequate system to check the identities of those who access the site.

The utility has been unable to confirm the whereabouts of 10 people who worked at the site after the March 11 earthquake and tsunami triggered the crisis at the plant.

The government is expected to finally start taking serious steps against possible terrorist attacks targeting nuclear facilities as part of its review of safety measures in response to the nuclear crisis.

After the Sept. 11, 2001, terrorist attacks in the United States, nuclear power plants around the world implemented stricter security measures against possible sabotage. The International Atomic Energy Agency revised its guideline titled "The Physical Protection of Nuclear Material and Nuclear Facilities" in February last year, which stipulates that "the identity of all persons entering [facilities] should be verified."

The United States and European countries require nuclear facility operators to examine workers' past records, including checks for criminal activity and drug abuse. In contrast, Japan has had almost no concrete discussions on this issue, mainly because of an emphasis on protecting private information.

When workers enter protected areas at nuclear facilities in Japan, they usually do so in pairs so they can keep watch on each other.

More than 3,000 workers have been engaged in daily recovery activities at the Fukushima No. 1 nuclear power plant since the outbreak of the crisis. TEPCO conducted follow-up investigations into those who had worked at the site and discovered that the whereabouts of 10 workers could not be confirmed.

Moreover, poor security in most areas of the plant except for the central control room has also been identified as a problem. Areas near power supplies and cooling systems could be easily targeted in a terrorist attack, which could possibly result in a core meltdown, according to sources.

Therefore, the committee has decided the government should make it mandatory for nuclear facility operators to verify the identity of all workers in line with the IAEA guideline. This would cover not only employees of nuclear power plant operators, but also those from other companies working for the utilities, the sources said.

(Feb. 11, 2012)

## **Over 100,000 signatures collected for Tokai nuclear plant scrapping**

MITO (Kyodo) -- Civic groups submitted to the Ibaraki governor on Friday about 51,000 signatures and a petition demanding that the Tokai No. 2 nuclear power station be scrapped, bringing the total number of signatures they have collected against the plant operation to more than 100,000.

Last November, about 50,000 signatures against the resumption of the plant's operation, halted since last year, were already submitted to Ibaraki Gov. Masaru Hashimoto.

The petition submitted Friday urges the prefectural government not to allow the Tokai power station to resume operation, saying, "We should not allow a recurrence of the irretrievable sacrifice and loss as experienced in the Fukushima Daiichi nuclear power plant accident."

Having received the signatures and the petition, Katsuyoshi Tan in charge of the prefecture's crisis management said, "The (central) government has not yet announced its decision on resuming operations (of idled nuclear reactors), so we are undecided."

Civic groups are encouraging the prefecture to make "independent" decisions instead of waiting for the central government's policies.

The groups said they used the Internet and took to the streets to gather the signatures and will try to gather more.

(Mainichi Japan) February 11, 2012

## Citizens group runs full-page anti-nuclear ad in Mainichi

<http://mdn.mainichi.jp/mdnnews/news/20120211p2a00m0na004000c.html>



The ad carried in the Feb. 11 morning edition of the Mainichi Shimbun.

A citizens group formed by intellectuals Shinichi Nakazawa, Tatsuru Uchida, and writer Seiko Ito ran a full-page anti-nuclear power ad in the Feb. 11 edition of the Mainichi Shimbun.

The ad reads in large print, "We aim for a Japan with no nuclear power plants." Nakazawa says the ad "is valuable in that it makes the opinions of people below the surface (of public discourse) visible through newspapers."

The ad was endorsed by some 150 people, mainly musicians and others in the arts, as well as around 20 organizations.

"To be ethical towards the future, we have to change direction," says Ito.

February 12, 2012

## TEPCO provided radiation map to U.S. before Japanese public

<http://mdn.mainichi.jp/mdnnews/news/20120212p2g00m0dm019000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. provided a contamination survey map of its crippled Fukushima No. 1 nuclear plant to the U.S. nuclear regulator nearly a month before its official disclosure to the public in Japan in late April last year, company officials said.

The revelation follows a series of revelations that the government data from the System for Prediction of Environmental Emergency Dose Information and the Japan Meteorological Agency's data on the projected radiation spread were provided to the United States and other international institutes before disclosure of the information in Japan.

TEPCO started making the map which described the amount of radiation at up to 150 spots around the buildings in the power plant site on March 22 and provided it the same day to the U.S. Nuclear Regulatory Commission at the request of its staff members dispatched to Japan after the March 11 earthquake and tsunami triggered the nuclear crisis, the officials said.

TEPCO officials and NRC staffers continued to share updated versions of the map almost every day via e-mail, they said.

TEPCO only started providing the data to Japan's Nuclear and Industrial Safety Agency on March 23. It waited until April 24 to make the map public, only after the media reported details of the map a day before.

An official at TEPCO's public relations department said the company had provided data on the radiation amount at the Fukushima No. 1 complex at press conferences even before the official disclosure of the map, adding the utility "received advice" from the NRC.

<http://mdn.mainichi.jp/mdnnews/news/20120212p2a00m0na007000c.html>

## **From atomic bombings to nuclear disaster: director turns camera toward Fukushima**

**Director Hidetaka Inazuka**, known for his documentary on the late double atomic bomb survivor Tsutomu Yamaguchi, has turned his attention toward Fukushima Prefecture, covering the prefecture in a new film on people exposed to radiation from the crippled Fukushima No. 1 Nuclear Power Plant.

The 61-year-old filmmaker's new work is titled "Fukushima 2011: Hibaku ni Sarasareta Hitobito no Kiroku" (Fukushima 2011: Records of people exposed to radiation). It follows survivors of the atomic bombing of Hiroshima and Nagasaki who are now living in Fukushima, as well as the people facing radioactive contamination of their hometowns. The film is **due to be screened across Japan from mid-March**. It will also be shown at the Los Angeles Japanese Film Festival in April.

One subject of the new documentary is a man in his 80s who survived the atomic bombing of Hiroshima at an army barracks in the city.

"Even when there were explosions at the nuclear power plant I didn't feel scared. I've been hit by a bombing before, and it's 30 kilometers (from my place to the nuclear plant)," he says.

After the war, the man took up dairy farming, but the nuclear disaster triggered by the March 2011 Great East Japan Earthquake and tsunami forced him to abandon his business.

"I had 46 cows, but I sold them off for 800,000 yen. I can get by for a year or two, but there's no telling what's in store after that. I think about my children and grandchildren every day," he tells the camera.

In April last year, Inazuka visited the United States for a screening of his documentary "Twice Bombed: A Legacy of Yamaguchi Tsutomu." The film traces Yamaguchi's activities speaking about surviving the atomic bombings of both Hiroshima and Nagasaki. Yamaguchi died in 2010 at the age of 93. The documentary was well received in the United States, but after the outbreak of the Fukushima nuclear disaster, Japanese people in the U.S. complained that the effects of radiation were not being properly communicated in Japan.

Hearing such complaints, Inazuka recalled the words of Yamaguchi: "The world in which people live must be nuclear-free. We can't prevent (nuclear) accidents with current technology. If we don't become nuclear-free, the downfall of mankind will draw closer."

In May last year, Inazuka visited Fukushima Prefecture, and he focused his camera on the people in the municipality of Iitate before the whole village was evacuated, as well as on people in the city of Soma and other areas where many were killed by the March 11, 2011 tsunami. The film covers people's efforts to restore and revitalize their hometowns, where bonds between families and communities have been severed as a result of the disaster.

Included in the film is 69-year-old Hiromi Sato, a restaurant operator in the city of Minamisoma.

"My neighbors starting leaving, and everyone sent me emails saying 'get out of there' so I started to get scared," she says. "But I didn't want to live in a shelter." She reopened her restaurant after the "Golden Week" string of public holidays in May 2011.

"There are various circumstances among the people who stay, those who leave, and those who return," Inazuka says. "I want to cover the people who are confronting the issues of life wholeheartedly."

## **Nobel laureate, citizens call for abolition of nuclear power**

<http://mdn.mainichi.jp/mdnnews/news/20120212p2g00m0dm021000c.html>

TOKYO (Kyodo) -- An antinuclear civic group led by Nobel literature laureate Kenzaburo Oe and other celebrities held rallies in Tokyo and Niigata Prefecture on Saturday calling for the abolition of nuclear reactors in the aftermath of radiation leaks at the Fukushima No. 1 power plant.

Addressing the protesters gathered at Yoyogi Park in Tokyo, who numbered around 12,000, according to the organizers, Oe insisted on the abolishment of nuclear reactors.

"We will be handing nuclear waste generated from the nuclear reactors to our grandchildren. This is unethical conduct," Oe said.

The rallies were held as part of the group's campaign to collect 10 million signatures against nuclear power to submit it to the prime minister and the chiefs of both chambers of the Diet. The executive

committee for the "10 Million People's Action to say Goodbye to Nuclear Power Plant" campaign said earlier it has gathered about 4 million signatures so far in sympathy with its goal to abolish all 54 commercial reactors in Japan.

Taro Yamamoto, an actor who is known as an anti-nuclear advocate, also took part in the rally.

"If a massive earthquake occurs now, our country will be finished. We cannot have the nuclear reactors resume their operations," he told the protesters.

On March 11, the first anniversary since the disastrous earthquake and tsunami prompted the worst nuclear crisis since Chernobyl at Tokyo Electric Power Co.'s Fukushima No. 1 Nuclear Power Plant, the group plans to hold a rally in Koriyama in Fukushima Prefecture.

## **Fukushima No. 2 reactor temperature up to 82C, but not critical: TEPCO**

<http://mdn.mainichi.jp/mdnnews/news/20120212p2g00m0dm020000c.html>

TOKYO (Kyodo) -- Tokyo Electric Power Co. said Sunday the temperature at the bottom of the No. 2 reactor at its crippled Fukushima No. 1 nuclear plant rose further to 82 C, but the reactor has not gone critical.

While the thermometer reading at shortly after 2 p.m. marked a new high since the reactor attained a cold shutdown in December, the utility known as TEPCO said it has confirmed that sustained nuclear reactions are not taking place in the reactor as **no radioactive xenon has been detected inside its containment vessel.**

TEPCO reported the latest development immediately to the Nuclear and Industrial Safety Agency of the Economy, Trade and Industry Ministry as the temperature exceeded the limit of 80 C designated by the company's safety regulation for maintaining a cold shutdown, it said.

It is considered desirable to keep the temperature below 80 C, while the bottom of a reactor pressure vessel must be kept below 100 C in a stable cold shutdown, in view of the margin of error of thermometers, according to TEPCO officials.

TEPCO plans to increase the amount of water injected as a coolant by 3 tons per hour and pour 1 ton of boric acid later Sunday to prevent any event of criticality.

As a reason for what is causing the temperature rise, TEPCO said it is possible the water flow is unstable and thus failing to cool the reactor stably, while also saying it will check the thermometer for any irregularities. The temperature was measured at 78.3 C at 10 a.m. and fell to 75.4 C at 11 a.m.

The decline occurred after TEPCO on Saturday night increased the amount of water being injected into the reactor to 14.6 tons per hour from 13.6 tons, after seeing the temperature rise to 73.3 C at 9 p.m. It reached 74.9 C at 11 p.m. Saturday. The temperature readings began rising on Feb. 1.

One of the three thermometers at the bottom of the reactor's pressure vessel stayed between 67 C and 71 C from Friday evening to Saturday evening after hitting 73.3 C on Monday.

Readings from two other thermometers that check the temperature at the bottom of the No. 2 reactor vessel were around 35 C, TEPCO said.

The Nos. 1 to 3 reactors at the Fukushima No. 1 plant in northeastern Japan experienced meltdowns as a result of the loss of key cooling functions in the wake of the devastating earthquake and tsunami on March 11 last year.

## Temperature rising at No.2 reactor

[http://www3.nhk.or.jp/daily/english/20120212\\_12.html](http://www3.nhk.or.jp/daily/english/20120212_12.html)

The temperature at the No.2 reactor of the Fukushima Daiichi nuclear power plant **keeps rising even after the injection of more cooling water on Saturday night.**

The plant operator, Tokyo Electric Power Company, or TEPCO, says a thermometer at the bottom of the reactor registered 78.3 degrees Celsius at 10 AM on Sunday.

The reading began to rise in late January to around 70 degrees. TEPCO pumped in more water to push down the temperature, but it rose again on Saturday night to 74.9 degrees.

The temperature continued to climb on Sunday morning to hit its highest level since last December, when the government and TEPCO declared all the reactors were at a state of cold shutdown, with their temperatures below 100 degrees.

**TEPCO denied the possibility of nuclear criticality**, saying 2 other thermometers at the bottom of the reactor show temperatures at around 35 degrees.

It adds that continuous nuclear fission would generate radioactive xenon, but gas samples collected from near the reactor found the element below the detection limit.

**TEPCO is set to dump in boric acid to prevent any nuclear criticality later on Sunday and increase the volume of cooling water by 3 tons per hour.**

Under new guidelines, **the company must keep reactor temperatures at 80 degrees or below, given thermometers' margin of error of up to 20 degrees.**

# **Annexes**

# Sommaire des annexes

---

- Communiqués de presse de la CRIIRAD des 22 et 26 mars 2011	1
--	---

---

- L'incident de Fukushima Daiichi : exposé d'AREVA du 7 avril 2011	9
--	---

---

- Advisory Committee on Reactor Safeguards Subcommittee on Fukushima, Official Transcript of Proceedings Nuclear Regulatory Commission, 26 mai 2011	42
---	----

---

- DOE Response to Fukushima Dai-ichi Accident, U. S. Department of Energy, 26 mai 2011	208
--	-----

---

- Lettre d'Arnie Gunderson, Chief Engineer, Fairewinds Associates, à The Advisory Committee on Reactor Safeguards, 26 mai 2011	249
--	-----

---

- The Fukushima Nuclear Disaster, in <i>Medicine &amp; Global Survival</i> , IPPNW, juin 2011	252
---	-----

---

## PANACHES RADIOACTIFS :

# Quels sont les risques attendus sur la France ?

*Au vu du nombre impressionnant de demandes qu'elle a reçues, et plus encore de l'inquiétude exprimée par la plupart des messages, la CRIIRAD a décidé de rédiger un texte d'information destiné à rassurer, autant qu'il est possible, les personnes qui l'ont interpellée sans pour autant aller au-delà de ce que permettent les données disponibles. C'est difficile car les données utilisables sont encore très rares. C'est d'autant plus choquant que des résultats d'analyse existent mais qu'ils ne sont pas publiés. Nous reviendrons dans un prochain communiqué sur les nombreux dysfonctionnements qui provoquent depuis 10 jours notre indignation et notre colère.*

## INFORMATION TARDIVE

**La CRIIRAD tient tout d'abord à présenter ses excuses pour n'avoir pas répondu plus tôt aux très nombreuses demandes d'information qu'elle reçoit depuis plusieurs jours. Ses excuses s'adressent tout spécialement :**

- **à ses adhérents** qui habitent très majoritairement la France et à qui la CRIIRAD aurait dû prioritairement envoyer des informations. C'est en effet grâce à leur soutien que la CRIIRAD s'est créée et qu'elle continue d'exister aujourd'hui.
- **à la Région Rhône-Alpes, aux départements de la Drôme, de l'Isère, aux municipalités d'Avignon, de Romans-sur-Isère, de Valence (et environs), de Montélimar (et environs), à la communauté de communes du Pays-Roussillonnais.** C'est grâce à leur soutien financier qu'existe dans la vallée du Rhône un réseau de balises de surveillance de la radioactivité de l'air indépendant de l'Etat, des exploitants et des services officiels. Ce réseau s'est constitué malgré l'opposition farouche de l'Etat français. La situation n'a pas forcément changé. C'est en tout cas ce que suggère l'échec inattendu du projet d'implantation d'une 6<sup>ème</sup> balise en Haute-Savoie. La municipalité d'Annecy et le SILA (syndicat mixte du lac d'Annecy) avaient donné leur accord, mais le projet a ensuite été abandonné... après une réunion avec la Préfecture et l'IRSN.

## LE CHOIX DE LA CRIIRAD

**Etant donné les niveaux de risque auxquels sont exposées les populations japonaises, nous avons décidé de concentrer nos efforts sur la situation au Japon, sachant évidemment que les panaches radioactifs n'arriveraient sur la France que postérieurement et que les concentrations en produits radioactifs auraient considérablement décliné. En parallèle, des recherches ont immédiatement été lancées sur les réseaux de mesures implantés aux Etats-Unis, au Canada et au Mexique afin de disposer d'une évaluation intermédiaire des niveaux de contamination des panaches avant leur arrivée sur l'Europe.**

**Ce jour 21 mars, la situation au Japon reste la priorité de la CRIIRAD :** les rejets radioactifs continuent, ils peuvent s'aggraver à tout instant ; les conditions météorologiques sont en outre défavorables et pourraient le rester jusqu'à mercredi minuit au minimum (heure de Tokyo) ; les mesures de protection qui ont été prises sont insuffisantes ; les niveaux de contamination dans les produits à risque sont très élevés et bien au-delà des zones proches de la centrale (nous avons travaillé tout le week-end pour contrer les informations erronées diffusées à ce sujet).

**Le présent document vient en complément. Il s'efforce de faire le point sur les niveaux de contamination attendus en France. Dès lors que le travail d'analyse de notre laboratoire pourra commencer, l'information sera plus facile à élaborer.**

## LA PROGRESSION DES MASSES D'AIR CONTAMINE EN DIRECTION DE L'EUROPE

### Les mécanismes qui diminuent de la radioactivité de l'air

La centrale nucléaire de Fukushima Daiichi rejette dans l'atmosphère, depuis 10 jours, tout un cocktail de produits radioactifs. Schématiquement, 3 mécanismes concourent à abaisser les niveaux de contamination et par conséquent les niveaux de risque :

**1/ les émissions radioactives sont progressivement diluées dans des volumes d'air de plus en plus importants.** Ceci conduit évidemment à une baisse de la concentration de l'air en produits radioactifs (ou plus exactement à une baisse de l'activité de l'air qui s'exprime en Bq/m<sup>3</sup>). L'air que les populations sont susceptibles de respirer est ainsi de moins en moins radioactif.

Note : c'est ce que Roger Belbéoch appelle la démocratisation du risque : les niveaux d'exposition sont plus faibles mais un bien plus grand nombre de personnes est touché.

**2/ les produits radioactifs présents dans l'air se déposent progressivement au sol,** ce qui conduit à appauvrir progressivement le panache et à abaisser d'autant sa dangerosité. Deux mécanismes convergent : **les dépôts secs**, qui se produisent en permanence, quelles que soient les conditions météorologiques, et **les dépôts humides**, plus intenses, qui sont provoqués par la pluie ou la neige. En tombant, elles lessivent en effet les masses d'air contaminé, précipitant au sol (ou sur les océans) les particules radioactives en suspension (aérosols) et les gaz solubles (c'est le cas des iodes radioactifs). Il faut espérer à ce propos que les panaches radioactifs restent le plus longtemps possible sur le Pacifique et l'Atlantique où l'impact des retombées est moindre d'un point de vue sanitaire.

**3/ l'activité des produits radioactifs diminue dans le temps :** pour certains, comme le césium 137 ou le krypton 85, très lentement ; pour d'autres, assez rapidement. Le rythme de décroissance est déterminé par la période radioactive de chaque radionucléide. Celle de l'iode 131 est de 8 jours. Cela signifie qu'en 1 période, soit 8 jours, l'activité initiale est divisée par 2 ; en 2 périodes, soit 16 jours, par 4 ; en 3 périodes, par 8, etc.

NB : la période radioactive ne suffit pas à déterminer le temps pendant lequel un produit radioactif reste dangereux. Il faut également tenir compte de l'activité initiale. Si l'activité initiale de l'iode est de 80 Bq, un mois plus tard, soit après 4 périodes, elle sera divisée par 16. Il ne restera « que » 5 Bq ; mais si l'activité initiale est de 8 000 Bq, un mois plus tard, il reste encore 500 Bq.

**L'impact de ces 3 mécanismes – dilution, dépôts, désintégration – augmente évidemment avec le temps et la distance.**

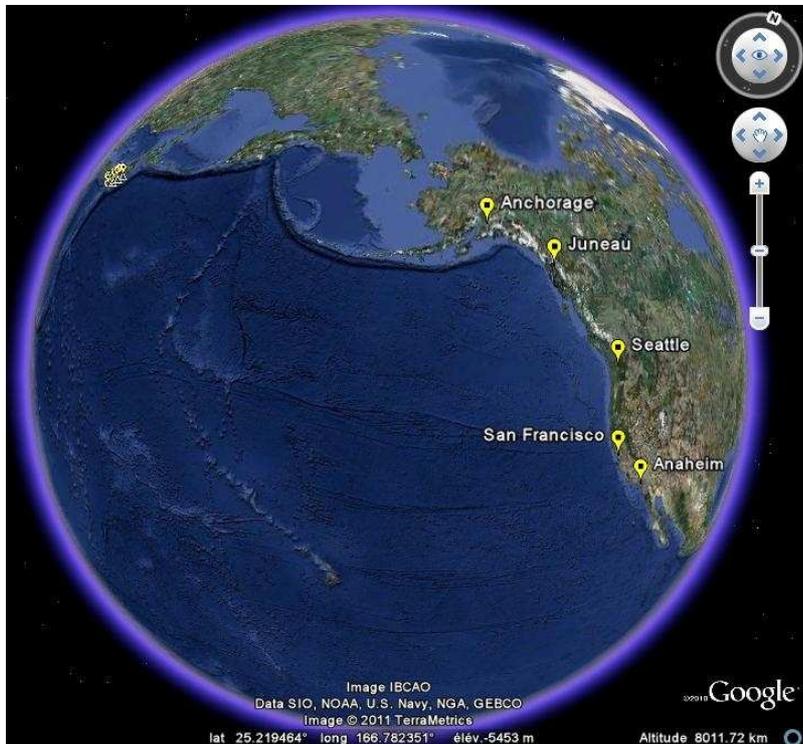
### Le passage des panaches radioactifs sur l'Amérique du Nord

Via l'océan pacifique, la France est située à près de 15 000 km des côtes japonaises. En utilisant le logiciel HYSPLIT du NOAA américain (<http://ready.arl.noaa.gov/HYSPLIT.php>), la CRIIRAD a modélisé les trajectoires des rejets émis à Fukushima (voir pdf « trajectoires » ci-joint). Il s'agit du parcours des produits radioactifs rejetés le 12 mars à 12h TU (soit 21h Japon). La simulation est basée sur les données météorologiques du 12 mars 12h TU au 21 mars 06h00 TU archivées par le NOAA. Trois trajectoires sont considérées en fonction de l'altitude de départ des radionucléides : en vert notamment la trajectoire des particules radioactives émise à 50 mètres de hauteur (en bleu 500 mètres, en rouge 1 000 mètres, assez peu réaliste dans le cas de Fukushima).

**Selon cette modélisation, les premiers rejets radioactifs de la centrale de Fukushima Daiichi devaient atteindre la côte ouest des Etats-Unis et du Canada vers les 17-18 mars.**

**Nous avons alors recherché des sites Internet susceptibles de donner des résultats d'analyse ce qui nous aurait permis d'établir un bilan intermédiaire des niveaux de contamination et de risque. En suivant l'évolution des concentrations tout au long de la traversée des Etats-Unis, nous espérons pouvoir anticiper plus précisément l'impact sur la France.**

Nous avons effectivement trouvé des résultats, notamment auprès de l'Environmental Protection Agency (voir lien ci-dessous). Malheureusement, ces résultats ne portent pas sur l'activité volumique mais sur les taux d'émission bêta et gamma des dépôts collectés sur des filtres à air. Ils ne permettent d'apprécier ni les risques d'inhalation de radionucléides, ni l'intensité des dépôts au sol. L'évolution dans le temps de ces paramètres montre en revanche une augmentation qui est, selon toutes probabilités, liée au passage de masses d'air contaminé, vu sa cohérence avec les dates qui figurent sur les modélisations de trajectoires.



Site d'accès aux données :  
<http://www.epa.gov/japan2011/rert/ra-dnet-data.html>

Les données analysées par la CRIIRAD concernent les stations de mesure suivantes :

Etat de l'Alaska :

- Anchorage
- Juneau

Etat de Washington :

- Seattle

Etat de Californie :

- San Francisco
- Anaheim

## Les estimations publiées par l'IRSN

L'IRSN a annoncé qu'en France, l'activité de l'air en **césium 137** serait de l'ordre de **1 mBq/m<sup>3</sup>**.

Pour quantifier les rejets, l'IRSN indique qu'il « *n'a pas de données de mesure directe sur la composition et l'ampleur des rejets radioactifs, mais dispose d'informations techniques sur les installations accidentées.* », précisant : « *l'interprétation de ces informations a permis à l'IRSN d'élaborer des scénarios probables de dégradation des 3 réacteurs depuis le 12 mars, en s'assurant de leur cohérence avec les mesures de débit de dose obtenues sur le site. L'IRSN a également retenu l'hypothèse que ces rejets se poursuivent jusqu'au 20 mars.* ». A noter que le dossier scientifique associé n'a pas été publié.

A partir des rejets estimés par l'IRSN, Météo France a simulé la dispersion des rejets radioactifs à très grande distance, projetée jusqu'au 26 mars.

Pour visualiser la modélisation : [http://www.irsn.fr/FR/popup/Pages/irsn-meteo-france\\_19mars.aspx](http://www.irsn.fr/FR/popup/Pages/irsn-meteo-france_19mars.aspx)

Selon cette simulation, le panache radioactif devrait atteindre la France à partir du 23 ou du 24 mars. L'IRSN précise que « *Les concentrations attendues à terme, d'après cette modélisation, pourraient être de l'ordre de 0,001 Bq/m<sup>3</sup> en France métropolitaine et dans les départements d'outre-mer de l'hémisphère nord. Comme attendu, l'hémisphère sud n'est pas significativement affecté par cette dispersion à grande échelle.* »

Pour accéder aux commentaires :

[http://www.irsn.fr/FR/Actualites\\_presse/Actualites/Pages/20110319\\_simulation\\_dispersion\\_panache\\_radioactif.aspx](http://www.irsn.fr/FR/Actualites_presse/Actualites/Pages/20110319_simulation_dispersion_panache_radioactif.aspx)

## ESTIMATION PRELIMINAIRE DES NIVEAUX DE RISQUE PAR LA CRIIRAD

Sur la base des éléments qu'elle a pu collecter, la CRIIRAD considère que :

- **le risque d'irradiation<sup>1</sup> par les masses d'air contaminé sera négligeable** (les personnes qui disposent d'un radiamètre ne devraient pas mesurer d'augmentation du bruit de fond ambiant mais nous invitons les personnes qui sont équipées à le vérifier : une mesure vaut mieux qu'une prévision) ;
- **le risque associé à l'inhalation des aérosols et halogènes radioactifs présents dans l'air devrait être très faible** (voir note)<sup>2</sup> . **Les calculs de dose précisés ci-dessous indiquent que la mise en œuvre de contre-mesures, notamment la prise de comprimés d'iode stable<sup>3</sup>, n'est pas justifiée.**

Nous avons essayé d'estimer les niveaux de dose résultant de l'inhalation des radionucléides dont la présence est documentée : césium 137, césium 134, iode 131, iode 132, iode 133 et tellure 132. Le premier calcul a été conduit pour une activité de 1 mBq/m<sup>3</sup> pour le césium 137 (estimation donnée par l'IRSN) et de 125 mBq/m<sup>3</sup> pour l'iode 131 (sur la base du rapport isotopique mesuré par TEPCO devant la centrale de Fukushima Daiichi le 19 mars 2011 à 12h - heure locale). Le calcul a été effectué en supposant que les panaches radioactifs restent présents sur la France pendant 1 semaine et sans que leur activité diminue.

Conclusion : une personne (adulte ou enfant) qui respirerait l'air contaminé 7 jours durant, recevrait une dose de rayonnement **inférieure à 1 µSv**, soit un niveau de dose négligeable ;

En prenant une marge de sécurité par rapport à l'évaluation de l'IRSN (soit 10 mBq/m<sup>3</sup> en césium 137 au lieu de 1 mBq/m<sup>3</sup>), les doses s'élèvent à **2 µSv pour l'adulte et à 8 µSv pour l'enfant**.

- **le risque d'irradiation des personnes par les produits radioactifs déposés sur les sols sera négligeable, n'induisant aucune augmentation mesurable du bruit de fond ambiant** (là encore ceci pourra être facilement vérifié par des mesures radiométriques) ;
- **le risque lié à l'ingestion d'eau ou d'aliments contaminés par les retombées radioactives devrait rester limité. Le laboratoire de la CRIIRAD évaluera le plus rapidement possible les quantités de radioactivité déposées au sol (dépôts sec et dépôts liés aux précipitations) afin de vérifier les ordres de grandeurs attendus dans les aliments et de donner, si nécessaire, des conseils adaptés.**

En conclusion, le passage des masses d'air contaminé sur la France ne doit pas générer trop d'inquiétude. Cependant, compte tenu du manque crucial de données, la CRIIRAD est contrainte de laisser certaines affirmations au conditionnel. Ceci devrait pouvoir être corrigé très rapidement.

Son laboratoire a procédé, dès aujourd'hui, sur plusieurs de ses balises à des prélèvements de filtres à poussières et de filtres à charbon actif afin de vérifier que l'air que nous respirons n'est pas encore contaminé.

Les premiers résultats, qui concernent la balise implantée à Romans-sur-Isère, dans la Drôme, confirment l'absence de contamination mesurable dans l'air jusqu'à la date du prélèvement, le lundi 22 mars 2011 à 10 heures : pas de césium 137 dans le filtre aérosols, ni d'iode 131 dans la cartouche à charbon actif.

---

<sup>1</sup> Il s'agit de l'exposition des personnes aux rayonnements émis par les produits radioactifs présents dans les panaches et qui se désintègrent. Un peu comme on peut être exposé aux rayonnements ultra-violetts émis par le soleil. Il n'y a pas d'incorporation de produits radioactifs ;

<sup>2</sup> Sous réserve cependant que les radionucléides significatifs sur le plan dosimétrique, **mais qui n'ont pas fait l'objet de mesures**, restent dans les rapports attendus. Il s'agit notamment des isotopes du strontium et du plutonium.

<sup>3</sup> En revanche, le contexte actuel peut amener chacun à réfléchir à l'équilibre de son régime alimentaire et à vérifier s'il n'est pas carencé en iode (la thyroïde a besoin d'iode stable pour fabriquer les hormones nécessaires au bon fonctionnement de l'organisme). Rappelons également que lorsque la thyroïde est carencée en iode, elle fixe d'autant plus l'iode radioactif.

**Ces contrôles seront intensifiés dans les jours à venir de façon à confirmer aussi rapidement que possible (et le cas échéant à corriger) les informations rassurantes données ci-dessus.**

**Si les conditions météorologiques le permettent, seront également effectuées des analyses d'eau de pluie qui renseigneront sur l'ordre de grandeur des dépôts au sol. Dans tous les cas, il sera procédé à des mesures des dépôts secs afin de vérifier le niveau de risque pour la chaîne alimentaire.**

**Rappelons que la contamination des aliments type lait, fromage, viande ne s'effectue qu'avec un certain délai : la CRIIRAD disposera d'ici là de données chiffrées et tous les résultats seront rendus publics.**

## ACTIVITE DE L'AIR EN IODE 131

*Le résultat publié par l'IRSN – et peut-être par d'autres laboratoires européens – sous-évalue très probablement le niveau réel de la contamination.*

*En effet, d'après les informations recueillies par la CRIIRAD, l'air a été échantillonné à partir d'un FILTRE A AEROSOLS qui ne permet pas de piéger l'iode présent dans l'air SOUS FORME GAZEUSE. La CRIIRAD considère que l'iode gazeux pourrait constituer une part importante, probablement majoritaire, de l'iode radioactif présent dans les masses d'air contaminé par les rejets de la centrale nucléaire de FUKUSHIMA DAIICHI.*

*Concernant l'Europe, l'incidence de cette question sur l'évaluation des risques est très limitée. Au Japon en revanche les conséquences pourraient être graves.*

*Dans tous les cas, il est indispensable que les laboratoires documentent leur méthodologie de prélèvement afin que chacun puisse apprécier la portée des résultats qui sont diffusés.*

Depuis hier, un certain nombre de communiqués font état de l'arrivée des masses d'air contaminé sur l'Europe. Les résultats concernent le plus souvent l'activité volumique de l'air en iode 131.

Ce samedi 26 mars, L'IRSN vient d'annoncer qu'une « **première mesure positive vient d'être obtenue par le laboratoire spécialisé de l'institut sur un prélèvement d'air effectué du 21 au 24 mars au sommet du Puy de Dôme (63). La concentration d'iode 131 ainsi mesurée correspond à un niveau de trace dans l'atmosphère, et ne représente aucun danger environnemental ou sanitaire.** ».

Le résultat de l'analyse figure dans le [bulletin d'information n°3 du 26 mars 2011](#). Extrait ci-dessous.

Les analyses réalisées à ce jour sur les prélèvements les plus récents effectués par l'IRSN indiquent que :

- des traces d'iode 131 ( $0,012 \text{ mBq/m}^3$  en moyenne sur la période de prélèvement de 4 jours) ont été mesurées dans l'air prélevé entre le 21 et 24 mars par la station de l'IRSN installée au sommet du Puy de Dôme. Elles révèlent pour la première fois la présence en France d'éléments radioactifs rejetés lors de l'accident de la centrale de Fukushima. L'arrivée de la masse d'air faiblement contaminé a probablement eu lieu au cours de la journée du 24 mars, comme le prévoit la modélisation de la dispersion atmosphérique à l'échelle mondiale réalisée par Météo France. Dans ce cas, la concentration pour la journée du 24 mars pourrait être de l'ordre de  $0,04 \text{ mBq/m}^3$ . **Cette valeur est plus faible que celles observées le 23 mars en Europe du Nord (quelques dixièmes de  $\text{mBq/m}^3$  - voir ci-dessous).** Ceci peut s'expliquer par le délai de transport de la masse d'air vers la France et il est probable que les prochains prélèvements d'air en France, actuellement en cours, indiqueront des valeurs comparables à celles d'Europe du Nord. Les autres radionucléides présents dans les rejets de l'accident de Fukushima, notamment le césium 137, n'ont pas été détectés dans le prélèvement d'air du Puy de Dôme car leur concentration dans l'air reste encore inférieure aux limites de détection des appareils de mesure utilisés ;

Moyennée sur 3 jours : du 21 mars au 24 mars, l'activité en iode 131 de l'air sur le Puy-de-Dôme serait de  $12 \text{ } \mu\text{Bq/m}^3$ . L'IRSN estime que cela correspond à une activité d'environ  $40 \text{ } \mu\text{Bq/m}^3$  pour la journée du 24 mars.

Aucune précision n'étant apportée sur le type de dispositif de filtration utilisé pour échantillonner l'air, la CRIIRAD a recherché les caractéristiques de la station de prélèvement. La station de mesure du Puy-de-Dôme fait partie du réseau OPERA (Observatoire Permanent de la Radioactivité de l'environnement). Une pompe à haut débit (300 m<sup>3</sup>/h) aspire l'air et le force à travers un filtre fixe afin de collecter les **aérosols** (micro ou nano-poussières atmosphériques). Les filtres sont ensuite envoyés à l'IRSN pour analyse en laboratoire.

## CONCLUSION DE LA CRIIRAD :

**1/ la présentation des résultats d'analyse est incorrecte : il est indispensable de préciser que la mesure n'a porté que sur l'activité de iode 131 particulaire et qu'il s'agit donc d'une estimation par défaut.**

**2/ les résultats publiés sous-évaluent très probablement l'activité réelle de l'air en iode 131. Pour savoir si le chiffre réel est 2 fois, 3 fois, 4 fois, 5 fois, 10 fois plus élevé, il faut disposer de résultats d'analyse portant sur des filtres spécifiques qui piègent les formes gazeuses de l'iode. (le laboratoire de la CRIIRAD utilise pour sa part des cartouches à charbon actif).**

**3/ l'iode est l'un des radionucléides les plus importants du point de vue de la radioprotection. Pour ne pas sous-évaluer les risques, il est indispensable de tenir compte des spécificités de son comportement. C'est d'autant plus important pour un organisme qui est l'expert de l'Etat et qui donne aux autorités les éléments sur lesquels s'appuyer pour la protection radiologique des personnes. Dans la situation présente, l'incidence est minime mais en cas de contamination élevée, les conséquences peuvent être graves.**

## RAPPEL

Dans son communiqué du 17 mars sur la contamination préoccupante de l'air à Tokyo, la CRIIRAD posait déjà la question de la méthodologie de prélèvement. Elle avait en effet utilisé les analyses du Tokyo Metropolitan Industrial Technology Research Institute, analyse effectuées sur les poussières atmosphériques. Les résultats révélaient un rapport de 4 à 5 entre l'iode 131 et le césium 137.

Résultats moyennés sur les 42 heures de suivi :

- **Iode 131 : 14,9 Bq/m<sup>3</sup>**
- **Césium 137 : 3,2 Bq/m<sup>3</sup>**

Résultats concernant le maximum enregistré à Tokyo, le 15 mars, sur les poussières prélevées à 11h :

- **Iode 131 : 241 Bq/m<sup>3</sup>**
- **Césium 137 : 60 Bq/m<sup>3</sup>**

La CRIIRAD avait conduit des calculs de dose à partir de ces chiffres mais en soulignant qu'ils sous-évaluaient probablement et peut-être fortement la réalité des risques. Pour rappel :

*« Il faut cependant souligner que **les chiffres utilisés pour les calculs sous-évaluent très probablement l'activité réelle de l'air.** L'air a, en effet, été échantillonné à partir de filtres à poussières. Pour obtenir un bilan complet, il faudrait disposer de résultats sur des filtres à charbon actif **capables de piéger les gaz, et notamment les formes moléculaires et organiques de l'iode.** Elles peuvent représenter une part importante, voire majoritaire, de l'iode présent. Cette information doit être obtenue d'urgence. »*

***Lien vers le communiqué CRIIRAD du 17 mars.***

**Le laboratoire de la CRIIRAD poursuit ses analyses.**

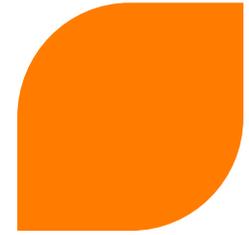
Résultats disponibles sur : <http://balisescriirad.free.fr>



# L'incident de Fukushima Daiichi

1. Conception de l'installation
2. Progression de l'accident
3. Rejets radioactifs
4. Piscines de désactivation
5. Sources d'information

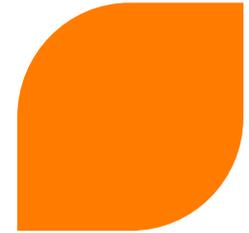
Matthias Braun  
PEPA4-G, AREVA–NP GmbH  
Matthias.Braun@AREVA.com



Traduction française réalisée par O. Rouyre-Cros, TRI/SSQ

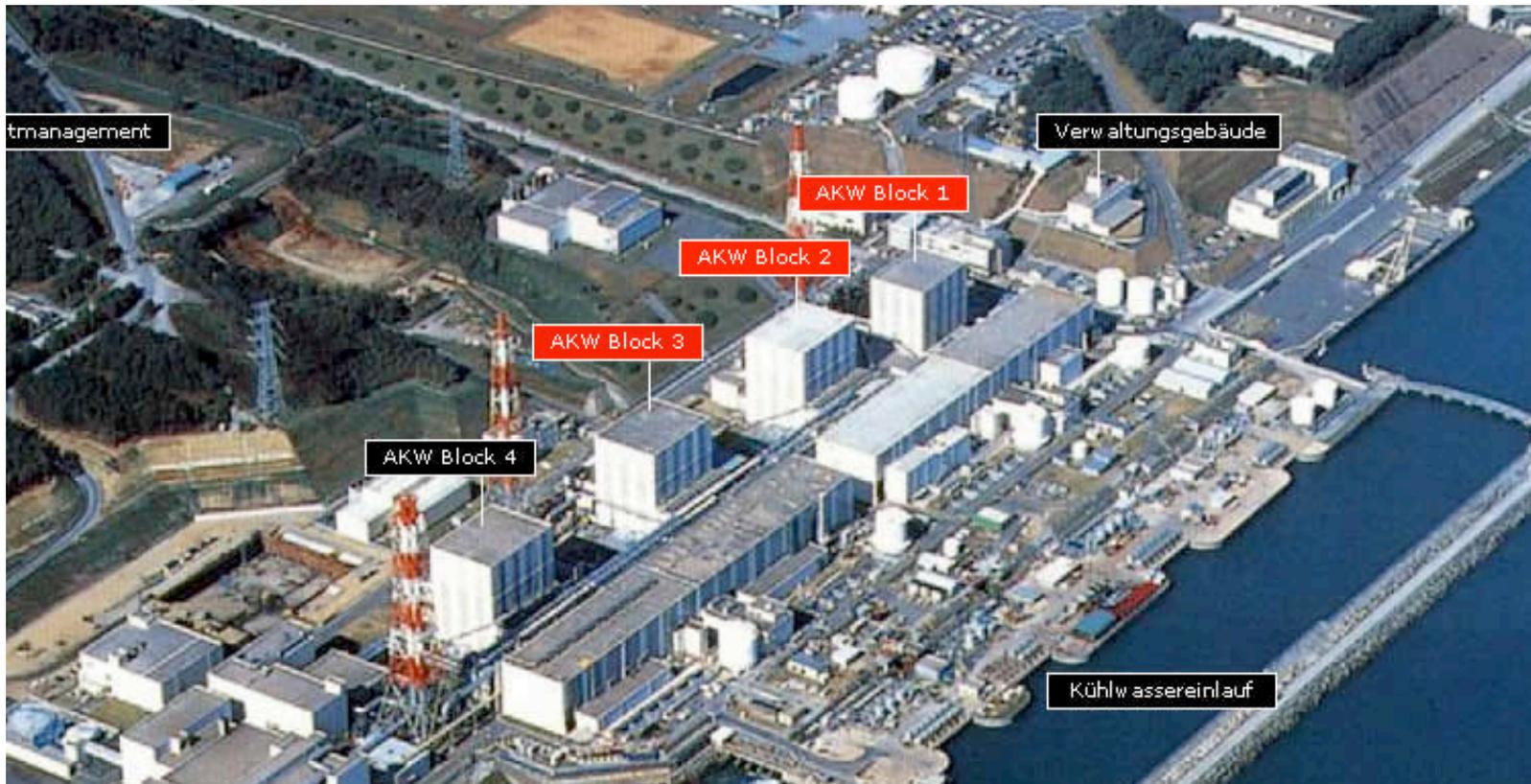
# L'incident de Fukushima Daiichi

## 1. Conception de l'installation



### ► Fukushima Daiichi (Centrale I)

- ◆ Tranche I - GE Mark I BWR (439 MW), En service depuis 1971
- ◆ Tranches II-IV - GE Mark I BWR (760 MW), En service depuis 1974

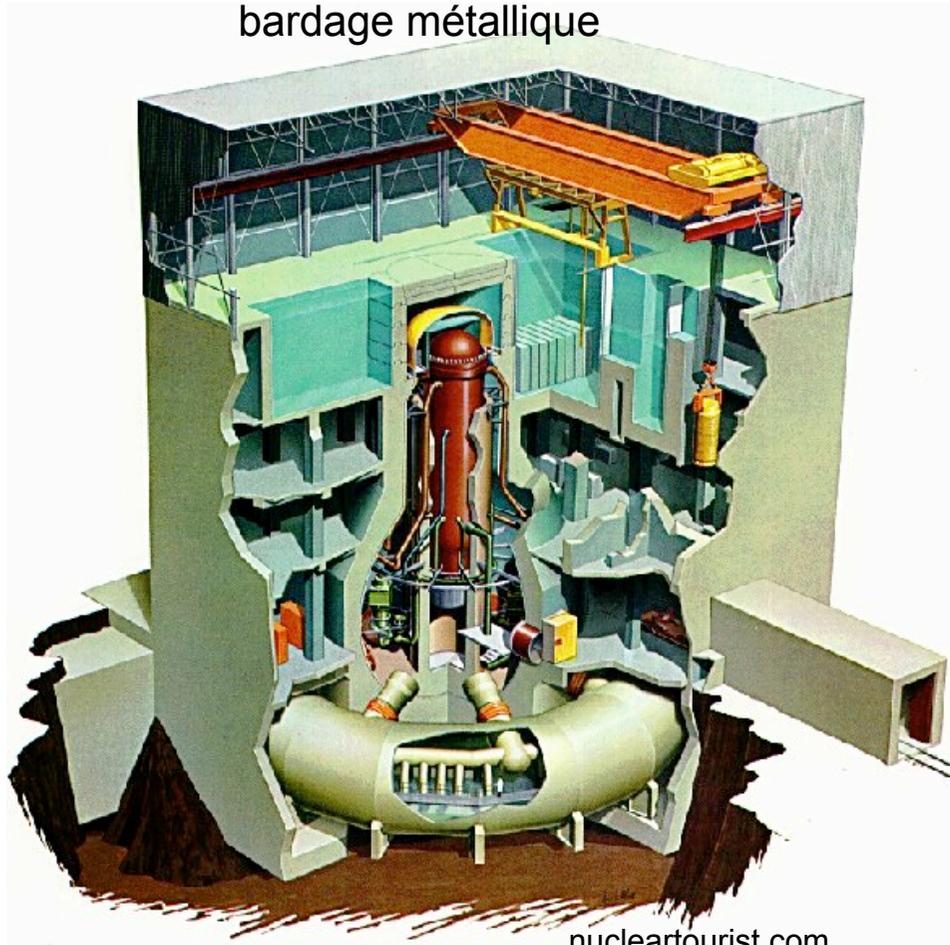


# L'incident de Fukushima Daiichi

## 1. Conception de l'installation

### ► Structure du bâtiment

- ◆ Bâtiment en béton
- ◆ Plancher de service en bardage métallique



### ► Enceinte de confinement

- ◆ Puits sec en forme de poire
- ◆ Puits humide en forme de tore



en.wikipedia.org/wiki/Browns\_Ferry\_Nuclear\_Power\_Plant

# L'incident de Fukushima Daiichi

## 1. Conception de l'installation



### ► Plancher de service



# L'incident de Fukushima Daiichi

## 1. Conception de l'installation

- Manutention de la coupole de fermeture de l'enceinte de confinement



# L'incident de Fukushima Daiichi

## 1. Conception de l'installation



▶ Plancher de service du réacteur  
(construction en acier)

▶ Bâtiment réacteur en béton  
(confinement secondaire)

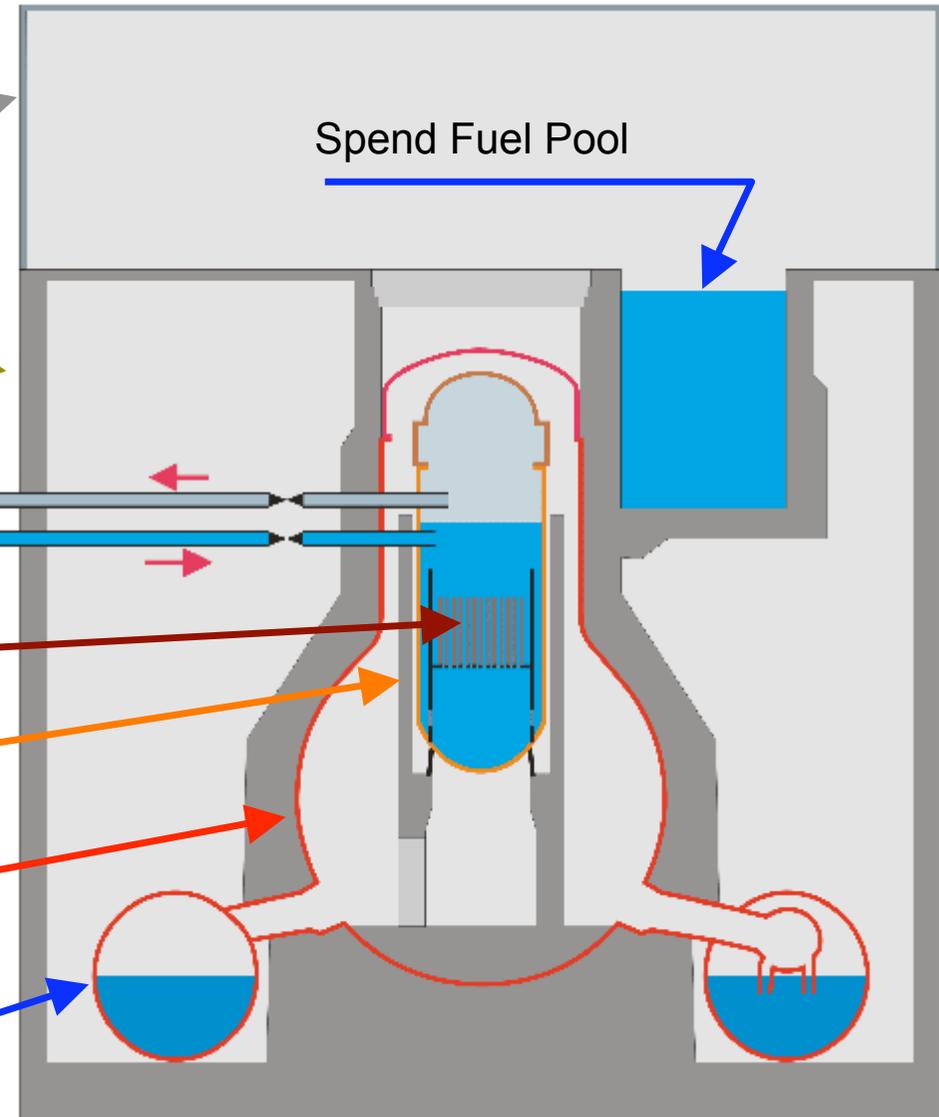
Ligne vapeur vive  
Eau alimentaire

▶ Coeur du réacteur

▶ Cuve du réacteur

▶ Enceinte (Puits sec)

▶ Enceinte (Puits humide) /  
Chambre de Condensation

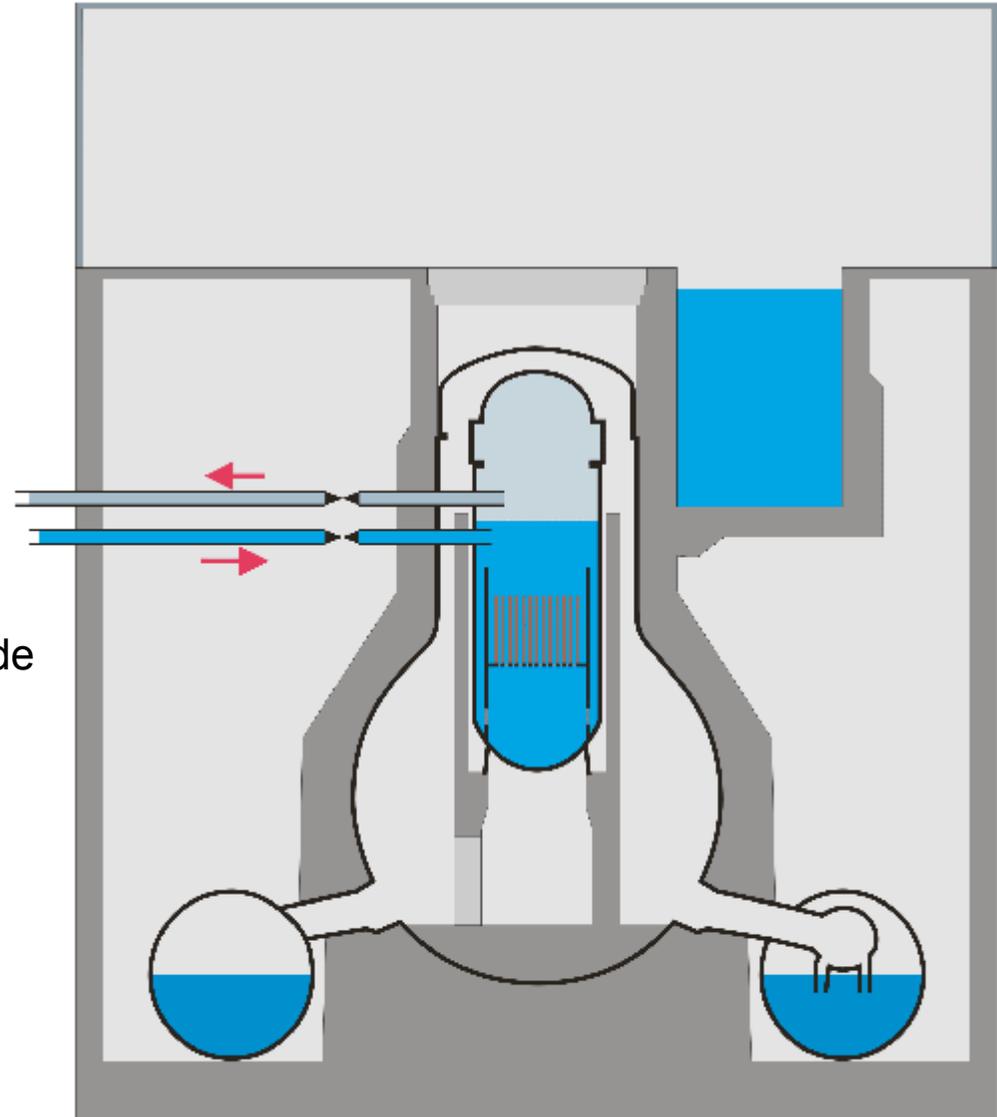


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ 11.3.2011 14:46 - Séisme
  - ◆ Magnitude 9
  - ◆ Ecrroulement du réseau de transport d'électricité du nord Japon
  - ◆ Les réacteurs eux-mêmes sont globalement non endommagés
  
- ▶ Arrêt Automatique Réacteur
  - ◆ La puissance issue de la fission de l'uranium cesse
  - ◆ Production de chaleur due à la décroissance radioactive des produits de fission
    - After Scram ~6%
    - After 1 Day ~1%
    - After 5 Days ~0.5%

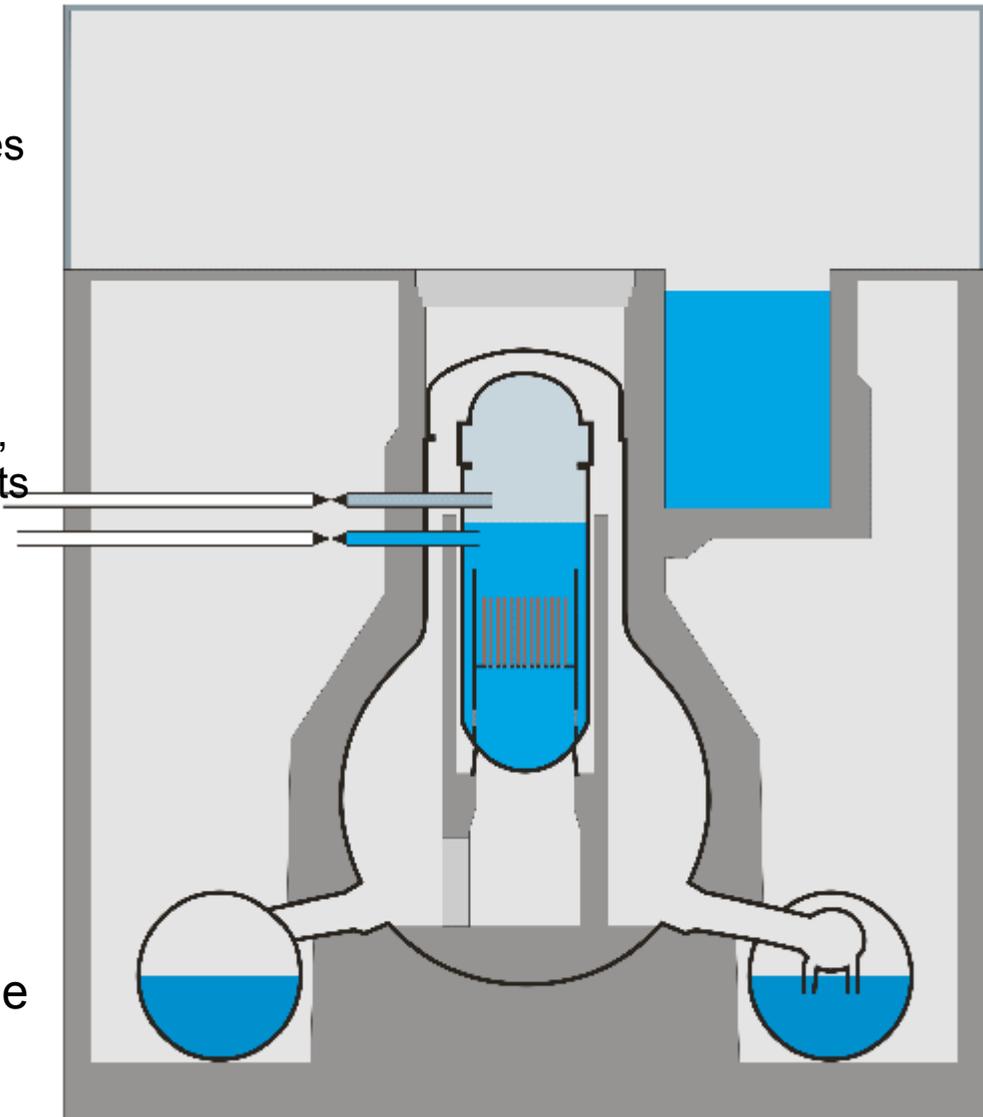


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ Isolement du confinement
  - ◆ Fermeture de toutes les traversées enceinte non importantes pour la sûreté
  - ◆ Séparation de la salle des machines
  - ◆ Si l'isolement enceinte fonctionne, un rejet massif précoce de produits de fissions est hautement improbable
  
- ▶ Démarrage des groupes diesels
  - ◆ Les systèmes d'injection de sécurité sont alimentés
  
- ▶ L'installation est dans un état stable et sûr

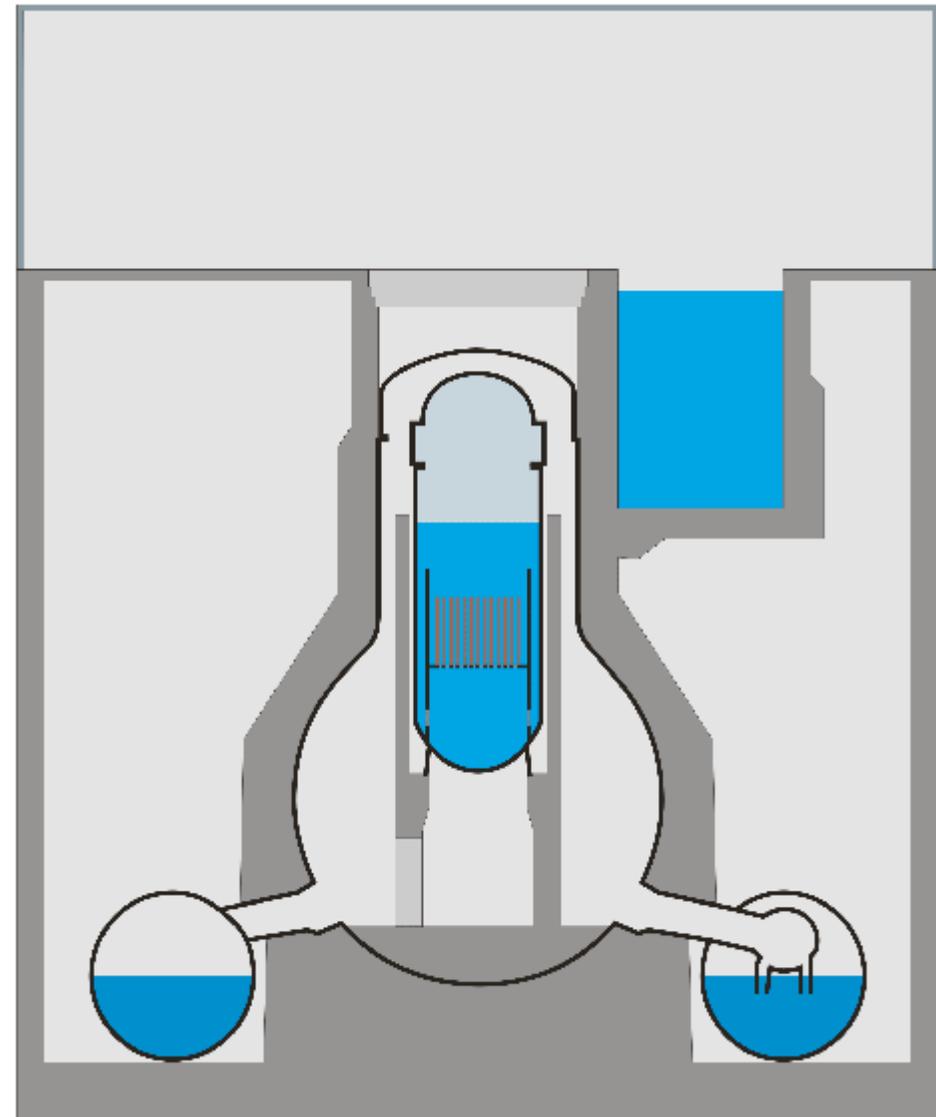


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ 11.3. 15:41 Le tsunami frappe la centrale
  - ◆ Conception de la centrale pour une hauteur de tsunami de 6,5m
  - ◆ Hauteur réelle du Tsunami >7m
  - ◆ Inondation des
    - Groupes électrogènes diesel et/ou
    - Bâtiment essentiel d'eau de service pour le refroidissement des diesels
  
- ▶ Perte totale des alimentations électriques
  - ◆ Défaut de mode commun sur les sources électriques
  - ◆ Ne restent que les batteries
  - ◆ Défaillance de tous les systèmes de d'injection de sécurité sauf un

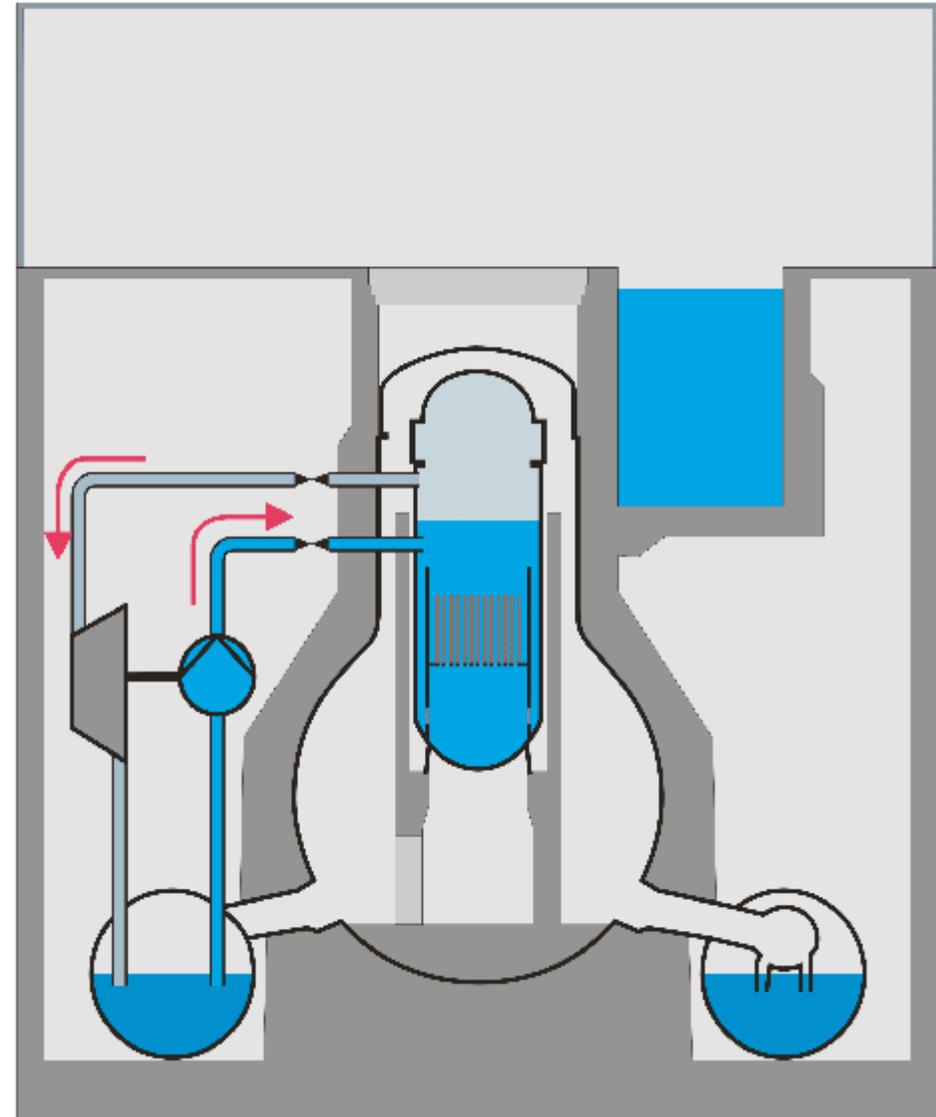


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ La pompe de refroidissement en mode isolé reste disponible
  - ◆ La vapeur issue du réacteur entraîne une turbine
  - ◆ La vapeur est condensée dans le puits humide
  - ◆ La turbine entraîne une pompe
  - ◆ L'eau du puits humide est pompée vers le réacteur
  - ◆ Cela nécessite :
    - La disponibilité des batteries
    - La température dans le puits humide doit rester  $< 100^{\circ}\text{C}$
  
- ▶ Comme il n'y a pas de retrait de chaleur dans le bâtiment, la pompe de refroidissement en mode isolé peut fonctionner indéfiniment.

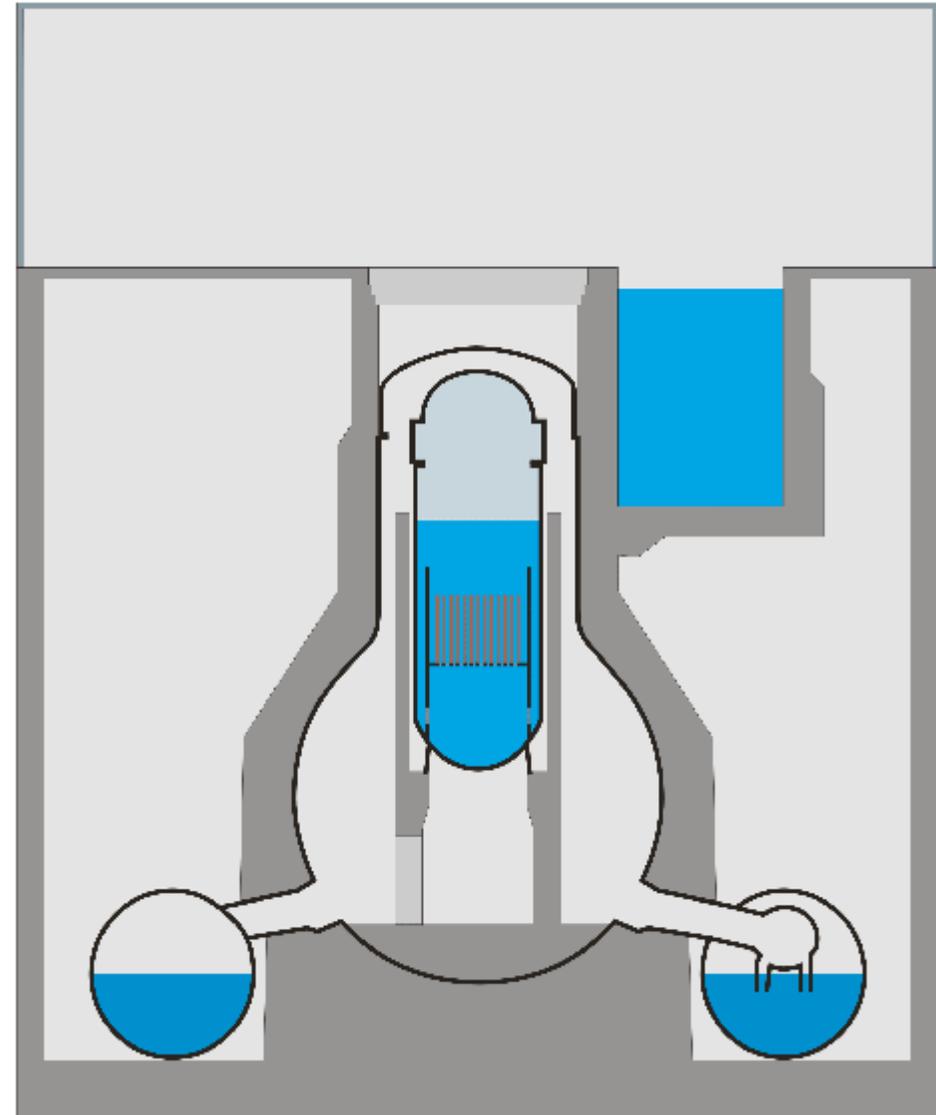


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ La pompe de refroidissement en mode isolé s'arrête
  - ◆ 11.3. 16:36 sur tranche 1 (Batteries vides)
  - ◆ 14.3. 13:25 sur tranche 2 (Défaillance de la pompe)
  - ◆ 13.3. 2:44 sur la tranche 3 (Batteries vides)
- ▶ La puissance résiduelle produit toujours de la vapeur dans la cuve
  - ◆ La pression augmente
- ▶ Ouverture des vannes de dépressurisation
  - ◆ Décharge vers le puits humide
- ▶ Baisse du niveau liquide dans la cuve

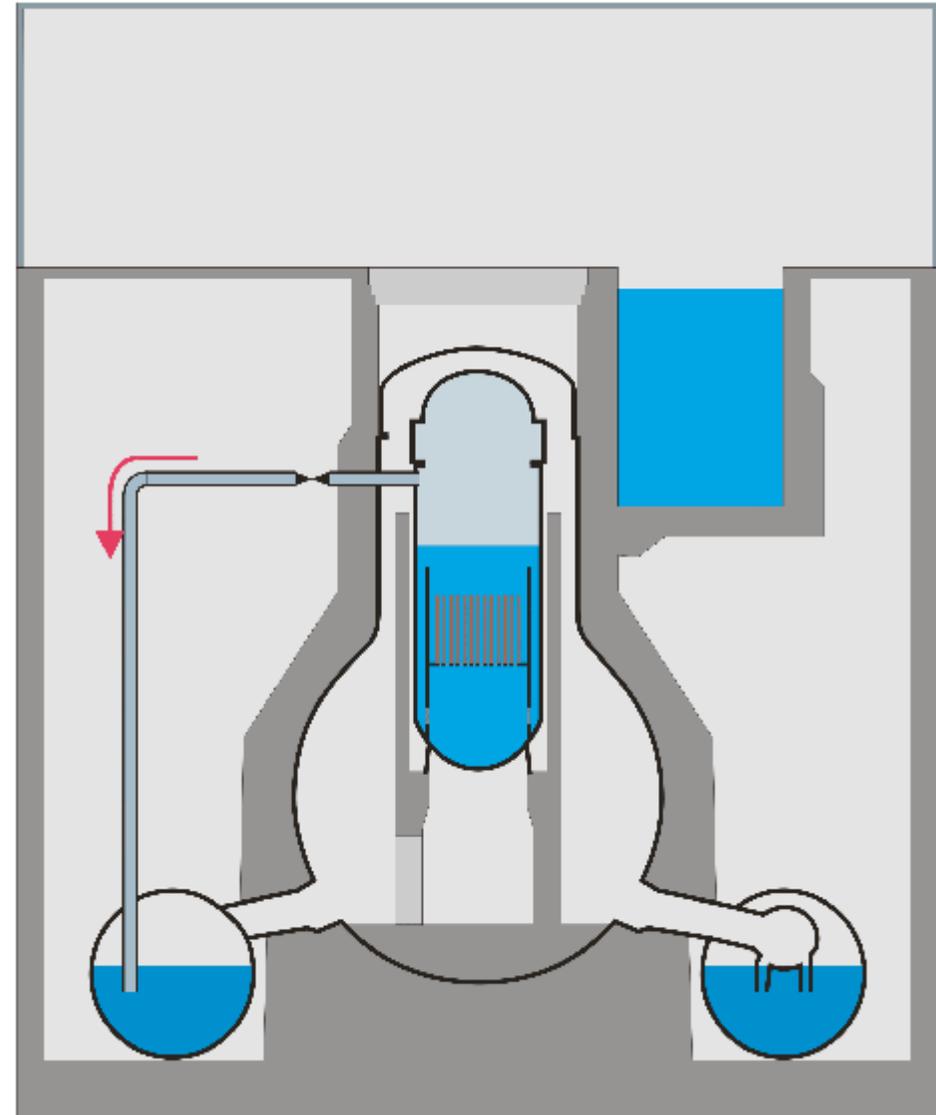


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ La pompe de refroidissement en mode isolé s'arrête
  - ◆ 11.3. 16:36 sur tranche 1 (Batteries vides)
  - ◆ 14.3. 13:25 sur tranche 2 (Défaillance de la pompe)
  - ◆ 13.3. 2:44 sur la tranche 3 (Batteries vides)
- ▶ La puissance résiduelle produit toujours de la vapeur dans la cuve
  - ◆ La pression augmente
- ▶ Ouverture des vannes de dépressurisation
  - ◆ Décharge vers le puits humide
- ▶ Baisse du niveau liquide dans la cuve

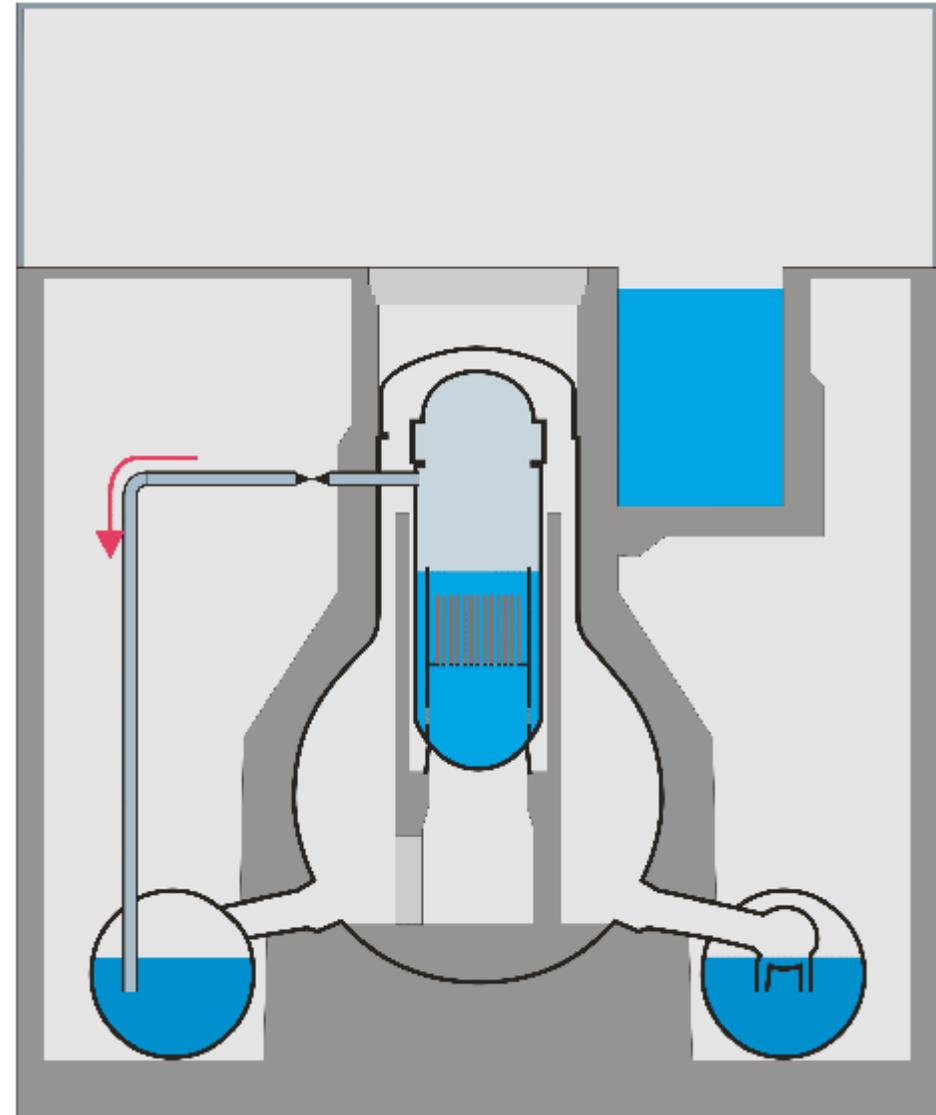


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ La pompe de refroidissement en mode isolé s'arrête
  - ◆ 11.3. 16:36 sur tranche 1 (Batteries vides)
  - ◆ 14.3. 13:25 sur tranche 2 (Défaillance de la pompe)
  - ◆ 13.3. 2:44 sur la tranche 3 (Batteries vides)
- ▶ La puissance résiduelle produit toujours de la vapeur dans la cuve
  - ◆ La pression augmente
- ▶ Ouverture des vannes de dépressurisation
  - ◆ Décharge vers le puits humide
- ▶ Baisse du niveau liquide dans la cuve

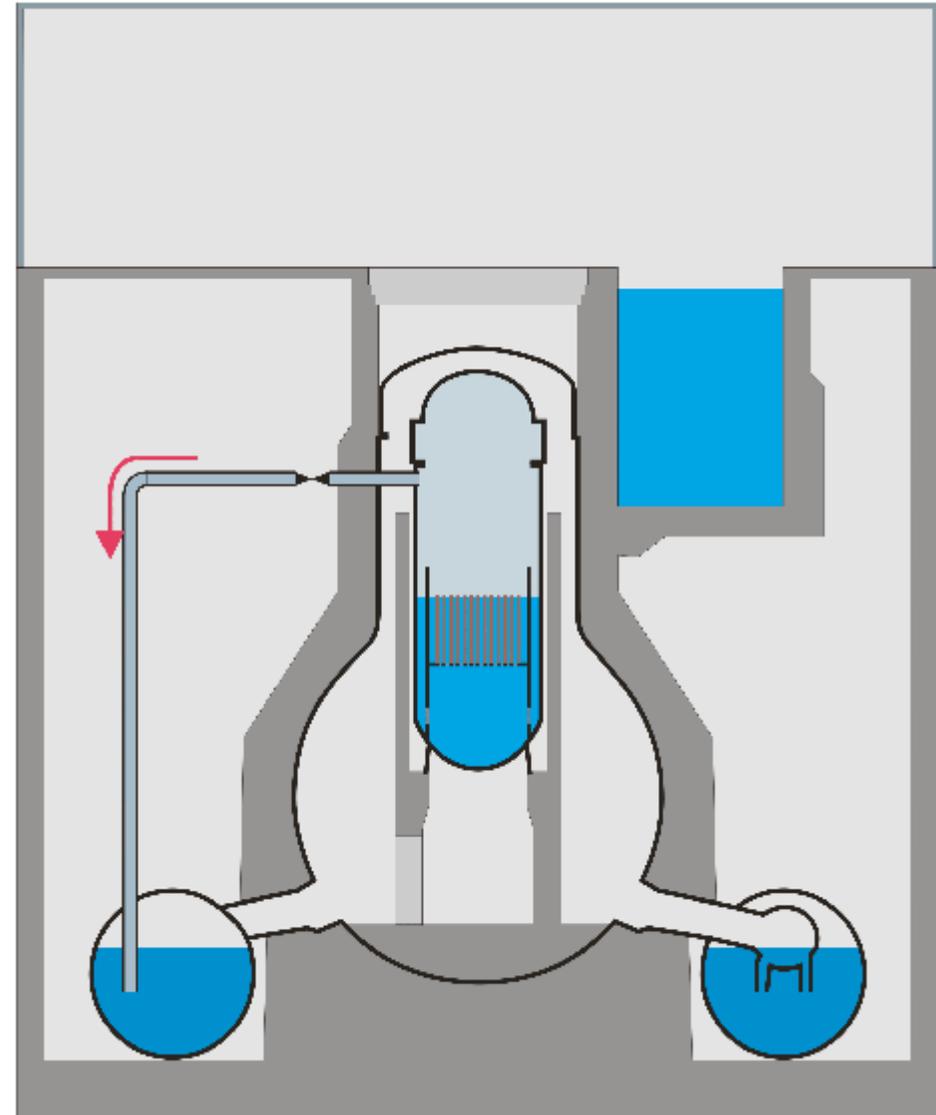


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ La pompe de refroidissement en mode isolé s'arrête
  - ◆ 11.3. 16:36 sur tranche 1 (Batteries vides)
  - ◆ 14.3. 13:25 sur tranche 2 (Défaillance de la pompe)
  - ◆ 13.3. 2:44 sur la tranche 3 (Batteries vides)
- ▶ La puissance résiduelle produit toujours de la vapeur dans la cuve
  - ◆ La pression augmente
- ▶ Ouverture des vannes de dépressurisation
  - ◆ Décharge vers le puits humide
- ▶ Baisse du niveau liquide dans la cuve

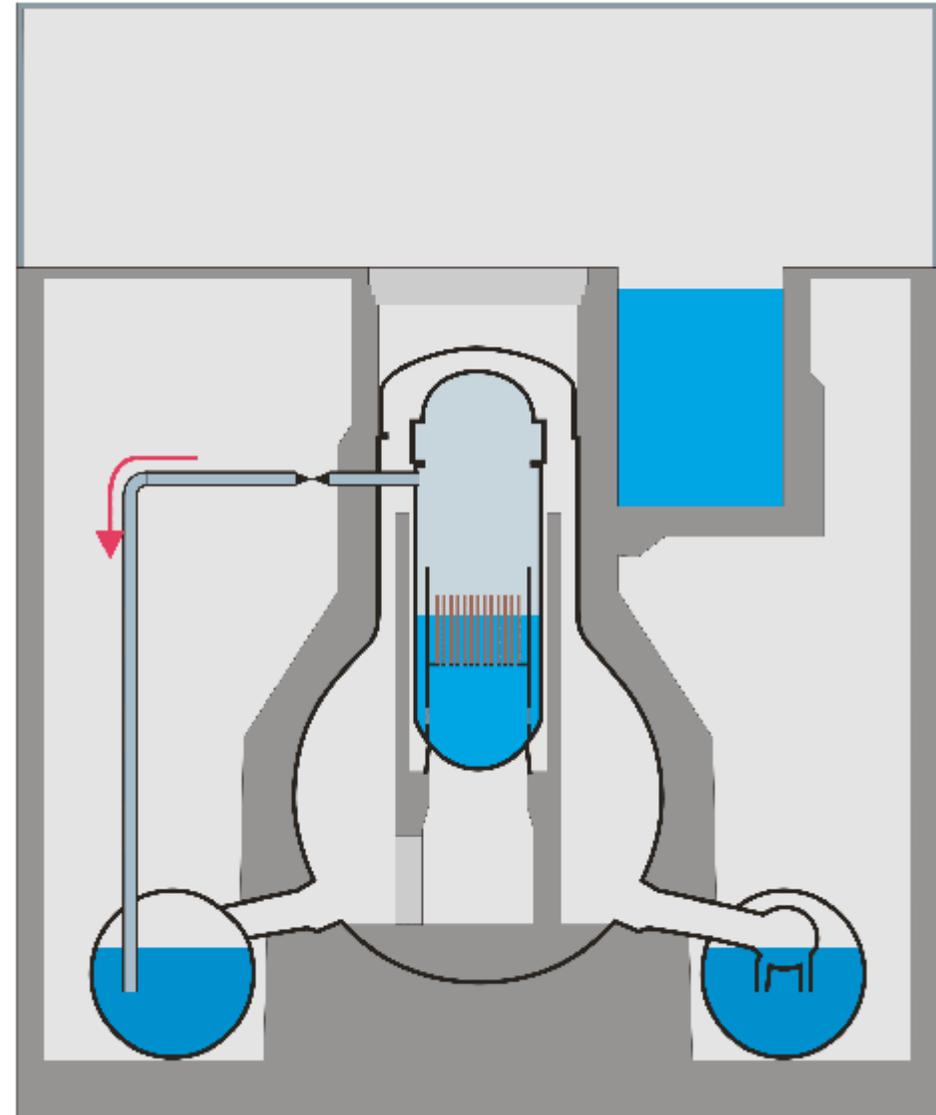


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident

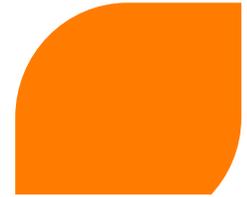


- ▶ La pompe de refroidissement en mode isolé s'arrête
  - ◆ 11.3. 16:36 sur tranche 1 (Batteries vides)
  - ◆ 14.3. 13:25 sur tranche 2 (Défaillance de la pompe)
  - ◆ 13.3. 2:44 sur la tranche 3 (Batteries vides)
- ▶ La puissance résiduelle produit toujours de la vapeur dans la cuve
  - ◆ La pression augmente
- ▶ Ouverture des vannes de dépressurisation
  - ◆ Décharge vers le puits humide
- ▶ Baisse du niveau liquide dans la cuve

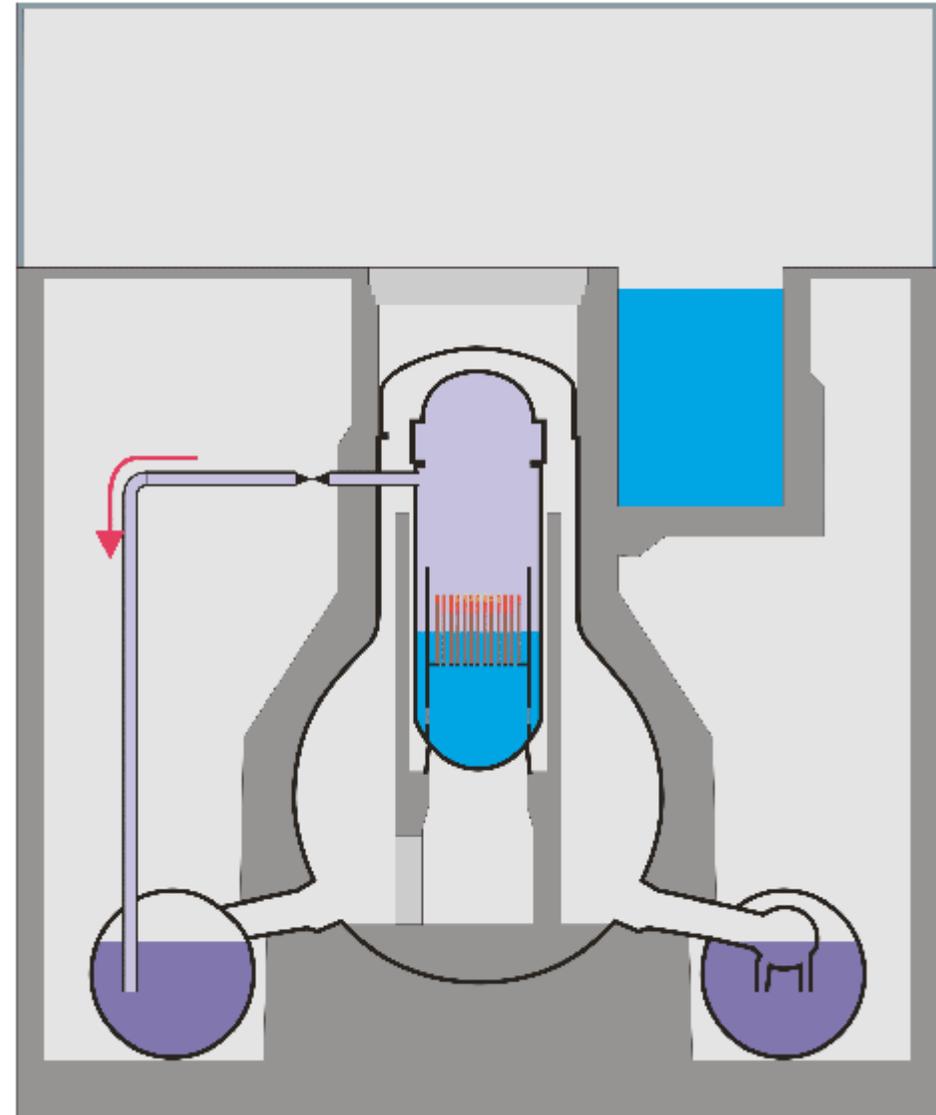


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ La mesure du niveau liquide indiquée ici est le niveau tassé. Le véritable niveau est supérieur du fait des bulles de vapeur présentes dans le liquide (émulsion)
  
- ▶ ~50% du coeur découvert
  - ◆ La température des gaines augmente, sans dégât significatif au coeur
  
- ▶ ~2/3 du coeur découvert
  - ◆ La température des gaines dépasse ~900°C
  - ◆ Gonflement / rupture des gaines
  - ◆ Relâchement de produits de fission par les ruptures de gaines

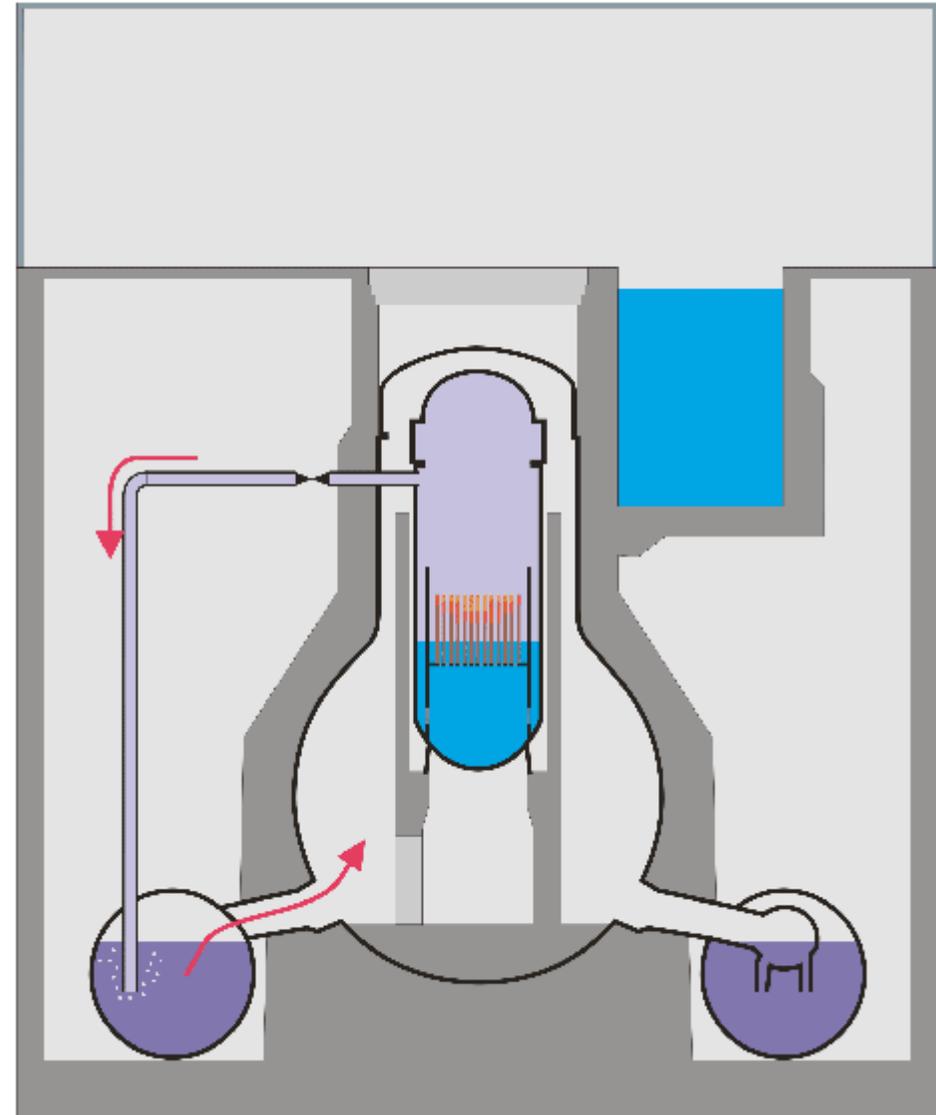


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



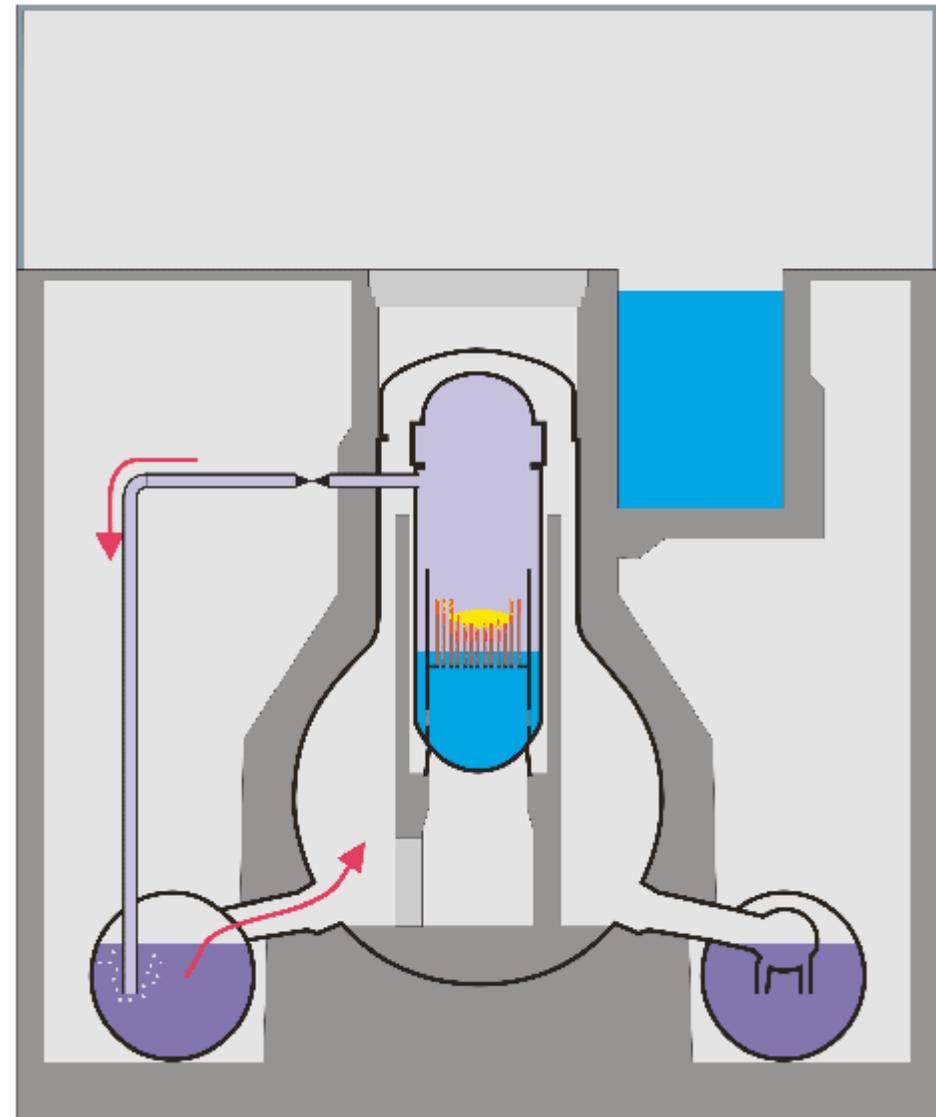
- ▶ ~3/4 du coeur découvert
  - ◆ Les gaines dépassent ~1200°C
  - ◆ Le zirconium des gaines commence à brûler en atmosphère vapeur
  - ◆  $Zr + 2H_2O \rightarrow ZrO_2 + 2H_2$
  - ◆ La réaction exothermique chauffe encore plus le coeur
  - ◆ Production d'hydrogène
    - Tranche 1: 300-600kg
    - Tranches 2/3: 300-1000kg
  - ◆ L'hydrogène est poussé dans le puits humide, le puits humide se décharge dans le puits sec (soupape)



# L'incident de Fukushima Daiichi

## 2. Progression de l'accident

- ▶ A ~1800°C [Tranches 1,2,3]
  - ◆ Fusion des gaines
  - ◆ Fusion de la structure des éléments
  
- ▶ A ~2500°C [Tranches 1,2]
  - ◆ Rupture des crayons combustibles
  - ◆ Couche de débris dans le coeur
  
- ▶ A ~2700°C [Tranche 1]
  - ◆ Fusion d'eutectiques Uranium-Zirconium
  
- ▶ La restauration de l'injection d'eau arrête l'accident sur les 3 tranches
  - ◆ TR 1: 12.3. 20:20 (27h sans eau)
  - ◆ TR 2: 14.3. 20:33 (7h sans eau)
  - ◆ TR 3: 13.3. 9:38 (7h sans eau)

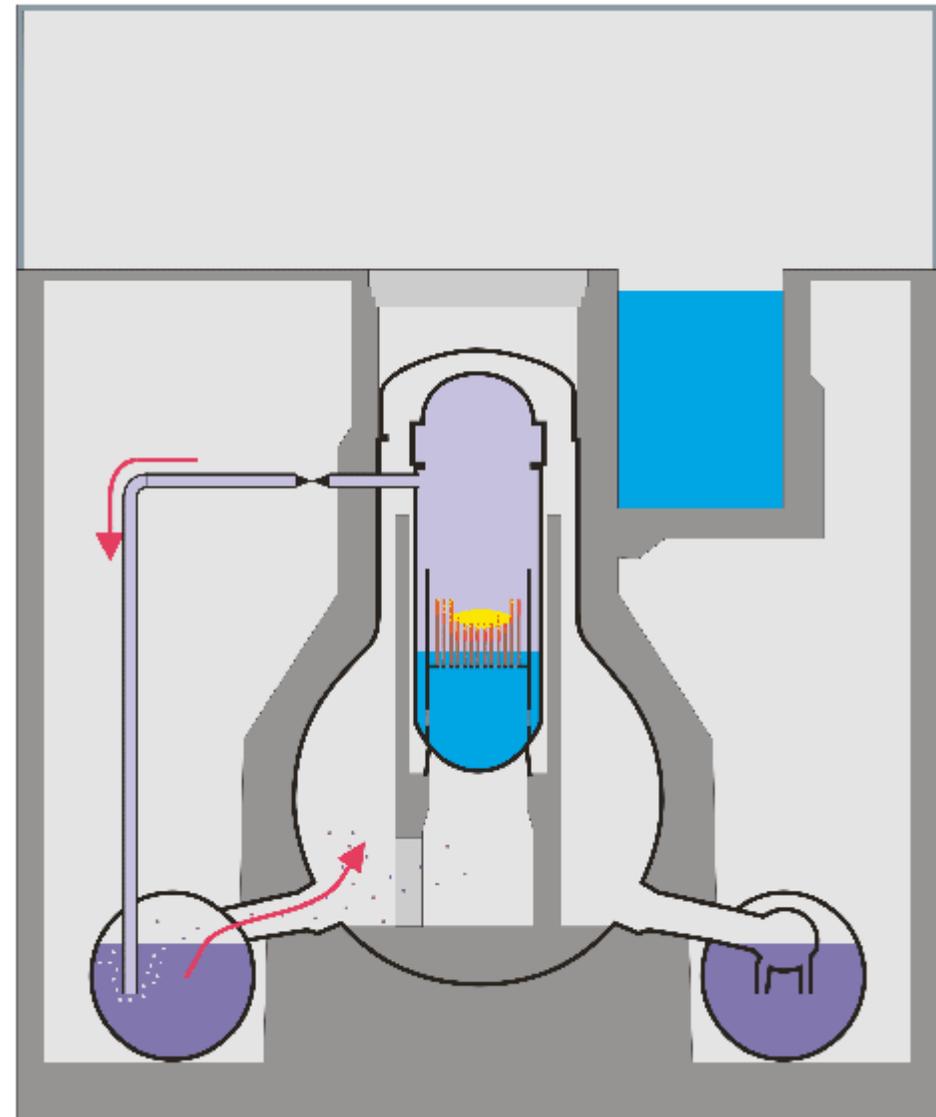


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ Relâchement de produits de fission durant la fusion
  - ◆ Xénon, Césium, Iode,...
  - ◆ Uranium/Plutonium reste en coeur
  - ◆ Des produits de fission se condensent sous forme d'aérosols entraînés par l'air
  
- ▶ Décharge au travers de vannes dans l'eau de la chambre de condensation
  - ◆ La piscine piège une partie des aérosols dans l'eau
  
- ▶ Le xénon et le reste des aérosols pénètrent dans le puits sec
  - ◆ Le dépôt d'aérosols sur les surfaces favorise la décontamination de l'air

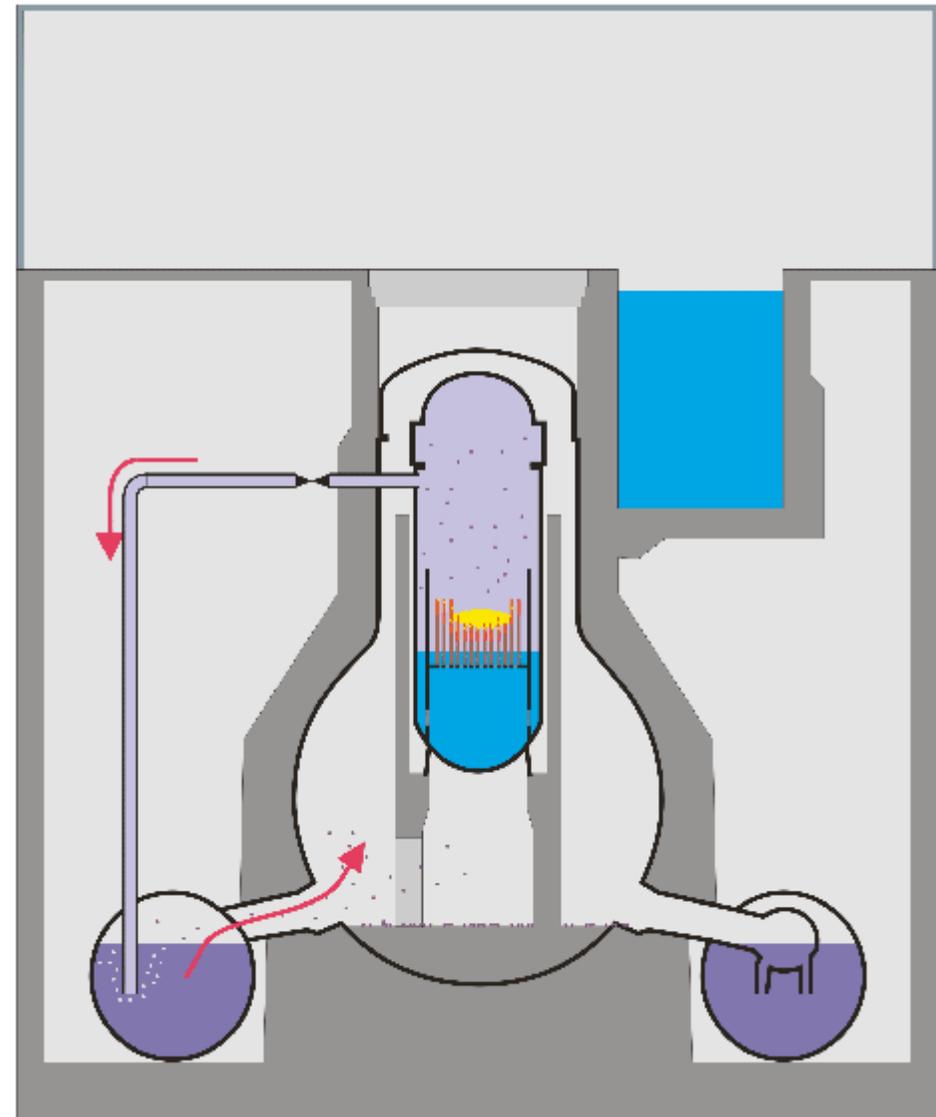


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ Enceinte de confinement
  - ◆ Dernière barrière entre les produits de fission et l'environnement
  - ◆ Epaisseur des murs ~3cm
  - ◆ Pression de calcul 4-5bar
  
- ▶ Pression réelle jusqu'à 8 bars
  - ◆ Gaz d'inertage normal (azote)
  - ◆ Hydrogène issu de l'oxydation du cœur
  - ◆ Chambre de condensation en ébullition (comme une cocotte)
  
- ▶ Dépressurisation de l'enceinte
  - ◆ Tranche 1 : 12.3. 4:00
  - ◆ Tranche 2 : 13.3 00:00
  - ◆ Tranche 3 : 13.3. 8.41

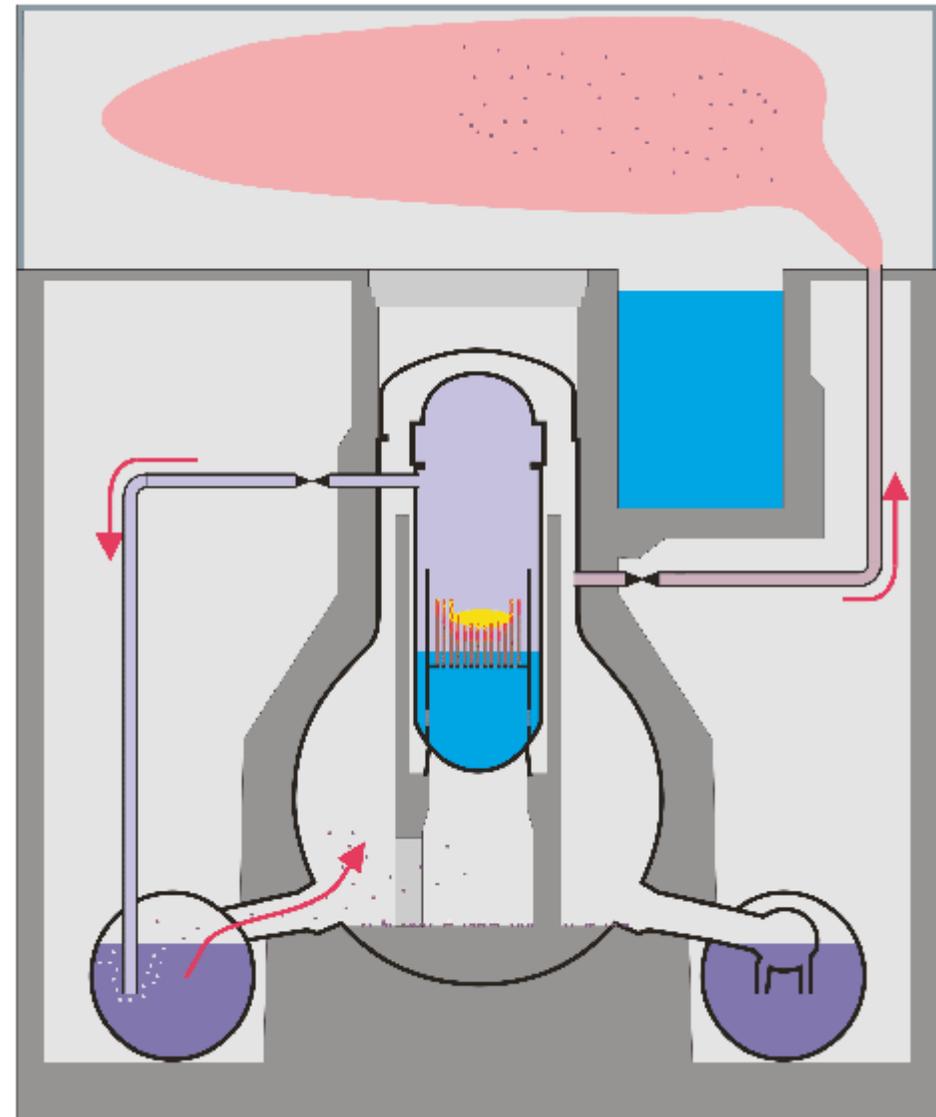


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident



- ▶ Avantages et inconvénients de la dépressurisation de l'enceinte
  - ◆ Retire de l'énergie du bâtiment réacteur (seule solution restante)
  - ◆ Réduction de la pression à ~4 bar
  - ◆ Rejet de petites quantités d'aérosols (iode, césium ~0.1%)
  - ◆ Rejet de gaz rares
  - ◆ Rejet d'hydrogène
  
- ▶ Le mélange gazeux est rejeté vers le plancher de service du réacteur
  - ◆ L'hydrogène est inflammable

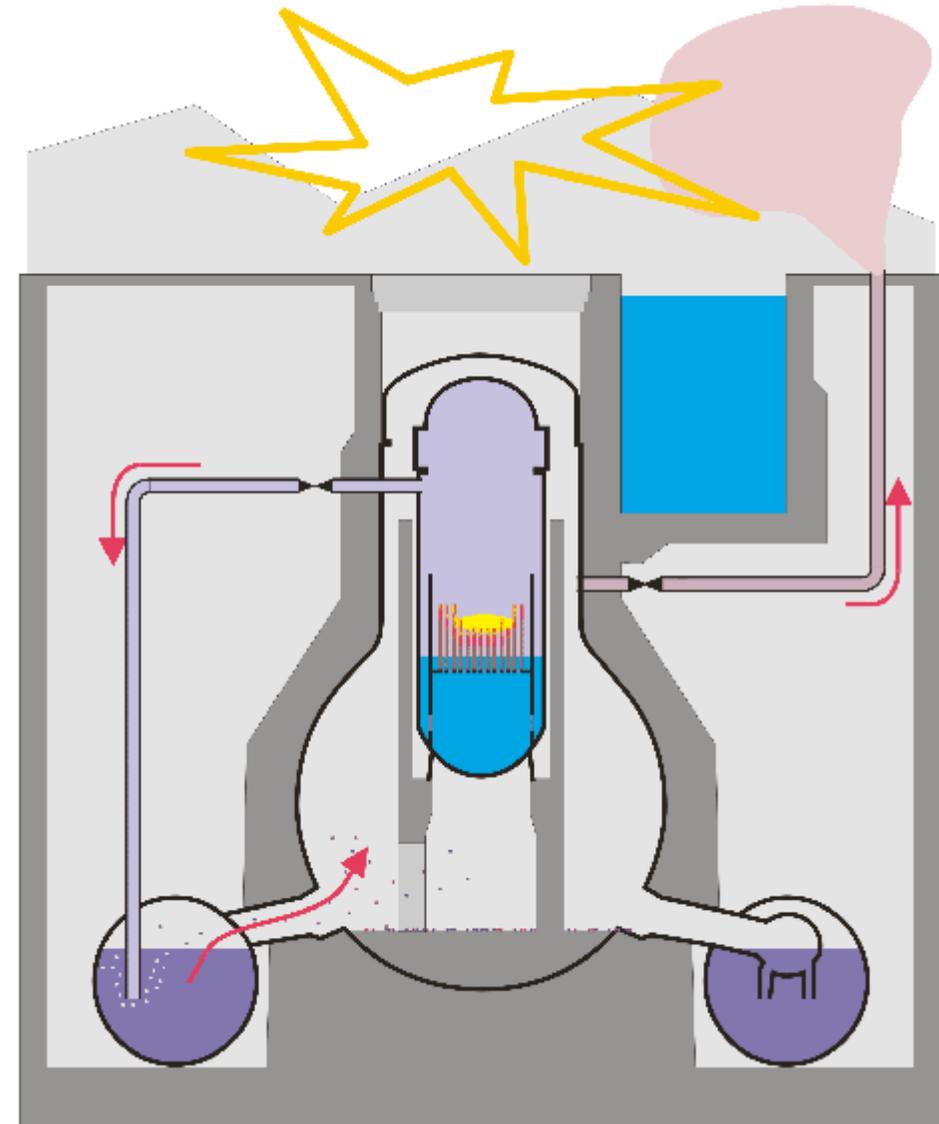


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident

### ▶ Tranches 1 et 3

- ◆ L'hydrogène brûle au niveau du plancher de service du réacteur
- ◆ Destruction du bardage
- ◆ La bâtiment en béton renforcé semble intact
- ◆ Spectaculaire mais impact sûreté faible

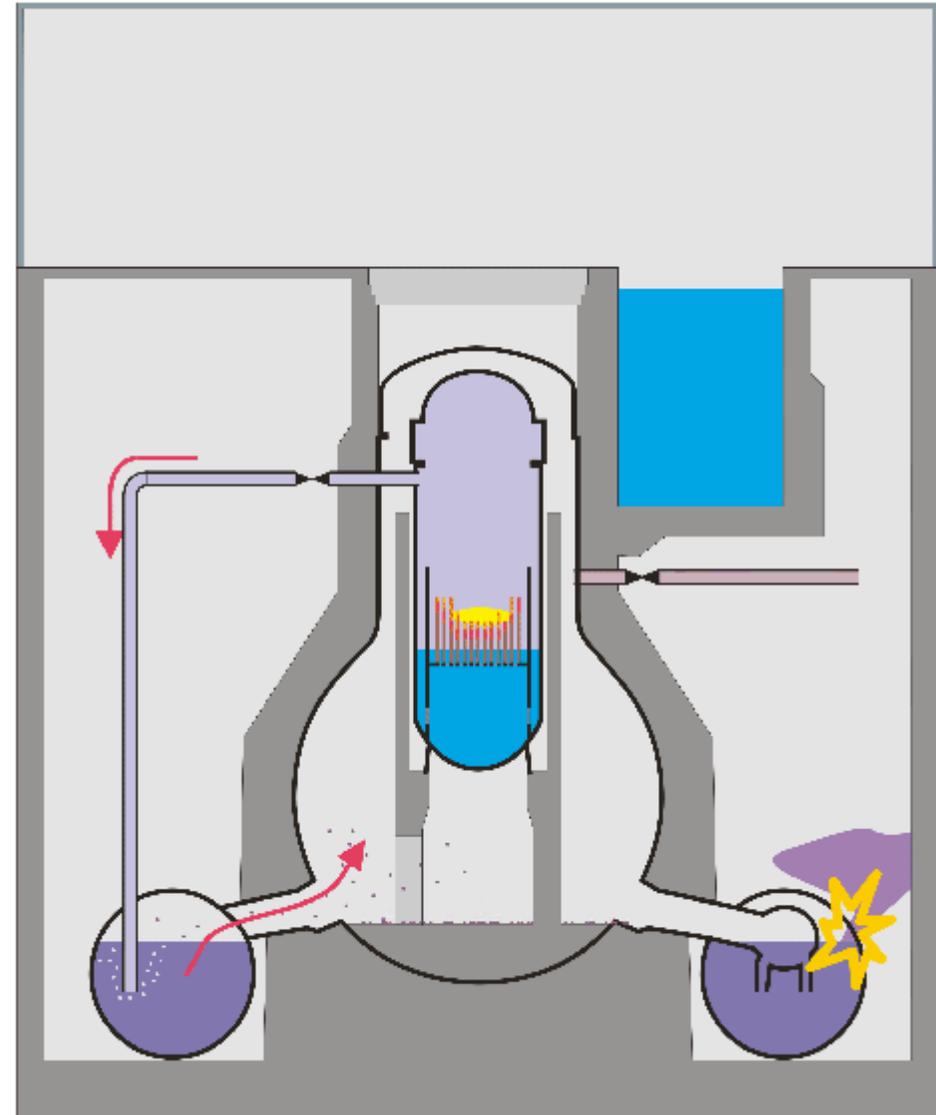


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident

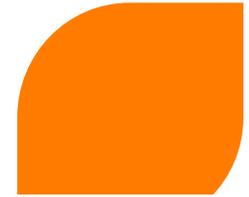


- ▶ Tranche 2
  - ◆ L'hydrogène brûle dans le bâtiment réacteur
  - ◆ Endommagement probable de la chambre de condensation (eau fortement contaminée)
  - ◆ Rejet de gaz incontrôlé de l'enceinte
  - ◆ **Rejet de produits de fission**
  - ◆ Evacuation temporaire du site
  - ◆ Les débits de dose locaux très élevés sur site du fait de la rupture gênent les travaux de réparation
  
- ▶ Aucune information claire sur le comportement différent de la tranche 2

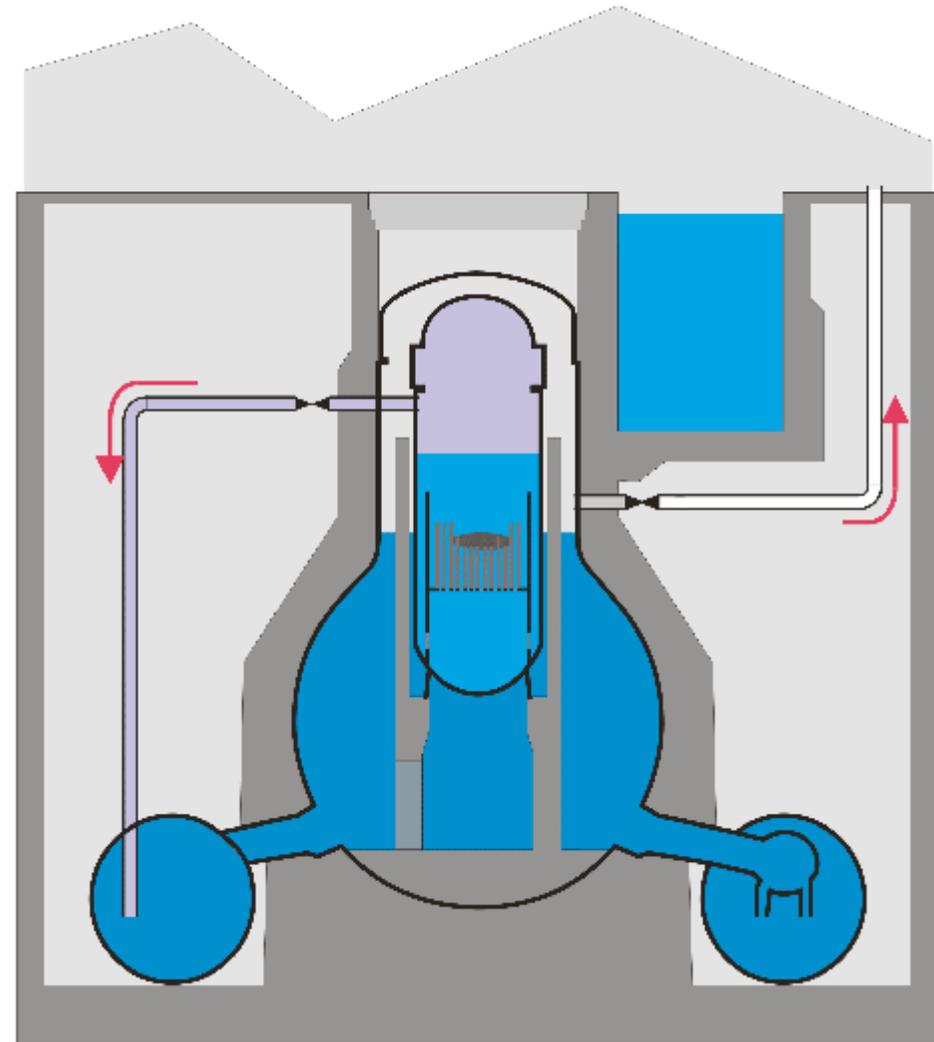


# L'incident de Fukushima Daiichi

## 2. Progression de l'accident

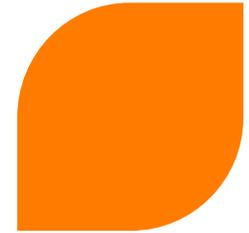


- ▶ Etat actuel des réacteurs
  - ◆ Coeur endommagé en tranches 1,2,3
  - ◆ Bâtiments endommagés du fait d'incendies divers en tranches 1-4
  - ◆ Cuves du réacteur remplis avec des pompes mobiles sur toutes les tranches
  - ◆ A minima, enceinte de confinement remplie sur la tranche 1
  
- ▶ Poursuite du refroidissement des réacteur via rejet vapeur à l'atmosphère
  
- ▶ Désormais, seuls de petits rejets de produits de fission peuvent être envisagés



# L'incident de Fukushima Daiichi

## 3. Rejets radioactifs

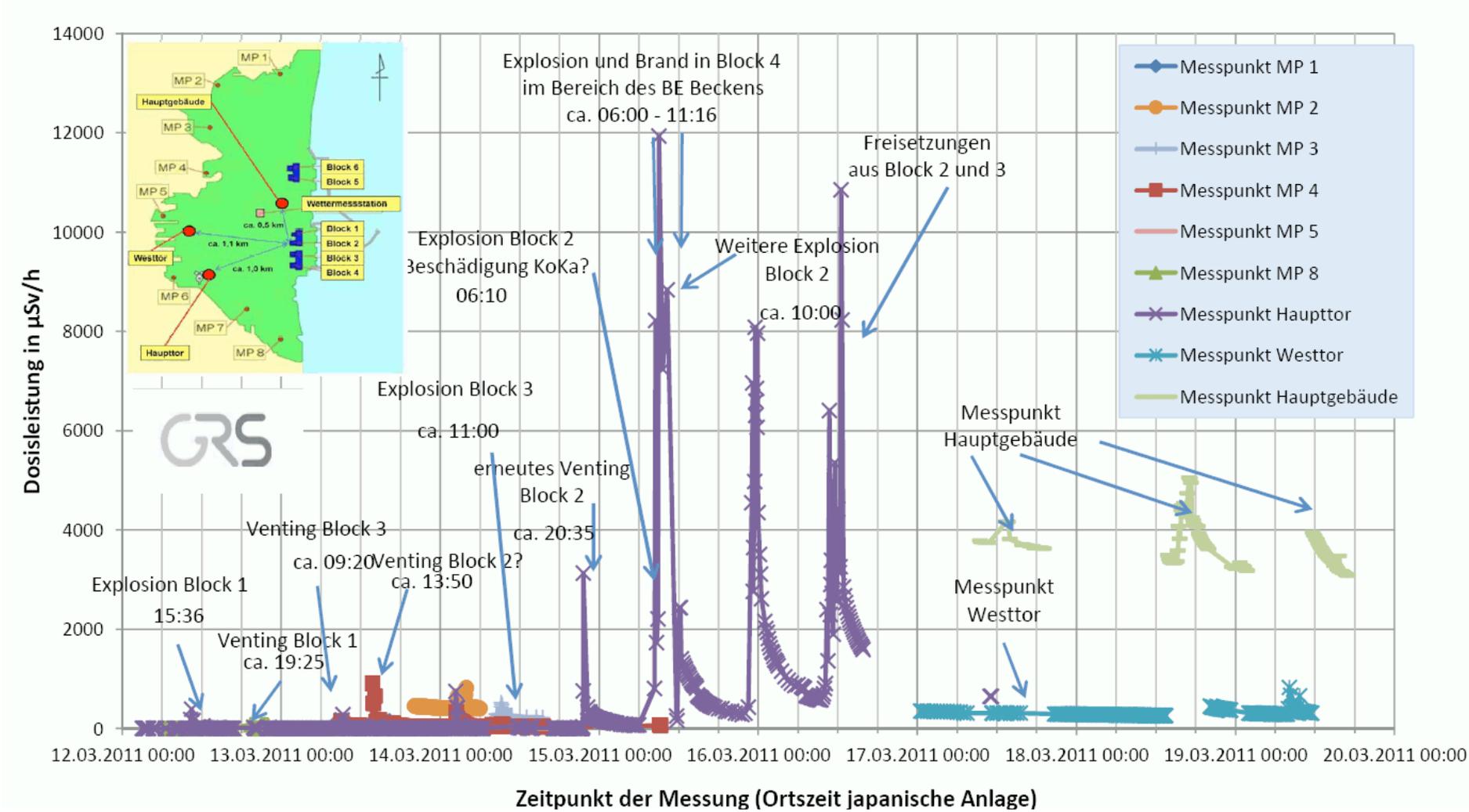
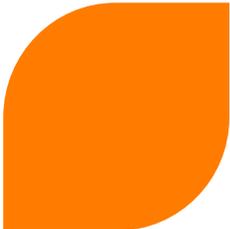


### ► Directement sur le site

- ◆ Avant explosion de la tranche 2
  - Inférieur à 2mSv / h
  - Essentiellement du au rejet de gaz rares
  - Balises côté ouest. La mesure peut être sous-estimée du fait du vent.
  
- ◆ Après explosion de la tranche 2 (endommagement de l'enceinte)
  - Valeurs pics temporaires 12mSv / h
  - (Origine pas complètement éclaircie)
  - Valeurs pics locales sur le site jusqu'à 400mSv /h (rupture enceinte / fragments?)
  - Dose stable actuelle sur le site à 5mSv /h
  - Beaucoup plus à l'intérieur des bâtiments
  
- ◆ La limitation du temps d'exposition des intervenants est nécessaire

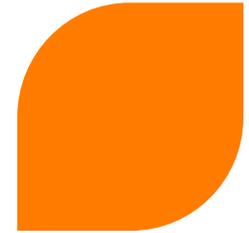
# L'incident de Fukushima Daiichi

## 3. Rejets radioactifs



# L'incident de Fukushima Daiichi

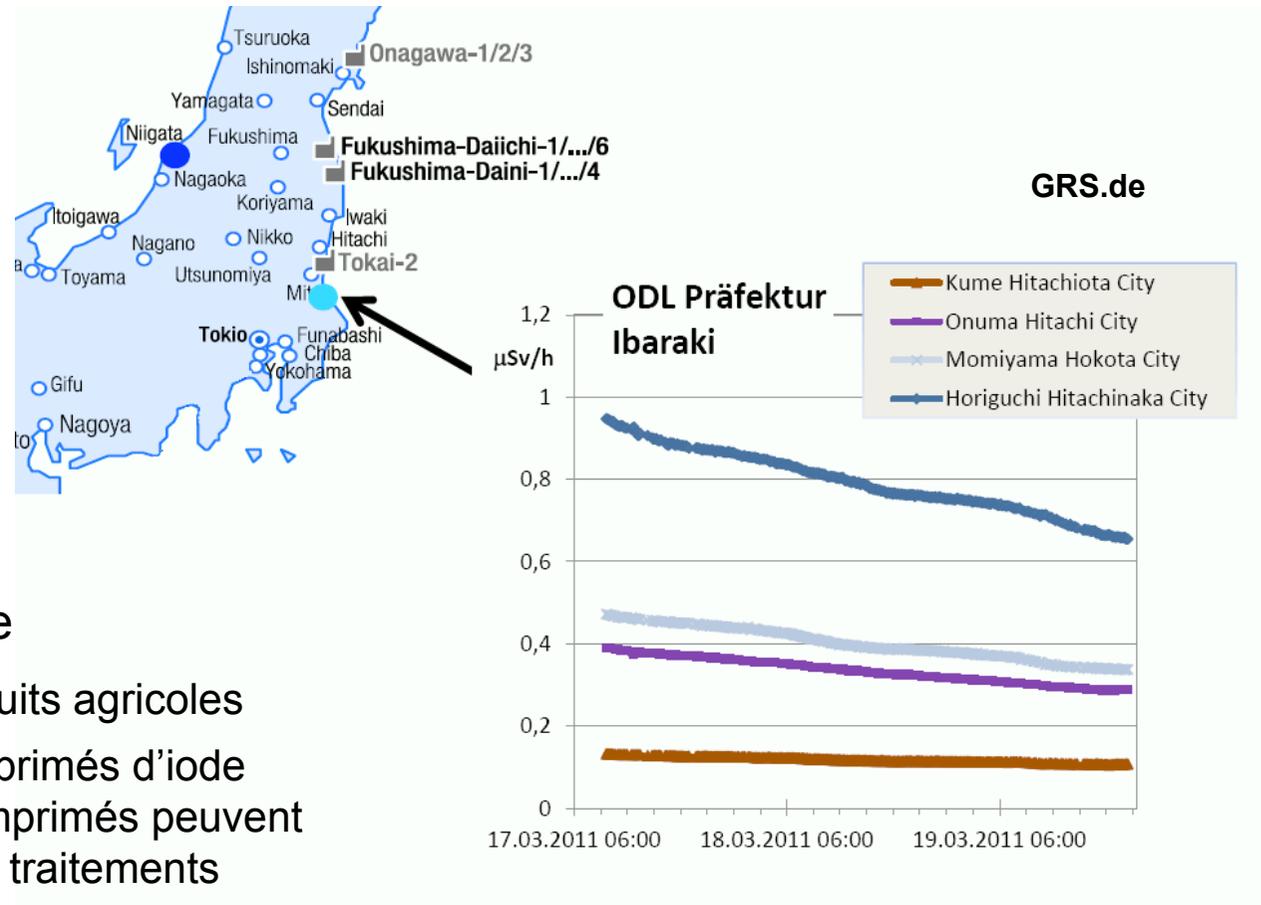
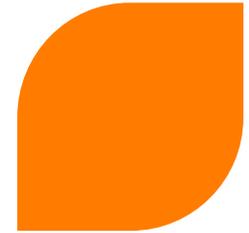
## 3. Rejets radioactifs



- ▶ En dehors du site
  - ◆ Comme les bâtiments réacteurs sont globalement intacts  
=> rejet réduit d'aérosols (pas comme Tchernobyl)
  - ◆ Les produits de fission sont relâchés via la vapeur  
=> augmentation des aérosols rapide, mais une large fraction tombe à proximité du site
  - ◆ La dose à l'extérieur du site est principalement due aux gaz rares
  - ◆ Transport / diffusion par le vent, baisse de la dose dans le temps
  - ◆ Pas de "retombée" des gaz rares, donc pas de forte contamination locale des sols
  
- ▶ ~20km autour du site
  - ◆ Les évacuations sont adaptées
  - ◆ Des débits de dose maximaux de 0,3mSv/h ont été mesurés sur de courtes périodes
  - ◆ Destruction de produits végétaux / animaux possible cette année
  - ◆ Evacuation permanente de la zone probablement non nécessaire

# L'incident de Fukushima Daiichi

## 3. Rejets radioactifs



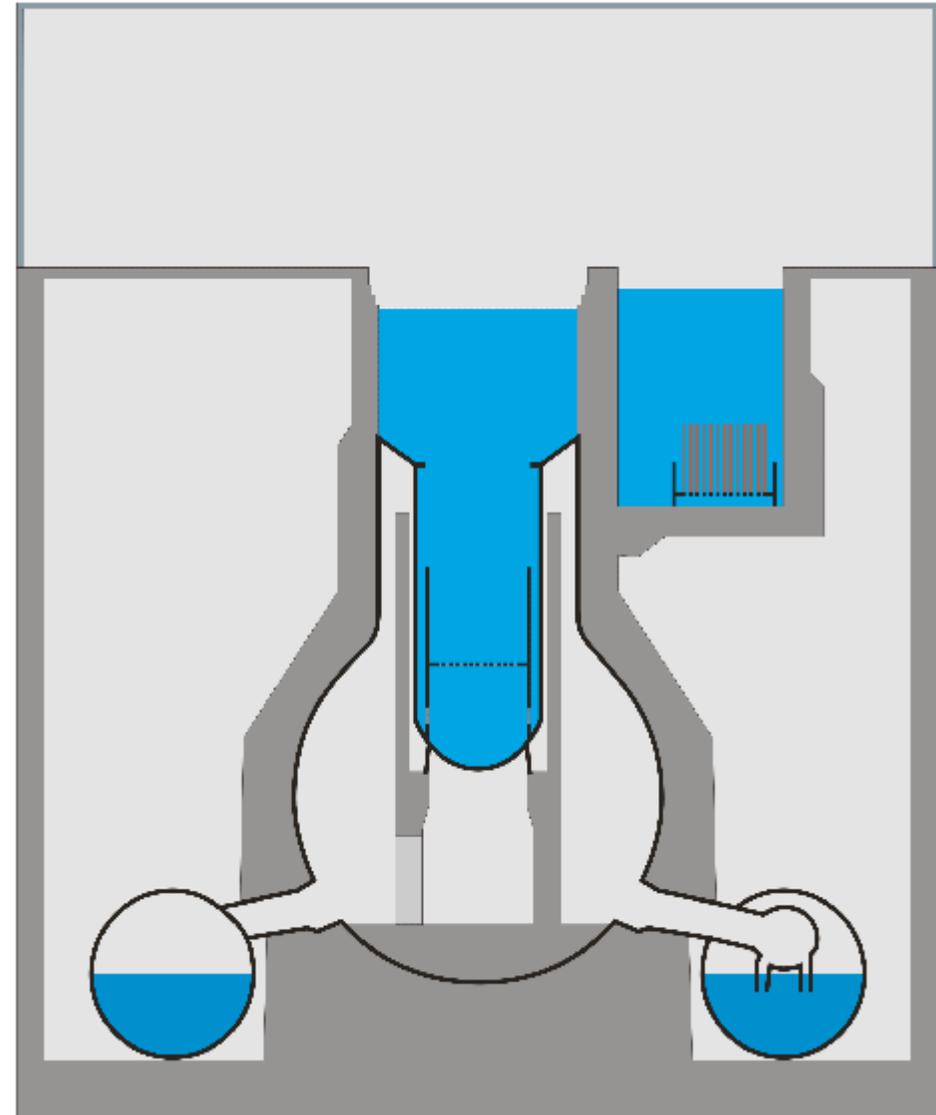
- ▶ ~50km autour du site
  - ◆ Contrôle des produits agricoles
  - ◆ Utilisation de comprimés d'iode (Attention, les comprimés peuvent interférer avec les traitements cardiaques)

# L'incident de Fukushima Daiichi

## 4. Piscines de désactivation



- ▶ La piscine de désactivation est située sur le plancher de service
  - ◆ Du fait de la maintenance, tous les éléments du coeur de la tranche 4 étaient en piscine de désactivation
  - ◆ Assèchement des piscines
    - Tranche 4: en 10 jours
    - Tranches 1-3,5,6 en quelques semaines
  - ◆ **Fuites des piscines du fait du séisme ?**
  
- ▶ Conséquences
  - ◆ Fusion du coeur en air
  - ◆ Presque pas de rétention des produits de fission
  - ◆ Rejets importants

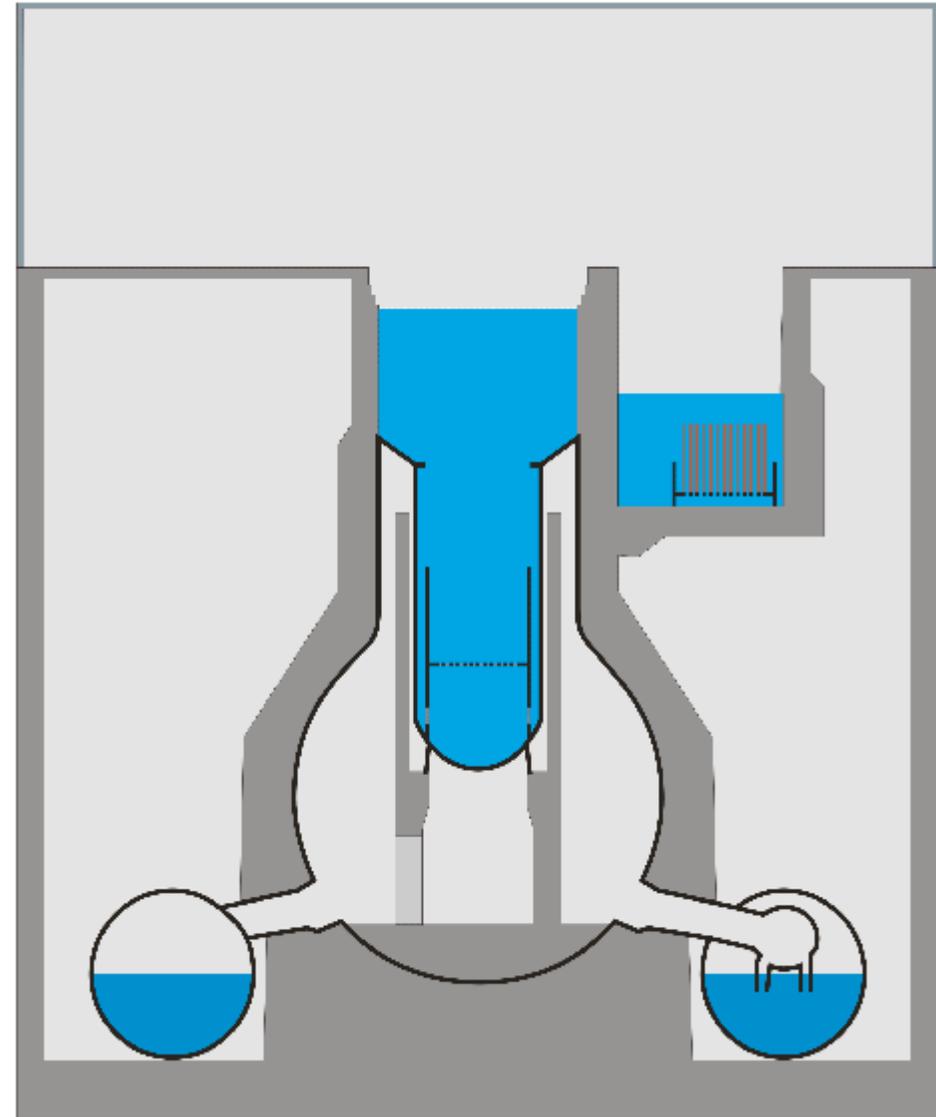


# L'incident de Fukushima Daiichi

## 4. Piscines de désactivation



- ▶ La piscine de désactivation est située sur le plancher de service
  - ◆ Du fait de la maintenance, tous les éléments du coeur de la tranche 4 étaient en piscine de désactivation
  - ◆ Assèchement des piscines
    - Tranche 4: en 10 jours
    - Tranches 1-3,5,6 en quelques semaines
  - ◆ **Fuites des piscines du fait du séisme ?**
  
- ▶ Conséquences
  - ◆ Fusion du coeur en air
  - ◆ Presque pas de rétention des produits de fission
  - ◆ Rejets importants

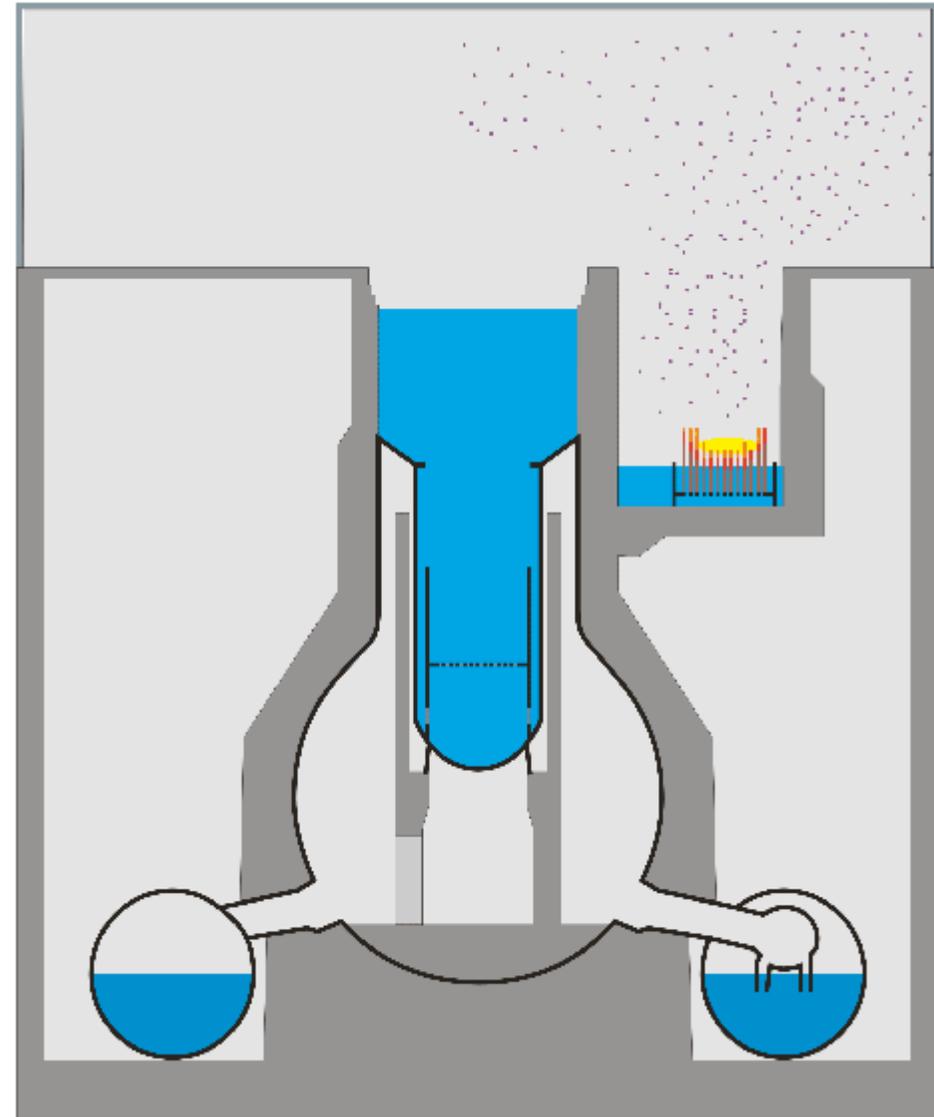


# L'incident de Fukushima Daiichi

## 4. Piscines de désactivation

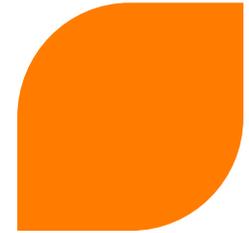


- ▶ La piscine de désactivation est située sur le plancher de service
  - ◆ Du fait de la maintenance, tous les éléments du coeur de la tranche 4 étaient en piscine de désactivation
  - ◆ Assèchement des piscines
    - Tranche 4: en 10 jours
    - Tranches 1-3,5,6 en quelques semaines
  - ◆ **Fuites des piscines du fait du séisme ?**
  
- ▶ Conséquences
  - ◆ Fusion du coeur en air
  - ◆ Presque pas de rétention des produits de fission
  - ◆ Rejets importants
  - ◆ **Il n'est pas clair actuellement s'il y a déjà eu des rejets depuis les piscines**



# L'incident de Fukushima Daiichi

## 5. Sources d'information



### ▶ Bonnes sources d'information

- ◆ Gesellschaft für Reaktorsicherheit [GRS.de]
  - A jour
  - Publication des données radiologiques
  - Traduction en allemand des pages web en japonais ou anglais
  
- ◆ Japan Atomic Industrial Forum [jaif.or.jp/english/]
  - Etat courant des tranches
  - Des mesures issues des réacteurs (pression et niveau)
  
- ◆ Tokyo Electric Power Company [Tepco.co.jp]
  - Etat des travaux de réparation
  - Victimes

- ▶ Il est probable que trop peu d'information soit diffusée par TEPCO, l'exploitant de la centrale

Official Transcript of Proceedings  
NUCLEAR REGULATORY COMMISSION

Title: Advisory Committee on Reactor Safeguards  
Subcommittee on Fukushima

Docket Number: (n/a)

Location: Rockville, Maryland

Date: Thursday, May 26, 2011

Work Order No.: NRC-905

Pages 1-164

**NEAL R. GROSS AND CO., INC.**  
**Court Reporters and Transcribers**  
**1323 Rhode Island Avenue, N.W.**  
**Washington, D.C. 20005**  
**(202) 234-4433**

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23

DISCLAIMER

UNITED STATES NUCLEAR REGULATORY COMMISSION'S  
ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

The contents of this transcript of the proceeding of the United States Nuclear Regulatory Commission Advisory Committee on Reactor Safeguards, as reported herein, is a record of the discussions recorded at the meeting.

This transcript has not been reviewed, corrected, and edited, and it may contain inaccuracies.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

UNITED STATES OF AMERICA

NUCLEAR REGULATORY COMMISSION

+ + + + +

ADVISORY COMMITTEE ON REACTOR SAFEGUARDS

(ACRS)

+ + + + +

SUBCOMMITTEE ON FUKUSHIMA

+ + + + +

THURSDAY

MAY 26, 2011

+ + + + +

ROCKVILLE, MARYLAND

+ + + + +

The Advisory Committee met at the Nuclear  
Regulatory Commission, Two White Flint North, Room  
T2B3, 11545 Rockville Pike, at 1:00 p.m., Said Abdel-  
Khalik, Chairman, presiding.

COMMITTEE MEMBERS PRESENT:

SAID ABDEL-KHALIK, Chairman

JOHN W. STETKAR, Member-at-Large

J. SAM ARMIJO, Member

SANJOY BANERJEE, Member

DENNIS C. BLEY, Member

CHARLES H. BROWN, Member

MICHAEL L. CORRADINI, Member

1 DANA A. POWERS, Member

2 HAROLD B. RAY, Member

3 JOY REMPE, Member

4 MICHAEL T. RYAN, Member

5 WILLIAM J. SHACK, Member

6 JOHN D. SIEBER, Member

7

8 ACRS CONSULTANTS PRESENT:

9 THOMAS S. KRESS

10

11 NRC STAFF PRESENT:

12 EDWIN HACKETT, ACRS Executive Director,  
13 Designated Federal Official

14

15 ALSO PRESENT:

16 KEVIN CAMPS, Beyond Nuclear/Don't Waste  
17 Michigan

18 ARNOLD GUNDERSEN\*

19 JOHN E. KELLY, Deputy Assistant Secretary for  
20 Nuclear Reactor Technologies, Office of  
21 Nuclear Energy, U.S. Department of Energy

22 ROBERT LEYSE\*

23 TONY PIETRANGELO, Nuclear Energy Institute

24 JIM WARREN\*

25 \*Participating via telephone

A G E N D A

1  
2  
3  
4  
5  
6  
7  
8  
9  
10  
11  
12  
13  
14  
15  
16  
17  
18  
19  
20  
21  
22  
23  
24  
25

OPENING REMARKS BY ACRS CHAIRMAN . . . . . 5

    Dr. Said Abdel-Khalik

NEI PERSPECTIVES . . . . . 7

    Tony Pietrangelo, Senior Vice President

    Chief Nuclear Officer

DOE PERSPECTIVES . . . . . 75

    Dr. John Kelly

ADDITIONAL QUESTIONS/GENERAL COMMITTEE

DISCUSSION . . . . . 146

ADJOURN

## P R O C E E D I N G S

(1:03:34 p.m.)

CHAIR ABDEL-KHALIK: The meeting will now come to order. This is a meeting of the Advisory Committee on Reactor Safeguards, Subcommittee on Fukushima. I'm Said Abdel-Khalik, Chairman of the Subcommittee.

ACRS Members in attendance are Sieber, Banerjee, Ray, Powers, Armijo, Stetkar, Ryan, Shack, Brown, and Corradini. Our consultant, Tom Kress, is also present. Dr. Edwin Hackett, Executive Director of ACRS is the Designated Federal Official for this meeting.

The Subcommittee will review information regarding the events of the Fukushima site in Japan. We will hear presentations from representatives of the Nuclear Energy Institute, and the U.S. Department of Energy.

We have received written comments from Mr. Donivan Porterfield of Los Alamos, New Mexico regarding today's meeting. Copies of his comments have been provided to the members and consultant.

We have also received a request from Mr. Arnold Gundersen to provide oral comments. Mr. Gundersen will be given time to provide his comments

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 following the scheduled presentations. The entire  
2 meeting will be open to the public.

3 The Subcommittee will gather information,  
4 analyze relevant issues and facts, and formulate  
5 proposed positions and actions, as appropriate for  
6 deliberations by the full Committee.

7 The rules for participation in today's  
8 meeting have been announced as part of the notice of  
9 this meeting previously published in the Federal  
10 Register. There is a phone bridge line for members of  
11 the public. To preclude interruption of the meeting,  
12 the phone will be placed in a listen-only mode during  
13 the presentations and Committee discussions.

14 A transcript of the meeting is being kept  
15 and will be made available as stated in the Federal  
16 Register notice. Therefore, we request that  
17 participants in this meeting use the microphones  
18 located throughout the meeting room when addressing  
19 the Subcommittee.

20 The participants should first identify  
21 themselves and speak with sufficient clarity and  
22 volume so that they can be readily heard. I see we  
23 have been joined by Dr. Rempe, also.

24 We will now proceed with the meeting, and  
25 I call upon Mr. Pietrangelo, Senior Vice President and

1 Chief Nuclear Officer for the Nuclear Energy Institute  
2 to begin. Tony.

3 MR. PIETRANGELO: Well, thanks for the  
4 opportunity to chat with you today. I do not have a  
5 formal presentation, and I'd much rather keep this as  
6 a dialogue with the Committee Members. I'm as  
7 interested in your insights into Fukushima as the  
8 NRC's and anyone else's because, quite frankly, we  
9 still do not have a lot of data yet about what  
10 transpired on March 11<sup>th</sup> and since then.

11 So, before I get into what we're doing as  
12 an industry, I'd just ask is there anything in  
13 particular that the Committee is interested in hearing  
14 about from an industry perspective on Fukushima, and  
15 then I can direct my remarks towards that.

16 MEMBER POWERS: Well, it seems to me the  
17 thing the Committee would be most interested in is  
18 whether the industry has identified or has processes  
19 in place to identify weaknesses in design, procedures,  
20 capabilities revealed by Fukushima that might be  
21 present in our plants.

22 MR. PIETRANGELO: Okay.

23 MEMBER ARMIJO: I have a general question.

24 MR. PIETRANGELO: Sure.

25 MEMBER ARMIJO: The extent to which the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 NEI or the industry has effective information sources  
2 with the Japanese utilities.

3 MEMBER SIEBER: Yes, I might add to that.  
4 I read all the NEI bulletins, which I consider very  
5 helpful, and I would be curious as to where that  
6 information that you published came from, and your  
7 opinion as to its accuracy and timeliness. And the  
8 extent to which we can rely on that information as one  
9 of the many building blocks for our analysis of what  
10 happened at Fukushima, what needs to be done here.  
11 And what changes need to be made with regard to the  
12 United States' fleet of nuclear reactors.

13 MR. PIETRANGELO: Okay.

14 CHAIR ABDEL-KHALIK: Yes, Mike.

15 MEMBER RYAN: Tony, I'd be interested in  
16 your comments on gaps in information with regard to  
17 worker exposure analysis, to public dose analysis.  
18 For example, as some data that I've seen on exposure  
19 rates, but that's not directly helpful for assessing  
20 dose. And how do we get to the measurements we've  
21 seen and real dose assessments to real people both in  
22 and out of the plants. Thank you.

23 CHAIR ABDEL-KHALIK: To add to a long  
24 list, Tony --

25 MR. PIETRANGELO: How long do I have?

1 (Laughter.)

2 MEMBER POWERS: I suspect many of them  
3 won't have --

4 CHAIR ABDEL-KHALIK: I mean, we just had  
5 INPO IER 11-1, 11-2. We had NRC Bulletin 2011-01.  
6 There were the inspections that were recently  
7 performed by the Resident Inspectors. And,  
8 originally, as part of the implementation of the  
9 mitigating strategies a comprehensive inspection was  
10 presumably done in 2008, and these were incorporated  
11 in the Reactor Oversight process as part of that  
12 triennial fire protection inspection.

13 MR. PIETRANGELO: Right.

14 CHAIR ABDEL-KHALIK: Perhaps, your  
15 perspective on the effectiveness of these processes  
16 that had been going on for a while in light of the  
17 findings of the recent inspections made by the  
18 Resident Inspectors, and whatever industry responses  
19 were provided to INPO in response to IER 11-1 and 11-  
20 2.

21 MR. PIETRANGELO: Okay.

22 MEMBER CORRADINI: Do you want more, or  
23 are you okay?

24 (Laughter.)

25 CHAIR ABDEL-KHALIK: And you can address

1 these issues in any logical order you may deem  
2 appropriate.

3 MR. PIETRANGELO: Okay. I've got half a  
4 dozen bullets here. I'm going to try to put them in  
5 some semblance of order here. And, again, question  
6 any time. Let's keep this as a dialogue.

7 First of all, the event itself, March  
8 11<sup>th</sup>. We, basically, went into our emergency response  
9 mode at NEI as to the NRC and INPO. We were  
10 fortunate, I think, as an industry here that following  
11 the BP rig explosion, Deepwater Horizon, last year, we  
12 kind of did a Lessons Learned on that for how we would  
13 apply that to our industry if we had an event like  
14 that in our country, and revised our emergency plan  
15 and response center, actually did a tabletop last  
16 October as a result of that.

17 And just from a pure industry perspective  
18 that, I think, put us in a much better position to be  
19 able to carry out what we're supposed to do in a  
20 response mode like that in terms of setting up  
21 communications, coordinating our role with INPO's and  
22 EPRI's. Basically, the roles broke down as follows:  
23 INPO was responsible for getting as much data on the  
24 ground in Fukushima as they could through the TEPCO  
25 Center of WANO, the World Association of Nuclear

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Operators, as well as through TEPCO, which is a member  
2 of both INPO, and NEI, and EPRI. So, we had some of  
3 those contacts.

4 We were responsible for keeping abreast of  
5 what regulatory actions were, as well as from a media  
6 and government communications outreach, all the data  
7 you saw, I think we were sending out every three or  
8 four hours updates to the information we had from the  
9 sources I mentioned, but we had NHK English version up  
10 on our screen, CNN, all the cable news networks, so it  
11 was really a compilation of all of that, that we were  
12 trying to assemble that information and provide what  
13 we thought was the most credible. Usually, if you're  
14 just hearing it from one source or news service that's  
15 not much to go on.

16 I think that that continues to some extent  
17 today; although you're seeing, I think, more analysis  
18 of information from Fukushima by the print journalists  
19 taking more time to get into the stories. But,  
20 certainly, we had a major role for our industry in  
21 terms of communication, so we had daily noon  
22 conference calls with all the Chief Nuclear Officers  
23 in the industry, as well as the Board of Directors of  
24 INPO, and other advisory committees around the  
25 industry. That went on for about three or four weeks.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           We are down to a weekly summary now based  
2           on information we're getting through some of the  
3           Japanese associations. And I agree with what I think  
4           the EDO has said about the situation at Fukushima,  
5           "While static, certainly far from stable." And  
6           that'll be three, six, nine months before they  
7           establish cooling and containment to be able to go to  
8           cold shutdown.

9           And I think we knew from the beginning  
10          that until that cooling loop was established, this was  
11          not going to be a stable situation. And you can feed  
12          and bleed for a long time, and they're showing that  
13          you can. But, obviously, that's not the preferred  
14          method of dealing with the event.

15          And I understand they're setting up  
16          temporary systems now at Fukushima to plug into,  
17          hopefully, some existing piping that can establish the  
18          cooling to bring those units to cold shutdown.

19          But I want to stress that our efforts thus  
20          far, and I'll go through some of the activities we  
21          have underway. It's going to take quite some time to  
22          get a full understanding of what transpired at  
23          Fukushima, months if not years to get some of the  
24          data, to understand the differences in design,  
25          differences in operational practices, training,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 emergency response, et cetera.

2           So, we're having to -- we've adopted kind  
3 of a roughly right premise that based on the  
4 observations we've seen, this is what we think -- we  
5 think it's roughly right that this was the cause, and  
6 we need to move forward on that basis, because if you  
7 waited to get a full understanding of everything that  
8 transpired there, you wouldn't do anything for maybe  
9 three, four, five years. So, I don't think that's an  
10 acceptable response either.

11           Let's see. Let's start with the actions  
12 the industry took almost immediately after Fukushima.  
13 The accident happened on Friday, March 11<sup>th</sup>. On  
14 Monday, the Chief Nuclear -- the following Monday, the  
15 Chief Nuclear Officers in the industry confer and  
16 agree on a set of actions under the INPO Executive  
17 Advisory Group, which is all the Chief Nuclear  
18 Officers, to do four sets of walkdowns at the plants.  
19 These were focused on some of the measures we put in  
20 place for the B5B order that was later codified in 10  
21 CFR 50.54(h)(h). Those walkdowns were completed by,  
22 I believe, the end of April, so we got out fairly  
23 early on those walkdowns.

24           There have been many, many observations  
25 from those walkdowns of the measures we took. And

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 some of them are, I'll call them some non-compliance  
2 issues that the staff in the subsequent Temporary  
3 Instruction that was issued, saw the same things that  
4 the licensee found in the walkdowns. But I think what  
5 a lot of people don't understand is that the measures  
6 put in place after 9/11 were specifically targeted at  
7 aircraft impact, and large fires and explosions.

8 So, for example, some of the portable  
9 equipment that was staged to provide contingency  
10 measures assuming quadrants of the plant had been  
11 destroyed by aircraft impact, that equipment was  
12 staged such that it would not be impacted by the  
13 aircraft impact. You keep it far enough from the  
14 plant so that the airplane didn't take out your  
15 contingency measures, as well. But we weren't  
16 thinking about floods, we weren't thinking about  
17 earthquakes, we weren't thinking about hurricanes or  
18 tornados when that equipment was staged.

19 So, I think one of the key Lessons Learned  
20 from Fukushima was that you can have a multi-unit  
21 event, and the other element of the B5B measures was  
22 that it was based on a single event response, an  
23 aircraft hitting a unit. So, the strategies were by  
24 unit, not by station.

25 So, given -- I think an irrefutable Lesson

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Learned is that you can have a single event, natural  
2 phenomena, or potentially other event that affects  
3 multiple units at a single station. And that's an  
4 area of potential improvement for us, is to expand  
5 what was done per the B5B measures to a multi-unit  
6 strategy. And that also takes into consideration some  
7 of the natural phenomena that the plant could  
8 potentially expect to see given where it's located.

9 We shouldn't jump to conclusions with  
10 that, though. I mean, some of the observations were  
11 while this -- where you put the portable diesel-driven  
12 fire pump could be subject to a flood there. That's  
13 a good observation, potential enhancement, but I think  
14 the -- some lead to a -- well, we ought to harden the  
15 structures around some of the portable equipment make  
16 it seismically qualified, hurricane-proof, tornado-  
17 proof, et cetera.

18 Personally, I don't think that makes any  
19 sense whatsoever. We built the plant to withstand that  
20 natural phenomenon, and the assumption is, is that  
21 that phenomena takes out everything at the plant, such  
22 that you need these measures. Why would you expect  
23 the same kinds of structures that you put in place at  
24 the plant to protect your portable? So, that's  
25 leading us to consider offsite response strategies

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 with equipment, perhaps regionally where a lot of  
2 plants are located where you'd have that equipment  
3 available in a timely way, but not subject to the same  
4 natural phenomena and/or terrorist attack that the  
5 plant would be subjected to.

6 MEMBER CORRADINI: If I might just build  
7 on that. So, does that kind of open the door to  
8 thinking from a probabilistic standpoint both manmade  
9 and natural disasters, and how you might consider  
10 staging or doing things, whether it be operator action  
11 or predetermined, so that you'd actually start  
12 thinking through this.

13 I guess I'm kind of going further -- in my  
14 mind, I'm going further than this, but in some sense  
15 to try to risk-inform --

16 MR. PIETRANGELO: You can to a certain  
17 extent.

18 MEMBER CORRADINI: Okay.

19 MR. PIETRANGELO: I call it event-inform.

20 MEMBER CORRADINI: That's fine. That's  
21 fine.

22 MR. PIETRANGELO: If you're not subject to  
23 tsunamis, you don't build a tsunami wall, for example.  
24 And there's natural phenomena associated with each  
25 site.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MEMBER CORRADINI: I'm okay in Wisconsin.  
2 MR. PIETRANGELO: You're okay in  
3 Wisconsin, hopefully. But you do it smart. And I  
4 think that's what we're trying to do out of the box  
5 here, is be smart about how we look at -- really, this  
6 is an additional layer of defense-in-depth that was  
7 put in place after 9/11 for a very specific reason.  
8 And I think my take based on Fukushima is, that's an  
9 additional layer that could be enhanced and expanded  
10 to deal with the multi-unit aspect of it, as well as  
11 consider natural phenomena and being smart about where  
12 you stage the equipment, be it on site or off site.  
13 MEMBER CORRADINI: The reason I asked the  
14 question in that regard is that, if you think about it  
15 from the possible events in any one specific site --

16 MR. PIETRANGELO: Right.

17 MEMBER CORRADINI: -- you might look at  
18 one and say I should move the diesels from low to  
19 high, but then some other event may -- that's what I  
20 was trying to get to.

21 MR. PIETRANGELO: Okay.

22 CHAIR ABDEL-KHALIK: Now, you indicated  
23 that what -- the logic, if you put these things in a  
24 hardened facility, whatever took the plant out might  
25 do the same thing.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. PIETRANGELO: Right.

2 CHAIR ABDEL-KHALIK: And that sort of  
3 leads you to the idea of offsite staging of equipment,  
4 perhaps regional staging of equipment.

5 MR. PIETRANGELO: Right.

6 CHAIR ABDEL-KHALIK: Would these equipment  
7 then be under the control of an industry organization,  
8 or would they still be under the control of individual  
9 utilities?

10 MR. PIETRANGELO: That remains to be seen.  
11 I think each station is going to have -- going to need  
12 to have a strategy for how they would respond. I  
13 could see a public/private partnership with the U.S.  
14 Government to try to do this.

15 Early on, we're thinking well, there's a  
16 lot of Army bases around the country where you could  
17 stage this equipment, and they would have the  
18 transportation equipment to deliver it, as well. So,  
19 that's a possible thought.

20 A lot of the plants along the Atlantic  
21 corridor are relatively close together, and a number  
22 of companies could come together and form a regional  
23 compact to all use the same equipment. We've done  
24 that for transformers and other -- we call it pooled  
25 inventory management for long lead time, hard to get

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 components that you would need to come back from an  
2 outage, and so forth. So, there's a lot of thinking  
3 in that regard.

4 The other, I think, irrefutable Lessons  
5 Learned from Fukushima was that they clearly could not  
6 cope with a station blackout condition long enough to  
7 preclude fuel damage.

8 Now, that leads us to questions on our own  
9 station blackout implementation here in the country.  
10 Based on the plants' configurations, they did coping  
11 assessments for two, four, eight hours. You might say  
12 well, why the Fukushima? That doesn't even pass the  
13 red-face test for being able to cope. But I think you  
14 heard at the Commission briefing at the end of March  
15 that in the United States, at least, with probably  
16 3,500 reactor years of operating experience, we've had  
17 one station blackout in 1990 for about 44 minutes at  
18 Plant Vogtle during an outage. And it was a truck  
19 backed into a transformer in the switchyard. One  
20 diesel failed to start, and the other diesel was down  
21 for maintenance, station blackout.

22 Now, they were able to restart the diesel  
23 that failed to start in 44 minutes, and restored AC  
24 power. But that's the only station blackout we've had  
25 in the United States. That doesn't mean it can't

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 happen here from some other combination of events.  
2 We've had several events, hurricane, Hurricane I  
3 believe it was Andrew in Florida, Turkey Point was on  
4 diesels for quite some time, a week or two. We just  
5 had Browns Ferry go through some very significant  
6 tornados, and were on their emergency diesel  
7 generators at three units.

8 Our diesel generators are very, very  
9 reliable. One of the first issues I worked at NuMark  
10 when I came to Washington was on diesel generator  
11 reliability. That was a key part of the station  
12 blackout implementation. And we tracked that in the  
13 Reactor Oversight process for the mitigating systems  
14 performance index. We had very, very high diesel  
15 generator reliability, and in the index you can track  
16 that. I think the reliability is upwards of 99.7  
17 percent, something in that range.

18 That doesn't say you can't have a common  
19 mode failure across all the diesels that potentially  
20 could make them non-functional, but I think, and what  
21 we've been saying pretty consistently from the get-go  
22 is that we cannot say an event like Fukushima could  
23 never happen here. It could happen here. It's very,  
24 very remote based on the reviews that were done when  
25 the plants were licensed, and the subsequent

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 improvements made over the years, both by requirements  
2 imposed by the NRC, as well as initiatives taken by  
3 the industry. But it doesn't matter at the end of the  
4 day. We have to be prepared for an emergency like  
5 this, whether it was tsunami, seismic event, terrorist  
6 attack, operator error, manufacturing defect,  
7 whatever, we want to keep these symptom-based events  
8 that we can respond to no matter what the event.

9 MEMBER RAY: Tony, I just want to make an  
10 observation. You made a point well taken about  
11 diesels. They've always had pretty stringent tech  
12 specs.

13 MR. PIETRANGELO: Right.

14 MEMBER RAY: And I guess as somebody who's  
15 operated a plant for a long time, I would say that's  
16 got something to do with how reliable they are, the  
17 fact that you've got very stringent LCOs, required  
18 surveillance testing.

19 MR. PIETRANGELO: Right. For those who  
20 don't know, diesels are tested on a monthly basis at  
21 the power plants to start and load run, I guess for  
22 approximately two hours, Harold. If you fail that  
23 test, you are inoperable, and you are in a tech spec  
24 action state.

25 MEMBER RAY: And it's a short one.

1 MR. PIETRANGELO: Right. Now, just in  
2 terms of insights with diesels, before the Vogtle  
3 event, some of the indicators we tracked as an  
4 industry rewarded doing diesel outage and maintenance  
5 during shutdown. We don't do that any more because of  
6 a simple risk insight that doing the diesel  
7 maintenance at power, if you did lose AC power, at  
8 least you'd have some steam to drive turbine-driven  
9 feed pumps and other pumps for core cooling and other  
10 cooling. So, we went from doing diesel maintenance  
11 from during an outage to on line.

12 I think that's a major improvement, and  
13 it's one of the ways we've managed to reduce, I think,  
14 outage duration across the industry, is by doing more  
15 and more maintenance on line, stringent tech spec  
16 still in place. I think the maintenance rule and the  
17 configuration risk management requirement in that  
18 greatly facilitated that, and told us when it was okay  
19 to take things out and when it wasn't. So, we've been  
20 managing that risk like that since the mid-90s.

21 Let's get back to station blackout for a  
22 second. So, we have the two, four, and eight coping  
23 duration. I would stress that that's a licensing basis  
24 number. It doesn't, necessarily, mean that that's the  
25 time that that licensee or that plant can cope with

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 loss of all AC power.

2 I have one example. One of our members  
3 about stripping battery load, non-essential battery  
4 loads once you're on batteries following station  
5 blackout, that he could operate what he needed to for  
6 core cooling for 32 hours.

7 MEMBER SHACK: Does he have a procedure to  
8 do that, or he's figuring that out on the fly?

9 MR. PIETRANGELO: Figuring that out now.

10 MEMBER CORRADINI: So, that really is a  
11 Lesson Learned. It's alternative means of operator  
12 action to extend.

13 MR. PIETRANGELO: Right. I'll get into  
14 kind of the whole framework for that in a second. But  
15 I'm stressing that the two, four, eight was based on  
16 that plant's assessment with very -- using approved  
17 guidance, I think that we developed, that the staff  
18 endorsed on how to do the assessment, and how you  
19 wound up with your number.

20 MEMBER STETKAR: Tony, can I -- talking  
21 about station blackout, I'm aware of some plants who  
22 have in place at least guidelines, if not formal  
23 procedures, to induce a station blackout under certain  
24 fire scenarios. Is the industry rethinking that?

25 MR. PIETRANGELO: I haven't heard that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 one. Induced station blackout?

2 MEMBER STETKAR: Some induce station  
3 blackout. There are not many plants, but there are  
4 some.

5 MR. PIETRANGELO: That's a first for me.  
6 I haven't heard that.

7 MEMBER POWERS: It's, actually, getting  
8 surprisingly large number of them.

9 MEMBER STETKAR: Depending on who you talk  
10 to, you get different counts, but it's not zero.

11 MEMBER POWERS: Non-zero. Oh,  
12 interesting.

13 MEMBER STETKAR: And that's a little bit  
14 of what Mike was asking about before in terms of this  
15 integrated thought that actions that are deemed  
16 prudent for one specific focus of an event may not be  
17 prudent in a more integrated --

18 MR. PIETRANGELO: In a more holistic look.

19 MEMBER STETKAR: -- view of risk.

20 MR. PIETRANGELO: Right.

21 CHAIR ABDEL-KHALIK: You may also be aware  
22 that as a result of this Vogtle station blackout  
23 event, Vogtle established what is called a "Power  
24 Options Book," which, essentially, gives the operators  
25 a list of all different ways of getting power from

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Point A to Point B under all conceivable  
2 circumstances. And is that something that the rest of  
3 the industry is following up on?

4 MR. PIETRANGELO: What we did back then,  
5 and I was actually the Project Manager on the shutdown  
6 guidelines for NuMark, turned into an industry  
7 initiative that we all adopted. There were guidelines  
8 in there for key safety functions, AC power was one of  
9 them. They were very high level, but it allowed the  
10 licensees, I think, a lot of room to develop measures  
11 to meet the high-level principles for the key safety  
12 functions. So, I'm not surprised to hear that a plant  
13 went to that length to identify ways that they could  
14 restore AC power.

15 I can't say everybody has done the same  
16 thing as Southern has at Vogtle, but I suspect there's  
17 measures in place to restore AC power even per station  
18 blackout, as well as some of the guidance we put in  
19 place.

20 All right. Back to station blackout. So,  
21 we think there may be some room for extended coping  
22 beyond what you were licensed to in your coping  
23 assessment simply by looking at means to, whether it's  
24 shutdown essential loads on the batteries, or do other  
25 things.

1           The other thing that we think we have but  
2 don't know how to take credit for yet are the B5B  
3 measures we put in place. That's a catalogue of  
4 contingency measures to back up key safety functions,  
5 core cooling, containment integrity, and spent fuel  
6 pool cooling.

7           And you don't know what you're going to  
8 have available after you got hit by aircraft, and you  
9 assume a quadrant of the plant was wiped out, so these  
10 contingency measures go all around the plant looking  
11 at those key safety functions, and identifying in  
12 advance measures you could take to restore those  
13 functions until you got AC power back, or whatever.

14           Again, I don't know how long, having not  
15 assessed this, and we don't have any -- I'll say not  
16 only do we not have guidance, we don't have approved  
17 guidance for how we would assess how those B5B  
18 measures could be used to extend the per station  
19 blackout coping duration. But I think it's an  
20 important fact to know before we start trying to  
21 develop enhancements to those measures. You have to  
22 have a starting point.

23           And we know we've got the licensed coping  
24 duration from the station blackout rule. We know there  
25 are certain things we can do to potentially extend

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that, and we know we have the B5B measures as another  
2 way to expand or extend coping duration.

3 But the key is you have to have sufficient  
4 coping duration such that you can put some form of  
5 mitigating capability in place to preclude core  
6 damage. And, again, that's the essential Lesson  
7 Learned from Fukushima, is they could not do that long  
8 enough before they got cooling --

9 CHAIR ABDEL-KHALIK: I guess I'm trying to  
10 understand the statement you made that we don't know  
11 how to take credit for the B5B equipment. Do you mean  
12 because we don't know what's going to be available, or  
13 we don't know --

14 MR. PIETRANGELO: I think those  
15 assumptions -- there are several assumptions one will  
16 have to make to say whether I can employ this measure  
17 versus that measure. And depending on the event, the  
18 external phenomena, or aircraft impact -- maybe it's  
19 just because I'm sensitive to it because I worked in  
20 Washington for 22 years with the NRC, but I'm  
21 uncomfortable going forward with some form of  
22 assessment of that as a step in a plan to enhance my  
23 overall layer of defense-in-depth without some  
24 regulatory buy-in to the method we use to do that, and  
25 what we could take credit for in expanded or enhanced

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 measures.

2 MEMBER CORRADINI: So, you want to do it  
3 in a reasoned fashion. That's what I heard you just  
4 say.

5 MR. PIETRANGELO: In other words, we want  
6 to do it in a reasoned fashion.

7 (Laughter.)

8 MEMBER CORRADINI: But I do think what  
9 Said is asking, I think is a fair point, because I  
10 think your concern, or your thinking through this in  
11 whether it be available equipment that has been  
12 considered in certain situations, or operator actions  
13 that could be done, but you don't want them to be done  
14 extemporaneously, but in some sort of planned thinking  
15 process.

16 MR. PIETRANGELO: Right.

17 MEMBER CORRADINI: All kind of goes into  
18 the idea of thinking through what you called events  
19 that are possible, maybe not be probable, but events  
20 possible how you attack --

21 MR. PIETRANGELO: Right. And both the  
22 things I'm talking about, station blackout and B5B  
23 54(h) (h) (2) are regulations.

24 CHAIR ABDEL-KHALIK: Right.

25 MR. PIETRANGELO: So, the NRC is,

1 necessarily, going to be interested in how we  
2 implement those regulations, or how they might be  
3 enhanced. So, I don't want to -- the worst thing that  
4 could happen is that we run out and do what we think  
5 we need to do without some kind of, I think, input  
6 from the regulator, or oversight from the regulator,  
7 because it's all at risk of doing it all over again,  
8 or paving over it later with something different that  
9 someone else had a different idea.

10 So, that's why we're looking forward to  
11 interactions after the 90-day short-term response. We  
12 want to make sure that we can effectively implement  
13 anything, any new enhancement or requirement that  
14 comes out of the NRC's process. It doesn't do us any  
15 good to get requirements that we can't implement  
16 effectively. That's in no one's interest, or to jump  
17 out ahead, spend resources, and then have to do it all  
18 over again.

19 MEMBER CORRADINI: Right.

20 MR. PIETRANGELO: So, I think there's a  
21 natural complementary interaction that's going to be  
22 needed after we get through this 90-day initial  
23 review.

24 CHAIR ABDEL-KHALIK: But that doesn't  
25 preclude sort of the possibility of pre sort of

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 conceptual thinking about --

2 MR. PIETRANGELO: Yes, and we're doing  
3 that.

4 CHAIR ABDEL-KHALIK: -- what approaches  
5 one can take in these unforeseen circumstances --

6 MR. PIETRANGELO: Right.

7 CHAIR ABDEL-KHALIK: -- in terms of  
8 defining the problems, in terms of critical safety  
9 functions, et cetera that would need to be maintained  
10 regardless of the event.

11 MR. PIETRANGELO: Yes, considerations that  
12 would go into extending the coping durations with B5B  
13 measures that we could probably turn into a guidance  
14 document.

15 Let me step back for a moment and give you  
16 some context around this thinking. I would say the  
17 first month after March 11<sup>th</sup>, we were still in crisis  
18 response mode, and not thinking about what we're going  
19 to here, necessarily. It wasn't until, I think, the  
20 situation became more static in Japan that we started  
21 focusing more on what we're going to do here in the  
22 U.S. as an industry response.

23 So, about a month after that, that's kind  
24 of where my attention turned. We were lucky,  
25 fortunate that we have industry organizations set up

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to try to fashion a holistic industry response, not  
2 just NEI. We've got Institute of Nuclear Power  
3 Operations, as well as the Electric Power Research  
4 Institute, and there are several activities that we've  
5 done over the years with our sister organizations that  
6 have been very successful by pulling together an  
7 industry response, not just a regulatory response  
8 through NEI. So, that's what we set out to do.

9 We set up a Steering Committee for the  
10 industry organizations comprised, primarily, of Chief  
11 Nuclear Officers from various plants, as well as the  
12 senior executives from each industry organization.  
13 We've established a charter for that group. We're  
14 putting the finishing touches on a strategic plan,  
15 guiding principles, and some building blocks that each  
16 organization will be the lead on. And I'll go through  
17 that very quickly.

18 I mean, the charter, there's -- let's see,  
19 about 13 people on this group were chartered to  
20 develop a strategic plan, articulation of strategic  
21 goal, structure, and process for defining the  
22 industry's overall response to Fukushima. We want to  
23 insure that identified issues are appropriately  
24 coordinated between industry organizations, and that  
25 lead and supporting roles are established. And I'll

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 get into how we're going to coordinate that in a  
2 moment. And then three, monitor the status of action  
3 plans on key issues to insure priorities and schedules  
4 are consistent with the strategic plan. And this  
5 probably most importantly, and that the overall impact  
6 on operating plants is balanced and appropriate to our  
7 prime focus, which is excellence in plant operation.

8 So, we're going to be doing a lot of work  
9 post Fukushima in response. And our first strategic  
10 goal speaks to this, and that we can't do it at the  
11 expense of the safety focus at the current plants.  
12 We've got 104 operating plants in this country. That  
13 has to be our first priority. It always has been. And  
14 even though we have to do a lot of work, we've got to  
15 be careful not to put a burden on that stations in the  
16 Fukushima response that dilutes the safety focus from  
17 current operations.

18 You see, many of the companies have set up  
19 separate groups just to make sure that you don't have  
20 a adverse impact on, say plant operations. We've done  
21 the same at NEI. I've got a separate group now just  
22 devoted to Fukushima-related events. I'll probably  
23 matrix across our organization to get the necessary  
24 expertise we need. INPO has done the same thing, EPRI  
25 has done the same thing. So, I think everyone is kind

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 of on the same page in terms of there's a lot of work  
2 to do, we need to get organized to pull it off, but it  
3 cannot be at the expense of the current plants.

4 This was our cumulative effects issue  
5 before Fukushima and the number of requirements, both  
6 self-imposed by the industry and from the NRC that we  
7 thought were starting to dilute the safety focus at  
8 the plants. And Fukushima can be cumulative effects  
9 on steroids, if you're not careful, so we've got to  
10 deal with these decisively, deliberately, but not at  
11 the expense of current plant safety.

12 Let me run through the strategic goals  
13 we've established. These have been through the NEI  
14 Executive Committee, the INPO Board, and the EPRI  
15 Board, so these are -- I feel pretty safe in talking  
16 about these.

17 MEMBER STETKAR: Tony, when you move the  
18 paper be careful because it hits the microphone.

19 MR. PIETRANGELO: Oh, sorry. The first  
20 goal -- I'll just read you kind of the lead-in. Our  
21 primary objective is to improve nuclear safety by  
22 learning and applying the lessons from the Fukushima  
23 Daiichi nuclear accidents. In response, the U.S.  
24 nuclear industry has established the following  
25 strategic goals to maintain, and where necessary,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 provide added defense-in-depth for critical safety  
2 functions of core cooling, spent fuel cooling, and  
3 containment integrity.

4 The first strategic goal is that our  
5 workforce remains focused on safety and operational  
6 excellence at all the plants, maintains the  
7 appropriate sensitivity to their emergency response  
8 roles, particularly in light of the increased work  
9 that the response of the Fukushima event will  
10 represent.

11 So, that's really INPO's building block,  
12 is let's -- we cannot lose our focus on safe operation  
13 at the plants. There's never a good time to have an  
14 event at your plant. This is a particularly bad time  
15 to have events at your plant in light of Fukushima.

16 Now, we'll get into more of the issues.  
17 And this is kind of based on the roughly right, what  
18 we think happened and observations that warrant  
19 attention. It remains to be seen what actions we'll  
20 take from these. We don't have action plans developed  
21 for these, but they're clearly areas that we're going  
22 to examine in some detail.

23 First, the goal -- these are kind of  
24 outcomes. Time lines for emergency response  
25 capability to insure continued core cooling,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 containment integrity, and spent fuel pool cooling are  
2 synchronized to preclude fission product barrier  
3 degradation following station blackout. And all that  
4 means is, you've got to have enough coping duration  
5 such that you can get your mitigating measures in  
6 place before fuel damage. And those have to be  
7 synchronized.

8 This is also not going to be, in our  
9 observation, a one-size-fits-all exercise given that  
10 the plants are so different in terms of the natural  
11 phenomena they see, their designs, their  
12 configurations. We want to try to keep this  
13 performance-based such that the station has enough  
14 flexibility to fashion a response that meets that goal  
15 in whatever time it takes.

16 MEMBER CORRADINI: So, this would be -- I  
17 guess, just to make sure I understand, so this would,  
18 potentially, lead to differences in the emergency  
19 procedure guides?

20 MR. PIETRANGELO: Plant-by-plant?

21 MEMBER CORRADINI: Plant-by-plant.

22 MR. PIETRANGELO: Yes.

23 MEMBER CORRADINI: Okay.

24 CHAIR ABDEL-KHALIK: May lead to proximity  
25 of staging points.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. PIETRANGELO: That's correct. That's  
2 correct. And, again, I think -- we'll get into that  
3 later. Next one.

4 CHAIR ABDEL-KHALIK: Before you --

5 MR. PIETRANGELO: Yes?

6 CHAIR ABDEL-KHALIK: Since this document  
7 is apparently --

8 (Simultaneous speech.)

9 MR. PIETRANGELO: -- from you, Mike.

10 (Laughter.)

11 CHAIR ABDEL-KHALIK: Approved by your  
12 Board, is this a document that you can share with us?

13 MR. PIETRANGELO: We hope to make it  
14 public some time in June. There's a lot of other  
15 verbiage that goes around these pieces. These goals  
16 are pretty well set, though.

17 CHAIR ABDEL-KHALIK: Okay.

18 MR. PIETRANGELO: The second one, U.S.  
19 nuclear industry is capable of responding effectively  
20 to any significant event in the U.S. with the response  
21 being scalable to support an international event, as  
22 appropriate.

23 MEMBER CORRADINI: Can I understand that?  
24 Is that in response, because Admiral Ellis I think at  
25 the NEA Assembly made some suggestions. Is that --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. PIETRANGELO: No.

2 MEMBER CORRADINI: -- coordinated with  
3 that? That's not the same thing.

4 MR. PIETRANGELO: No, I think this one is  
5 more about -- we were trying to provide support to  
6 TEPCO following the event, as was just about everybody  
7 else in the world. It took a while to organize our  
8 industry through the federal government with NRC, with  
9 the OEM. I'm sure Dr. Kelly will probably talk about  
10 that in his presentation. It took a while to get that  
11 supply chain formed up.

12 We should have that ready as an industry  
13 here for an event in the U.S., as well as to help  
14 someone internationally. How we can help, have that  
15 organized, have the supply chain ready to go. We  
16 shouldn't have to take another week to get all that  
17 together while the event is happening, so that's what  
18 that means.

19 CHAIR ABDEL-KHALIK: So, this is a  
20 statement of the goal.

21 MR. PIETRANGELO: Yes. It's kind of a  
22 desired outcome.

23 CHAIR ABDEL-KHALIK: Right. But is there  
24 a time line associated with that?

25 MR. PIETRANGELO: Not yet. There's going

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to be action plans associated with these. We'll put  
2 milestones, responsibility and accountability. That's  
3 coming, but these are -- we spent the last month  
4 trying to make sure we have the goals and outcomes  
5 right.

6 The next one, severe accident management  
7 guidelines, B5B response strategies, and external  
8 event response plans are effectively integrated to  
9 insure stations are capable of a symptom-based  
10 response to events that could impact multiple units at  
11 a single site. Lots of words, but I think pretty  
12 simple concept.

13 If you looked at the current structure of  
14 design-basis for external events, EOPs, SAMGs,  
15 emergency plans, B5B is somewhere over here.

16 CHAIR ABDEL-KHALIK: Training.

17 MR. PIETRANGELO: Training, yes. You  
18 shouldn't ask the operator to go to 13 different  
19 places in response to an event to get guidance. That  
20 should be an integrated well thought through holistic  
21 thing, so I think the intent there is to effect that.  
22 And it could be, you've got your station blackout  
23 coping duration, potentially extended coping  
24 durations, SAMGs, and that should be an integrated  
25 piece and the transition should be smooth for an

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 operator.

2 The next one, margins for protection from  
3 external events are sufficient based on the last  
4 hazards analyses and historical data. That's  
5 happening right now with GI 199 on seismic. It also  
6 could be a potential, and another natural phenomena,  
7 be it flood, tornado, or hurricanes.

8 This is making sure that we have margin  
9 that we're comfortable with from the design-basis  
10 events, and looking at the latest data.

11 MEMBER ARMIJO: What I'm missing, Tony, is  
12 response to a natural disaster, huge natural disaster  
13 which would give you seismic plus flooding.

14 MR. PIETRANGELO: Yes.

15 MEMBER ARMIJO: Or take out infrastructure  
16 that you were counting on for transportation, not only  
17 just electrical power, but just a whole number of  
18 things, people dying, families at risk.

19 MR. PIETRANGELO: Right.

20 MEMBER ARMIJO: Is the NEI assessment  
21 going to think in terms of that kind of a situation,  
22 because that's what happened in Japan.

23 MR. PIETRANGELO: Right. And that's why,  
24 when I said before about the assessments one would do  
25 whether it's for extended coping duration or emergency

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 planning, what assumptions do you make to fashion your  
2 plan? And I think we've all got to be on the same  
3 page with that.

4 This particular goal, I think, is really  
5 our prevention goal. Is there something we can do  
6 from a prevention standpoint from natural phenomena?  
7 Because I think, and based on at least my experience  
8 and the exhaustive reviews when the plants were  
9 licensed for these natural phenomena, I'm not sure  
10 there's a lot we're going to find here. But if there  
11 is something we can do from a prevention standpoint  
12 that makes sense, we should do it.

13 But to your point, I can always get one  
14 upped on --

15 MEMBER ARMIJO: NO, I know that. That's  
16 an infinite --

17 MR. PIETRANGELO: Right.

18 MEMBER ARMIJO: -- possibility.

19 MR. PIETRANGELO: I can always get one  
20 upped, and I'd rather -- I'd feel more comfortable  
21 with mitigating strategies that is not dependent,  
22 necessarily, on the event, but responding to the  
23 symptoms, and being able to do something about it.

24 MEMBER ARMIJO: Flexibility.

25 MR. PIETRANGELO: Right.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MEMBER ARMIJO: So, that you can --

2 MR. PIETRANGELO: Yes. Yes.

3 MEMBER POWERS: Tony, you mentioned  
4 several times already the exhaustive review that's  
5 done in the course of licensing these plants with  
6 respect to both internal events, and external events.

7 MR. PIETRANGELO: Right.

8 MEMBER POWERS: Do you have any reason to  
9 believe that there was a less exhaustive review done  
10 for the Fukushima and the Japanese plants?

11 MR. PIETRANGELO: Not at this time. I  
12 don't have enough information about that yet.

13 MEMBER POWERS: Okay.

14 MR. PIETRANGELO: I'll be honest with you,  
15 we don't really understand the regulatory differences  
16 yet from the way the Japanese license --

17 MEMBER POWERS: Are you going to try to  
18 look in -- because it strikes me that that's one area  
19 where one could make some progress now, not dependent  
20 on understanding the plant, to see if there are any  
21 differences. The Japanese system is very similar to  
22 our's, that would lead to oversights, perhaps, or  
23 probably the most interesting task, especially when we  
24 think about all of our plants, is the evolution in  
25 knowledge on the vulnerabilities to, or the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 frequencies with which natural events of large  
2 magnitude might occur, and how one factors that into  
3 the updating of the FSAR, which we all know moves  
4 about once a year.

5 MR. PIETRANGELO: Right.

6 MEMBER POWERS: That looks like a route  
7 where your group and those that are associated with  
8 NEI could make real progress without having to get  
9 into the plant itself --

10 MR. PIETRANGELO: Right.

11 MEMBER POWERS: -- and see things, which  
12 is going to go at the rate it's going to go.

13 MR. PIETRANGELO: Yes. We've got a lot of  
14 stuff to do. I'm hoping that our own regulator will  
15 be interested in the differences between our system  
16 and the Japanese system, and understand those  
17 differences about methodologies were acceptable there  
18 versus here.

19 I was at Senate hearing, and questions  
20 from one of the Senators to the EDO was, do you know  
21 what the differences are? Not yet we don't. Says  
22 well, whatever they did there didn't work, or required  
23 there didn't work. So, if we're doing the same thing,  
24 that's a reasonable question.

25 MEMBER POWERS: You say it didn't work,

1 but the truth is that we do a judgment on what's  
2 adequate protection.

3 MR. PIETRANGELO: Right.

4 MEMBER POWERS: There is always going to  
5 be some finite probability of an event, and it can be  
6 a single event that goes beyond what we think is  
7 adequate protection.

8 MR. PIETRANGELO: See, I don't think we  
9 know -- we think we know that these were beyond  
10 design-basis for the tsunami and earthquake that -- we  
11 think that, but we don't know what methodology they  
12 used, how --

13 MEMBER POWERS: That's right. That's  
14 right. And that -- we have to know not only what  
15 methodology, but would we have used a different  
16 methodology, or is there anything that's flawed about  
17 that methodology --

18 MR. PIETRANGELO: Correct.

19 MEMBER POWERS: -- or anything that's  
20 flawed about our methodology? It still could come out  
21 that --

22 MR. PIETRANGELO: Right.

23 MEMBER POWERS: -- when events go beyond  
24 those methodologies, to know --

25 MR. PIETRANGELO: Right.

1                   MEMBER POWERS: Ignorance, or whatever it  
2 is, I mean, there are things that we don't know about.  
3 Mother Nature can always surprise us.

4                   MR. PIETRANGELO: Yes, and I think that's  
5 why we do the additional layer of defense-in-depth for  
6 those scenarios --

7                   MEMBER POWERS: Absolutely. We definitely  
8 do that.

9                   MR. PIETRANGELO: Okay. Two more. These  
10 are, I think, somewhat maybe redundant to one of  
11 these, but we wanted to make sure that they were clear  
12 in the goals; spent fuel pool cooling and makeup  
13 functions are adequate during periods of high heat  
14 load in the spent fuel pool, and during extended  
15 station blackout conditions.

16                   We have not given the same level of  
17 attention to spent fuel pools here as we have the  
18 reactors, and that's just a fact. The second INPO IER  
19 that went out specifically looked at spent fuel pool  
20 cooling. And it really is using the same measures we  
21 put in place 20 years ago for outages, and backups,  
22 and safety functions when you were taking equipment  
23 out of service for outages.

24                   And then the last one, primary containment  
25 protective strategies can effectively manage and

1 mitigate post-accident conditions, including pressure  
2 and elevated hydrogen concentrations. This one is, I  
3 think, one of the ones where we need a lot more  
4 information about what happened in Japan. We're  
5 seeing a lot of speculation about venting, what they  
6 did, what didn't work, what worked, when they did it,  
7 et cetera. But it's all speculative at this point.

8 I think we've got to have a very, very  
9 firm understanding of the designs there, the  
10 procedures they used, what additional measures after  
11 losing electric power they had for operating those  
12 valves.

13 I think one of the observations from our  
14 walkdowns is that we can improve the accessibility to  
15 these valves. You shouldn't have to be Spiderman to  
16 go try to manually operate this valve after some  
17 natural phenomenon. Okay? So, improving the  
18 accessibility to key equipment I think is going to be  
19 important, as well.

20 So, those are the goals. Again, these are  
21 kind of desired outcomes. We kind of thought of these  
22 in a way that, where do we want to be in five years  
23 when this is all over? These would all be good  
24 outcomes, I think.

25 We also put some guiding principles

1 together. These are more process-driven, how we want  
2 to conduct the reviews both generically across the  
3 industry, as well as at the plants.

4 The first one is, insure equipment and  
5 guidance, and has been supplemented, as necessary,  
6 improves response effectiveness. This gets to the  
7 controls one places on that equipment that's there for  
8 emergencies. Do we have to expand it, enhance it, et  
9 cetera?

10 The second, address guidance, equipment,  
11 and training to assure long-term viability of safety  
12 improvements. I think this is another observation  
13 from the walkdowns, is that there were not  
14 prescriptive controls placed on the measures put in  
15 place for B5B. And in some cases during the  
16 walkdowns, you found the equipment wouldn't work.  
17 Well, that's not acceptable. That's not acceptable.  
18 So, we have to have the guidance, training, et cetera  
19 in place such that the long-term viability of that  
20 measure is maintained.

21 We want to insure response strategies are  
22 performance-based, risk-informed, and account for  
23 unique site characteristics. This is the one-size  
24 doesn't fit all. Maintain a strong interface with our  
25 regulators to insure regulatory actions are consistent

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 with safety significance, and can be complied with in  
2 an efficient manner. We want to make sure we can  
3 effectively implement any additional regulatory  
4 requirements, be that adequate protection, or  
5 enhancements.

6 We want to coordinate with federal, state,  
7 local government and their emergency response  
8 organizations on industry actions to improve overall  
9 emergency response effectiveness. This gets to the  
10 regional, make sure you're bringing in your partners.  
11 And there were, actually, a lot of discussions after  
12 9/11. We did comprehensive reviews that were  
13 conducted with state and local officials on the  
14 plants, the equipment they needed. Did they have  
15 familiarity with the site, if they were asked to come  
16 in and help, whether it was a terrorist attack, or  
17 another event.

18 And, finally, we want to communicate  
19 aggressively what we're doing. We didn't go into a  
20 shell after the event happened. We tried to go  
21 forward with the information we had and try to provide  
22 context to what we were seeing coming out of Japan.  
23 I think we did that in a pretty good way based on the  
24 information we had. And it's hard not to speculate  
25 sometimes about what you're seeing, and we tried not

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 to. But we want to make sure that we communicate.

2 The document I'm speaking of also names  
3 all the stakeholders that we need to pay attention to  
4 as we implement this. And it's a pretty broad list,  
5 including plant employees. They need to know the  
6 actions the industry is taking as a whole, all the way  
7 from plant employees to other industry organizations,  
8 to the general public, media, Congress, our  
9 regulators, state and local officials. There's a lot  
10 of stakeholders in this enterprise, and we want to  
11 make sure we communicate and what we're doing.

12 Let me go back to the questions you asked.  
13 We've got this set up. It's in place now. The next  
14 step is, we're assigning leads and supporting roles  
15 for accomplishing these goals. We're going to expect  
16 the lead organizations to come back with action plans  
17 and milestones, so we can flesh this plan out and get  
18 into the substance.

19 CHAIR ABDEL-KHALIK: And when this plan is  
20 finalized, would you share it with us?

21 MR. PIETRANGELO: This is more of the  
22 internal sausage-making we do. We'll share it.  
23 There'll be a public version of this plan that will  
24 include this stuff that I went through. But in terms  
25 -- we did not contemplate sharing all the action

1 plans.

2 I think when we get into after the 90-day  
3 NRC review, and there's more stakeholder interaction,  
4 a lot of these things will come to light through the  
5 public meetings we have.

6 CHAIR ABDEL-KHALIK: Okay. Thank you.

7 MR. PIETRANGELO: First question was,  
8 identify weaknesses either in design, procedures, or  
9 capabilities. At least from a -- at this point, I'm  
10 kind of where the staff is in their review. We  
11 haven't seen any fatal flaws yet in terms of our  
12 design. I think we see areas enhancements that would  
13 improve margins to withstand events like these. But  
14 there's no ah-hah moment yet about some preventive  
15 measure we could take that would preclude this.

16 Certainly, we have to look at our, as the  
17 goal pointed out, kind of integrating our procedures  
18 and capabilities to respond to a multi-unit event. So,  
19 I think that's one of the weaknesses we see, is we  
20 need a multi-unit strategy.

21 We talked about where we got our info,  
22 talked about sources of info from Japan. I don't have  
23 a lot on the gaps in worker exposure. I would point  
24 you to testimony that Dr. John Boyse gave at the House  
25 Science and Technology Committee I think a week or two

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 ago that's very, very good, puts this in context with  
2 respect to worker doses, as well as public exposure  
3 from the event.

4 MEMBER CORRADINI: Can I just ask a  
5 question about that, because I think Mike's question  
6 was both worker dose and public exposure. Because the  
7 one thing, I guess a big question in my mind was, is  
8 if you think about it working from the outside in,  
9 something that's reported commonly on all the websites  
10 is activity.

11 MR. PIETRANGELO: Right.

12 MEMBER CORRADINI: But what I think would  
13 help from a communication standpoint is a breakdown in  
14 terms of where is that activity coming from, and some  
15 very clear pathway so somebody can see that, and  
16 understand the effect. And I think Professor Boyse,  
17 I didn't hear him in this session, but I heard him in  
18 some other public -- some radio, where he went through  
19 and discussed this for worker. But I think Mike's  
20 point I thought was both worker, as well as offsite,  
21 because to me from a health effects standpoint, the  
22 further you draw the boundary, the more you can  
23 essentially speak to what we already know.

24 In some sense no matter how -- you used  
25 the term, I can't remember how you said it, but I

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 would call however sketchy what occurred internally of  
2 the plant events were.

3 MR. PIETRANGELO: At least today, I can't  
4 shed a lot of light on this piece.

5 MEMBER BROWN: Could I backtrack to your  
6 design information piece for a minute?

7 MR. PIETRANGELO: Sure.

8 MEMBER BROWN: After reading all the stuff  
9 and the information coming out, if you're going to  
10 take corrective actions or procedures, or mitigating  
11 actions to do stuff, you really have to have some type  
12 of monitoring data coming out of the plant that you  
13 have some reliance on, like water levels, or  
14 pressures, or temperatures, et cetera. And in reading  
15 your early reports, there were assumptions made based  
16 on the outputs of the instrumentation that they had in  
17 place that what appears to be now at the later stages  
18 not exactly correct, like water levels were lower than  
19 what anticipated and, therefore, there was greater  
20 levels of fuel damage.

21 And I'm not aware of any requirements, I'm  
22 saying that in the broad term, of having a limited set  
23 of hardened instrumentation which would provide a  
24 better feel during these events which would not,  
25 necessarily, be reliant on -- it could be electrically

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 powered if they had their own little --

2 (Simultaneous speech.)

3 MR. PIETRANGELO: -- batteries or  
4 something.

5 MEMBER BROWN: Well, they'd have to maybe  
6 even their own batteries, not the ones that just last  
7 for eight hours. I mean, you'd have to have some  
8 really -- instruments, typically, do not take  
9 humongous amounts of power. It's not like running  
10 pumps or things like that.

11 MR. PIETRANGELO: Right.

12 MEMBER BROWN: Or mechanical-type things,  
13 just gauges where they could be put in, or those that  
14 don't depend on -- a level indication that doesn't  
15 depend on a reference leg, which you may not --

16 MR. PIETRANGELO: Have.

17 MEMBER BROWN: You may not have it any  
18 more.

19 MR. PIETRANGELO: Right.

20 MEMBER BROWN: So, that was a thing that  
21 struck me, is assumptions were being made, mitigating  
22 actions were being taken for the in-plant. Even the  
23 knowledge of what the spent fuel pool levels were  
24 seemed to be questionable, and that -- I had not seen  
25 anybody addressing that, and I didn't hear you say

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 anything about that during the -- in your all's  
2 consideration --

3 MR. PIETRANGELO: I think that's an  
4 excellent point. I think as we go through the  
5 strategies and what you think you need, obviously, if  
6 you're the operator you want some level of indication  
7 of what you're doing, and what's going where, is it  
8 going where it should go, is the valve open or not.  
9 So, I think when we look at what the loads are on the  
10 batteries, it has to include key instrumentation.

11 I think another step would be to try to,  
12 as you said, maybe harden or enhance that capability.  
13 Just in spent fuel pools alone, I know a lot of  
14 control rooms do not have spent fuel pool level  
15 indication, and they check it on an operator round.

16 MEMBER BROWN: And/or temperature.

17 MR. PIETRANGELO: Right.

18 MEMBER POWERS: I don't want to deter you  
19 in looking for opportunities to improve your  
20 instrumentation. I would point out that this is the  
21 third major accident I've had the joy of going  
22 through, and every one of them people said gee, if we  
23 only had better instrumentation of this sort or that  
24 sort. And in many cases, we've upgraded the  
25 instrumentation, and what I found out subsequently was

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 not terribly useful to us, and it's not useful for the  
2 next accident. I'm not sure we can out-guess the  
3 accident when it comes to instrumentation.

4 MR. PIETRANGELO: Yes.

5 MEMBER POWERS: I think it's --

6 MEMBER BROWN: Well, I'm not trying to  
7 out-guess --

8 MEMBER POWERS: I think the --

9 MEMBER BROWN: You have to have something  
10 there.

11 MEMBER POWERS: Well, the trouble is the  
12 accident is defined by the failure of the systems that  
13 you have in place, so you chase your tail a little  
14 bit. I think these response things that you talk about  
15 after the event where you can respond to its symptoms  
16 rather than trying to say well, if I have this kind of  
17 accident, I'm going to need this kind -- the trouble,  
18 I don't think you can out-guess the system.

19 MEMBER BLEY: But there's something in  
20 what you'd said a little earlier about staging grounds  
21 for equipment, that sorts of things, having portable  
22 equipment that could be moved in that leans toward  
23 flexibility such that no matter what happens, if it's  
24 something they haven't thought of, you'd have the  
25 equipment to be flexible.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           The same approach could be taken with  
2           respect to instruments. And, in fact, one plant we  
3           worked with some years ago actually developed in-house  
4           very simple procedures for ways to be flexible with  
5           looking at instrumentation. In fact, they wrote up  
6           and practiced being able, if they had no power, no  
7           instrument power to get -- go out to the parking lot  
8           and steal batteries out of cars and use bridge  
9           circuits, and where to do it, and train on it so that  
10          they wouldn't be thinking about it. So, flexibility,  
11          to me, seems key. And I agree with Dana, we're not  
12          going to out-guess Mother Nature on this.

13                   MR. PIETRANGELO: I agree.

14                   MEMBER BLEY: It's nice to have things  
15                   that are flexible. And of course, Charlie, a few  
16                   things, you might have a minimal set that you harden.

17                   MEMBER BROWN: Fundamental things like  
18                   levels and temperatures, and some pressures that  
19                   they're not out-guessing anything, but they'll give  
20                   you at least a plant condition --

21                   MEMBER BLEY: But even here it wasn't so  
22                   much hardening. It was not having power to do things.  
23                   And if they'd had flexible arrangements in place,  
24                   maybe they could have done a lot more with what they  
25                   had.

1                   MEMBER REMPE: Or having some sensors that  
2 could go to, for example, thermocouples that were  
3 valid for higher temperature ranges, even though they  
4 weren't intended for that purpose. That would be  
5 useful.

6                   MR. PIETRANGELO: They key safety  
7 functions that don't go away. I take your point. But  
8 I take your point, as well, and I agree with it, that  
9 flexibility is key here, because you don't know the  
10 event -- the hand you're going to dealt at the time.  
11 That's why we want to kind of keep this performance-  
12 based and flexible in terms of the response measures,  
13 because they have to be. You don't know what event  
14 you're going to get.

15                   But the key safety functions, we need to  
16 protect and enhance. So, at least from an  
17 instrumentation standpoint, I'd try to focus on those,  
18 making sure I had instrumentation that the operators  
19 could use.

20                   CHAIR ABDEL-KHALIK: Please continue.

21                   MR. PIETRANGELO: Let's see. That's about  
22 all I had.

23                   CHAIR ABDEL-KHALIK: Okay. Well, let me  
24 just go and see if there are questions posed at the  
25 beginning, if Tony had addressed them, or you still

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 have questions that you would like to pose for him.

2 MEMBER CORRADINI: Do you have a plan, Mr.  
3 Chair -- when --

4 CHAIR ABDEL-KHALIK: I think the agenda  
5 calls for Tony to be here until 2:30.

6 MEMBER CORRADINI: Okay.

7 CHAIR ABDEL-KHALIK: So, we have time.

8 MEMBER CORRADINI: I guess the one thing  
9 that was mentioned, at least the one thing that pops  
10 in my head, the one thing that was mentioned, I don't  
11 know if it was Mike or someone else, I do think that  
12 from NEI's perspective on this, the ability, maybe it  
13 was Jack, the ability to identify -- if you have an  
14 observation or something that you're -- because I've  
15 been watching your weekly now, but previously hourly,  
16 or every few hour updates, to the extent that a member  
17 of the public can find out where you got it from, I  
18 think is very important. The openness as to this is  
19 what you saw, and here's where I can go look at it  
20 myself, because I think, at least in this environment,  
21 this culture that we are in, the public not only wants  
22 to know, they want to know where you knew it from.

23 MR. PIETRANGELO: Let me just say, we  
24 don't have any special source.

25 MEMBER CORRADINI: No, I understand that.

1 Not so much that, it's just that a way to dig through  
2 it, I think -- because the one thing, I guess, I --  
3 the one Lesson Learned that I came through, I mean,  
4 Dana mentioned three accidents. Thirty-two years ago  
5 when we started the information was not easily  
6 gathered. This time almost 180 degrees opposite of  
7 TMI. The information was flowing out so quickly, and  
8 you weren't sure what the source was, and you were  
9 looking for verification or validation of it. So, I  
10 think that kind of is the biggest Lesson Learned here,  
11 is that in the environment we're in now, any sort of  
12 event, forget about if it's a nuclear event, any sort  
13 of event, you're going to get this flood of  
14 information, a lot of it will be not very valuable.

15 MR. PIETRANGELO: Right.

16 MEMBER CORRADINI: So, the connection back  
17 to a source so that people will try to understand it,  
18 I think is beneficial.

19 MR. PIETRANGELO: Okay. Yes, I'm  
20 encouraged that IAEA team is there on the ground now,  
21 and they're trying to put a time line together, get a  
22 set of facts that everybody can agree to would be  
23 very, very helpful, such that we could use -- everyone  
24 could use that without a doubt, and no question about  
25 its validity or authenticity.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701



1 there was 36 workers in the reactor building at the  
2 time of the earthquake, and they came out of the  
3 building drenched. They were at the fuel pool floor  
4 and they came out drenched, so that was probably a  
5 pretty good splash. I don't know how much inventory  
6 they lost as a result of that.

7 I mean, we had guys trying to do  
8 calculations about how long it would take to evaporate  
9 and boil down that inventory, but what was your  
10 starting point? Right? You had to assume you lost  
11 something as a result of the earthquake. Especially  
12 in Unit 4, we didn't know if the gate was up for the  
13 refueling or not, whether that survived the  
14 earthquake, and that was another path that would  
15 almost get you down to the top of the actual fuel.  
16 So, just a lot of assumptions that were going into  
17 these calculations to try to figure out what the heck  
18 was going on.

19 MEMBER ARMIJO: So, how are you --

20 MR. PIETRANGELO: And we still don't know.

21 MEMBER ARMIJO: Are you going to get  
22 answers to that, all those kinds of just straight  
23 factual stuff? Do you have --

24 MR. PIETRANGELO: I'm relying on the IAEA  
25 team that's over there right now, and I'm hoping the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 NRC has a person on that team that's going to --

2 MEMBER ARMIJO: You will get your  
3 information through the IAEA team? You don't have  
4 direct contacts with your counterparts in Japan then.

5 MR. PIETRANGELO: There have been various  
6 -- I mean, EPRI leadership was over there last week,  
7 did a tour of Hamaoka, and went to the Daini site  
8 where TEPCO is staging a lot of the people, and  
9 materiel for Daiichi. So, we have had missives over  
10 there to try to even offer help in the organization in  
11 terms of project management for the task they have at  
12 hand, getting to cold shutdown and then a big  
13 decontamination activity. But it's -- I would say the  
14 focus is still on the ground, because it's not a  
15 stable situation, and not yet on getting that  
16 information out to everybody. I think that will happen  
17 over time. I think it's done more effectively if one  
18 organization like IAEA does it versus every country  
19 trying to get their set of facts.

20 We're not getting anything more than --  
21 during the first few days of the event, I'd call over  
22 here just to trade notes on what we were hearing  
23 versus what information the NRC was getting, and they  
24 weren't getting any better information than we were.  
25 So, I think everybody was in the same boat in that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 regard.

2 CHAIR ABDEL-KHALIK: I asked a question  
3 about NRC Bulletin 2011-01, INPO IERs, and the  
4 inspections that were performed in response to the  
5 Temporary Instruction. The question was meant in the  
6 vein of, are we asking licensees to do the same thing  
7 several times when they should be spending their time  
8 sort of doing the strategic thinking that is required,  
9 rather than sort of redoing things three different  
10 times?

11 MR. PIETRANGELO: Well, the walkdowns that  
12 the industry did were self-initiated. I think the  
13 Temporary Instruction came out after that, was a good  
14 hand-in-glove fit about inspecting what we were doing  
15 in the walkdowns and what we were finding. Those all  
16 went into inspection reports that were made public and  
17 summarized.

18 The Bulletin, I think, my understanding of  
19 it is to make sure that you fix the items or non-  
20 compliances that were found in the 30-day time period,  
21 or tell us what you're going to do within 30 days. And  
22 then I think the 60-day response is more targeted at  
23 the controls you have over those extreme -- over those  
24 measures for extreme events, what training, what  
25 surveillance, what periodicity of maintenance, that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 kind of thing, because that was not prescriptive in  
2 the requirement.

3 And I'll be honest with you, we're looking  
4 at establishing our own kind of generic template for  
5 well, how often should we be testing and exercising  
6 training, because of the question you just asked. I  
7 mean, we had a discussion with someone, it's not gold-  
8 plated, but it might have to be silver-plated. We  
9 goldplate design-basis tech specs, all those things  
10 for a good reason. These are for very extreme low  
11 probability things, should you afford the same  
12 measures over those kinds of things as you do for the  
13 more likely day-to-day events? That's risk-informed  
14 thinking, I think. Harold?

15 MEMBER RAY: Well, Tony, you made some  
16 comments that I certainly resonate with about seamless  
17 transition from normal operating and emergency  
18 procedures to severe accidents.

19 MR. PIETRANGELO: Yes.

20 MEMBER RAY: One thing that's come up in  
21 our discussions here, completely unrelated, has  
22 nothing to do with Fukushima. But it does have to do  
23 with the intervention of, I'll call it management, and  
24 what role they play in a severe accident, and whether  
25 they can play any role if they're not licensed to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 operate the plant, for example. Is any of that kind of  
2 discussion taking place?

3 MR. PIETRANGELO: Yes. Well, in terms of  
4 understanding differences from what appears to have  
5 happened in Japan versus how we would do it here.

6 MEMBER RAY: Well, yes. But, I mean, let  
7 me be more specific. What role does the TSC have in  
8 saying it's time to move to a different strategy, or  
9 not, as the case may be, or even higher levels of  
10 management. It seems like that's going to have to be  
11 on the table here.

12 MR. PIETRANGELO: Well, I think one of the  
13 differences we see today with the way our operators  
14 are trained, licensed, and what they execute is the  
15 authority is with the shift supervisor in the control  
16 room. They're going to make the decision to vent or  
17 not vent based on their procedures and executing them.  
18 And you're not going to seek senior management  
19 approval in your organization, nor from the federal  
20 government.

21 MEMBER RAY: Well, that's the way it  
22 stands today. I'm just wondering are we comfortable  
23 with that, and are we going to look at that again, or  
24 is it pretty well set as far as you're concerned?  
25 Because, I mean, that's my understanding of the rules,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 too.

2 MR. PIETRANGELO: Yes. I don't know I want  
3 to have it any other way, Harold, than the authority  
4 has to be --

5 MEMBER RAY: Okay. That's fine with me.

6 MR. PIETRANGELO: -- with the plant, and  
7 the trained, licensed operator following their  
8 procedures. I mean, that's --

9 MEMBER RAY: We've had some folks suggest  
10 that maybe there was a role for upper management to  
11 play when these things develop. And I've been trying  
12 to ask questions about that, so that's why I asked you  
13 the question.

14 MR. PIETRANGELO: I'm not even sure we let  
15 upper management in the control room.

16 (Laughter.)

17 MEMBER SIEBER: Well, that's the  
18 established protocol right now. And I think it's the  
19 right one, because these people are trained to do that  
20 job, and have the wherewithal to do it, and have the  
21 most information. And I would like to reserve more  
22 distant management with less knowledge and less  
23 experience get involved in prescribing detailed  
24 actions that people are to take.

25 I do have another question, though. You

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 know, what you have described to us is a lot of short-  
2 term actions, investigations, procedure changes, you  
3 know, things like that. And I think in order to get  
4 an immediate improvement, that's what you start on  
5 first. But is anybody in industry looking toward  
6 design issues for the plants that may be modified to  
7 prevent some things?

8 For example, the hardened vents, either  
9 they leaked or some other pathway leaked, or they  
10 didn't work because you ended up with three reactor  
11 buildings that exploded. There are other issues that  
12 sort of hint at design issues in these plants that at  
13 least ought to be evaluated, because software fixes  
14 and extra training in a staged diesel some place isn't  
15 going to do everything.

16 MR. PIETRANGELO: Right.

17 MEMBER SIEBER: Who is looking at that,  
18 and to what extent?

19 MR. PIETRANGELO: Yes. I think the  
20 walkdowns were -- those are the short-term actions,  
21 but I think some of the corrective actions that come  
22 out of that are certainly, I mean, from a flood  
23 protection standpoint, just for your design-basis  
24 flooding analyses, make sure your seals are  
25 functional, watertight doors, all that kind of stuff.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 That has to be rechecked, and if you find some  
2 deficiencies, you need to fix those. And that's what  
3 the Bulletin, I think, is trying to drive, is  
4 corrective actions commensurate with their  
5 significance.

6 The other piece that I mentioned before is  
7 like improving the accessibility to those key  
8 equipment like the hardened vents, so that if you do  
9 get in that situation they are more readily  
10 accessible. You've got the nitrogen bottle staged to  
11 be able to operate the valve, et cetera, the right  
12 fittings there, that kind of thing. In the short term,  
13 I think that's what we need to focus on.

14 MEMBER SIEBER: And I think there are some  
15 policy issues out there, too. For example, the  
16 government's been collecting from electricity  
17 ratepayers for years, and years, and years as part of  
18 their electric bill to establish long-term spent fuel  
19 geologic storage. And we are making virtually no  
20 progress even though the money has been spent in that  
21 area, and we end up with a large inventory of spent  
22 fuel located at plant sites stored where under normal  
23 conditions it's completely safe, but there ought to be  
24 some policy alternative to try to resolve that  
25 situation. Do you agree or disagree with that?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. PIETRANGELO: I agree, and if there's  
2 any silver lining to this horrible event, is that  
3 we've got a Blue Ribbon Commission looking at long-  
4 term national policy on used fuel.

5 MEMBER SIEBER: Right.

6 MR. PIETRANGELO: We're going to see their  
7 draft recommendations here I think in July, and final  
8 recommendations by the end of the year.

9 A lot of times you have these Blue Ribbon  
10 Commissions that make recommendations that stay on the  
11 shelf and nobody does anything with them.

12 MEMBER SIEBER: Right.

13 MR. PIETRANGELO: I think Fukushima really  
14 puts a spotlight on the aspect of used fuel  
15 management. We need a national integrated used fuel  
16 management policy. And to the extent Fukushima shines  
17 some light on that and the urgency of getting on with  
18 this. I don't think it's an urgent today issue, it's  
19 a longer term issue, but we need to start taking  
20 definitive steps towards some national goal and  
21 policy.

22 MEMBER SIEBER: I was a young man when  
23 this first became an issue, and I'm not longer younger  
24 and the issue is --

25 (Laughter.)

1 CHAIR ABDEL-KHALIK: You correctly  
2 identified sort of the fact that, in general, we have  
3 been looking at issues on a unit-specific basis rather  
4 than sitewide basis. And has the industry started  
5 thinking about the licensing implications of this if  
6 we change the paradigm of licensing rather than  
7 looking at it from a licensing of an individual unit,  
8 instead we look at it from the perspective -- from a  
9 sitewide perspective?

10 MR. PIETRANGELO: We do do that to a  
11 certain extent now. I'll note with new plant  
12 construction at Vogtle and Scana, you're doing heavy  
13 construction next to an operating plant. I think from  
14 a security standpoint we've looked at that very, very  
15 carefully, and the need to account for that with the  
16 security measures at the operating plant. I think  
17 you're suggesting something broader.

18 CHAIR ABDEL-KHALIK: Right.

19 MR. PIETRANGELO: I thought about it a  
20 little bit, not a lot, and the context was totally  
21 different for me. I was thinking it for small modular  
22 reactors versus big plants. But the same could be --  
23 there are some plants that share turbine decks, share  
24 control rooms, share refueling floors.

25 CHAIR ABDEL-KHALIK: Right.

1 MR. PIETRANGELO: So, I think that's a  
2 legitimate area to investigate and look into.

3 CHAIR ABDEL-KHALIK: Shared switchyards.

4 MR. PIETRANGELO: Switchyards, right.

5 MEMBER REMPE: Said?

6 CHAIR ABDEL-KHALIK: Yes?

7 MEMBER REMPE: I'd be interested in your  
8 perspective about resolving some -- the long-term  
9 resolution of some uncertainties. You have mentioned  
10 the spent fuel pool Unit 4, for example, and there are  
11 several scenarios being thought about, whether there  
12 was hydrogen from three versus water sloshing out, and  
13 there's other things about some sort of flammable  
14 liquid.

15 To really get the answer to that might be  
16 important on what we think about doing in the future.  
17 And there's other issues like saltwater. Does  
18 industry have a perspective and an opinion that they  
19 plan to maybe promote, find some answers, as they go  
20 through it?

21 MR. PIETRANGELO: Absolutely. I think  
22 that's -- from day one when we all got together to  
23 start thinking about what we were going to do, an  
24 emphasis on needing a more detailed understanding of  
25 precisely what happened, timeline, actions, condition,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 as best we can get it. And I think the fuel pools --

2 MEMBER REMPE: Some of it may require  
3 going in and getting some sort of sampling, etcetera.

4 MR. PIETRANGELO: And that's probably  
5 years.

6 MEMBER REMPE: Yes.

7 MR. PIETRANGELO: Unfortunately. But it  
8 took a long time on the TMI lessons learned. It is  
9 probably going to take a long time for this as well.  
10 But nonetheless, we should get that information,  
11 because I think it will obviously inform our efforts  
12 going forward.

13 CHAIRMAN ABDEL-KHALIK: Go ahead.

14 MEMBER POWERS: One of the challenges --  
15 the benefits that we have derived from the TMI  
16 incident was doing the diagnostics on -- post-accident  
17 diagnostics. And we were -- the problem is the very  
18 middle of the data you derive from dissecting a  
19 damaged reactor is of use to those cleaning up the  
20 reactor, and their imperative is to clean it up as  
21 quickly as possible at as low a cost as possible.

22 And they are disinterested in it rupturing  
23 their activities to acquire diagnostic information  
24 that may be of use to us in validating models of how  
25 accidents degrade and things like that.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           At TMI, we operated very much in the  
2 blind, because we didn't know very much about severe  
3 accidents at that time. We know marginally more, I  
4 presume, now than we did. And so we don't have to  
5 operate nearly so blind, but we are still going to be  
6 under the pressures of time and the schedules of those  
7 doing the cleanup, if there is no recognized value to  
8 getting that information, and a well-developed  
9 strategy for getting that information, interfering as  
10 little as possible.

11           I think it would be exceptionally useful  
12 if NEI could add its weight to encouraging all  
13 interested parties in developing a good plan for what  
14 information we get, how it will be used, and  
15 encouraging those responsible for the cleanup to  
16 recognize that value.

17           MR. PIETRANGELO: Yes, that's an excellent  
18 point. And we have had that discussion just about  
19 domestically when we find flaws of indications and  
20 people want to do the weldover without knowing --  
21 finding out exactly the extent. And I think we've got  
22 our protocol down now where we don't do that until we  
23 find out as much as we can.

24           MEMBER POWERS: Well, I may --

25           MR. PIETRANGELO: Yes.

1 MEMBER POWERS: -- this country for small  
2 things, but -- and a big thing, there is so much money  
3 involved, and time is money here.

4 MR. PIETRANGELO: Yes. But I think it's  
5 given that TEPCO has several other operating plants of  
6 a similar design in that country. They are going to  
7 want the lessons learned, perhaps more than anybody,  
8 for their own reasons. And I don't see why there  
9 would be any reason not to share that with  
10 international --

11 MEMBER POWERS: I don't think it's  
12 sharing. It's having --

13 MR. PIETRANGELO: A plan in advance.

14 MEMBER POWERS: Yes, a plan in advance --

15 MR. PIETRANGELO: Right.

16 MEMBER POWERS: -- that recognizes this  
17 drive that is going to go on to clean up as quickly as  
18 possible. Both parties have to recognize that.

19 MR. PIETRANGELO: Right.

20 MEMBER POWERS: And at the same time, we  
21 still need to get the information. There is so much  
22 information we did not get at TMI, quite frankly  
23 because we ran out of money, and because we were not  
24 well planned. And the drive to completion was just  
25 very, very heavy pressure, and you have to be very

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 sympathetic with people.

2 MR. PIETRANGELO: Right. That's a  
3 balance.

4 MEMBER POWERS: Yes.

5 MR. PIETRANGELO: Well, I totally agree  
6 with your point, though.

7 MEMBER STETKAR: Tony, in light of that,  
8 you mentioned that there's an IAEA team on the ground  
9 now. And my impression from what you said is that you  
10 are relying, to a greater or lesser extent, on them to  
11 do a lot of the detailed forensics.

12 MR. PIETRANGELO: Initially at least.

13 MEMBER STETKAR: Okay. Well, I guess my  
14 question, in light of what Dana was discussing, is,  
15 who in the U.S. is coordinating with that team? In  
16 other words, if there is valuable information --

17 MR. PIETRANGELO: Right.

18 MEMBER STETKAR: -- that should be  
19 preserved, at a relative -- you know, at this stage of  
20 the process, three months, two and a half months --

21 MR. PIETRANGELO: Right.

22 MEMBER STETKAR: -- after the event, that  
23 could be lost because of cleanup efforts and things,  
24 who was working with that team if they are now the  
25 point international team for --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. PIETRANGELO: Right.

2 MEMBER STETKAR: -- collecting --

3 MR. PIETRANGELO: In our plan, we have  
4 actually got an international coordination building  
5 block in that plan that EPRI and INPO share the lean  
6 on.

7 MEMBER STETKAR: Okay. But you mentioned  
8 that that plan will be eventually developed and  
9 perhaps published by the end of this year. I'm  
10 talking about, you know, some time in the next two or  
11 three months in real time.

12 MR. PIETRANGELO: Yes. Well, EPRI was  
13 there last week, and I think, in my mind, it would be  
14 the right industry organization to say, "Here is kind  
15 of the questions we have been doing research on for a  
16 number of years, that this information" --

17 MEMBER STETKAR: Well, the question is --

18 MR. PIETRANGELO: -- "light on."

19 MEMBER STETKAR: -- in your mind that  
20 sounds right, but in real time who is doing it? I  
21 mean, does EPRI have the lead? Does EPRI know that it  
22 has the lead?

23 MEMBER CORRADINI: I guess John's question  
24 -- I guess more provocatively, so if tomorrow somebody  
25 said, "You really shouldn't clean that up. That might

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 be some valuable information there," or could make the  
2 final decision to clean it up or to -- or to leave it  
3 there for forensics value -- that's what I guess John  
4 is asking.

5 MEMBER STETKAR: Well, it's -- in some  
6 sense. I mean, I'm not advocating delaying, but at  
7 least if someone thoughtful thought that information  
8 prior to cleanup might be useful, collecting as much  
9 information prior to cleanup should be, you know,  
10 given some priority.

11 And if, you know, at least from the U.S.  
12 perspective, if I can cast it that way, given an  
13 information flow to us to sort of enhance our  
14 understanding of severe accident -- event progression  
15 or severe accident phenomena, who has the lead today?

16 MR. PIETRANGELO: I'm going to take that  
17 question. That's a good one, given the time. I'm  
18 really glad the ACRS is involved in this, and I know  
19 -- I've heard -- don't know, but heard that you all  
20 have wanted to be more engaged on the Fukushima and  
21 the planning. And I know the staff is under duress  
22 right now to get this 90-day review done.

23 But I know if there is any subsequent  
24 actions that come out of that I trust that this  
25 Committee is going to be engaged in looking at those

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 and providing your expertise to that, because this is  
2 something we all need to work on. It's very  
3 important.

4 There's a lot of lessons to be learned  
5 here, and the more we can get I think a consensus from  
6 all communities on what is fact and what is real  
7 versus kind of what is speculative, I think is very,  
8 very helpful going forward. So --

9 CHAIRMAN ABDEL-KHALIK: Thank you very  
10 much.

11 MR. PIETRANGELO: -- appreciate the  
12 opportunity to chat with you today.

13 CHAIRMAN ABDEL-KHALIK: We intend to do  
14 that.

15 MR. PIETRANGELO: Okay.

16 CHAIRMAN ABDEL-KHALIK: And we thank you  
17 very much for taking the time to meet with us today.

18 MR. PIETRANGELO: My pleasure. Thanks.

19 CHAIRMAN ABDEL-KHALIK: Thank you. At  
20 this time, we will move to the next presentation. Dr.  
21 John Kelly from DOE will give us a presentation on  
22 DOE's perspective.

23 DR. KELLY: Thank you, Mr. Chairman. So  
24 are my slides loaded, do you know?

25 CHAIRMAN ABDEL-KHALIK: I believe they

1 are. And if you can --

2 DR. KELLY: I know a couple of the people  
3 here.

4 MEMBER POWERS: Who are you again?

5 (Laughter.)

6 DR. KELLY: Well, I can't remember exactly  
7 -- I think Dana maybe initiated this request back a  
8 month or so ago, because he knew that I was heading up  
9 the Department of Energy Nuclear Energy Office's work  
10 on the Fukushima event. And so -- but the focus I  
11 think at this point needs to be, what did DOE do in  
12 the last two months on this?

13 And the forward-looking thing we are --  
14 you know, our position right now is we need to learn  
15 a lot more about what happened and why it happened,  
16 and if we can lay that foundational base of  
17 understanding, then lessons learned will flow from  
18 that.

19 So here is the plant, you know, before the  
20 accident. I think everyone has seen that. And then,  
21 the -- you know, the extreme devastation that occurred  
22 within the first few days after the tsunami, and then  
23 the hydrogen explosions in the various buildings  
24 greatly damaged all of the facilities.

25 You know, the timeline that we know is the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 earthquake happened at 2:00 in the afternoon. About  
2 an hour later the tsunami hit. It was a magnitude  
3 approximate nine on the -- and the tsunami was about  
4 14 feet, and their design base I think was about six  
5 meters.

6 Many thousands of people perished, and,  
7 you know, I think one thing that I recognized was that  
8 when we had the big earthquake or whatever, and  
9 thousands of people were killed, we always had this  
10 assumption that the -- whatever happened in the  
11 nuclear plant wouldn't be as important as all the  
12 other human devastation. Apparently, that's, you  
13 know, not valid.

14 But hundreds of -- over 100,000 people  
15 were homeless, without food, water, evacuated,  
16 etcetera. It wasn't just because of the nuclear  
17 accident.

18 So we are still uncertain about how much  
19 damage was done by the earthquake, and that  
20 information is still coming out as they inspect the  
21 other reactor buildings and the units that weren't  
22 damaged. Units 5 and 6 did not meltdown, so they can  
23 go in and see what damage occurred there.

24 But we're pretty sure that the grid lines  
25 were knocked down by the earthquake. That led to the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 loss of offsite power. And then, diesel generators  
2 operated, but when the tsunami came in and we have,  
3 you know, some simulations now looking at that, the  
4 diesel generator rooms were flooded, and this knocked  
5 out the diesel generators leading to basically long-  
6 term station blackout, without heat sink as well.

7 MEMBER CORRADINI: John, you mentioned 5  
8 and 6, so maybe -- if this is the wrong time, you can  
9 hold us back. So in 5 and 6, has there been internal  
10 inspections of the building such that they know where  
11 the water went, or if any water made it into a lot of  
12 the compartments?

13 DR. KELLY: You know, I don't know the  
14 answer to that.

15 MEMBER CORRADINI: Because I think you  
16 have actually started bringing up questions that --

17 DR. KELLY: That we've been following,  
18 yes.

19 MEMBER CORRADINI: -- five or six weeks  
20 ago we were asking staff about, too, about a  
21 comparative point, maybe due to elevation things were  
22 different there. But then, given that, what sort of  
23 things they found when they were inspecting internals  
24 of it. So at this point, still a question mark.

25 DR. KELLY: Still a question mark. But we

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 are pretty sure that there are, you know, various  
2 inspections going on to assess earthquake damage. In  
3 terms of tsunami damage, that seems like something  
4 they would also be interested in.

5 MEMBER CORRADINI: Okay.

6 MEMBER ARMIJO: Well, similarly, for the  
7 Daini sites, which survived, and it was a tsunami as  
8 severe where they're at higher elevations --

9 DR. KELLY: Well, the tsunami was I think  
10 worse, but they were up at higher elevations.

11 MEMBER ARMIJO: Yes. You know, some  
12 quantitative stuff like that would be --

13 DR. KELLY: They barely survived I think.  
14 You know, the indication -- I don't know if you know  
15 Dr. Omato, Japan Atomic Energy Commission. He and I  
16 spoke a few weeks ago. They did not lose all offsite  
17 power, so they had one line still remaining. And  
18 then, they were able to bridge that line to the units  
19 onsite. So it was through that mechanism that they  
20 were able to maintain power.

21 MEMBER CORRADINI: I guess I would -- just  
22 to follow Sam's question, I guess it was -- was it  
23 Onagawa that was at a much higher elevation? It was  
24 on cliffs.

25 DR. KELLY: Right.

1 MEMBER CORRADINI: And F2 was in a bay  
2 region, so even though the tsunami was worse there, it  
3 was mitigated by the bay? Or is that still a big  
4 question?

5 DR. KELLY: Onagawa or --

6 MEMBER CORRADINI: No.

7 DR. KELLY: -- Fukushima 2?

8 MEMBER ARMIJO: Daini.

9 MEMBER CORRADINI: Daini, excuse me. I  
10 guess that's back to --

11 DR. KELLY: I think what saved Daini was  
12 the fact that they did not completely lose connection  
13 to the grid. At least that's what Dr. Omato reported  
14 to me.

15 MEMBER SHACK: But is the implication of  
16 that that they had lost their emergency diesels? They  
17 do seem to need them.

18 DR. KELLY: I think that was the  
19 implication.

20 MEMBER SHACK: Okay.

21 DR. KELLY: Maybe I'll say a little bit  
22 more when I -- I can talk to it as I go through here.  
23 So station blackout occurred due to the earthquake at  
24 the Fukushima Daiichi plants.

25 Loss of emergency diesels due to the

1 tsunami -- now, they had both water-cooled and air-  
2 cooled diesel generators, so they had added redundancy  
3 some time before. I think people were talking -- I  
4 can't remember, because we talk about this all the  
5 time, but they had done extensive relooks at seismic  
6 hazards and tsunami hazards within the last five years  
7 I think it was.

8           What Dr. Omato explained was that there  
9 are four fault lines off the coast, and in their  
10 modeling they never assumed that they would all  
11 operate at the same time. And so these four in  
12 harmony went up and down generating massive earthquake  
13 and tsunami. So the fault lines were known. The fact  
14 that they would work together I think was overlooked  
15 in the analysis.

16           Eventually, they were able to maintain  
17 some control for a while, but there is, you know,  
18 speculation now that there was damage. There was a  
19 report earlier this week that the Unit 1 was cooling  
20 too rapidly. The isolation condenser was working.  
21 The operators turned it off, because they were afraid  
22 that it was going -- some kind of thermal transient,  
23 thermal shock.

24           And then, when the tsunami hit, they  
25 weren't able to restore the isolation condenser, which

1 part -- you know, we need to confirm all of these  
2 things, but it's sort of pointing to why it actually  
3 melted down faster than severe accident codes would  
4 have said.

5 MEMBER CORRADINI: That was because the  
6 isolation -- it was isolated.

7 DR. KELLY: Yes. There is one valve that  
8 needs to be turned, apparently, and so --

9 MEMBER STETKAR: John, everybody is -- I  
10 have to apologize, because I haven't had a chance to  
11 really look at lot of the details, and I'm kind of a  
12 detail-oriented guy. But people focus on the tsunami  
13 effects on the diesels themselves, which obviously  
14 were vulnerable to the flooding.

15 It's my understanding that a lot of the  
16 switchgear was down in the basement of the turbine  
17 building. So even if the diesels had survived, would  
18 they have been able to provide electrical power to  
19 anything? Do you know that?

20 DR. KELLY: I don't know that, but I've  
21 heard that, indeed, you know, it wasn't just the  
22 diesels themselves. The diesels might have been many,  
23 many, many meters above the tsunami level, but --

24 MEMBER STETKAR: I don't know how the --

25 DR. KELLY: -- the actual layout of --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MEMBER STETKAR:  -- switchgear itself,  
2                   emergency power sources are, whether they -- the  
3                   switchgear --

4                   DR. KELLY:  Okay.  You don't know.

5                   MEMBER STETKAR:  I don't know.

6                   DR. KELLY:  I haven't been able to find  
7                   that --

8                   MEMBER STETKAR:  I just don't remember,  
9                   because the Secretary of Energy and I went up to  
10                  Millstone a week after the accident, because we  
11                  thought it would be a good idea to walk around a  
12                  similar plant that we could walk around in, and so we  
13                  got a pretty good tour.

14                  You could actually envision how this  
15                  happened, because the diesel generator room there has,  
16                  you know, the vent to release combustible gas or the  
17                  combustion gases afterwards.  So up at the top, they  
18                  have designed it for a very large hurricane tidal  
19                  swell on Long Island Sound.  But if you miss that, you  
20                  know, there's a clear path for water to go right into  
21                  the building.  And I suspect that water, mixed in with  
22                  electrical equipment, is, you know, a high probability  
23                  of failure at that point.

24                  And then, furthermore, the diesel fuel  
25                  tanks were -- which were outside were also washed

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 away. So even if -- you know, their supply of fuel  
2 was gone as well.

3 Yes.

4 MEMBER SIEBER: I might comment -- not  
5 only the diesels and the switchgear, but also the  
6 pumps themselves.

7 DR. KELLY: Right.

8 MEMBER SIEBER: In order to get suction  
9 head, pumps are usually placed low, and they are  
10 driven by electric motors. They are vulnerable to  
11 flood. And so if there's more issues than just having  
12 the power supply and the switchgear, you have to have  
13 the equipment --

14 DR. KELLY: Right.

15 MEMBER SIEBER: -- safe, too.

16 DR. KELLY: So I think we know core  
17 overheated, cladding oxidized, melt produced hydrogen.  
18 Hydrogen escaped from the containment. There is -- it  
19 was either vented or the head seals leaked, or some  
20 combination of that. And so Units 1, 2, and 3 all  
21 had, you know, explosions or deflagrations, and there  
22 was an explosion/deflagration in Unit 4.

23 And I'll talk -- I heard you speaking  
24 earlier about the -- what we know the about spent fuel  
25 pool 4, and I have some of -- I'll talk a little bit

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 about the analysis that we did and the conclusions we  
2 rely on.

3 MEMBER CORRADINI: But given the  
4 qualitative stepping through, as you have done, there  
5 are still large uncertainties as to, was there  
6 hardened vents? If the hardened vents failed, if  
7 there was a change in procedure, if, if -- there is  
8 still a good bit of --

9 DR. KELLY: I mean, we're sure that they  
10 have hardened vents, that they were used. How they  
11 were plumbed is not, you know, understood, so, you  
12 know, there is still --

13 MEMBER CORRADINI: Okay.

14 DR. KELLY: But that still needs to be  
15 fully verified.

16 MEMBER ARMIJO: John, would -- these vents  
17 would normally not discharge into the refueling floor.  
18 So they --

19 DR. KELLY: No.

20 MEMBER ARMIJO: So, you know, something --

21 DR. KELLY: Something else went wrong.

22 MEMBER ARMIJO: -- went wrong when they  
23 were venting or before they went -- were venting.

24 CHAIRMAN ABDEL-KHALIK: Unless you get  
25 connected.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. KELLY: So there is some  
2 interconnection. That may explain the mystery of  
3 Unit 4, so -- but basically, what I wanted to talk  
4 about was, you know, what kind of happened in those  
5 first days. Of course, you know, we know the NRC  
6 stood up their Emergency Operations Center. They  
7 deployed people to Japan.

8 They formed this reactor safety team that  
9 was really there to provide advice to the Ambassador  
10 and the government as questions came in. And it was  
11 principally on the -- managing the reactors and spent  
12 fuel pools. I mean, that's what the NRC team was  
13 principally focused on.

14 But they initiated this consortium call  
15 that was twice a day, daily, you know, it was very  
16 frequent, that it had participation from NRC, INPO,  
17 DOE, Naval Reactors, and GE, other industry partners.  
18 So there was a call that was discussing basically that  
19 the appropriate accident management guidelines, as we  
20 are gathering data and looking ahead, as to what was  
21 next.

22 Dr. Lyons, my boss, and Chairman Jaczko  
23 got together with INPO and discussed, how are we going  
24 to deal with all the industry's interest in assisting  
25 Japan? And so INPO agreed to be the coordinating

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 point for that, and they sent -- ended up sending  
2 people both to -- to Japan as well as coordinating  
3 things here in the U.S.

4 And so this really was a great idea,  
5 because it helped get our capabilities, which are  
6 great in terms of many of these areas, channeled in  
7 the right direction, so that they could be deployed  
8 more rapidly.

9 MEMBER CORRADINI: So INPO was the point  
10 of focus, the point of contact to TEPCO.

11 DR. KELLY: Yes.

12 MEMBER CORRADINI: Okay.

13 DR. KELLY: And for all interesting in  
14 assisting, it was -- INPO served as a clearinghouse  
15 for that.

16 Department of Energy -- our responsibility  
17 was principally on the -- well, we have our own  
18 Operations Center, but principally on the airborne  
19 monitoring system that the NNSA maintains for various  
20 nuclear disasters in the U.S.

21 And, you know, this is vital for not only  
22 informing the Embassy in Japan about potential dangers  
23 to the U.S. citizens, it was also to the military that  
24 has naval bases, air base in Japan in close proximity.  
25 There were a number of reasons why this was very

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 important for the benefit of U.S. citizens, and, at  
2 the same time, it was benefitting the government of  
3 Japan.

4 We also sent representatives from Idaho,  
5 PNNL, Sandia, to Japan. We sent additional DOE staff,  
6 and then we had the great job of having -- doing shift  
7 work, hadn't done that in a while. I got the midnight  
8 to 6:00 in the very beginning. Of course, that's when  
9 everything was happening, so it was pretty  
10 interesting. But even Dr. Lyons was doing shift work  
11 when we got the EOC stood up.

12 MEMBER BANERJEE: Who organized the badges  
13 with freshwater and things?

14 DR. KELLY: That was the Navy that --

15 MEMBER BANERJEE: Did you guys get  
16 involved in that?

17 DR. KELLY: No. See, the military was  
18 also involved, so it was -- I didn't have their  
19 activities on here, but --

20 MEMBER BANERJEE: Nobody coordinated that  
21 activity from DOE or NRC.

22 DR. KELLY: No. There's actually a  
23 disaster assistance team -- DART it's called -- and  
24 that was the overall coordinating function. But every  
25 agency has their roles and responsibilities. We kind

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 of follow down that line.

2 You know, so during the first several  
3 weeks, we did a significant number of analyses -- so  
4 that's in my office -- basically asking a lot of the  
5 "what-if" questions, because we were trying to  
6 anticipate what could go wrong next, and we wanted to  
7 be ready to inform the Ambassador about, you know, how  
8 much time do you have, and these type of questions.

9 If the spent fuel pools are dry, how much  
10 time do you have? And what would be the signatures?  
11 What would we see? And we could look at the very  
12 assets the U.S. Government has to give us early  
13 warning on -- if the accident --

14 MEMBER BANERJEE: Were you going directly  
15 to the Ambassador or to the Secretary? I mean --

16 DR. KELLY: Our team -- I have a flow  
17 diagram that shows the information flow. It's pretty  
18 complex, but I'll get there.

19 In terms of DOE offices, NE is mine,  
20 Nuclear Energy. Science was involved, NNSA.  
21 Environment Management, because it's in EM that we  
22 have the expertise at Hanford and Savannah River, and  
23 a lot of the work in the future is going to be  
24 cleaning up contaminated water. And we have built  
25 that equipment in the U.S., and we will probably be

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 involved in some role there, had all our labs,  
2 universities, consultants.

3 And then, the Secretary, for the VP  
4 disaster, had formed this group of science experts  
5 that he brought together to consult with. And so he  
6 stood that up within the first week to really help us  
7 -- the analysis team with giving us advice, questions,  
8 and then asking, you know, pertinent questions that we  
9 could then communicate to our colleagues in Japan to  
10 get information to help understand.

11 So there is kind of the information flow.  
12 And this is not a complete wiring diagram, but in the  
13 middle we stood up this triad they called this, which  
14 Steve Binkley in the Office of Science, Steve Aoki in  
15 NNSA, and myself, so we were representing the kind of  
16 three major elements of the Department.

17 And then, there was this -- in the U.S.,  
18 there was this consortium with INPO, industry, DOE,  
19 and NRC, that were having their daily phone calls, and  
20 we would have people participating on those phone  
21 calls. They, in turn, would have phone calls with the  
22 Embassy, and there were probably daily meetings with  
23 the Embassy and the government of Japan. And you can  
24 see the various organizations in Japan.

25 And, you know, TEPCO and NISA were

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 interacting with the Embassy, and of course Hosono was  
2 the overall integrator in Japan. So that was kind of  
3 a lot of back and forth.

4 But our main connection to getting  
5 information to the Embassy was through the consortium,  
6 but we also had two DOE people there all the time that  
7 we could, you know, call up and talk to.

8 MEMBER CORRADINI: So, John, I guess I  
9 don't recognize what that means. So who is the -- can  
10 you explain the integrator's role? I'm sorry. I  
11 didn't --

12 DR. KELLY: He is -- the Prime Minister  
13 appointed him as the person in charge.

14 MEMBER CORRADINI: All right. Thank you.

15 DR. KELLY: It's all the ministries in  
16 Japan that are dealing with this report to him. It's  
17 much -- this is just a really small slice of the  
18 overall picture.

19 MEMBER CORRADINI: From the standpoint of  
20 command and control, then, information advice would go  
21 back to TEPCO from that group also.

22 DR. KELLY: Yes. And they were coming up  
23 with a list of equipment that they wanted, and  
24 analysis. So it was equipment and analysis. They  
25 wanted stainless steel tanks for water storage, or

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 they wanted robots, or they wanted pumps. And so this  
2 was a way of getting the information put together as  
3 quickly as possible.

4 We had the Secretary's -- what we call  
5 X1's -- science experts. We were meeting daily with  
6 those folks. And then, we had our laboratories where  
7 we had -- we brought in some of the -- Harold  
8 McFarlane from Idaho fortunately was in Washington at  
9 the time, and so we tapped him to kind of be the  
10 coordinator of the lab group. So as we got requests  
11 for analysis, etcetera, we could give it to Harold,  
12 and he would go to the laboratory experts to get the  
13 analysis done, and then report it back the next day.  
14 So we were pretty busy that first day.

15 As I mentioned, NNSA had the lead on the  
16 radiation monitoring, and they deployed the system.  
17 They really -- I think our Emergency Response Centers  
18 were stood up sometime 11 or -- 11:00 in the morning  
19 or so on that Friday, the 11th, which was I believe  
20 nine to ten hours after it had happened, because there  
21 was already indications that they had lost cooling.

22 I think they deployed in the afternoon.  
23 Because of the day difference, they arrived very early  
24 on the 13th and were flying their first missions on  
25 the 13th, which already was after I think Unit 1 had

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 failed.

2 And then, at the same time, the NARAC  
3 group at Lawrence Livermore, they have the plume  
4 modeling, and so they were calculating hypothetical  
5 source terms, looking at plumes to the U.S., plumes on  
6 Japan, and all this was informing EPA in the U.S. and  
7 the Embassy in Tokyo.

8 MEMBER CORRADINI: Was that group also  
9 informing NRC?

10 DR. KELLY: They were working together, so  
11 NRC provided the source term.

12 MEMBER CORRADINI: Oh, NRC provided the  
13 source term.

14 DR. KELLY: NRC provided the source term,  
15 and then that was put in the NARAC, and there was lots  
16 of interactions with Dr. Holderin at the White House  
17 on "what-if" scenarios. So that was pretty  
18 interesting.

19 Very nice, you know, instruments. They  
20 did do these flyovers and would -- maybe you've seen  
21 these photos, but they've got lots of data now on  
22 radiological. They do have gamma specs, so that they  
23 can -- they can pick out the cesium-137 or iodine-131,  
24 so we have some isotopic information as well. And  
25 then, later they did ground sampling. They set up

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 various monitoring there.

2 And, basically, they are identifying hot  
3 zones, and we saw yesterday that there is this kind of  
4 plume up to the north and west. And I don't know if  
5 it's fortuitous or what, but the plume modeler, if you  
6 plug in the weather and sort of a constant release,  
7 you get a pattern that kind of looks like this. So  
8 that -- it's not exact, but at least it gives you an  
9 indication of -- and it's a pretty complicated -- it's  
10 probably mostly due to rain, rain at the right time,  
11 led to this disposition, rather than in the atmosphere  
12 and a lot more dispersion.

13 MEMBER CORRADINI: And so these are --  
14 what you are showing here are measurements at a  
15 particular point in time.

16 DR. KELLY: Yes. These are dated -- this  
17 is April 5th, where they were -- I think the red dot  
18 at the bottom is a plant, so then they have a  
19 measurement going out. They went over sea, you know,  
20 so they did both over the land, over the sea -- a  
21 pretty substantial difference. They were running two  
22 or three missions a day, so they've run nearly 100  
23 missions now I think they told us.

24 MEMBER STETKAR: John, was the Japanese  
25 government also doing flyovers, taking their own

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 measurements? And were those --

2 DR. KELLY: Apparently, they didn't have  
3 the radiation -- they did not have the radiation  
4 monitoring capability.

5 MEMBER STETKAR: Oh, they did not. Okay.

6 DR. KELLY: They did not. They had  
7 thermal imaging capability, and so that was one way  
8 they were trying to measure the temperature of the  
9 spent fuel pools.

10 MEMBER STETKAR: But in terms of -- NNSA  
11 was providing --

12 DR. KELLY: Right.

13 MEMBER STETKAR: -- this is the only  
14 source of this information.

15 DR. KELLY: And, you know, we -- every  
16 time you do this, and especially internationally, it  
17 takes a little while to get the protocols all quite  
18 right. So initially we were having -- we had the  
19 information. We were providing it to our Embassy. We  
20 informed the Japanese that we had this data. They had  
21 actually asked us to do this. And then, we worked out  
22 a way so that we could share it. So it ended up being  
23 posted daily on the DOE website.

24 CHAIRMAN ABDEL-KHALIK: You indicated  
25 earlier that the NRC provided the source term for

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Livermore --

2 DR. KELLY: Right.

3 CHAIRMAN ABDEL-KHALIK: -- to do these  
4 plume model calculations. Was there any attempt by  
5 the labs to sort of develop a source term estimate  
6 for it, an independent --

7 DR. KELLY: They went -- so they have a  
8 code called RASCAL, which I think has the NUREG-1465  
9 source term in it and various modeling. So that was  
10 one piece that was used initially. Then, they went to  
11 Sandia and asked for, you know, more scenario -- as we  
12 learned information, you know, what would this  
13 scenario actually give you in terms of fission product  
14 release. So we sort of had a best case/worst case --  
15 what would they call it -- it was best estimate  
16 bounding source term or something.

17 CHAIRMAN ABDEL-KHALIK: So that was  
18 developed by Sandia.

19 DR. KELLY: And then, that was put into  
20 NARAC. I think we learned -- there was some learning  
21 there that NARAC really hadn't been set up for that  
22 kind of interface, and so it was kind of cumbersome  
23 and took -- and it was difficult to do quick  
24 turnaround, because that had not been put together,  
25 that interface. With RASCAL, I think it was already

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 in place.

2 So in terms of our office, we formed  
3 something called the Nuclear Energy Response Team. We  
4 spent a lot of our time assessing and clarifying  
5 information for our leadership, because we're seeing  
6 I think a lot of erroneous press reports, and there  
7 was a lot of concern about what was going on. And so  
8 we were, you know, looking at that trying to  
9 rationalize it.

10 We took the approach that we needed to  
11 keep an open mind, that we needed to be able to  
12 explain hopefully all of the data, or the majority of  
13 the data observations that we were seeing, before you  
14 had a theory, so there were multiple theories for the  
15 same data sets.

16 And then, we tried to assign probability  
17 such as this is likely, not very likely, you know, to  
18 that, and then that helped I think put it in  
19 perspective that the data could mean something else.  
20 And so we were always trying to envision what could  
21 the data actually mean, and the horror stories were  
22 kind of coming out.

23 We supplied watch standards to people on  
24 the shift work, and then we organized our response to  
25 the questions from the White House, Embassy, and our

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 leadership.

2 In terms of the way we organized, it was  
3 really around these four or -- sorry, five main areas.  
4 First, work associated with how to stabilize the  
5 reactors and spent fuel pools. That was important to  
6 get the stability. We are also concerned that you had  
7 to do things to get the radiation levels down, so that  
8 the workers could go in and do things, because if the  
9 radiation levels were high, they were still not in a  
10 very good state.

11 Because of the high probability of  
12 recurring earthquakes, you needed to install some  
13 remote operations capability. Over time, they were  
14 able to get remote controlled vehicles that could  
15 spray water into the spent fuel pools, for instance.

16 And then, you know, even though the  
17 containments may be leaking, we still need to be  
18 concerned about their long-term integrity. You know,  
19 complete failures of the containment could make this  
20 accident become even worse, even today.

21 And then, if the situation really becomes  
22 very worse, we need to plan for that situation,  
23 something like Chernobyl sarcophagus type of thing.  
24 If the situation were to worsen, this is how we'd  
25 frame the problem in the first couple of weeks.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 CHAIRMAN ABDEL-KHALIK: So how would you  
2 inform that last box?

3 DR. KELLY: I'll get to what we did on  
4 each of these.

5 So the way we did it is we identified what  
6 the potential threats were and what the -- you know,  
7 what the mitigation strategies would be. So I don't  
8 want to go through all of these in detail, but, you  
9 know, we are worried still today about potential core  
10 melting to the vessel and backing the containment.  
11 That cannot be ruled out until you can manage the  
12 decay heat.

13 Lots of concern about hydrogen explosion  
14 and containment, because we didn't know -- we were  
15 pretty sure there was still probably hydrogen in the  
16 containment, but we didn't know how much oxygen was in  
17 the containment. And so if you started various  
18 mechanisms that would begin to condense the steam in  
19 the containment, and oxygen could come -- the  
20 principal source of oxygen was the water we were  
21 putting in, we thought.

22 So we put all of this water -- seawater or  
23 even the freshwater had a certain ppm. And if you put  
24 enough of it in, you're going to get oxygen  
25 concentrations that could take you into the flammable

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 regime.

2 Spent fuel pool fires, another earthquake,  
3 corrosion of the intact fuel, eventually there is  
4 zirconium cladding, which would lead them to another  
5 release of -- the gap release for those, so those are  
6 all things that could happen.

7 But basically, the idea -- you know, what  
8 we wanted -- needed to do was to help inform them  
9 about getting more water into it. We eventually -- I  
10 think we communicated to them the concern about  
11 oxygen, so they ended up treating the water with  
12 hydrazine to take the oxygen out before they put it  
13 into the system, to try to mitigate that hydrogen  
14 threat downstream. But, you know, these were the  
15 kinds of things that we thought would be important.

16 In terms of analysis, as I mentioned, we  
17 were doing estimates on oxygen. And I'll talk a  
18 little bit more about the next one, which is long-term  
19 decay heat removal for a couple of slides. We did a  
20 lot of talking and thinking about new sensors. I  
21 think that was talked about earlier today -- just  
22 simple things, water level, radiation, you know, these  
23 type of things. You know, whether -- we looked to see  
24 if we, you know, have anything available to send over,  
25 but that looked impractical.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           We then also looked at, could you restore  
2 failed sensors? And these water levels are based on  
3 some pressure differential. We think that if you  
4 could blow air through it, you might be able to clear  
5 the aerosols that have probably plugged it when the  
6 core -- when the water level went down. That's our  
7 theory at least. And, you know, you may be able to  
8 regain that kind of instrument.

9           Lots of other analysis about mal  
10 progression, recriticality, steam explosion potential,  
11 boil-down rates, the effect of salt -- and that's  
12 still one that we don't fully understand -- mass and  
13 energy balance, air ingress, all of these things that  
14 were related to potential threats.

15           Now, this kind of shows schematically all  
16 of the analysis that we did. It is dozens of  
17 different kind of calculations that were done. Some  
18 of these have reached the point where they are written  
19 up and we can publicly release them. Not all of them  
20 will get to that point, but my goal was to, you know,  
21 as we move through this, bring these analyses, as many  
22 as we can, to some set of closure, so that we will  
23 inform people in the future about what could happen,  
24 you know, in this kind of accident, and really gain  
25 some insights as we move into the lessons learned

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 phase.

2 So I think we need to -- we are paying  
3 particular attention to documenting what we did, so we  
4 don't lose all this valuable information that --

5 CHAIRMAN ABDEL-KHALIK: And the intent is  
6 for all of these documents to be open to the public?

7 DR. KELLY: I think so. I mean, we are  
8 trying to resolve any issues of proprietary data with  
9 TEPCO. That will get resolved, I believe, as they are  
10 moving toward releasing more and more of their data.  
11 And there may be some other -- I don't think there  
12 will be any other issues, but we will just see. That  
13 would be the only one that I would think we would be  
14 concerned about.

15 One of the things, though, that Japan is  
16 conducting an investigation right now on the accident,  
17 and we don't want to do anything to prejudice their  
18 decisionmaking. So things that we have done are going  
19 to lag -- our release of information will lag anything  
20 that they do.

21 CHAIRMAN ABDEL-KHALIK: Okay.

22 DR. KELLY: One thing that we paid  
23 particular attention to -- and it's still a subject  
24 for discussion -- is, how do you cool the reactor?  
25 It's bottled -- you know, the core is bottled up, and

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 there's no pathway outside of the containment to get  
2 the heat out. So they are basically stuck with a  
3 feed-and-bleed type of cooling system, which isn't  
4 good for a number of reasons.

5 One is it's difficult to control it  
6 exactly. They don't have a lot of instruments to  
7 understand how much water to put in. And at the same  
8 time, when they -- when they bleed, they are releasing  
9 radioactivity to the environment.

10 MEMBER CORRADINI: And where is the bleed  
11 occurring? Is it different for each different unit?

12 DR. KELLY: I think it's coming out from  
13 head seals at this point, so --

14 MEMBER CORRADINI: The head --

15 DR. KELLY: Either the -- yes, the drywell  
16 seal.

17 MEMBER POWERS: It's a silicon rubber  
18 seal. The Japanese have actually done experiments on  
19 it and says that it -- it really cannot stand a  
20 prolonged exposure to elevated temperatures and  
21 radiation loads for --

22 MEMBER CORRADINI: So this is a gaseous  
23 leakage through the head seals.

24 DR. KELLY: Yes. Yes, I think the steam  
25 will find a way to get out, and so it's not -- I've

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 been informed that it's not deliberate venting, that  
2 it's --

3 MEMBER CORRADINI: Okay.

4 DR. KELLY: -- just --

5 MEMBER STETKAR: They're not venting  
6 through the drywell head vents or anything like that?

7 DR. KELLY: Not to my knowledge.

8 Now, this is recent data from a few days  
9 ago of the radiation levels, which are showing ranges  
10 of one and a half to four and a half R per hour, and  
11 this is on the -- I think the lowest level of the  
12 reactor building. And it turns out that this is the  
13 level where the RHR pumps are located.

14 Now, we have information that there was  
15 water in this area, so the RHR pumps may be  
16 inoperative. There's a high rad level, so it will be  
17 difficult to go in there and do things. And the other  
18 thing is if you turned them on, you would be pumping  
19 contaminated water out of the containment into the --  
20 what is left of the reactor building. That is where  
21 the heat exchanger is. That's probably not set up.

22 And we are -- we had Oak Ridge look at,  
23 how long would the pumps work, and it would be a very  
24 short period of time before the salty fission product  
25 stuff would fail the seals and the pumps wouldn't work

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 anyway. So the recommendation ended up being don't  
2 try to start the pumps, because they are not going to  
3 be effective, and it could make the situation worse,  
4 but --

5 CHAIRMAN ABDEL-KHALIK: Now, back to the  
6 feed-and-bleed situation, are they throttling the  
7 feed, so that they -- the bleed is actually just  
8 steam?

9 DR. KELLY: Yes.

10 CHAIRMAN ABDEL-KHALIK: And the motivation  
11 for that, rather than increasing the feed rate, is  
12 just to limit --

13 DR. KELLY: There was some --

14 CHAIRMAN ABDEL-KHALIK: -- the release?

15 DR. KELLY: There has been a discussion  
16 about trying to fill the vessel up and these type of  
17 things. And they're worried that there's -- the  
18 vessel is leaking, and they would not be able to fill  
19 it. But without water measure, water level  
20 measurements, it is hard to tell really what is going  
21 on.

22 So we started looking at -- well, if you  
23 have to live with feed-and-bleed, how long is it going  
24 to take before you could stop feed-and-bleed? The  
25 problem is you have this very thick biological shield

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 outside of the drywell area, and so our -- this work  
2 was done at Argonne, started looking at the -- you  
3 know, what is the rate-limiting heat transfer step in  
4 this process. And it's through that wall, and you  
5 don't -- it's something like 250 kilowatts, and they  
6 are still in the megawatt range.

7 So you run this out, and for Unit 1, which  
8 is the lowest power, it is about a year before you  
9 could stop the feed-and-bleed, and it's even longer  
10 for the other units. So this is, you know, a very  
11 long period of time to have this kind of situation,  
12 which in one of the reasons in TEPCO's road map they  
13 are looking at adding a heat exchanger or trying to do  
14 some other things to begin to get a cooling system in  
15 place.

16 CHAIRMAN ABDEL-KHALIK: And this is based  
17 on flooding of the drywell? I mean, the --

18 DR. KELLY: The previous one?

19 CHAIRMAN ABDEL-KHALIK: Yes, that says --

20 DR. KELLY: This is a convection  
21 conduction.

22 CHAIRMAN ABDEL-KHALIK: This is just  
23 convection and --

24 DR. KELLY: Yes, right. And then, what --  
25 could you get water in -- onto the drywell, and by

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 cooling the drywell improve the heat transfer. This  
2 would -- if you could do it, this would be good. At  
3 least in terms of time, it would reduce that time down  
4 to nine months. But then, you know, there is a lot of  
5 issues with this. One is that the shield plugs are  
6 there, and we are pretty sure the cranes are  
7 inoperable. So getting the shield plugs at the -- the  
8 shield plugs being that --

9 DR. KELLY: These big like multiple  
10 concrete structures that would need to be lifted with  
11 a crane, which might be difficult to take off.

12 We looked at drilling technology to see if  
13 you could use special drilling technology to drill  
14 through those rapidly and not drill through the  
15 drywell at the same time, and come up with some ideas.  
16 So you'd drill two holes, one where you would inject  
17 water, and one for the steam to come out.

18 Those options are still being evaluated,  
19 but we basically did the analysis, wrote it up, sent  
20 it to Japan, and it's under consideration right now.

21 On the spent fuel pool 4, we certainly  
22 spent a lot of time looking at this, just because it's  
23 outside of containment and a huge source term, if it  
24 were to --

25 MEMBER CORRADINI: Let me go back just --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I guess you don't have to go back in the slides, but  
2 just -- may I go back? So, then, the ultimate  
3 objective is to bring it to cold shutdown, and a  
4 number of -- what I'm hearing you say is a number of  
5 options are still under evaluation. Not one option  
6 has been chosen to bring it to -- to get into a closed  
7 loop cooling of other -- whether it be outside  
8 containment or internal. Just a number of options are  
9 still on the table.

10 DR. KELLY: Yes. And I think the  
11 engineering challenges are immense. So they have  
12 begun, as you saw, to go in and begin to do the  
13 radiological survey, because if you're going to do  
14 anything else you're going to have to send in people.  
15 So I think the plan would be to do those surveys,  
16 understand the contamination levels, and then  
17 decontaminate, so people could work in there, and  
18 then, you know, maybe do the engineering.

19 So I think this is a long-term process,  
20 but I think what they wanted to know was, well, how  
21 long do we have to wait? It's a long time. So maybe  
22 it makes sense to try to go -- you know, have a plan  
23 of attack to go in, clean up, and, you know, engineer  
24 some systems for the heat removal.

25 So on spent fuel pool 4, so the explosion

1 occurred in the morning about 90 hours after the  
2 earthquake. We think it's about that time. They --  
3 we had some discussion yesterday about it. It was --  
4 I think it was the beginning of the shift, and they --  
5 somebody noted in the log that there had been this  
6 explosion.

7 Now, we think this -- if it had the  
8 explosion that -- and the effects of it, somebody  
9 would have heard it, I would have thought.

10 MEMBER ARMIJO: Hard to miss, yes.

11 DR. KELLY: But anyway --

12 MEMBER CORRADINI: But it's not clear that  
13 it wasn't coincidence with other things that could  
14 have --

15 DR. KELLY: Yes.

16 MEMBER CORRADINI: -- that could have  
17 masked that one versus something else.

18 DR. KELLY: Yes. I'll talk about what --  
19 you know, what the likely suspects are here. So it  
20 was originally attributed to hydrogen, but, you know,  
21 it would not be possible to definitely conclude this.  
22 And so the original theory was that it was -- water  
23 had boiled down, zirconium had overheated, you had  
24 hydrogen and, you know, but there was -- you know,  
25 that theory didn't fit for a lot of reasons.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           One is they had radiological levels or  
2 readings, and, you know, above the pool. And so we  
3 had Oak Ridge run shielding calculations, and you  
4 could quickly see that, you know, the numbers didn't  
5 jive. You must have had water there to get such low  
6 levels of radiation at the levels they were at. So if  
7 it had boiled down, you would have saw much higher  
8 radiation levels.

9           The fission product assays that were being  
10 done, you know, the ratios of iodine and cesium  
11 weren't right. There was -- there should have been  
12 very little iodine, so you would have not -- you can  
13 do this forensics work, but basically it didn't look  
14 right from the measurements that were coming out. It  
15 looked like fission product release from fuel that had  
16 been operated recently.

17           MEMBER STETKAR: John, in those -- the  
18 radiological measurements, there was reasonably high  
19 confidence that they were reliable above the pool?

20           DR. KELLY: Yes, but we -- yes. Well, it  
21 was like a -- it would have been two or three orders  
22 of magnitude higher had there been no water.

23           MEMBER STETKAR: Okay.

24           DR. KELLY: So, yes, I think we were on  
25 good ground there.

1           And zirconium fire, once started, is  
2 difficult to put out. So you would have expected to  
3 see this linger for days perhaps. At least that's the  
4 testing at Sandia -- indicates it just won't go out on  
5 its own. So there was a lot of I think conflict on  
6 that.

7           And then, furthermore, the calculations we  
8 had indicated it would be 10 days to boil down. And  
9 so unless you had a major rupture at the gate, or a  
10 slosh, big slosh -- again, the slosh was about a meter  
11 is what, you know, we think it might have been. It  
12 was hard to conclude that.

13           MEMBER CORRADINI: So if I might just ask,  
14 so you said the Japanese had thermal measurements,  
15 mapping. So did they see any unusual heatup of this  
16 pool?

17           DR. KELLY: No. They were reading about  
18 80-some degrees Centigrade. So it was -- the pool was  
19 warm.

20           MEMBER CORRADINI: But not overheated.

21           DR. KELLY: Not at saturation. Now -- we  
22 now know that there's lots of debris, and so they may  
23 have been -- their thermal imaging may have been  
24 reading debris that could have been colder. So the  
25 pool could have been closer to saturation.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           So the other theory is that there maybe  
2 was flammable materials in Unit 4, because they had  
3 just begun work to remove the shroud, and so there may  
4 have been equipment that had oil for cooling oil, that  
5 as the buildings heated up or something the oil leaked  
6 and, you know, then it could vaporize and maybe you'd  
7 get a pocket of volatile oil, something like that.  
8 That was one thought.

9           Maybe they had acetylene there. It turns  
10 out we -- they have ruled out acetylene, but it would  
11 have taken about two bottles of acetylene going off to  
12 explain the damage that we saw. But that has been  
13 ruled out, so I'm not -- on that.

14           And third was that perhaps the hydrogen  
15 was actually transferred from Unit 3, and this is now  
16 believed to be I think the best answer. I think there  
17 was -- we discounted radiolysis as a source, and maybe  
18 there was some -- a multi-dimensional effect in the  
19 pool that led to dryout of a section of it. It's kind  
20 of hard to envision that, but because of the channel  
21 boxes each -- you know, there is no crossflow between  
22 the assemblies in the pool, so you could -- if  
23 something was going on in one, others may not be  
24 affected by it.

25           But we did have -- you know, we had from

1 TEPCO the full layout of the spent fuel pool, every  
2 assembly, its date, its burnup, etcetera, so we were  
3 able to put together a very good model. And, you  
4 know, using that, we then, you know, did the  
5 calculations to -- for various initial pool heights  
6 and how long it would take.

7           And it was very difficult to -- unless you  
8 were at the bottom of the -- I think the refueling  
9 gate there, to start with, that you actually could get  
10 to the time when hydrogen production from the spent  
11 fuel burning could lead to that explosion. The time  
12 would -- the water would have had to have been  
13 extremely low at the beginning.

14           So the evaporation blowoff -- as I said,  
15 we were calculating about 10 days, and then you  
16 wouldn't expect any hydrogen for about 12 to 14 days.  
17 And so the explosion at four days, there had to be  
18 some leakage -- massive leakage from the pool, and  
19 then those -- you know, the numbers, four to five  
20 days, pool liner, etcetera.

21           Of course, we now have video that shows  
22 there was lots of water in there, so --

23           (Laughter.)

24           -- all this was overcome by events, so --

25           MEMBER ARMIJO: But also, the -- you know,

1 it's not just that there's lots of water in there, but  
2 if you look you can see the fuel handles, you can  
3 see --

4 DR. KELLY: Yes.

5 MEMBER ARMIJO: -- tops of vent plugs.

6 DR. KELLY: Right.

7 MEMBER ARMIJO: That thing was never on  
8 fire.

9 DR. KELLY: So we had speculated about  
10 this vent, because we could see from aerial  
11 photographs that there is one --there is fewer stacks  
12 than there are plants, and that's because they connect  
13 through the stacks. And so we went back and looked,  
14 and it -- after the earthquake, these vent lines were  
15 still intact. And even after the tsunami they were  
16 still intact.

17 So we speculated that the hydrogen buildup  
18 in Unit 3 was massive, and, you know, some of it was  
19 heading out the stack and went through -- through the  
20 stack back into Unit 4. And then, some hours later  
21 either -- maybe it was a steam hydrogen mix, steam  
22 condensed, and it went -- we don't know what happened  
23 next, but at least that's the thinking right now is  
24 the likely source.

25 I think this is the more likely. There

1 still could be -- you know, there still could be  
2 combustible material as the source, but that's viewed  
3 to be less likely now.

4 MEMBER ARMIJO: But, John, why wouldn't  
5 that hydrogen just go right up the stack? I mean,  
6 that's what it is there for. And then, to go into  
7 Unit 4, it would have to go past a whole number of  
8 valves.

9 DR. KELLY: Yes. We're going to have to  
10 get the details on that and look at that.

11 So the next section had to do with keeping  
12 the radiation levels low. Again, I mentioned that if  
13 the levels are too high, the workers may be evacuated.  
14 That happened a couple of times.

15 This is still a problem area we see that,  
16 you know, basically isolating and stopping whatever  
17 reactor pressure vessel leak -- that has not been done  
18 yet. They have begun the cleanup of contaminated  
19 water by first pumping it out into various storage  
20 tanks, and then they are envisioning building a  
21 cleanup system. And I'll talk a little bit more about  
22 what we think is going on there.

23 They definitely need to get more shielding  
24 there, because it's still going to be hot for people  
25 to work. There is a need to get more data and get the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 additional sensors and redundant -- you know, pH is  
2 important to know in a lot of these chemical  
3 processes. And, you know, we have seen -- I don't  
4 think we have seen any data on that yet.

5 CHAIRMAN ABDEL-KHALIK: Do we have any  
6 idea about extent of salt deposition within the vessel  
7 and how that may impact these mitigation activities?

8 DR. KELLY: I think I have a slide on  
9 corrosion and salt. Yes, I will deal -- I will talk  
10 about that --

11 CHAIRMAN ABDEL-KHALIK: Okay.

12 DR. KELLY: -- because I -- we aren't  
13 worried about that.

14 So these are -- here is the set of  
15 technical studies that we did related to this about  
16 getting the radiation levels down.

17 We had the folks at EM put together a  
18 quick report on waste management treatment and  
19 storage. And this is where the -- so if you extract  
20 the contaminated water, and it has salt in it, and  
21 they worry about the efficiency of the cesium  
22 extraction, there's the presence of salt. And it's  
23 degraded, but they have -- I talked to them yesterday.

24 They thought that their system would still  
25 be effective, because they had lots of salt in the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Hanford K basin residue. So they are pretty sure that  
2 in terms of extracting -- you know, separating out the  
3 radioactive -- at least the cesium out of the water,  
4 that the systems they have will still be effective for  
5 that. And so we basically put together our concepts  
6 of this and transmitted that to Japan.

7 MEMBER CORRADINI: So the technique is  
8 more what would have occurred in terms of Hanford  
9 cleanup than what was done for TMI because of the  
10 presence of salt or not -- or just because it is known  
11 to be more effective in terms of what was done at  
12 Hanford?

13 DR. KELLY: Looking at the situation, I  
14 would say it's, you know, similar to Hanford, although  
15 I think some of this was done at TMI. I'm not an  
16 expert on that.

17 But basically, what you needed to do was  
18 to, you know, get to -- you need to get the water to  
19 some place safer so that it reduces the radiation  
20 levels in the turbine building, etcetera, and then set  
21 up a system for treatment and disposal.

22 So they are hopeful that they can clean up  
23 the water to the point that they can then use it as  
24 cooling water for the reactor, so that they get at  
25 least a partially closed system.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           Let's see, so there are systems that are  
2 skid-mountable and are available dealing with all  
3 kinds of things. There is oil in the water, so that  
4 was one thing that, you know, was another system that  
5 needed to be added to this. And there's lots of  
6 expertise in the U.S., so this is one where I see a  
7 continuing dialogue with TEPCO and the government of  
8 Japan on treating and cleaning up the water.

9           In terms of establishing remote  
10 capabilities, again, I mention that if workers have to  
11 evacuate things could get worse. So they needed to be  
12 thinking about installing various remote control  
13 capability, robotics, spiralis systems, etcetera.

14           So we did end up sending some robotic  
15 equipment with instruments on it. NNSA set up a set  
16 of radiation monitors around the plant, in a  
17 circumference around it, so that it -- they started to  
18 have more release. We'd get more data more quickly.  
19 Those were tied into a GPS system and through the  
20 internet. Data was being relayed back to Washington.  
21 So a number of those things were actually put in place  
22 and deployed very quickly.

23           The other area of big interest was  
24 maintaining the integrity of the containment, whether  
25 it be due to corrosion or another -- a hydrogen

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 explosion, melt-through, overpressure, failure of  
2 these silicon rubber head seals.

3 The key here we thought was to -- you are  
4 going to have to design a system at this point to  
5 extract coolant from the primary -- reactor primary  
6 vessel, treat it, either store it, and then recycle it  
7 in some kind of concept like that.

8 So, again, we conducted a number of  
9 studies looking at oxygen. Again, I mentioned that  
10 previously. We did start looking at the corrosion of  
11 the reactor pressure vessel and trying to make  
12 estimates of how long it would take for the reactor  
13 vessel to be corroded through by the saltwater and  
14 salt, because we're pretty sure there is significant  
15 quantities of salt that have actually precipitated out  
16 of the seawater.

17 And then, we developed a different  
18 conceptual model for removing reactor pressure vessel  
19 water, so the previous system I talked about was for  
20 turbine building, things in the sumps of reactor  
21 building that had leaked, it has already leaked out.

22 This system was to look at, how could you  
23 take one of the existing penetrations into the reactor  
24 pressure vessel and use that to develop a system to  
25 treat the water?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MEMBER STETKAR: John, just before you get  
2 too far into the corrosion stuff -- I was just  
3 thinking, since several of these systems will need to  
4 remain operable for months, if not longer, have the  
5 various organizations thought about the possibility of  
6 not necessarily a magnitude nine earthquake --

7 DR. KELLY: Right.

8 MEMBER STETKAR: -- but, you know, pick a  
9 magnitude six earthquake, for example, occurring near  
10 the site.

11 DR. KELLY: Right.

12 MEMBER STETKAR: Are you thinking about  
13 pardoning the equipment at all, or have those  
14 thoughts --

15 DR. KELLY: We have recommended --

16 MEMBER STETKAR: The good news is you have  
17 longer time, because you are much lower --

18 DR. KELLY: We have certainly  
19 recommended --

20 MEMBER STETKAR: In terms of releases and  
21 things like that, it could be --

22 DR. KELLY: We have recommended that, and  
23 we understand that they do have alternate power and  
24 heat sink capability now.

25 MEMBER STETKAR: Okay.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. KELLY: We also have set up some  
2 ARCOFF analysis to try to understand how things would  
3 progress if you had a fault. So we're trying to mock-  
4 up what it is just to -- it's more to find out how  
5 much time you have to --

6 MEMBER STETKAR: I mean, that's the key.

7 DR. KELLY: -- time to recovery. It's not  
8 predictive in that sense, but it's to get some time  
9 estimates for when it can go.

10 MEMBER STETKAR: Okay. Thanks.

11 DR. KELLY: Again, this is for the  
12 recovery phase. There is another whole set of  
13 calculations that were done, and, you know, we --  
14 yesterday we went through some of these, and it took  
15 a whole day. So I would suspect, you know, we could  
16 easily put together a multi-day briefing on what --  
17 you know, all the work that DOE collectively did.  
18 It's quite interesting.

19 MEMBER CORRADINI: Can I go back to John's  
20 question? Maybe I'm -- so I'm sure there were a bunch  
21 of aftershocks. So you know that -- how many  
22 aftershocks were there above some magnitude? So to  
23 give a feeling -- I would assume a bunch.

24 DR. KELLY: What was the number, a dozen?

25 MEMBER REMPE: There were 500 within the

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 first week. I have seen -- I have a viewgraph that  
2 has like maybe 10 of them based on USGS that were  
3 above six that were from the day of the event through  
4 -- you know, but it -- I can't give you exact numbers  
5 here. I haven't counted it.

6 DR. KELLY: All right. So I think that's  
7 -- you know, one of the reasons they are -- because of  
8 the explosion in Unit 4, they are I think worried  
9 about the integrity of the building, and so that is  
10 why they are trying to increase its seismic  
11 capability.

12 So a little bit about corrosion. Our  
13 understanding is that they may use this A533B steel,  
14 kind of an industry standard. I'm not an expert in  
15 this area, but that's what the folks at Oak Ridge --  
16 I believe. They may need to confirm that.

17 Very little data on this class of steels  
18 and salts or concentrated salt solution. And it's not  
19 a typical choice for that type of application.

20 I probably had not really thought about  
21 salt and water into -- in the reactors before,  
22 although it had happened at Millstone in '72. They  
23 had a condenser failure, and they got some salt in and  
24 it destroyed a lot of their power detectors, you know,  
25 power monitors, and they saw some stress corrosion

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 cracking, things like that. So they had -- that was  
2 '72, I think there was a report on that, and --

3 MEMBER CORRADINI: The Navy has no  
4 experience --

5 DR. KELLY: Well --

6 MEMBER CORRADINI: The Navy experience  
7 doesn't fit into this mold I guess.

8 DR. KELLY: I think they use cath anode or  
9 something. You know, they use systems to --

10 MEMBER ARMIJO: Cathodic protection and  
11 all of that.

12 DR. KELLY: Cathodic protection is the  
13 word.

14 MEMBER ARMIJO: Are they deaerating the  
15 water that is -- the contact?

16 DR. KELLY: They are deaerating the water  
17 now.

18 MEMBER ARMIJO: Nitrogen sparging or --

19 DR. KELLY: They are using hydrazine.

20 MEMBER ARMIJO: Hydrazine.

21 MEMBER SHACK: It's much more effective,  
22 even if it leaked hydrazine.

23 MEMBER ARMIJO: Well, maybe.

24 DR. KELLY: But here is the information on  
25 Millstone. It was September of '72 and --

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1                   MEMBER BANERJEE: Got a lot of hydrogen  
2 anyway.

3                   DR. KELLY: So seawater was introduced  
4 into full-flow demineralizers, so they got this  
5 indication of high conductivity. And, anyway, they  
6 started just seeing all of their local power range  
7 monitors fail, and so this -- then, they scrambled,  
8 and, you know, found out what was happening.

9                   Stress corrosion -- they did a full  
10 inspection. Stress corrosion cracking was observed in  
11 other reactor components and considered to be  
12 superficial. And then, GE followed up with additional  
13 tests, found it to be more severe than the actual  
14 accident.

15                   So we expect that the stainless steel  
16 components will be cracking in this salt solution.  
17 Now, you know, if it's the liner and the vessel head,  
18 you still have a lot of material before you would  
19 corrode through that, so you may have time. But a lot  
20 of -- so many penetrations in the bottom of the BWR  
21 that it's hard to say that you would -- we would not  
22 get some cracking leading to potential penetration.

23                   MEMBER ARMIJO: That's weld overlay. It's  
24 duplex microstructure, very resistant to a lot of this  
25 cracking. But, you know --

1                   MEMBER SHACK: This is chloride cracking,  
2                   though, Sam. This isn't our old favorite.

3                   MEMBER ARMIJO: Okay. So it may have  
4                   some.

5                   DR. KELLY: So we actually don't know for  
6                   sure, so we -- we are actually putting together a test  
7                   matrix to try to think about what testing we could do  
8                   to get our arms -- because we don't know -- we think  
9                   it's -- I think the data is here, corrosion rates for  
10                  carbon steel, and there was some limited data on low  
11                  allow carbon steel. And that was mils per year or a  
12                  few mils per year, a hundred if there was sulfuric  
13                  acid present. If it's just eating through the head,  
14                  that's a long time.

15                  MEMBER CORRADINI: It's more the  
16                  connections, the weldments.

17                  DR. KELLY: Yes. It's probably the  
18                  connections and weldments. So we really don't know  
19                  how long, and so this is still a concern of getting  
20                  more massive failure of the lower head, in which case,  
21                  you know, having the containment flooded up if it's  
22                  capable would help mitigate that.

23                  MEMBER ARMIJO: Is there an assessment of  
24                  how concentrated the water is in those vessels, what  
25                  the saltwater concentration -- salt concentration is?

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MEMBER POWERS: At least .5 molar.

2 (Laughter.)

3 DR. KELLY: We think it's --

4 MEMBER POWERS: Less than six and more  
5 than .5.

6 DR. KELLY: So seawater is about three  
7 percent salt, and the solubility is about 30 percent.

8 And so when you boil, about 10 -- 10 RPVs  
9 full of water out, which they would have had to do,  
10 you will get -- the salt will stay and the steam will  
11 leave, and so you will easily get up to the  
12 precipitation limit. So the estimates were somewhere  
13 around 100 to 200 tons of salt, which could  
14 significantly fill the lower head.

15 In terms of the area's emergency response,  
16 there wasn't that much done here except we did some  
17 work on developing bounding source terms, really to  
18 inform -- at this point, it's more to inform  
19 evacuation procedures rather than thinking about  
20 entombing the reactor. So it was, you know, do you  
21 shelter, do you evacuate, and that was a function of,  
22 you know, what bounding source term would -- could  
23 still be evolved as the accident progresses?

24 So we have the initial one, but there is  
25 -- now out and largely deposited, but if you had

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 another one, what could happen? So this was the --  
2 you know, a second phase of emergency response if  
3 something happened again.

4 MEMBER RYAN: Can you describe that in  
5 terms of fraction of intact material in the reactors  
6 that would be engaged in that --

7 DR. KELLY: Yes. So what we were looking  
8 at was, you know, where is the cesium, where is the  
9 iodine now? How much has already been release? How  
10 much is there? And we're using MELCORE to do that  
11 partitioning.

12 You know, the code says most of both the  
13 cesium and iodine are still in the water. Less than  
14 one percent has actually been released to the  
15 atmosphere, and that's -- so they had about 500,000  
16 curies, and that number is somewhat consistent with  
17 the radiological measurements. And we haven't pulled  
18 all of that together to get the coherent picture, but  
19 that number, like one percent-ish or so, of cesium and  
20 iodine release is not inconsistent with the --

21 MEMBER RYAN: Well, I mean, that's --  
22 you've got source term still in the plants and on the  
23 ground. They local.

24 DR. KELLY: Right. And then, you know, we  
25 didn't see the strontium yet, so we're not -- we don't

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 think the temperatures were hot long, or it's in  
2 solution as well I guess.

3 MEMBER BANERJEE: Did you see any  
4 ruthenium?

5 DR. KELLY: No. I don't --

6 MEMBER POWERS: You are never going to see  
7 any ruthenium in these kinds of plants.

8 DR. KELLY: Now, they did see  
9 plutonium-238. They are still -- we are still not  
10 sure what --

11 MEMBER POWERS: You will see plutonium --

12 DR. KELLY: Yes, Unit 3 was running on  
13 mixed oxide.

14 MEMBER POWERS: John, you will see  
15 plutonium in Japan anywhere you go. And you will see  
16 plutonium in Colorado anywhere you go.

17 DR. KELLY: Yes. But 238 would be odd to  
18 see.

19 MEMBER RYAN: Did they have any gauges  
20 or --

21 MEMBER POWERS: No, I don't think  
22 that's --

23 MEMBER RYAN: -- because it might have a  
24 seal, 238 seal.

25 DR. KELLY: Yes, so that's another one,

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 another piece that we'll have to -- yes, did they have  
2 sources or something, yes. Anyway --

3 MEMBER POWERS: But, I mean, the whole  
4 thing is quite remarkable, I mean, that you have  
5 damage to three units, maybe a couple of spent fuel  
6 pools, we've got a megacurie or so of cesium outside  
7 the plant.

8 DR. KELLY: Yes.

9 MEMBER POWERS: I mean, that just shows  
10 you how much defense-in-depth you have, even when  
11 things get very, very heavily compromised here. I  
12 mean, there is a tremendous -- had you asked me  
13 a priori, before the event, you had this sort of event  
14 occur, what kind of source term would you expect, I  
15 would have written out a much more severe set of  
16 numbers for you.

17 DR. KELLY: So, but you know there's still  
18 a lot of work that has to be done. The clean-up as  
19 well as stabilization. And so I think we're -- Again  
20 another large earthquake could maybe again disable  
21 cooling. And our estimates are not that it's on the  
22 order of 10 hours. If they lost cooling, it would be  
23 10 hours before they would begin to remelt.

24 MEMBER BANERJEE: Does the analysis with  
25 what measurements you've been making? The plume

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 analysis?

2 DR. KELLY: Qualitatively. But there is  
3 --

4 MEMBER CORRADINI: You're saying in terms  
5 of -- I guess I want to understand. Sanjoy --

6 MEMBER BANERJEE: I want to actually work  
7 backwards and see if the source term is correct or  
8 not.

9 MEMBER REMPE: And that was based on the  
10 later melt core source term.

11 DR. KELLY: Right. There were two things.  
12 So the plume analysis is with this NARAC code. They  
13 were just doing unit source term.

14 MEMBER RYAN: There was no exposure  
15 measurements. It's hard to calibrate.

16 DR. KELLY: They weren't doing the detail.  
17 But that pattern of having this direction in the  
18 northwest, if you put in the weather, the winds and  
19 rain, you've got a majority of the deposition along  
20 that path. So that's why I say it's qualitative.  
21 Qualitatively it was showing that that should have  
22 been the highest region and that's what it was.

23 MEMBER BANERJEE: But you couldn't back  
24 out whether your source term was --

25 DR. KELLY: We're going to try to take a

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 look at that. But because we had three different  
2 source terms kind of overlaid and at different times  
3 it's going to be a --

4 MEMBER BANERJEE: Yes, it's a difficult  
5 problem.

6 DR. KELLY: But that certainly -- The  
7 folks at Livermore are very interested in getting that  
8 data to help improve the validation of their modeling.

9 MEMBER RYAN: I'm guessing with the  
10 rainfall that occurs fairly routinely in Japan it will  
11 be hurt to get enough of that plume measured within a  
12 reasonable --

13 DR. KELLY: Yes. We're going to have to  
14 rely on a lot of the data we already have because  
15 they're heading into the rainy season pretty soon.

16 MEMBER RYAN: Right. So it's going to  
17 wash away.

18 DR. KELLY: It's going to wash -- So in  
19 terms of -- My last slide and then we can have  
20 questions. Next steps. So we're continuing our  
21 support for the Government of Japan. We see our role  
22 as providing peer review and analysis as requested.  
23 So as they move forward with their engineering  
24 designs, they've been asking us for our evaluations.  
25 We've been giving them feedback. So I think that kind

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 of thing will continue.

2 We have been collecting data. We've been  
3 trying to understand, doing the accident forensics and  
4 eventually lessons learned. We see that kind of  
5 activity continuing.

6 And we're staying vigilant on potential  
7 accident consequences. So there are questions about  
8 evacuation zones. The Ambassador is visiting us in  
9 two weeks. And I'm sure we'll have a good session  
10 with him to see what's worrying him today and how we  
11 can help do analysis and other things, sort through  
12 it.

13 MEMBER RYAN: Has there been any advanced  
14 planning on where all the waste material is going to  
15 end up?

16 DR. KELLY: The plan we saw was to  
17 basically create an onsite low level waste storage  
18 area.

19 MEMBER RYAN: That's storage. But what's  
20 the ultimate call?

21 DR. KELLY: You know, that may be 30 years  
22 or more before they could reuse the site. So maybe  
23 almost permanent.

24 MEMBER POWERS: I'm telling you, Ryan,  
25 that we've got the merry, honest French there.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 DR. KELLY: You know, they're trying to  
2 figure out how this -- It's going to be complicated.  
3 They're going to have to bring in vehicles and they  
4 want to have a clean path so they can bring in things  
5 that don't get radiologically contaminated. So then  
6 they're have a cordoned-off area where they'll deal  
7 with that.

8 This was briefed to us -- I don't know if  
9 it's a plan. I can't remember who was -- the company  
10 that came in. But they had this plan of setting up a  
11 region on the site where they would do the storage.  
12 And whether then it could be repackaged and  
13 transferred later, that was to be determined.

14 MEMBER RYAN: That raises some interesting  
15 questions about do you want to continue on-going  
16 activities like that on the coast and then under not  
17 ideal conditions. So that's a challenge I think  
18 ahead.

19 CHAIR ABDEL-KHALIK: John, we heard  
20 earlier from industry that one of their goals is to be  
21 able to handle any nuclear accident in the U.S. and  
22 also be able to provide a response overseas. Have you  
23 given much thought to DOE's role in such a response  
24 capability?

25 DR. KELLY: Yes. Well, clearly, this lack

1 of instrumentation measurements is really severe. We  
2 think that there may be capabilities within our  
3 laboratories to invent new instruments that could be  
4 deployed. And so that's one area for research.

5 When I think about it, I kind of put it in  
6 a research terminology. Because I think if industry  
7 has capabilities DOE doesn't need to do things.  
8 Industry can do it. But if there's a new technology  
9 that's needed, perhaps.

10 You know, we have a very good system for  
11 responding to other type of nuclear incidents. And so  
12 maybe having more capabilities, stage capabilities,  
13 these types of things, might be useful. And I think  
14 DOE has some of those capabilities. There may be a  
15 way to think about how these could be used in the  
16 commercial sector.

17 MEMBER CORRADINI: Maybe just a follow-up  
18 then. So are you then discussing it not just within  
19 NE but within EM and NNSA?

20 DR. KELLY: Yes. Because there's much  
21 more to DOE than just NE in terms of --

22 DR. KELLY: Yes. It's more than just NE.  
23 So I'm talking more broadly now.

24 MEMBER CORRADINI: The same triad.

25 DR. KELLY: We're already doing research

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 on zirconium-free cladding which would be a big  
2 benefit. Silicon carbide cladding. So that's been a  
3 research area. And it was really to get over some of  
4 the materials issues with high burn-up with zirconium.  
5 But there's also always the hydrogen issue if you use  
6 that.

7 CHAIR ABDEL-KHALIK: My question really  
8 was aimed at any response activities associated with  
9 that "coordinated response" that the industry would  
10 provide. Do you foresee a role for DOE?

11 DR. KELLY: Only if there's technology  
12 development needs and perhaps some learning from what  
13 we have in terms of the response for like nuclear  
14 weapon incident. We have a response time. That  
15 capability is in place. It's tested.

16 So there is certain learning if we wanted  
17 to stand up. I think Jim Ellis at INPO has suggested  
18 something like this. And I think they're certainly  
19 learning from it, the NNSA folks, that could be had  
20 from that. And then there may be some capabilities  
21 that need to be developed that aren't in the  
22 commercial sector. And again there would be a role  
23 for DOE there.

24 CHAIR ABDEL-KHALIK: Okay.

25 MEMBER BANERJEE: Going back to Unit 4,

1 the explosion, have there been any observations  
2 planned or have there been observations already of the  
3 fuel to see if the cladding may have reacted? Because  
4 that's one of the scenarios we discussed. Right?

5 DR. KELLY: Yes. So they have had a  
6 camera dangling on this water crane pan over it and  
7 you can see things pretty good. You can see the  
8 handles. You can see the identification numbers on  
9 the assemblies. It certainly doesn't not look like  
10 degraded.

11 Now the best pictures are of unburned  
12 fuel. So they had a lot of fresh fuel that was going  
13 to be loaded in in there. And there's a region that  
14 they just didn't pan over. So that's one of the  
15 questions we're going to have.

16 MEMBER BANERJEE: That's rather unlikely  
17 that scenario then.

18 DR. KELLY: That the zirconium -- Yes.

19 MEMBER BANERJEE: Yes.

20 DR. KELLY: I think that's one of the  
21 least likely scenarios --

22 MEMBER BANERJEE: Okay.

23 DR. KELLY: -- when you have a zirconium  
24 fire. And as I mentioned there was a number of other  
25 data pieces that did not correlate with that

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 hypothesis.

2 MEMBER BANERJEE: Thanks.

3 MEMBER SHACK: Did they have water  
4 chemistry samples?

5 DR. KELLY: The water chemistry is another  
6 one that doesn't -- The cesium that they detected is  
7 equivalent of the cesium in one -- is less than the  
8 cesium in one fuel pin.

9 MEMBER STETKAR: If there's indications of  
10 water, I don't know how their pools are configured,  
11 but they typically will have weirs between the  
12 different pool sections. If there's indications that  
13 water level remained above the sections of those  
14 weirs, the entire fuel pool was --

15 DR. KELLY: You know, these are some of  
16 the things you learn is that what they worry about is  
17 not overfilling. And so they have measurements close  
18 to the top because they probably didn't envision  
19 wanting to know where it was when it went down. So  
20 they've got --

21 MEMBER ARMIJO: It was flooded up for this  
22 major maintenance.

23 DR. KELLY: Yes.

24 MEMBER ARMIJO: So there was plenty of  
25 water there. The question, did it leak out through

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the bottom as a result of the earthquake and then  
2 caused a fire? And you know those early thoughts seem  
3 not to be supported.

4 DR. KELLY: Yes, it's hard. If there is  
5 a leak, we think it's small. We found out what kind  
6 of sealing mechanism they use for the gates. I think  
7 it's a seal that seals with hydrostatic pressure. So  
8 maybe there could have been something but it would  
9 reseal. We think it's unlikely that that's the  
10 scenario. The data just doesn't line up to that.

11 MEMBER BANERJEE: So it's either something  
12 was there other than the hydrogen most likely or a  
13 hydrogen leak from somewhere.

14 DR. KELLY: It was either other  
15 combustible materials that we haven't discovered. And  
16 if they could get into the building they should be  
17 able to -- the observation tunnel.

18 The explosion they thought started lower,  
19 too, which was --

20 MEMBER ARMIJO: You see the building was  
21 destroyed at the base.

22 DR. KELLY: Yes. So it was low which then  
23 points to the hydrogen coming from --

24 MEMBER BANERJEE: Somewhere else.

25 DR. KELLY: If it was hydrogen from

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1       somewhere else, yes.

2                   CHAIR ABDEL-KHALIK: Are there any  
3 additional questions for John?

4                   MEMBER ARMIJO: John, have you  
5 communicated directly with the plant designers, the  
6 GEs?

7                   DR. KELLY: I was at the GE Emergency  
8 Center on like the 13th of March. It turned out the  
9 PSA conference was held in Wilmington. So I took the  
10 opportunity to go over. I know that was really good.  
11 So we've established that liaison, too. So that when  
12 we need information on the GE plants we've got that  
13 network in place.

14                   MEMBER ARMIJO: And so you feel they're  
15 giving you the information you need.

16                   DR. KELLY: Absolutely. Yes. And they've  
17 been part of these consortium calls, too. So it's  
18 been a real coming together of all the nuclear  
19 expertise in the country to help.

20                   MEMBER ARMIJO: Because early in the event  
21 there was a lot of uncertainty whether the Japanese  
22 plants were very similar to the U.S. BWR4s, Mark I  
23 containments or not including hardened vents or not  
24 hardened vents. All those sorts of questions. Has GE  
25 helped you resolve that since they designed and built

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 at least Fukushima 1.

2 DR. KELLY: Well, they had some  
3 information. They were the builders of the 1 and 2.  
4 And then I think it became Hitachi and Toshiba.

5 MEMBER ARMIJO: Right.

6 DR. KELLY: And of course they're  
7 connected to Hitachi now. So there's information  
8 going back and forth on that. But you know unless you  
9 get the actual as-built you maybe can never know for  
10 sure. The hardened vents would have been an Adder,  
11 post TMI.

12 MEMBER ARMIJO: Yes.

13 DR. KELLY: I think there are still some  
14 questions about getting the details and then really  
15 understanding the vent pathways still part of the  
16 puzzle on the Unit 4.

17 CHAIR ABDEL-KHALIK: Joy.

18 MEMBER REMPE: I want to pick on you with  
19 the same questions that we picked on with Tony towards  
20 the end. I think there's a lot of key uncertainties  
21 and it could help us with our state of knowledge and  
22 how we address severe accidents.

23 And I know it appeared that Tony said,  
24 "Yes, we need to go in and see that information." It  
25 may be five years or more before we ever do. And

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 industry might be able to throw some support as Dana  
2 suggested.

3 But it's my opinion that would happen at  
4 TMI. It was an OECD type of effort and NRC and DOE  
5 did it together. Have those kind of discussions been  
6 ongoing at DOE?

7 DR. KELLY: Yes, I think that's one of the  
8 areas that we've identified. And at this point it's  
9 to understand where we think we would have validation  
10 needs for our severe accident modeling capability.  
11 Because what we want to do is take whatever  
12 information we can gain from this, understand how well  
13 our codes predict because we rely on those codes a lot  
14 to inform our risk assessments and accident management  
15 and all kinds of things. And so we want to know are  
16 they valid.

17 As we go through this we have  
18 uncertainties identified in our analysis. Those will  
19 point to data needs that could be had when they begin  
20 to disassemble the core. So they can -- As they did  
21 before, if they take sections so that we can do the  
22 metallography, etc. we should be able to go in.

23 MEMBER REMPE: But as Dana pointed out  
24 there may be a lot of push.

25 DR. KELLY: There will be a need for

1 expediency now. So I expect -- I mean we already have  
2 very strong bilateral relationships with Japan. And  
3 I expect that to continue and strengthen as we move  
4 forward.

5 Together we have more of the GE BWRs in  
6 the world. So there's a lot of interest in us  
7 understanding the implications. I think there will be  
8 an even stronger need to collaborate on that. So  
9 there may be joint efforts and things like that. If  
10 that comes into play, then we will at least encourage  
11 data recovery to support code validation.

12 MEMBER STETKAR: Let me put you on the  
13 same point I put Tony. He mentioned the current IAEA  
14 teams on the ground collecting information, doing for  
15 lack of a better term forensic analysis I guess. Are  
16 you plugged into that effort? Or you mentioned  
17 bilateral agreements between the U.S. and the Japanese  
18 government. How is all this playing out?

19 DR. KELLY: I'm plugged into some of the  
20 IAEA activities. So I'm not exactly sure -- They were  
21 over there before. And my understanding was they had  
22 some real problems with their data collection  
23 previously.

24 MEMBER STETKAR: Okay.

25 DR. KELLY: And they were just doing

1 measurements on the ground. I don't know what the  
2 current team is doing other than that they're going  
3 over there.

4 But there's a huge IAEA meeting at the end  
5 of June. And we're currently developing an action  
6 plan which will be a plan for all the nuclear nations  
7 in the world to work through IAEA to do a set of  
8 activities. That's currently being developed and will  
9 be rolled out in the end of June time frame. And  
10 there will be a whole set of meetings over the next  
11 year on all of these things.

12 In terms of collecting data, verifying it,  
13 documenting it, these types of things, I think that --  
14 people may differ -- there's merit to having different  
15 sets of eyes look at the same thing. And if you can  
16 afford to do that and then come together and do the  
17 cross-checking, it will hopefully help the whole  
18 international community have a set of reliable data.

19 There were still lots of mysteries with  
20 the Three Mile Island data years later. We know a lot  
21 more about severe accident phenomenology now. So  
22 we're able to more quickly assess things.

23 But to my knowledge I don't know who the  
24 experts are with IAEA, who they've picked up to go  
25 over there. But the severe accident expertise is in

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the DOE National Laboratories in this building. So  
2 it's data plus analysis that go together to help you  
3 understand what the data is saying at the same time.

4 I think we have a lot to bring to bear on  
5 this problem. Having a data collection, verification,  
6 analysis, cross-checking, we'll be doing that  
7 ourselves. But then having international community  
8 involved I think will be a good thing long term.

9 MEMBER STETKAR: Thanks.

10 CHAIR ABDEL-KHALIK: Are there any  
11 additional questions for John? Well, let me just on  
12 behalf of ACRS say --

13 MEMBER POWERS: Can I just ask one  
14 question?

15 CHAIR ABDEL-KHALIK: Sure.

16 MEMBER POWERS: Do you want me to come  
17 over and stage your garden?

18 (Laughter.)

19 DR. KELLY: Can you stop by once a week?  
20 I still have my home in Albuquerque.

21 CHAIR ABDEL-KHALIK: I may make that  
22 assignment later. But on behalf of ACRS, let me just  
23 thank you for taking the time from your very busy  
24 schedule to brief us.

25 DR. KELLY: You're welcome.

1 CHAIR ABDEL-KHALIK: Thank you.

2 DR. KELLY: Thank you.

3 CHAIR ABDEL-KHALIK: At this time we will  
4 take a roughly 15 minute break. And we'll come back  
5 to hear the public comments and have additional  
6 discussions amongst ourselves. So let's reconvene at  
7 4:05 p.m. Off the record.

8 (Whereupon, the above-entitled matter went  
9 off the record at 3:52 p.m. and resumed at 4:05 p.m.)

10 CHAIR ABDEL-KHALIK: On the record. We're  
11 back in session. At this time our schedule calls for  
12 us to hear from the public. And as I mentioned in the  
13 opening remarks, we received a request from Mr. Arnold  
14 Gundersen to make a comment. And he has been allotted  
15 five minutes to do so.

16 So I would like to ask the staff to open  
17 the bridge line so that Mr. Gundersen (1) can let us  
18 know that he's here and (2) make his remarks. Bridge  
19 line open.

20 PARTICIPANT: Yes, the bridge is open.

21 CHAIR ABDEL-KHALIK: Okay. Mr. Gundersen,  
22 are you on the line? Is there anyone else on the line  
23 who can let us know?

24 MEMBER CORRADINI: Now maybe it's open.

25 PARTICIPANT: Please let us know if you're

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 on the line.

2 MR. GUNDERSEN: Hi. This is Arnie  
3 Gundersen on the line.

4 CHAIR ABDEL-KHALIK: Yes, Mr. Gundersen  
5 you have five minutes.

6 MR. GUNDERSEN: All right. Thank you  
7 very much.

8 Good afternoon, Mr. Chairman and Members  
9 of the Advisory Committee on Reactor Safeguards, I  
10 speak to you today as a (telephonic interference) I  
11 have not been retained by any group to make a  
12 statement at this meeting.

13 Although there are many issues to resolve  
14 as a result of the nuclear accident at Fukushima I  
15 want to focus on the single statement of integrity in  
16 the brief time you've allotted me.

17 CHAIR ABDEL-KHALIK: Mr. Gundersen. We're  
18 having some difficulty hearing you. So if you try to  
19 -- If you're sort of speaking into a microphone, try  
20 to minimize any physical contact with the microphone.

21 MR. GUNDERSEN: I'm sorry. Is this  
22 better?

23 CHAIR ABDEL-KHALIK: Yes.

24 MR. GUNDERSEN: Okay.

25 CHAIR ABDEL-KHALIK: Please proceed.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 MR. GUNDERSEN: Okay. I first wrote to  
2 you, the ACRS, in 2005 to express my concerns on  
3 Vermont Yankee and the net positive suction head lever  
4 the ACRS had granted to Vermont Yankee.

5 In 2008, (telephonic interference) was  
6 retained by SECAM to analyze the containment.

7 PARTICIPANT: Excuse me.

8 MR. GUNDERSEN: I wrote ACRS regarding my  
9 belief that the containment volume to power ratio at  
10 Millstone was the smallest of any Westinghouse plant.  
11 At that meeting the ACRS was told by the NRC that  
12 (telephonic interference) analyze the containment  
13 system.

14 In 2009 --

15 PARTICIPANT: Excuse me. Can I interrupt?  
16 I think people either in the room or on the line that  
17 need to mute their lines or just stop making noise  
18 next to the phone because I don't think that the  
19 static is coming from Mr. Gundersen. Thank you.

20 CHAIR ABDEL-KHALIK: If there are other  
21 people on the line if you could please mute your  
22 microphones on your end so that we can hear Mr.  
23 Gundersen clearly. Thank you very much.

24 Mr. Gundersen, please proceed.

25 MR. GUNDERSEN: Thank you, Mr. Chairman.

1                   Did you hear what I had said already or  
2                   should I start again?

3                   CHAIR ABDEL-KHALIK: No, we have heard up  
4                   to this point. So please proceed.

5                   MR. GUNDERSEN: Okay. Thank you, Mr.  
6                   Chairman.

7                   In 2009, Citizens Power retained Fairwinds  
8                   to analyze a hole found in Beaver Valley containment.  
9                   My analysis was also provided to the ACRS.

10                  In 2010, I met with you as a candidate for  
11                  an opening on the ACRS and we discussed positive  
12                  suction head and its relation to containment  
13                  integrity. I notice that the Browns Ferry unit had  
14                  not been allowed the NPSH credit. But the ACRS  
15                  granted that credit to Vermont Yankee five years  
16                  earlier. It was illogical for the people of Alabama  
17                  to have more accident protection than the people of  
18                  Vermont.

19                  In 2010, at the AP 1000 Oversight Group  
20                  Fairwinds was retained and in April Fairwinds provided  
21                  to you a report detailing a long history of  
22                  containment failures around the country.

23                  In 2010, (telephonic interference) met  
24                  with you for an hour and half to delineate my concerns  
25                  reporting doubt of a containment integrity of the AP

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 1000 design.

2 In December I wrote you again, notifying  
3 you of a significant amount of additional information  
4 about containment failure due to flaws. Each time I  
5 have contacted you, containment integrity data had  
6 been rebuffed and ignored.

7 The accident at Fukushima has confirmed my  
8 belief that the leakage of a nuclear containment  
9 cannot be based upon the assumption of a leak rate of  
10 zero as used by the NRC. Just this week Tokyo  
11 Electric has finally acknowledged that all seals of  
12 Mark I containment systems are leaking significant  
13 radiation to the environment and at least Units 1 and  
14 2 began leaking on the first day of the accident.

15 Unfortunately, the possibility of such  
16 containment failures to which I alerted you for the  
17 last six years has been proven correct. It was no  
18 surprise to me that the containment systems have a  
19 long history of leaking and have now failed three  
20 times at Fukushima. Yet it apparently comes as a  
21 major surprise to the NRC.

22 The ramifications of a nuclear reactor  
23 containment leakage and failure of the NRC and its  
24 body to consider are: (1) the SAMSA analysis of  
25 Westinghouse AP 1000 design (telephonic interference)

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 that there is zero probability of a containment leak  
2 of any magnitude. When historical record prior to  
3 Fukushima proved this assumption fault and the  
4 Fukushima containment failure of the AP 1000 design be  
5 analyzed and retrofitted with charcoal filters on top  
6 of the shield built.

7 MR. WARREN: Pardon me. Arnie?

8 MR. GUNDERSEN: Yes.

9 MR. WARREN: This is Jim Warren. Can you  
10 hear me?

11 MR. GUNDERSEN: Yes, I do.

12 MR. WARREN: I apologize for interrupting.  
13 But there is so much noise on the phone bridge it's  
14 obvious that some people are not listening. And  
15 others that are on the phone cannot hear the  
16 presentation.

17 CHAIR ABDEL-KHALIK: Sir, I have asked all  
18 others except for Mr. Gundersen to mute their phone so  
19 that we can hear him without interruption.

20 MR. WARREN: Thank you. That's all I'm  
21 asking is that we can all hear him and that we all  
22 listen. Thank you.

23 MR. GUNDERSEN: The ACRS has granted net  
24 positive suction heads credits to numerous reactors  
25 around the country in violation of Regulatory Guide 1.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 Today in a simple stroke of the pen the ACRS can  
2 acknowledge this erroneous decision by requesting the  
3 NRC staff to revise the licenses of reactors so that  
4 every reactor is in compliance with Regulatory Guide  
5 1. And with this simple one stroke of a pen you can  
6 make all the reactors immediately safer than they are  
7 today.

8 Everyone sitting at the ACRS today knows  
9 that the pressure suppression containments on GE BWRs  
10 were inadequate when they were first designed. As a  
11 result of that design inadequacy, boiling water  
12 reactor containment vents were added in 1989 to  
13 prevent containment overpressurization. Currently,  
14 there are 23 Mark I containment systems in operation.  
15 All Mark I have vents that were added as a bandaid  
16 fix.

17 Events at Fukushima show that this fix did  
18 not work. I urge the ACRS to evaluate containment  
19 venting to determine whether or not any of these  
20 reactors --

21 (Simultaneous speaking.)

22 -- a single operation.

23 (4) The ACRS should stop license renewal  
24 of any BWR until the Fukushima accidents have been  
25 completely analyzed.

1           For the record and finally, Fairwinds  
2 finds it disconcerting that both NEI and DOE have been  
3 granted an hour to make a presentation to this body  
4 when NEI and DOE have responsibility for promotion of  
5 nuclear power. I brought these containment integrity  
6 issues to your attention for more than six years.

7           In closing, I strongly suggest that each  
8 of you as members evaluate the bias you bring to the  
9 table when listening to experts with whom the nuclear  
10 industry disagrees. Thank you for your time, Mr.  
11 Chairman. I'll gladly brief you in detail if you  
12 choose.

13           CHAIR ABDEL-KHALIK: Thank you, Mr.  
14 Gundersen. We would appreciate it if you provide your  
15 comments in a written form just in case we missed.

16           MR. GUNDERSEN: I will send them to Dr.  
17 Hackett this afternoon.

18           CHAIR ABDEL-KHALIK: Dr. Hackett. Thank  
19 you very much.

20           Okay. At this time, we have sort of  
21 concluded all the presentations. Are there any other  
22 members of the public who would like to make comments  
23 or ask questions?

24           (No response.)

25           Is there anybody else on the line? Is

1 there anybody else here?

2 Yes, sir. Please come to the microphone,  
3 identify yourself.

4 MR. LEYSE: Yes, this is Robert Leyse.  
5 I've talked to you before.

6 CHAIR ABDEL-KHALIK: Mr. Leyse, please  
7 hold off. We have some here in the room who is going  
8 to make comments. So I will recognize you later.

9 MR. LEYSE: I will go to \*6.

10 CHAIR ABDEL-KHALIK: Sir.

11 MR. KAMPS: Thank you. Hello everyone.  
12 My name is Kevin Kamps with Beyond Nuclear. And I'm  
13 also on the board of Don't Waste Michigan. We are  
14 watchdog groups on the nuclear power industry.

15 And I just wanted to inform the ACRS if it  
16 did not know yet that our organization joined with  
17 colleague organizations at the grassroots who live  
18 near GE-BWR Mark 1s across the country. We have  
19 launched a 2.206 petition to the NRC to immediately  
20 suspend the operating licenses of the 21 to 23 BWRs in  
21 this country that are very similar design to the  
22 Fukushima Units 1 through 4. And this is an important  
23 safety step until we learn the lessons from Fukushima  
24 so that it doesn't happen here.

25 Another part of that petition in addition

1 to the reactor risks are the risks of high level  
2 radioactive waste storage pools at these reactors.  
3 And this would even include shutdown reactors of this  
4 design including the Millstone unit that's been  
5 mentioned, the pool of which still contains high level  
6 radioactive waste.

7 So I just wanted to inform you of this.  
8 We have been granted a petition review board on June  
9 8th that will last for two hours. I'm not sure of the  
10 exact time of day. But we have a growing number of  
11 groups across the country joining this coalition.

12 And in addition to this effort there's  
13 also a petition drive by another organization, Nuclear  
14 Information and Resource Service which is a grassroots  
15 petition drive which already has thousands of  
16 signatures calling on the NRC to immediately suspend  
17 the operating licenses of these reactors in this  
18 country.

19 Thank you very much.

20 CHAIR ABDEL-KHALIK: Thank you, sir.

21 Okay. At this time, Mr. Leyse, if you'd  
22 like to offer any comments.

23 MR. LEYSE: Just came back on. Quickly,  
24 I want to say DRM 50.93 was around well ahead of  
25 Fukushima and a predecessor to that was around since

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the mid -- around 2002 or 2003. And nothing seems to  
2 move.

3 Now today we heard NEI tell us that while  
4 we take this Fukushima act on we don't ignore what  
5 else is going on. I would advise ACRS to be get into  
6 DRM 50.83 as well as the NRC. NRC once had it as a  
7 high priority item until a rather otherwise useless  
8 meeting back in October of the Thermohydraulic  
9 Subcommittee, the only part really bragging, not  
10 bragging.

11 But it's a fact that made any sense what  
12 Mark Leyse and myself discussed. You went through the  
13 whole thing and never got into zirconium or how it  
14 would react in a loss of coolant accident. Instead  
15 you listened to endless presentations from Penn State  
16 and others that really don't bear on what's going on  
17 today or was potentially going to go on.

18 CHAIR ABDEL-KHALIK: Mr. Leyse.

19 MR. LEYSE: End of comments. Thank you.

20 CHAIR ABDEL-KHALIK: Thank you very much.

21 Is there anybody else who would like to  
22 make comments? Are there any other members of the  
23 public who would like to make a comment?

24 MR. WARREN: This is Jim Warren again.

25 And I like to come back and apologize for having to

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 interrupt Mr. Gundersen's presentation a few minutes  
2 earlier. But it was very frustrating that obviously  
3 some people in the room were not listening to what he  
4 was saying. And it make it possible for others of us  
5 not to hear either.

6 I am concerned that is a reflection of the  
7 lack of respect for members outside the nuclear and  
8 academic orbit.

9 CHAIR ABDEL-KHALIK: Sir, excuse me.

10 MR. WARREN: I want to thank you for  
11 holding the meeting and allowing us to listen. Please  
12 do respect our ability to listen to these and to  
13 participate further. Thank you.

14 CHAIR ABDEL-KHALIK: Sir, the interruption  
15 was not caused by anything that was going on in this  
16 room. It may have been caused by others who were  
17 connected to the phone line. But I assure you that  
18 this committee provides ample opportunity for members  
19 of the public and offers them to make comments and  
20 treats those comments seriously and with the upmost  
21 respect.

22 MR. WARREN: Okay. Well, I appreciate  
23 that. And if I'm mistaken then I do apologize. But  
24 when he began his presentation there began an awful  
25 lot of conversation. It sounded like it was around

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the room or near the phone.

2 CHAIR ABDEL-KHALIK: It was not, sir.

3 MR. WARREN: Okay. Thank you. Then it  
4 was someone else and I apologize.

5 CHAIR ABDEL-KHALIK: Thank you. All  
6 right.

7 Are there any additional comments that  
8 anyone else would like to make?

9 (No response.)

10 Hearing none, let me just go around the  
11 room and see if members would like to offer any  
12 comments or reflections on what we heard today. Let  
13 me start with you, Jack.

14 MEMBER SIEBER: I have no additional  
15 comments at this time.

16 CHAIR ABDEL-KHALIK: Okay. Sanjoy.

17 MEMBER BANERJEE: None.

18 CHAIR ABDEL-KHALIK: Harold.

19 MEMBER RAY: None other than that what I  
20 said to NEI on that one point.

21 CHAIR ABDEL-KHALIK: Dennis.

22 MEMBER BLEY: No. No additional.

23 CHAIR ABDEL-KHALIK: Dana.

24 MEMBER POWERS: What we see is a  
25 tremendous amount of interest in the Fukushima

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 accident right now and desperate attempts to try to  
2 learn lessons at which is a very premature stage and  
3 understanding of this accident. And our experience  
4 from previous accidents is it takes quite a while  
5 before you can draw conclusions that stand any test of  
6 time.

7 In fact, I think if we go back to our own  
8 experiences at TMI we saw an awful lot of prompt steps  
9 taken that had to subsequently be reversed. And I  
10 grow concerned that we'll be preemptive now when we  
11 don't need to be. I'm not sure Mark I BWRs located in  
12 the midland of the United States are really  
13 susceptible to both tsunamis and earthquakes  
14 simultaneously. And so maybe we don't need to address  
15 those things right now.

16 I think we can and maybe this Committee  
17 can help define things that can be done at this stage  
18 for a time. And I certainly pointed out that  
19 potentially one of them was just how the FSARs are  
20 done in Japan versus how they're done here in the  
21 United States is something that can be done.

22 Similarly, I think in the area of seismic  
23 engineering a lot of plants in Japan were affected by  
24 this earthquake and did not sustain damage that shut  
25 them down. But they did sustain the earthquake.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           And there are opportunities for us to  
2 compare our seismic engineering projections against  
3 what actually happened at plants other than Fukushima  
4 Daiichi. And I think we ought to be encouraging  
5 perhaps in our research report for the NRC to take  
6 advantage of that. Because at least my looking at  
7 things like the IPEEE suggests to me that the rank  
8 ordering or vulnerable locations predicted versus  
9 those actually observed in Japan may not be entirely  
10 coincidental.

11           Now you can draw -- You cannot from the  
12 specific incident draw general conclusions always.  
13 But it sure is an opportunity to validate or suggest  
14 where more work needs to be done.

15           CHAIR ABDEL-KHALIK: Thank you.

16           Sam.

17           MEMBER ARMIJO: Yes. I'd just like to say  
18 that an awful lot of good work has been done by DOE  
19 and I appreciate the presentation.

20           I think the thing that's bothered me from  
21 the beginning of this is the mystery of Unit 4 and the  
22 spent fuels. I think we've gotten new information  
23 that in fact the spent fuel in Unit 4 was in good  
24 shape, relatively good shape, compared to the cores in  
25 the other reactors.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1           But we don't know why that plant had an  
2 explosion and so much damage. And I think if DOE and  
3 others can really study that and find out what  
4 happened there because I think that's still a mystery.  
5 And I don't think we can really address the U.S. plant  
6 safety until we understand what happened in Unit 4.  
7 And I think that's a big open issue.

8           CHAIR ABDEL-KHALIK: Okay. Thank you,  
9 Sam.

10           John.

11           MEMBER STETKAR: Nothing more. Thanks.

12           CHAIR ABDEL-KHALIK: Mike.

13           MEMBER RYAN: No additional comments.

14 Thank you.

15           CHAIR ABDEL-KHALIK: Bill.

16           MEMBER SHACK: Nothing.

17           MEMBER BROWN: Nothing more than what I  
18 said.

19           CHAIR ABDEL-KHALIK: Joy. Mike.

20           MEMBER CORRADINI: Well, I have a lot of  
21 questions. But I guess the only thing that I would  
22 suggest is that I don't know about Tony's  
23 presentation. But in terms of John's -- I guess in  
24 Tony's case I really do think you asked him to get the  
25 strategic plan. I don't know the right terminology.

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 I do think we need that in writing so we understand  
2 what are the big pictures things they're looking.  
3 Because I know they've allotted a good deal of  
4 resources to do this. And I think it's important that  
5 we at least understand how they're divvying up  
6 relative to the topics.

7 In John's case, I guess I think Tanny --  
8 I asked Tanny to send everybody electronically the  
9 copies of his talk. I think the one thing that I find  
10 interesting is that he's trying to get TEPCO to remove  
11 the proprietary nature of some of the information.  
12 Because I think the more public information that is  
13 available is important so we actually can -- everybody  
14 can look at the same set of information and its  
15 sources. That to me is probably the most important  
16 thing.

17 CHAIR ABDEL-KHALIK: Okay.

18 MEMBER CORRADINI: But other than that I  
19 think it was a very good presentation. I hope we can  
20 continue and hear from the staff next month.

21 CHAIR ABDEL-KHALIK: Yes. That's the  
22 plan. The staff will brief us on June 23rd. We have  
23 a subcommittee meeting in the afternoon and that is  
24 the plan.

25 Are there any -- Tom.

1 DR KRESS: Thank you. I don't have any  
2 additional comments. I just have been jotting down my  
3 reactions in terms of lessons learned. I don't want  
4 to bore anybody with them, but I've got about 20 right  
5 now. And I think the ACRS should get involved in the  
6 NRC's efforts of lessons learned.

7 But you can be a little premature. These  
8 20 I've got, a lot of them may not prove to be good  
9 when we get the real information. That's really my  
10 reaction to this.

11 CHAIR ABDEL-KHALIK: Right. Thank you,  
12 Tom.

13 Are there any additional comments?

14 PARTICIPANT: If I can.

15 CHAIR ABDEL-KHALIK: Yes, sir.

16 PARTICIPANT: Maybe I'm a little bias  
17 because I worked on Station Blackout many years ago as  
18 one of the first things I did. And now today I think  
19 it's going to be very important that the Committee  
20 look at that issue and how it evolves now. And I  
21 guess there's going to be reg. guides that are going  
22 to be updated and a lot of other things related to  
23 Station Blackout.

24 But it might be worthwhile for the  
25 Committee to focus on that because that is probably

**NEAL R. GROSS**

COURT REPORTERS AND TRANSCRIBERS  
1323 RHODE ISLAND AVE., N.W.  
WASHINGTON, D.C. 20005-3701

1 the most important event right now that could occur at  
2 a plant. And so whatever the Committee does with  
3 respect to Station Blackout I think is going to be  
4 very helpful to the Commission.

5 CHAIR ABDEL-KHALIK: Thank you, John.

6 PARTICIPANT: Appreciate that.

7 CHAIR ABDEL-KHALIK: Are there any  
8 additional -- Does anybody know what this alarm means?

9 PARTICIPANT: It's a door alarm. It's  
10 okay. We're fine.

11 CHAIR ABDEL-KHALIK: Okay. At this time,  
12 we're adjourned. We're off the record.

13 (Whereupon, at 4:28 p.m., the above-  
14 referenced matter was concluded.)

15

16

17

18

19

20

21

22

23

24

25



U.S. DEPARTMENT OF  
**ENERGY**

**Nuclear Energy**

## **DOE Response to Fukushima Dai-ichi Accident**

**John E. Kelly**

**Deputy Assistant Secretary for Nuclear Reactor  
Technologies**

**Office of Nuclear Energy  
U.S. Department of Energy**

**May 26, 2011**

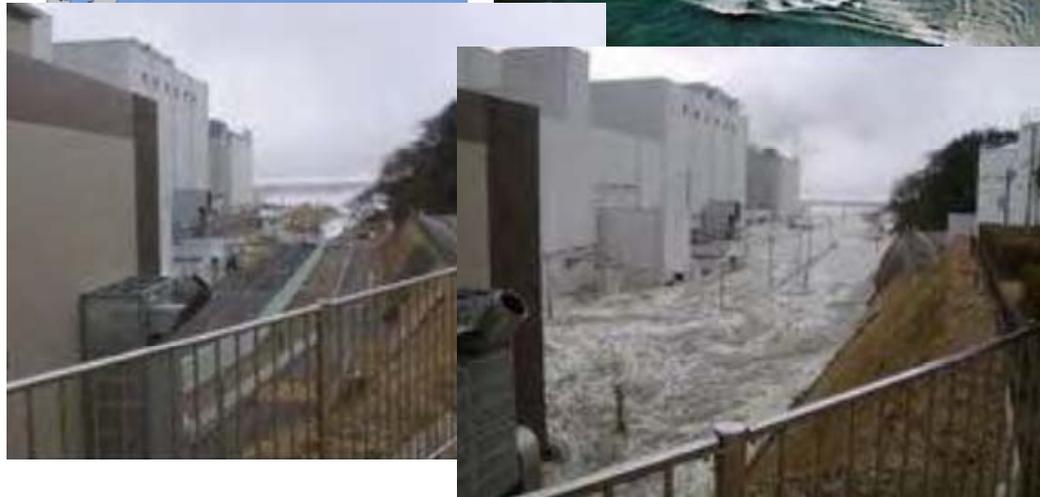
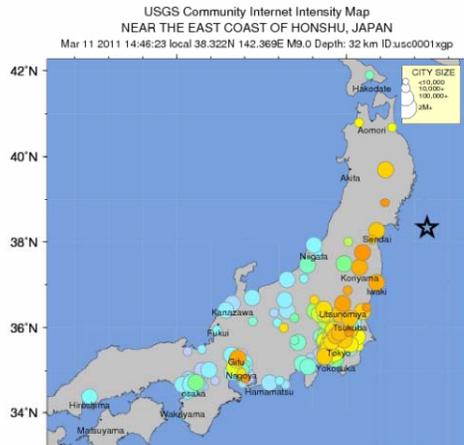






# Earthquake 3/11

## Nuclear Energy

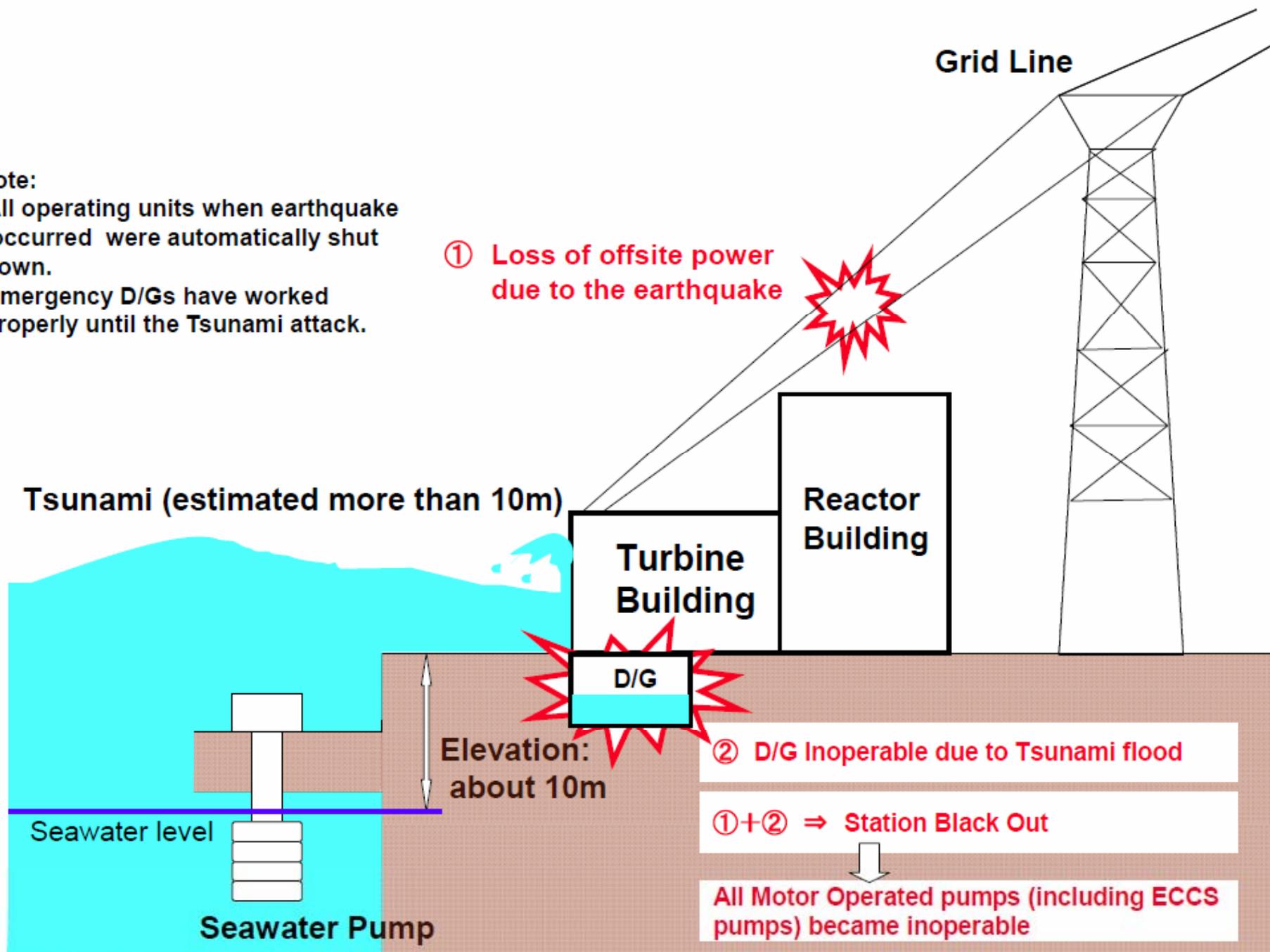


- **14:36 JST Earthquake**
- **15:41 JST Tsunami**
- **Magnitude: 9.0**
- **Generated a 14m Tsunami**
- **Many thousands perished**
- **More that 100 thousand people were homeless without food, water, or heat**

## 3-2. Major root cause of the damage

**Note:**

- All operating units when earthquake occurred were automatically shut down.
- Emergency D/Gs have worked properly until the Tsunami attack.



# Accident Sequence for Fukushima Dai-ichi Reactors



- Station blackout due to the earthquake
- Loss of emergency diesels due to the tsunami (nearly 1 hour later)
- Eventual loss of batteries and cooling to control steam driven emergency pumps
- Core overheats, cladding oxidizes and melts producing hydrogen
- Hydrogen escapes from containment and explodes/deflagrates in reactors 1, 2, & 3
- Explosion/deflagration in reactor 4 building



# Immediate Response



- Activated its Emergency Operations Center
- Immediately deployed personnel to the U.S. Embassy in Japan to support the Reactor Safety Team (RST)
- Provided expert advice to the U.S. Ambassador and Government of Japan ministers
- Set up and coordinated consortium call that involved NRC, INPO, DOE, and Naval Reactors



- Organized nuclear industry technical response to assist TEPCO

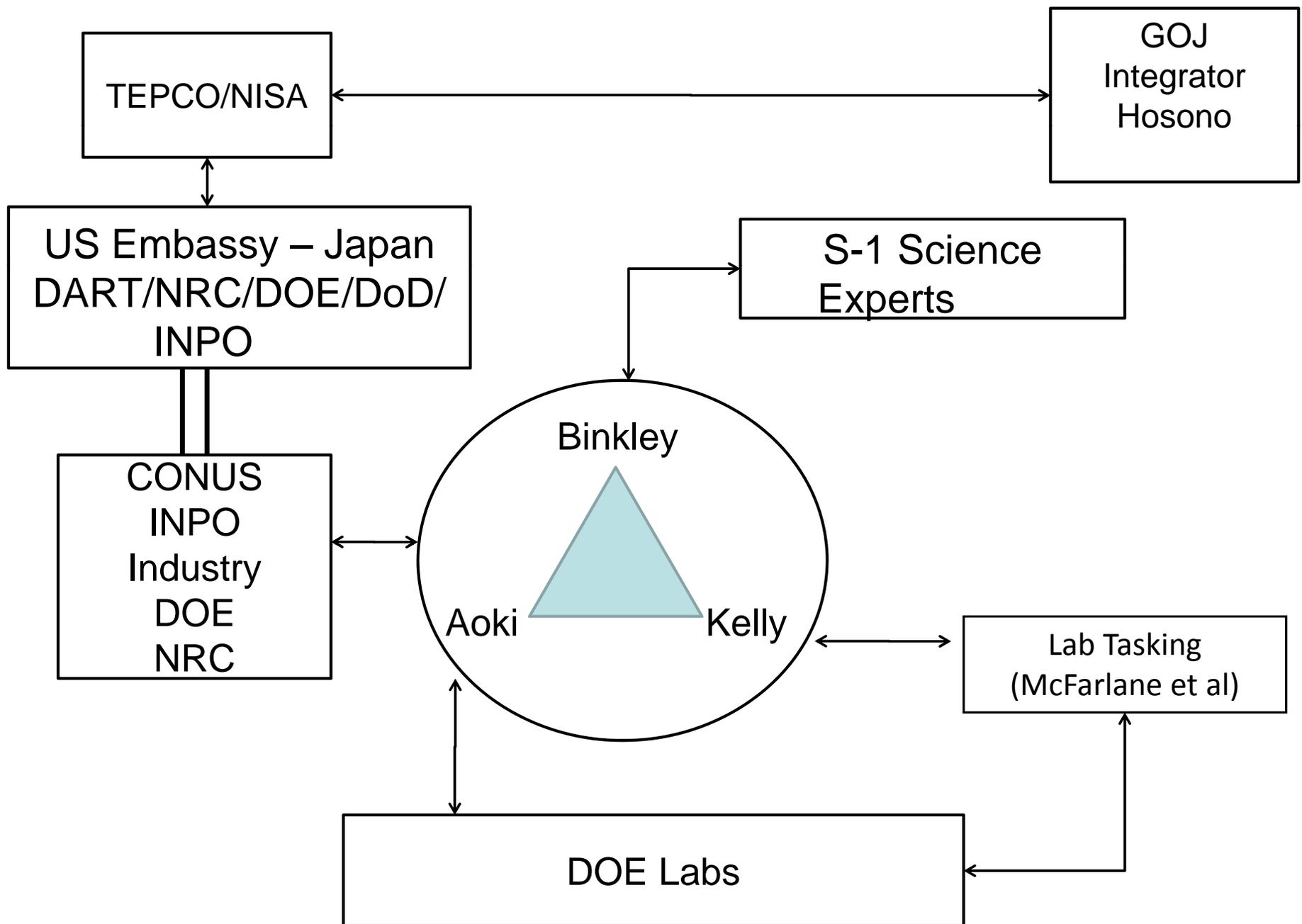


- Activated its Emergency Operations Center focused on monitoring radiation release and impact on U.S. citizens (both in Japan and the U.S.)
- Deployed Airborne Monitoring System aircraft and sensors
- Provided additional DOE Embassy reps to the two already assigned to the U.S. Embassy
- Deployed national laboratory reps from INL, PNNL and Sandia to provide technical assistance
- Assigned NE personnel to stand watch in the DOE EOC

# DOE has provided a significant response to the events at Fukushima

- **During the first several weeks after the massive earthquake in Japan, DOE provided a significant and diverse set of analysis to support the events at Fukushima-Daiichi**
  
- **This response involved a broad set of institutions with over 200 people contributing**
  - DOE: Offices of NE, SC, NNSA, EM
  - Laboratories: ANL, BNL, INL, LANL, ORNL, PNNL, and SNL
  - Numerous universities
  - Individual consultants – Secretary’s external science experts

# Nuclear Energy Response Team



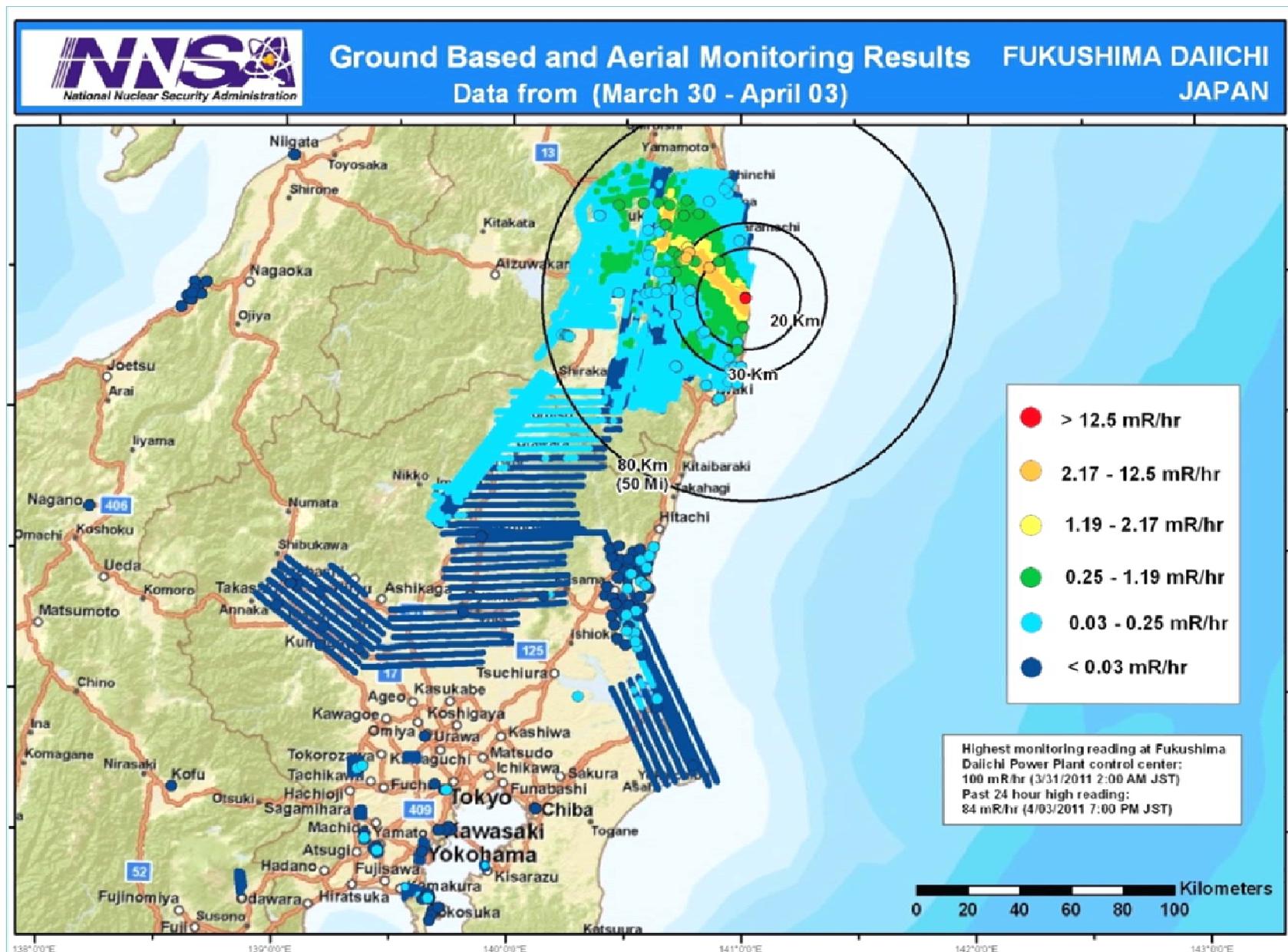


# Airborne Radiation Monitoring

- NNSA had primary responsibility to monitor and notify U.S. citizens of radiological fallout, including those in Japan
- Deployed airborne monitoring systems
- Used NARAC code at LLNL to model calculate plume impact on the U.S

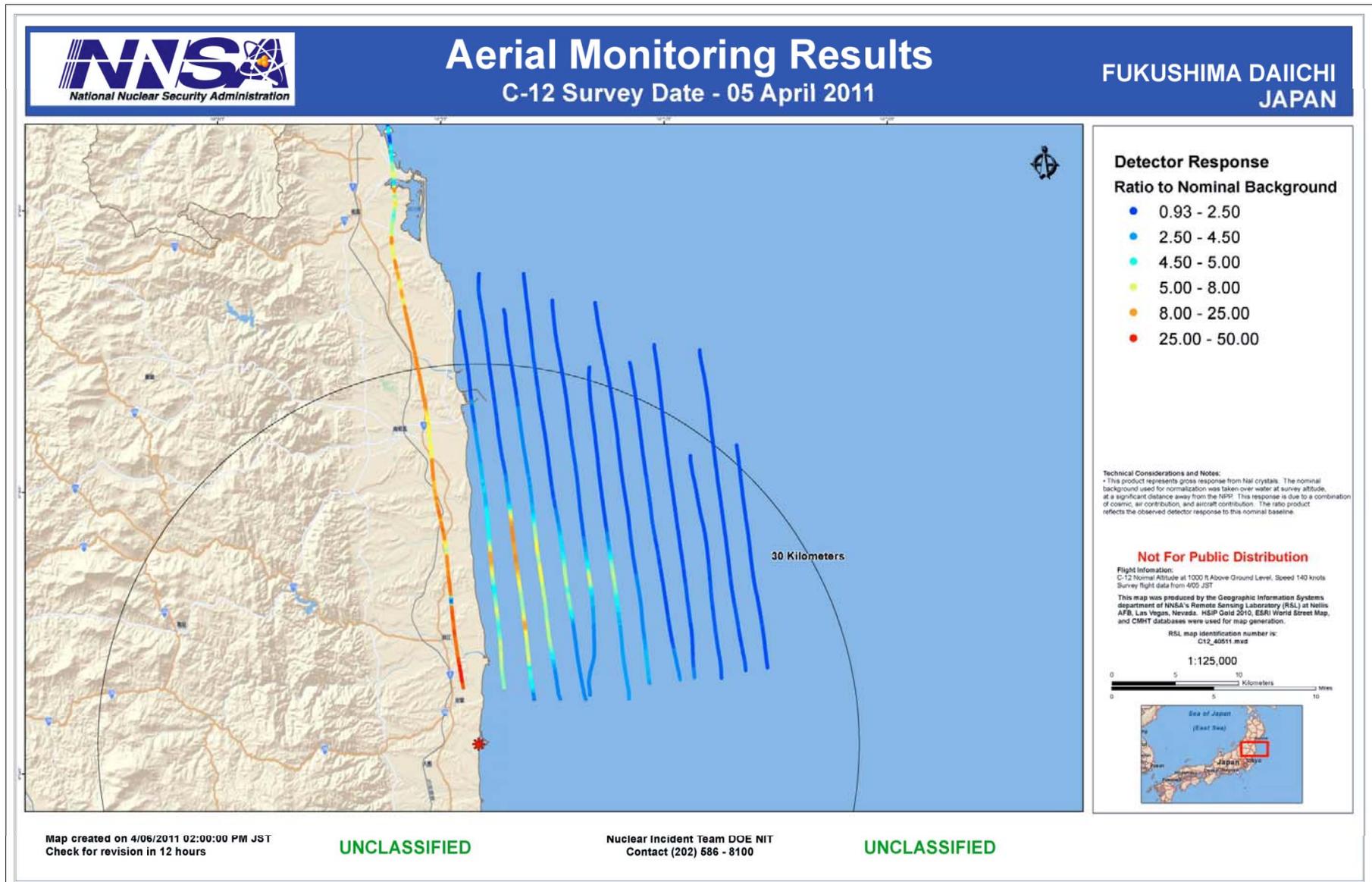


# DOE/NNSA Monitoring



This product is an aggregate of data collected from March 30 – April 3, 2011. Monitoring results are derived from aerial measuring platforms and validated where possible by ground survey teams.

# DOE/NNSA Monitoring (Over-water)



## ■ Primary mission

- Assess and clarify information for DOE and NE leadership concerning the status of the Fukushima Dai-ichi reactor situation
- Provide support to NE EOC watch standers
- Organized national laboratory analysis activities in support of:
  - *White House and USG*
  - *U.S. Embassy Requests*
  - *DOE and NE Leadership*

# Accident Management Strategies

Stabilize reactor and  
spent fuel pools

Keep radiation levels  
low so workers can  
continue to work

Establish remote  
operations capability

Take measures to  
maintain long-term  
integrity of  
containment

Plan emergency  
response if situation  
worsens

# Stabilize Reactors and Pools

## ■ Threats

- Reactor core melting thru vessel and attacking containment
- H<sub>2</sub> explosion in containment
- Spent fuel pool fire
- Another earthquake
- Corrosion and gap release of radionuclides episodically from now intact fuel rods

## ■ Mitigation

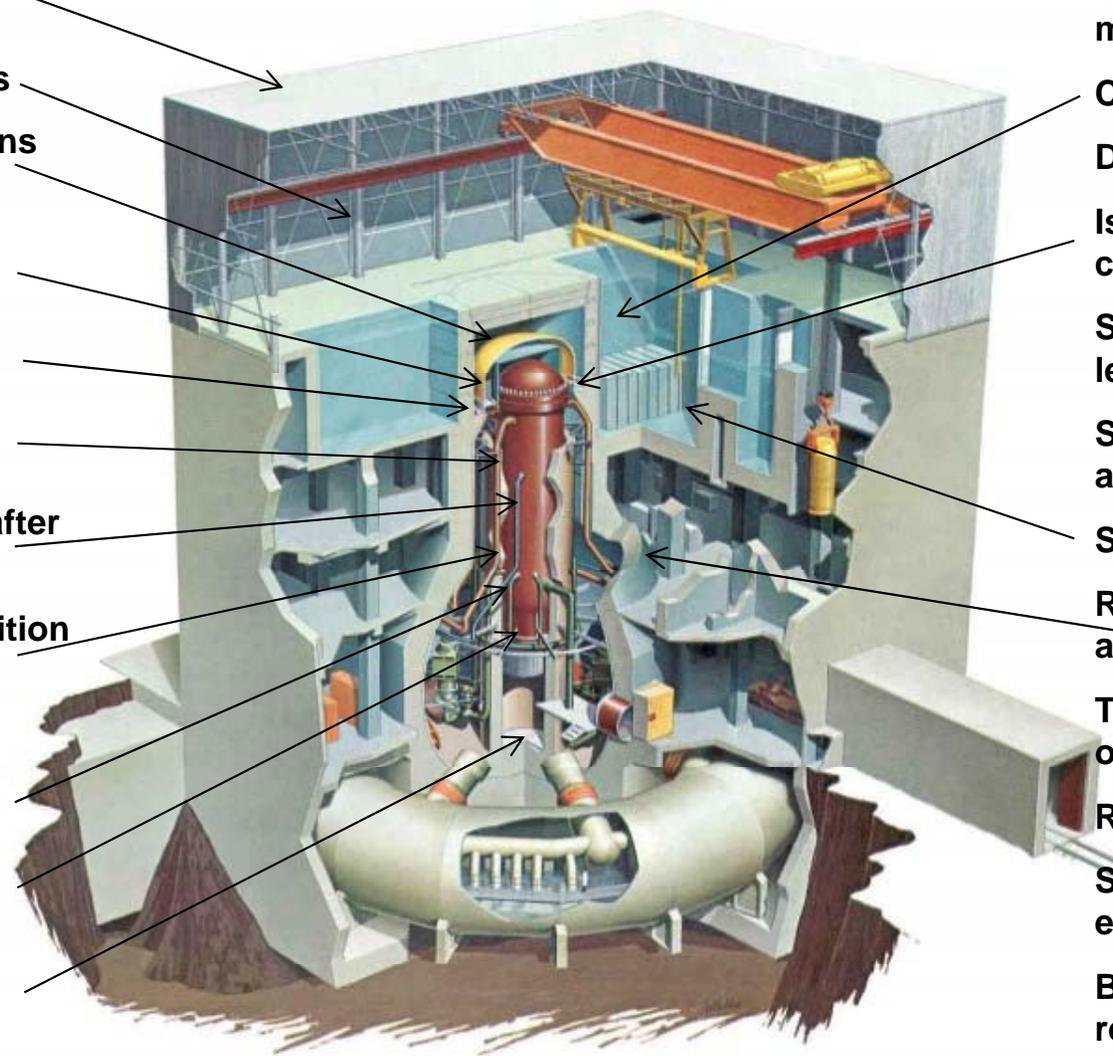
- Continue to inject water to remove decay heat
- Inert containment
- Keep adding water to pools
- Restore pool cooling
- Get more data on water level, radiation levels, chemistry
- Remove spent fuel from pools

# NERT Technical Studies related to Reactor & Pool Stabilization

- **Estimation of O<sub>2</sub> build up in Containment**
- **Long term decay heat removal**
  - Time to achieve fully passive heat removal
  - Alternative cooling strategies
- **Additional sensors for measuring water level, radiation levels, etc in pools, containment, and RPV**
  - New sensors
  - Restoring failed sensors
- **Melt progression estimates**
- **Potential for recriticality**
- **Potential for steam explosions**
- **Spent fuel pool boil down rate and Zr fire potential**
- **Salt precipitation and effect on cooling**
- **Mass and energy balances**
- **Air ingress analysis**



# DOE Analysis for Initial and Stabilization Phase



- Collection of daily status data and events
- Isotopic analysis of releases
- H2 production and explosions in reactor buildings
- N2 inerting options and processes
- Gas inventory calculations
- Potential for further H2 production and explosions
- Structural analysis of RPV after pressure spikes
- Core damage and fuel condition
- Sensor data analysis
- Water level calculations
- Corrosion in sea water solutions
- Drywell filling options and water level tracking
- Stabilization criteria

- Severe accident analysis and management
- Criticality determinations
- Decay heat calculations
- Isotope and radionuclide calculations and releases
- Spent Fuel Pool (SFP) water level analysis
- SFP hydrogen production and analysis
- SFP modeling
- Reactor building and SFP dose assessments
- Thermal analysis for SFP fill options
- Robotics tools for stabilization
- Shielding advice for on-site equipment
- Bioaccumulation for water releases



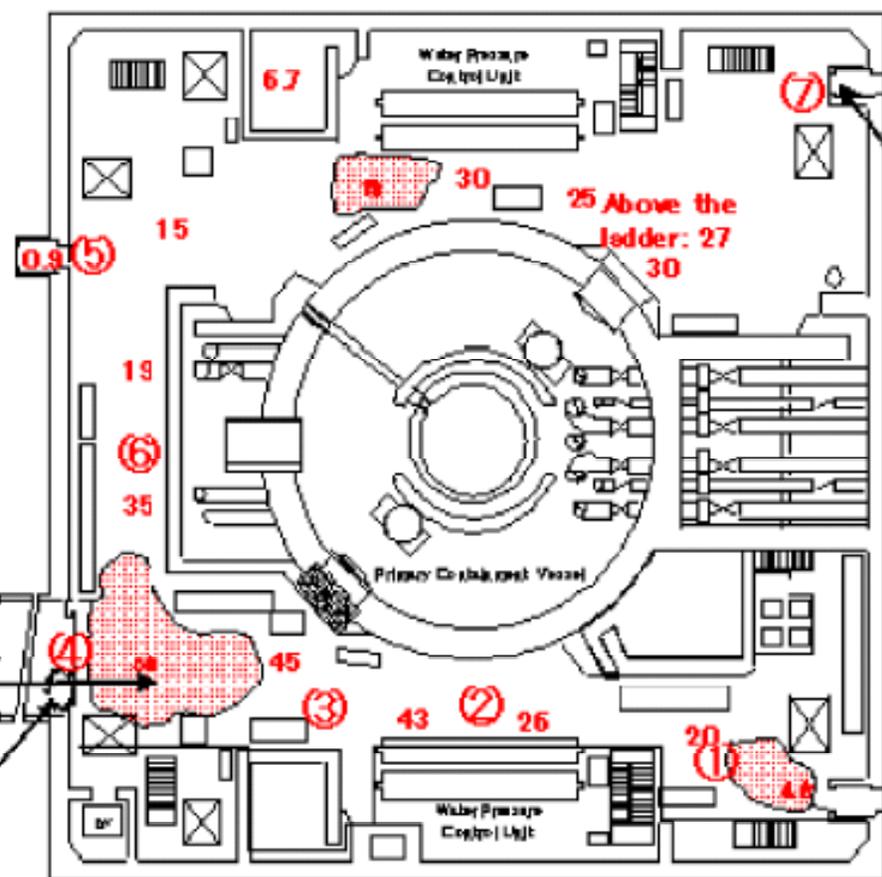
# Reactor Building Survey Results for Unit 2

- Recent (19 May) survey results for Unit 2 shown below; dose rates in the range of 15 to 45 mSv/hr (1.5 to 4.5 R/hr)
- Underscores the difficulty in restarting normal RHR equipment.

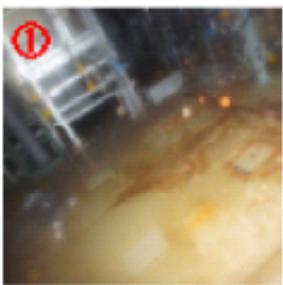


Water dripping found around the upper side of the machine hatch

Inside door of the equipment hatch: partly open (approx. 1/3)



Airlock did not open from inside

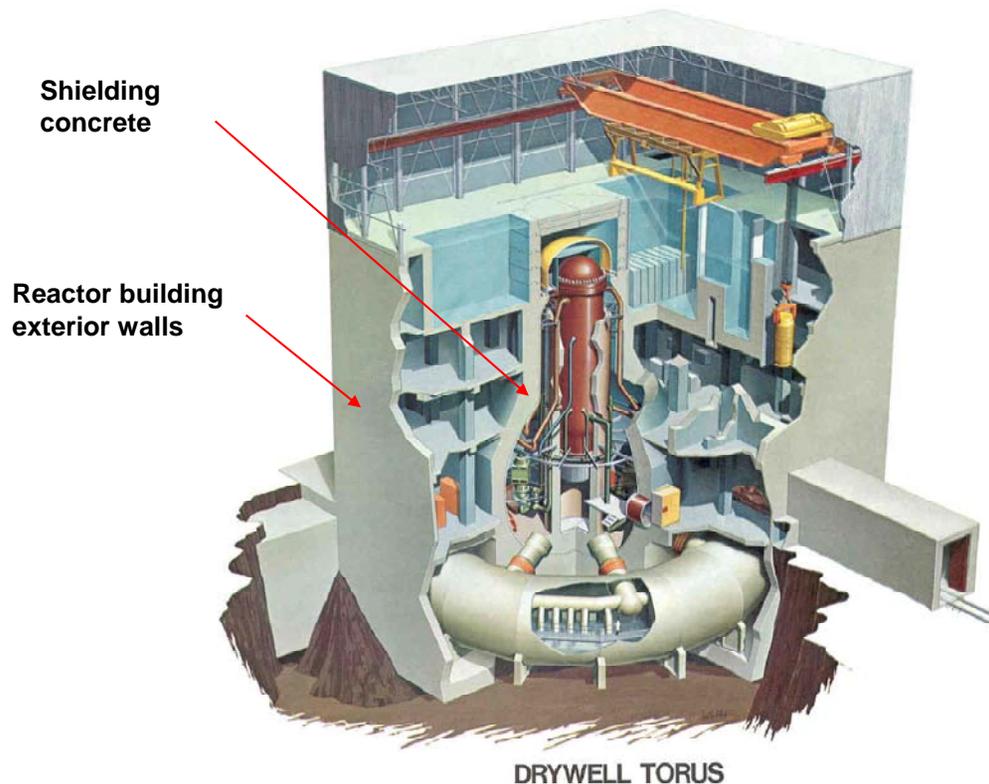
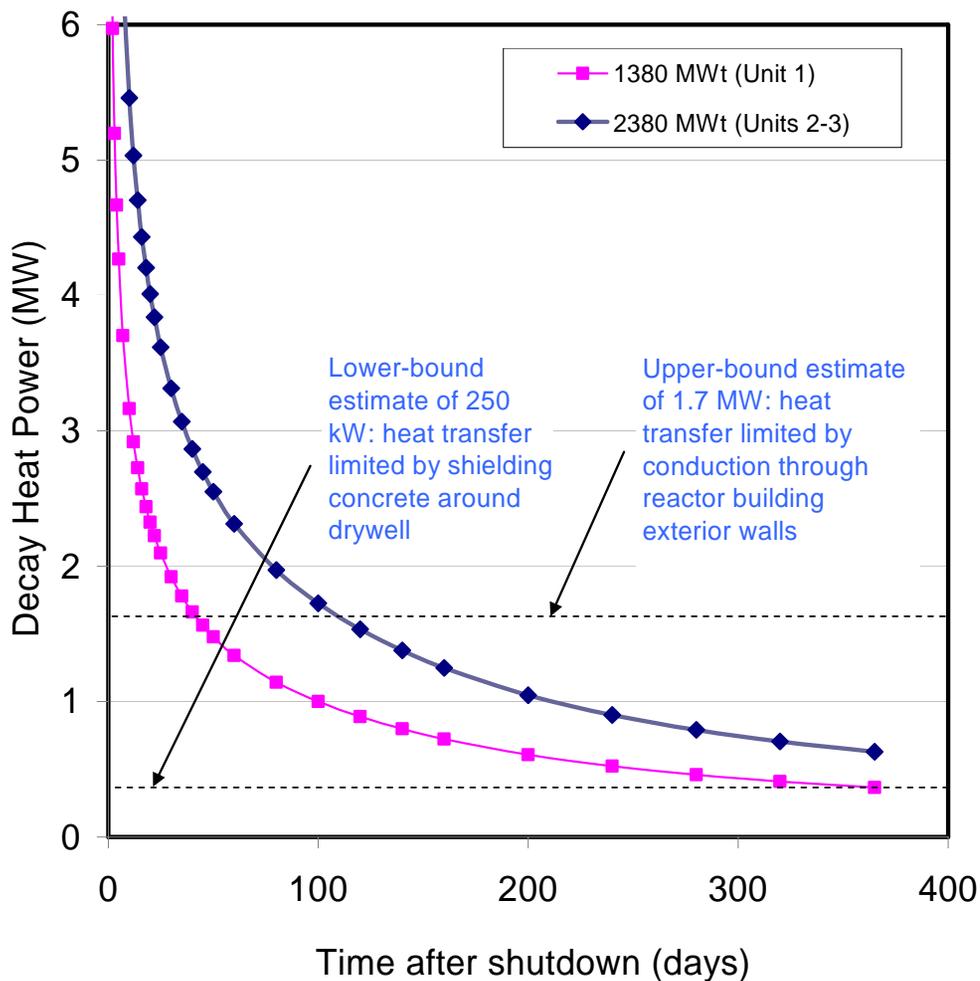




# Passive Cooling Assessment

## Nuclear Energy

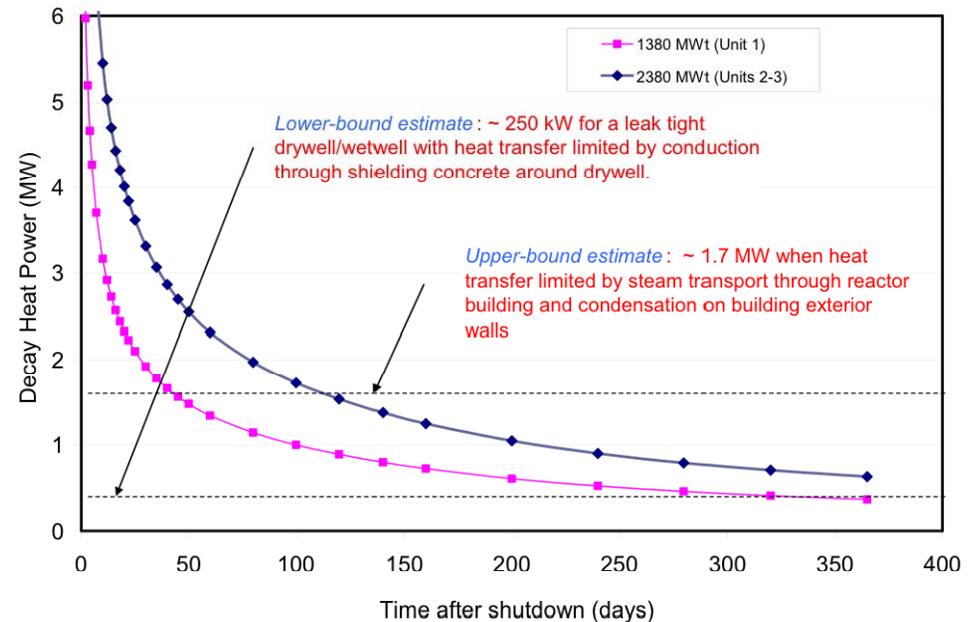
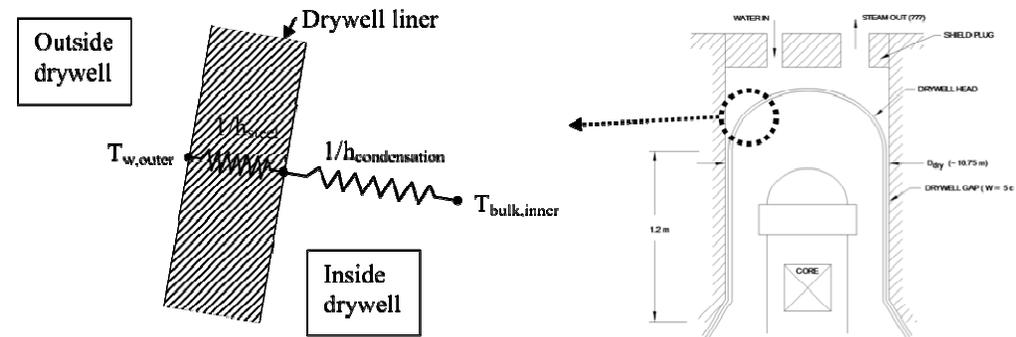
Calculated containment passive cooling heat removal rates compared with decay heat levels for Units 1-3





# Long-term Decay Heat Removal

- Decay heat cooling would take about 9 months using of passive cooling
- Explored options for accelerated cooling
  - Capture, treatment and reuse of cooling water
  - Alternate cooling approaches



# Background on Unit SFP 4 Explosion

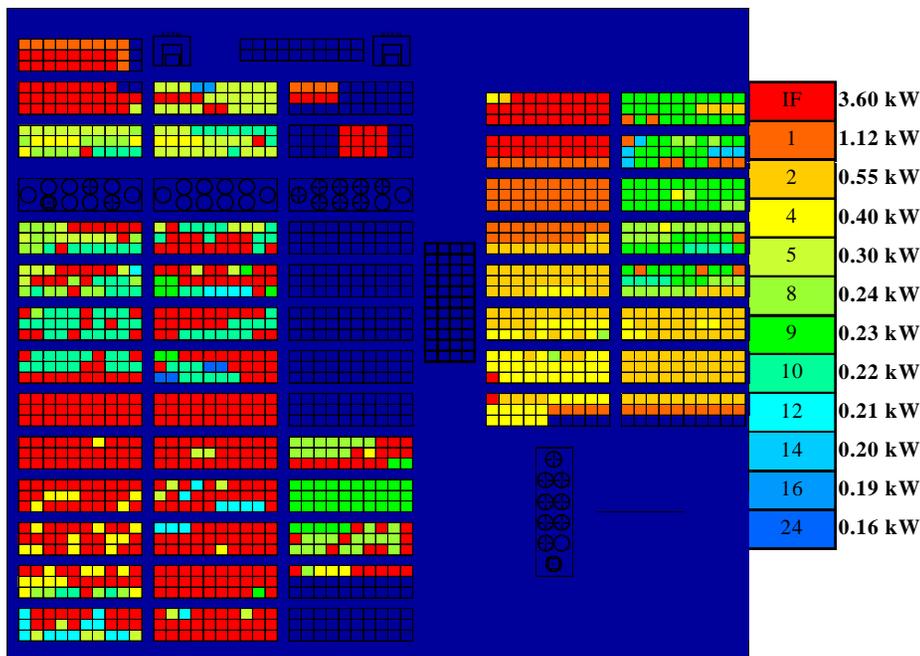
- **Unit 4 explosion Occurred March 15, 6:00 am – Approximately 90 hours after earthquake (Full core offloaded into pool, high heat load (~2.3 MW))**
- **The Unit 4 Explosion was originally attributed to hydrogen, but it has not be possible to definitively conclude this.**
- **An assessment of possible causes of the explosion was performed resulting three primary causes:**
  - Hydrogen produced from zirconium oxidation from the fuel cladding (or other fuel assembly and storage rack structures) in the fuel storage pool
  - Ignition of other flammable materials in the unit 4 building that were possibly being used for maintenance work (such as acetylene)
  - Hydrogen that was transferred through the stack vent lines from the hydrogen produced in unit 3
- **There were additional possible causes that have been proposed by others, but not analyzed:**
  - Hydrogen production from radiolysis
  - A proposed scenario based on material blockage preventing convective flow coupled with extreme boiling to provide hydrogen production without a low water level.



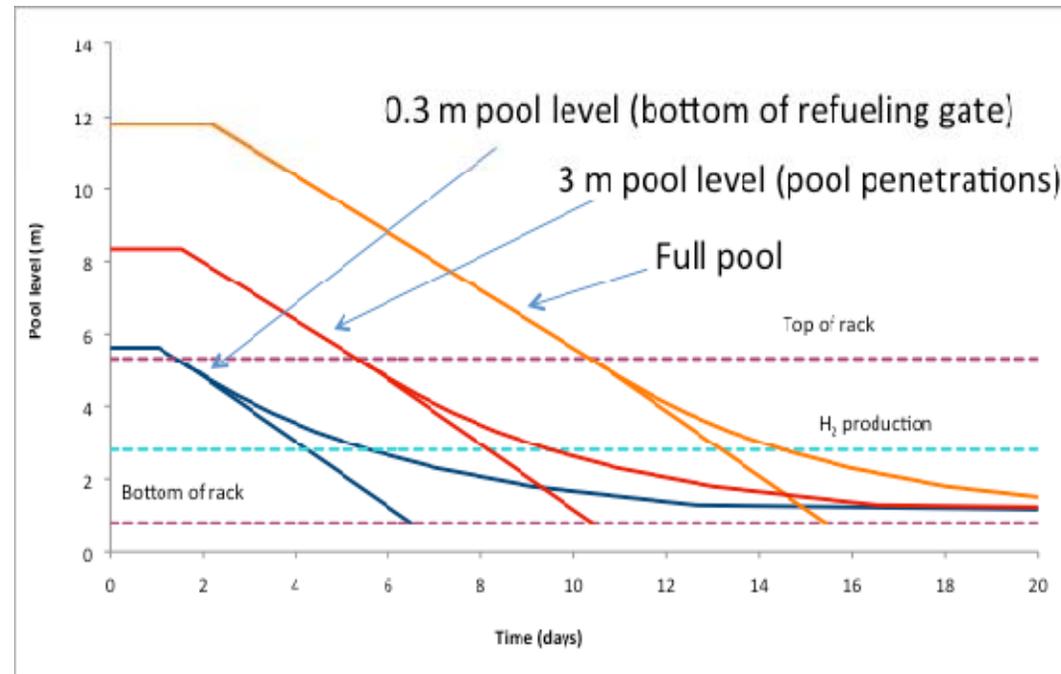
# Thermal analysis of pool heatup and boil off

- Models of spent fuel pools developed to predict pool boil off time and to understand hydrogen production
- Used to perform analysis of pool leakage scenarios
- Calculations based on several codes and models to provide range in turn-around time and fidelity

UNIT 4 SFP HEAT GENERATION RATE DISTRIBUTION



POOL LEVEL FOR VARIOUS SCENARIOS FOR UNIT 4

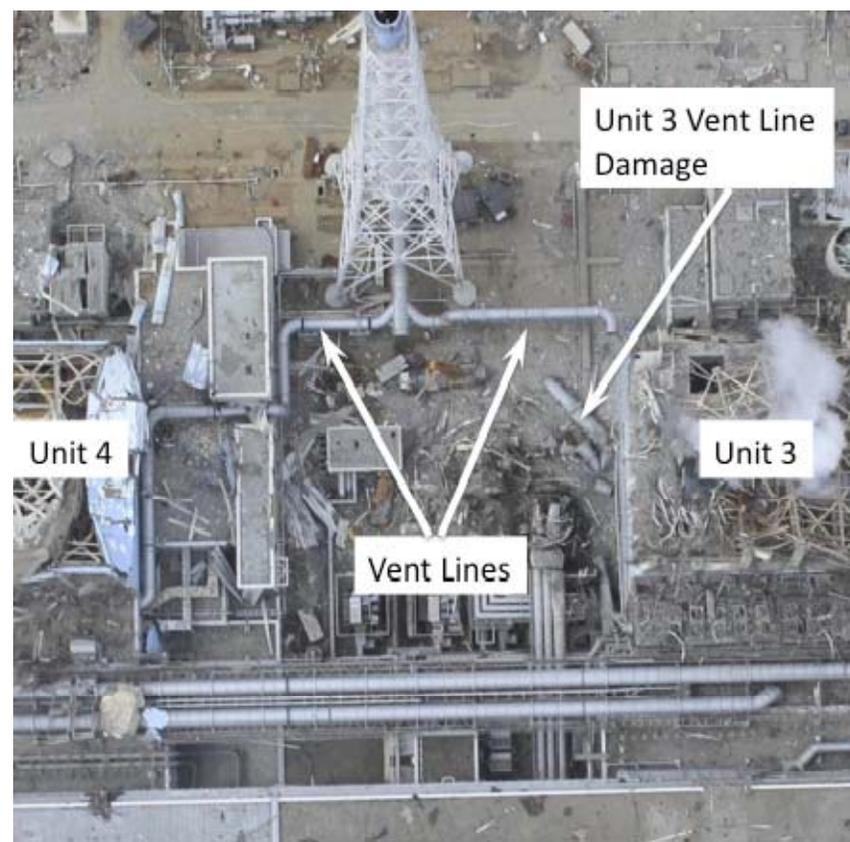


# Hydrogen Explosion From Fuel Storage Pool

- **Evaporation and boil off of a the full pool would take ~10 days and significant hydrogen production would not be expected until ~12-14 days after earthquake.**
- **For explosion at <4 days, there would have had to been leakage from pool**
- **Four leakage scenarios**
  - Leakage of refueling pool gate or gate seals (hydrogen production in 4-5 days)
  - Damage to refueling pool penetrations (hydrogen production in 8-9 days)
  - Damage to refueling pool liner (depends on damage, could be ~ 1 day)
  - Failure of two refueling pool cooling system anti-siphon check valves coupled with second failure of refueling pool cleanup system piping
  - Sloshing during earthquake (a few feet)
- **Refueling gate leakage or pool liner damage could result time frame for hydrogen production similar to that which actually occurred**

# Hydrogen from Unit 3 Transferred Through Stack Vent Lines

- The vent lines for Unit 3 and Unit 4 connect to the same stack
- A possible source of hydrogen in Unit 4 is leakage from Unit 3 to Unit 4 through this common vent line



# Keep Radiation Levels Low

## ■ Threat

- If radiation levels are too high, workers may be evacuated

## ■ Mitigation

- Isolate and stop RPV leak
- Clean-up contaminated water
  - *Extract, treat, store*
- Deliver more shielding
- Collect more data on chemical composition and radiation levels
- Deploy additional and redundant sensors

# NERT Technical Studies related to Reducing Radiation Levels

- **Conceptual design for system to extract, treat, and store contaminated water in turbine building**
- **Assessment of potential RPV and containment leak pathways**
- **Characterization on shielding requirements**
  - Shielding analysis for RHR pipes and water in turbine building
- **Sensors and robotics for radiological surveys**
- **Venting strategies**
- **Evaluate containment head seal failure and how to mitigate**



# Waste Water Storage & Treatment

- Significant quantities of water is collecting in the sumps and basements of the reactor and turbine building
  
- Japan government requested U.S. concepts for
  - Collection
  - Transfer
  - Storage
  - Treatment of waste water

Potential Near-Term Options to Mitigate Contaminated Water in Japan's Fukushima Daiichi Nuclear Plant  
April 7, 2011

Environmental cleanup

Weapons complex D&D

Waste management

LLW disposal



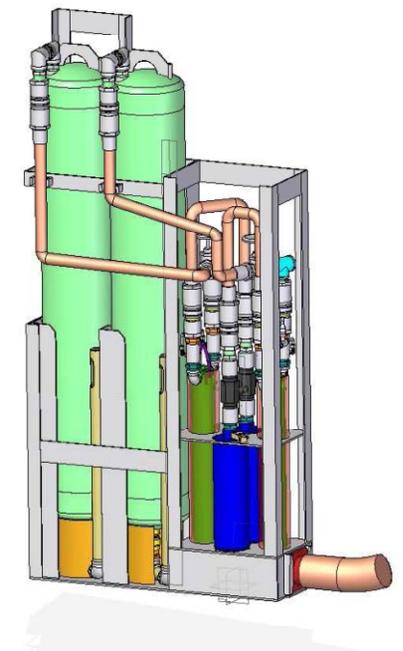
Hanford Spent Fuel K-Basin



Hanford Spent Fuel K-Basin

# Design Options for Water Retrieval and Treatment

- **Currently accumulated sea water**
  - Pump water from basement, tunnels and other locations
  - Treat water for storage/disposal
- **Cooling water**
  - Pump water from reactor vessels or spent fuel basins
  - Treat water for recirculation
- **Skid mounted systems**
  - Pumping/retrieval technologies for liquids and sludges
  - Pre-filters and filters to remove debris and solids
  - Ion exchange resin columns and sorption systems for removal of radionuclides
  - Evaporation systems
  - Treatment equipment contained in large shielded fuel transport casks
- **Utilize DOE-EM cleanup contractor base for expertise**



**Conceptual design of a water treatment system deployed in a spent fuel basin**

# Establish Remote Operations

## ■ Threat

- If workers evacuate, spent fuel and reactor could resume meltdown

## ■ Mitigation

- Install pumps and systems that can be operated remotely with redundancy
- Install remote data collection with back-up
- Install robotic and wireless monitoring system
- Evaluate fire risks posed by the onsite operations especially electrical fires

# NERT Technical Studies related to Remote Operations

- **Sensors and instruments to characterize site**
  - Emphasis on simple or off-the-shelf
- **Evaluating robots, pumps and equipment that can be operated remotely**

# Take Measures to Maintain Long-Term Integrity of Containment

## ■ Threat

- Containment may fail due to corrosion
- H<sub>2</sub> explosion
- Melt thru of core
- Overpressure
- Failure of silicon rubber head seals

## ■ Mitigation

- Design and install system for extraction, treatment, and storage (or recycle) of corrosive, radioactive liquid waste including heat removal
- Install additional and redundant data collection for water level, radiation levels, water pH, etc

# NERT Technical Studies related to Maintaining Long-term Integrity of Containment

- **Oxygen level in containment study**
- **Corrosion of RPV and containment by salt water**
  - Test matrix for testing steels
- **Conceptual design of salt/radioactivity removal system from RPV and/or containment**
- **Additional sensors for measuring water level radiation levels, pH, etc**
- **Evaluating use of Millstone I for staging & check-out of new systems**



# DOE Analysis for Recovery Phase

Collection of daily status data and events

Isotopic analysis of releases  
Passive cooling options

Dry-well gap cooling

Potential for further H2 production and explosions

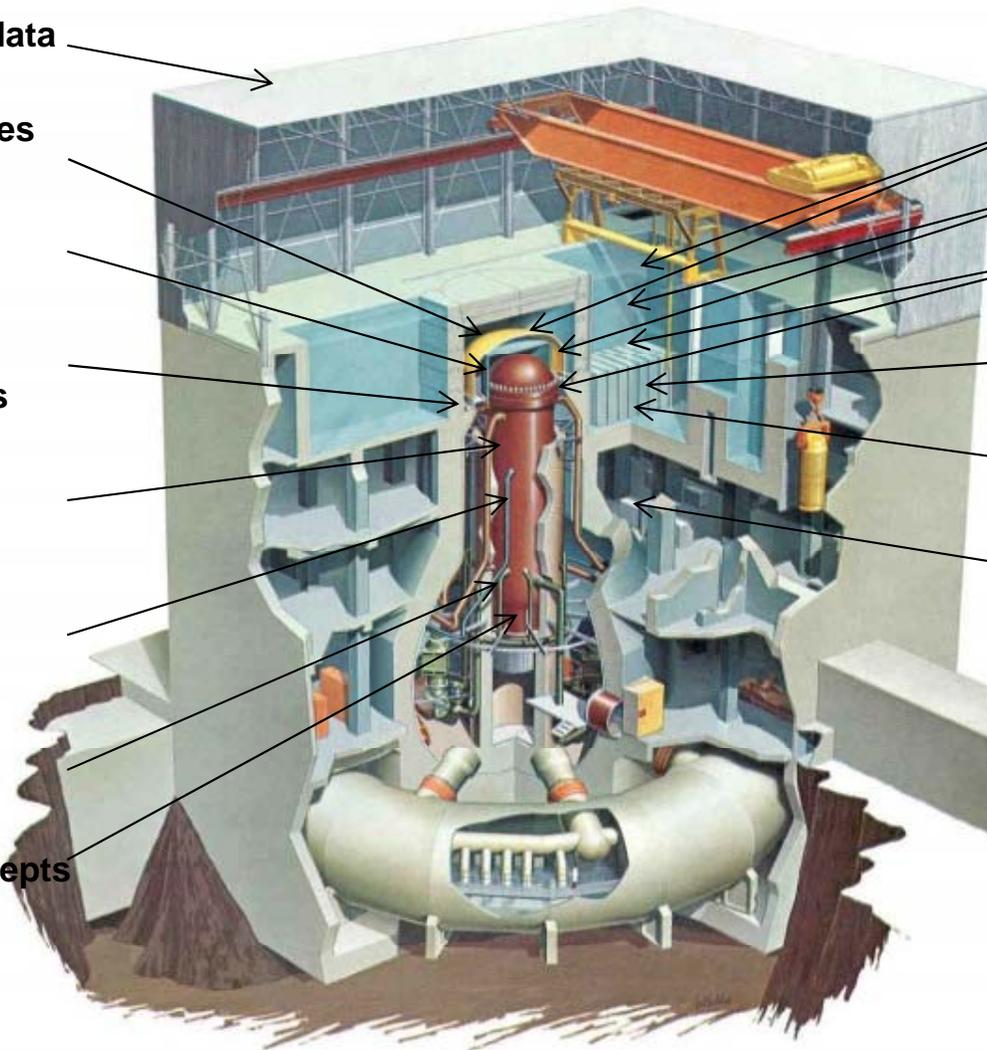
Clean-up and recycling of reactor coolant

Core damage and fuel condition

Corrosion in sea water solutions

Corrosion Mitigation Concepts

Leak management



Severe accident analysis and management

Criticality determinations

Decay heat calculations

Isotope and radionuclide calculations and releases

SFP modeling

Thermal analysis for SFP fill options

Reactor building and SFP dose assessments

Robotics tools for stabilization

Shielding advice for on-site equipment

Bioaccumulation for water releases

Water clean-up options

## Corrosion rates of RPV steels have been examined in the open literature

- **Fukushima-Daiichi plants utilize A533B steel for the pressure vessel (likely based on industry standards, but not confirmed)**
- **There is little data on this class of steels in salt or concentrated salt solutions as it is not a typical choice for any application**
- **Some data has been identified (and the search will continue)**

# Corrosion experience from Millstone unit 1

- **Sept. 1, 1972, the Millstone Unit 1 BWR was undergoing routine startup**
  - sea-water was introduced into full flow demineralizers
  - high conductivity water entered the reactor vessel via the condensate/feedwater system
- **Corrosion effects were observed in a matter of hours**
  - 116/120 of the local power range monitors (with very thin walls) were damaged by cracking
  - Stress corrosion cracking was observed in other reactor components and considered to be “superficial”
  - Subsequent tests at GE found tests produced results more severe than in the actual incident

# Implications from Millstone 1 experience to Fukushima

- **Cracking likely occurred in all units very quickly as seawater was introduced**
- **However, rapid cracking early in the event may not be sustained, consistent with the disposition of cracks that were deemed superficial to subsequent operation in Millstone**
- **The observations on carbon steel testing are consistent with other literature results from other industries for this class of alloys**



# Corrosion Rate for Carbon Steel

- Initial data for low-alloy steels (LAS) and carbon steels (C-steel) in salt-solutions

Alloy	Temp. (C)	Solution	Concen.	Other factor	Corrosion rate (mm/y)	Corrosion rate (mils per year)
LAS	25	NaCl	3.5%	--	0.025	1
LAS	25	NaCl	3.5%	--	0.38	15
LAS	25	NaCl	3.5%	H2SO4	3.8	150
C-steel	150	MgCl2	10%	Irrad.	0.07	27
A533B (Davis Besse)	310	Boric acid	High		64	2500

Davis Besse test data is still most conservative

# Plan Emergency Response

## ■ Threat

- Large release could expose large number of people to radiation

## ■ Mitigation

- Develop realistic, bounding source terms
- Perform radioactivity plume dispersion analysis
- Develop timeline of precursors and indicators to major event
- Develop guidelines for shelter vs. evacuate
- Develop contingency plans for sarcophagus construction

# NERT Technical Studies related to Emergency Response

- **Plume analysis**
- **Develop timeline for precursors and indicators to major release**
- **Scoping study to support permanent stabilization of reactor complex**

## Next Steps for DOE-NE

- **Continue our Support for the Government of Japan**
  - Peer reviews and analysis as requested
- **Data collection and accident forensics to support lessons learned**
- **Continued vigilance on potential accident consequences**

May 18, 2011

Dr. Edwin Hackett, Designated Federal Official  
Advisory Committee on Reactor Safeguards  
U.S. Nuclear Regulatory Commission  
Edwin.Hackett@nrc.gov

Dr. Said Abdel-Khalik, Chairman

This letter is in response to the invitation for public comments at the May 26, 2011 meeting of the U.S. Nuclear Regulatory Commission Advisory Committee on Reactor Subcommittee on Fukushima (Federal Register, vol. 76, no. 90, May 10, 2011, Notices, page 27103).

Many U.S. organizations (e.g. U.S. Environmental Protection Agency RadNet, U.S. Department of Energy national laboratories, and various state radiation laboratories) have been making measurements of fission products in environmental media resulting from the Fukushima incident. These measurements are likely being made to understand the resulting dose to the nearby public. I believe that the Nuclear Regulatory Commission in partnership with the U.S. Environmental Protection Agency could play an important role in assisting these many organizations in using their measurement data to convey to the respective publics the resulting exposure risk in a clear and consistent manner. I believe the public is interested in more detail than statements such as “are well below any level of public health concern”.

As with fallout resulting from above ground nuclear testing in the early 1960’s and contamination from the 1986 Chernobyl Unit 4 accident, environmental scientist have made use of the deposited radio-elements to characterize natural processes. The environmental contamination resulting from Fukushima may likewise present such an opportunity even at a much smaller levels. Such applications would likely be assisted with accurate and precise information on the relative isotopic abundances of the fission products, e.g. Cs-134/Cs-137, from each of the several Fukushima units that were compromised.

The International Atomic Energy Agency (IAEA) and the U.S. National Institute of Standards and Technology (NIST) have a number of environmental media standard reference materials, including fish and agricultural products, with low levels of man-made radioactive contaminants such as the following: IAEA-375, “Radionuclides and Trace Elements in Soil”; IAEA-384, “Fangataufa Sediment”; IAEA-414, “Fish”; IAEA-372, “Grass”; NIST 4353A, “Rocky Flats Soil 2”; and NIST 4357, “Ocean Sediment Environmental Radioactivity”. I’m not sure if an equivalent Japanese institution has considered developing similar environmental media standard reference materials with low levels of man-made radioactive contaminants from the Fukushima vicinity. If there is such intent perhaps subject matter experts at the IAEA and/or NIST may wish to assist if so invited.

In closing I would like to extend my thanks to the U.S. Nuclear Regulatory Commission for its timely start to document lessons learned from the Fukushima event. Through such positive actions I believe the U.S. Nuclear Regulatory Commission can assure the safe and productive usage of nuclear energy for the benefit of our nation.

Sincerely yours,

Mr. Donovan R. Porterfield

*Fairewinds Associates, Inc*  
*Burlington, VT 05408*

Date: May 26, 2011

To: The Advisory Committee on Reactor Safeguards

Good afternoon Mr. Chairman and members of the Advisory Committee on Reactor Safeguards.

I speak to you today as the Chief Engineer of Fairewinds Associates, Inc, and have not been retained by any group to make a statement at this meeting. Although there are many issues that must be resolved as a result of the nuclear accidents at Fukushima, I will focus on the single issue of containment integrity in the brief time you have allotted to me.

I first wrote to you, the ACRS in 2005 to express my concern regarding Vermont Yankee and the net positive suction head (NPSH) waiver that the ACRS granted to Vermont Yankee.

In 2008 Fairewinds was retained by CCAM to analyze the Millstone 3 containment. I spoke twice to the ACRS regarding my belief that the containment volume to power ratio at Millstone 3 is the smallest of any Westinghouse four-loop plant in the world. At that meeting, the ACRS staff acknowledged that it does not have the capability to analyze containment systems.

In 2009 Citizen Power retained Fairewinds to analyze the hole found in the Beaver Valley containment. That analysis was also discussed by the ACRS.

In 2010 when I met with you as a candidate for an opening on the ACRS, we discussed NPSH and its relation to containment integrity. I noted then that the Browns Ferry units had not been allowed the NPSH credit, yet ACRS granted the NPSH credit to Vermont Yankee five years earlier. It is illogical that that the people of Alabama have more accident protection than the people of Vermont.

In 2010 the AP1000 Oversight Group retained Fairewinds, and in April 2010, Fairewinds provided you with a report detailing a long history of containment failures around the country. In June 2010 Attorney Runkle and I met with you for an hour and a half to delineate my concerns regarding doubts about the containment integrity of the AP1000 design. In December of 2010 I wrote to you again notifying you of a significant amount of additional information about containment failures and flaws because at the October 2010 ACRS meeting, the NRC staff informed the ACRS that the NRC's calculations assume that there is zero leakage in the Mark 1 design.

Each time I have contacted you, the containment integrity data has been rebuffed and ignored. The accidents at the Fukushima Mark 1 BWR reactors have confirmed my belief that leakage of a nuclear containment cannot be based upon the assumption of a leakage rate of zero used by the NRC. This week, Tokyo Electric Power Company (TEPCO) has finally acknowledged that all three of the Fukushima Mark 1 containment systems are leaking significant radiation into the environment, and at least Units 1 and 2 began leaking on the first day of the accident. Unfortunately, the possibility of such containment failures, to which I have alerted you for the past six years, have been proven correct.

It is no surprise to me that containment systems have a long history of leaking and have now failed three times at Fukushima, yet it apparently comes as a major surprise to this advisory body and the NRC.

The ramifications of nuclear reactor containment leakage and failure the NRC and this body must consider are:

1. The SAMDA analysis for the Westinghouse AP1000 design is based upon false calculations that there is zero probability of a containment leak of any magnitude. The historical record prior to Fukushima proved this assumption false, and the Fukushima containment failures require that the AP1000 design be reanalyzed and retrofitted with advanced charcoal filters on the top of the shield building.

2. This advisory body has granted NPSH credits to numerous reactors around the country in violation of Regulatory Guide 1. Today, with a simple stroke of a pen, the ACRS can acknowledge its erroneous decision by requesting that the NRC revise the licenses of all reactors so that every reactor is in compliance with Regulatory Guide 1. And, with this one simple pen-stroke you can make all of the reactors applying the NPSH credit immediately safer than they are today.
3. Everyone sitting on the ACRS today knows that the pressure suppression containments on General Electric BWR's were inadequate when they were first designed. As a result of that design inadequacy, boiling water reactor containment vents were added in 1989 to prevent containment over-pressurization. Currently there are 23 Mark 1 containment systems in operation. All 23 Mark 1's have vents that were added as a Band-Aid fix. It is time for the ACRS to evaluate containment venting to determine whether or not any of these reactors be allowed to continue operation.
4. Moreover, ACRS should stop the license renewals of any BWR until the Fukushima accidents have been completely analyzed.

For the record, Fairewinds finds it disconcerting that both NEI (Nuclear Energy Institute) and DOE (Department of Energy) have been granted one hour each to make presentations to this body, when NEI and DOE are responsible for the promotion of nuclear power. I have brought these containment integrity issues to your attention for more than six years. In closing, I strongly suggest that each of you as members evaluate the bias you bring to the table when listening to experts with whom the nuclear industry disagrees.

Thank you for your time. I will gladly brief you in detail if you so choose.

Arnie Gundersen  
Chief Engineer, Fairewinds Associates  
Burlington, Vermont

# Medicine & Global Survival



# M & G S

## The Fukushima Nuclear Disaster

<b>A First-Hand Account of Japan's Nuclear Crisis</b> Katsumi Furitsu .....	28
<b>Young doctors speak out on the Fukushima disaster</b> .....	40
<b>Japan's Nuclear Nightmare</b> Ronald McCoy .....	41
<b>"A terribly difficult situation with a lot of uncertainties":</b> PSR Press Conference .....	46
<b>What may we learn from Fukushima?</b> Frank Boulton .....	57
<b>Radiation in medicine and in nuclear power plants: the same but very different</b> Andreas Nidecker .....	61
<b>Children, Teens and the Japan Disaster</b> Harry Wang .....	63

June 2011  
Special Edition



A publication of  
International Physicians for  
the Prevention of Nuclear War



*Medicine & Global Survival* is published by International Physicians for the Prevention of Nuclear War. A peer-reviewed journal on medical, public health, environmental, and humanitarian aspects of war—particularly nuclear war—and other forms of armed violence, *M&GS* was published continuously from 1990 (as *The PSR Quarterly*) through 2002.

**A complete archive of articles is available at [www.ippnw.org](http://www.ippnw.org).**

Editor: John Loretz



International Physicians for the Prevention of Nuclear War (IPPNW) is a federation of national medical organizations in 63 countries, representing doctors, medical students, other health workers, and concerned citizens who share the common goal of creating a more peaceful and secure world freed from the threat of nuclear annihilation. IPPNW received the Nobel Peace Prize in 1985.

**INTERNATIONAL PHYSICIANS FOR THE PREVENTION  
OF NUCLEAR WAR**  
66-70 UNION SQUARE, #204 SOMERVILLE, MA 02143 USA  
+1.617.440.1733 (TEL)  
+1.617.440.1734 (FAX)  
DIRECTOR@IPPNW.ORG (EMAIL)  
IPPNW.ORG  
PEACEANDHEALTHBLOG.COM



## CONTENTS

---

### The Fukushima Nuclear Disaster

#### About this issue

We decided to publish this special issue of *M&GS*—the first since 2002—in order to present in one place the perspectives on radiation and health, the dangers posed by nuclear energy, and the links between nuclear power and nuclear weapons technologies that IPPNW, its national affiliates, and its network of physician experts have made available to the press and to the public since the tragic events in Japan in March.

This is by no means a comprehensive collection, and we refer readers to the IPPNW Peace and Health Blog ([peaceandhealthblog.com](http://peaceandhealthblog.com)), where many more resources, including links to audio and video reports in several languages, are compiled.

<b>Introduction</b> .....	2
The Fukushima Nuclear Crisis, Month 1: A Brief Chronology .....	4
Fukushima Radioisotopes: Some Key Facts .....	6
<b>Editorials</b> .....	7
IPPNW has been a constant voice against nuclear energy .....	7
IPPNW Nuclear Energy Resolution .....	8
Nuclear power—“basta”! .....	9
Nuclear energy is no alternative .....	10
A potential source of radiation .....	10
Futility of nuclear energy: Alternatives for Nigeria .....	10
What could be worse? .....	12
From Hiroshima to Fukushima and back .....	13
The nuclear chain – splitting atoms, hairs and personalities .....	13
Just in case you missed it, here's why radiation is a health hazard .....	14
There really is no safe level of radiation .....	16
Anger is renewable energy .....	17
Children of Fukushima need our protection .....	17
<b>Commentaries</b> .....	19
<b>In the News</b> .....	23
<b>A First-Hand Account of Japan's Nuclear Crisis</b>	
Katsumi Furitsu .....	28
<b>Young doctors speak out on the Fukushima disaster</b> .....	40
<b>Japan's Nuclear Nightmare</b>	
Ronald McCoy .....	41
<b>“A terribly difficult situation with a lot of uncertainties”:</b>	
PSR Press Conference .....	46
<b>What may we learn from Fukushima?</b>	
Frank Boulton .....	57
<b>Radiation in medicine and in nuclear power plants: the same but very different</b>	
Andreas Nidecker .....	61
<b>Children, Teens and the Japan Disaster</b>	
Harry Wang .....	63



## INTRODUCTION

---

On March 11, 2011, a massive earthquake and tsunami caused extensive and irreparable damage to the nuclear reactors and spent fuel pools at the Fukushima Nuclear Power Plant in Japan, releasing harmful radiation into the environment. Since then, our physician experts have briefed government officials, medical professionals, and journalists in numerous countries about the impact of these radiation releases on public health in Japan and elsewhere.

IPPNW's first concern has been for the people of northeastern Japan, whose health and security have been seriously compromised by a misguided national reliance on nuclear-generated electricity. In the days following the disaster, IPPNW called for an expansion of the evacuation zone around Fukushima to protect the health of children and pregnant women, who are particularly vulnerable to the effects of radiation. That evacuation zone, comparable to the one that has surrounded the Chernobyl reactor since 1986, had been extended to 12 miles by mid April 2011.

IPPNW has been formally opposed to nuclear energy since 1998, when our International Council called for a halt to new plant construction and the phase out of existing nuclear plants because of the insurmountable dangers nuclear energy poses to health, the environment, and security.

First and foremost, we know that there is an inherent link between nuclear power and nuclear weapons. Every commercial reactor produces plutonium and other fissile materials that can be used in weapons programs. The biggest practical obstacle to the abolition of nuclear weapons is the proliferation of nuclear power plants around the world—the so-called nuclear renaissance promoted by the industry and its government proponents.

The nuclear reactors and spent fuel pools at Fukushima and at similar nuclear



**Rescue workers monitor children for increased radiation exposure after the Fukushima nuclear disaster. Reuters photo.**

power stations in the US and in other countries contain thousands of times the amounts of radioactive isotopes released by the Hiroshima and Nagasaki bombs. Isotopes that have been steadily and increasingly entering the air, soil, and water around the plant include iodine-131, which causes thyroid cancer; cesium-137, which causes cancer in the liver and kidneys; strontium-90, which causes leukemia; and plutonium-239, which has a half-life of 24,000 years and causes lung cancer when ingested in microscopic amounts.

The International Atomic Energy Agency and the World Health Organization have estimated that there were 6,000 to 9,000

new cases of cancer—primarily thyroid cancers and leukemias among children—as a result of the 1986 Chernobyl explosion in Russia, but there is good reason to believe that the true numbers are much, much higher. While it is now impossible to reconstruct an accurate data set of exposures and illnesses related to Chernobyl, independent experts have concluded that the IAEA/WHO data itself supports an estimate as high as 25,000 additional cancer deaths, and that the real number of deaths and illnesses is substantially higher—into the tens or even hundreds of thousands according to an assessment published by IPPNW-Germany in April 2011.

In addition to the immediate and long term health dangers from radioactive contamination, the environmental destruction resulting from each major nuclear power plant disaster to date has been enormous. While one of the two reactors at Three Mile Island continues to produce electricity, the area surrounding the plant, which was the site of the first commercial reactor meltdown in 1979, will have to be monitored for hundreds of years after the facility is finally decommissioned. There is a permanent 20-mile “exclusion zone” around the Chernobyl reactor. It is still too soon to assess the full extent of the long term dangers around Fukushima, but there is no doubt that an extensive area around the doomed reactors will be uninhabitable and unusable for generations to come.

IPPNW has additional concerns about nuclear power plants. They are tempting targets for acts of terrorism. Were someone to deliberately fly an aircraft into the nuclear plant at Indian Point, just north of New York City, for example, and rupture the containment vessel around the reactor, the probable result, planned or spontaneous, would be the evacuation of one of the world's major cities, immeasurable damage to the US economy,

and ripple effects—more like an economic tsunami—to the global economy.

IPPNW rejects the industry's arguments that nuclear energy is needed to mitigate the effects of global warming. Even if the other risks described above were acceptable, which we believe they are not, the world would need to build hundreds of new nuclear power plants, at an average cost of \$8-10 billion each, in order to bring about sufficient carbon reductions to protect the climate. Moreover, it would take decades to bring that number of plants online, by which time it would be too late to prevent a climate catastrophe. As Amory Lovins, Arjun Makhijani, and other energy experts have pointed out, investments in conservation, efficiency, and renewable energy sources such as wind and solar, are dollar-for-dollar more effective in reducing carbon emissions than comparable subsidies to the nuclear industry. As a simple matter of economics, nuclear energy fails every test. That is why IPPNW has joined other NGOs in supporting the International Renewable Energy Agency (IRENA), an intergovernmental body of nearly 150 countries committed to the rapid development and deployment of renewable, non-nuclear energy worldwide.

The attempts to provide security with nuclear weapons and to meet global energy needs with nuclear power share the same flawed premise: that we can prevent the most dangerous technologies ever created by human hands from ever failing. The lesson of Hiroshima and Nagasaki is that nuclear weapons must be abolished before they abolish us. The lesson of Fukushima—and of Chernobyl and Three Mile Island before that—is that we can no longer afford to roll the dice on a technology that cannot be allowed to fail, when failures now appear to be inevitable, with catastrophic consequences.

## The Fukushima Nuclear Crisis, Month 1: A Brief Chronology

*March 11, 2011*—A magnitude 9 earthquake strikes the northeast coast of Japan and is followed 30 minutes later by a tsunami. More than 20,000 people are killed or injured, almost 7,000 more are missing, and hundreds of thousands are forced to evacuate. The Fukushima Daiichi nuclear power plant is automatically shut down, but with no electricity to power the cooling systems, water inside the reactors began to boil off, threatening a meltdown of the uranium fuel in three reactor cores that had been running at the time. The Japanese government declares a state of emergency and advises people living near the plant to leave.

*March 12*—Tokyo Electric Power Co. (TEPCO) reports rising pressure inside reactor 1, begins to vent radioactive steam containing iodine-131 and cesium-137, and starts to evacuate 20,000 people who live within 10 kilometers of the plant. An explosion tears the roof off the building housing reactor 1; workers begin to pump seawater into the reactor; the government distributes iodine pills to nearby residents.

*March 13*—The evacuation zone is expanded to 20 kilometers; radiation levels continue to rise; seawater is pumped into reactors 2 and 3, which are also failing.

*March 14*—A second hydrogen explosion ruptures reactor 3, injuring several workers; evidence begins to appear that the reactor containment may have been breached; cooling fails at reactor 2, exposing the fuel rods to the air.

*March 15*—An explosion occurs in the building housing reactor 2 and radiation levels increase four-fold; the reactor containment is apparently damaged. A fire in the reactor 4 building, shut down for maintenance at the time of the earthquake, threatens the spent fuel ponds on the building's roof. Prime Minister Naoto Kan goes on television to warn residents within a 30-kilometer radius of the crippled plant to remain indoors. A fourth hydrogen explosion rocks the reactor 4 building. By day's end, radiation levels near reactor 3 reach 400 milliSieverts per hour; TEPCO evacuates all non-essential workers.

*March 16*—Water continues to boil off spent fuel ponds in reactors 3 and 4 but temperatures and pressures begin to drop at reactor 2, indicating some level of success. Radiation spikes, however, prevent workers from approaching the reactor, and a plan to dump seawater on the reactor by helicopter has to be postponed. Seawater is dropped on the exposed fuel ponds at reactors 3 and 4, but fears of a core meltdown at reactor 3 remain high.

*March 17*—Military helicopters drop water on reactor 3 building, while fire engines spray water from the ground.

*March 18*—The Japanese nuclear safety agency declares a Level 5 nuclear emergency on a scale of 7.

*March 19*—Radioactive materials above "allowable" levels are detected in raw milk in Fukushima Prefecture and spinach in Ibaraki Prefecture; Russian, French, and Finnish experts say Fukushima Daiichi is more likely a Level 6 nuclear emergency.

*March 20*—Reactors 5 and 6, which had not been operating at the time of the disaster, are stabilized in "cold shutdown."

*March 21*—Workers are evacuated from reactor 3 after smoke spews out.

*March 22*—More water is dumped on reactor 4.

*March 23*—Elevated levels of radioactive iodine are detected in a water treatment plant in Tokyo; the city government warns residents not to give tap water to infants.

*March 24*—Three workers are exposed to elevated levels of radiation at reactor 3. Water restrictions in Tokyo are lifted.

*March 25*—The government urges people living within a 20-30 kilometer radius of Fukushima Daiichi to evacuate voluntarily.

*March 26*—Radioactive iodine at 1,850 times the "allowable" level is found in seawater near the drainage for reactor 1.

*March 27*—High levels of radioactive water are found in tunnels near turbine buildings for reactors 1 and 3.

*March 28*—Highly contaminated water is found in the basement of the reactor 2 building. TEPCO announces that during the previous week it had detected plutonium in the plant.

*March 30*—TEPCO announces that reactors 1-4 have been decommissioned.

*April 2*—A cracked pit near the seawater intake for reactor 2 is found to be leaking water.

*April 4*—TEPCO begins dumping radioactive water into the sea, raising serious concerns about contamination of fish and other marine life, and bioaccumulation of radiation up the food chain; 520 tons of radioactive water will leak into the sea before the leaks are plugged.

*April 5*—Radioactive material is, in fact, found in fish caught off Ibaraki Prefecture.

*April 6*—TEPCO states that leaks of highly contaminated water into sea have stopped; pumps nitrogen gas into reactor 1 to prevent new hydrogen explosions.

*April 7*—Major aftershock strikes Miyagi Prefecture.

*April 10*—Work begins to remove rubble, some of it radioactive, with remote-controlled heavy machines; water in the plant tunnel system is so radioactive—more than 1,000 mSv/h—it must be removed before repair work can continue. Removal of radioactive water will continue throughout April and May.

*April 11*—The Japanese Nuclear and Industrial Safety Agency (NISA) raises the disaster at Fukushima Daiichi to Level 7 on the INES scale, making the crisis comparable to the Chernobyl disaster 25 years earlier.

*April 25* —Japanese government increases the maximum amount of radiation exposure for children to 20 mSv/year, prompting international censure and protests from IPPNW and other NGOs.

## Fukushima Radioisotopes Some Key Facts

Cesium-137, iodine-131, strontium-90, and plutonium have been the principal radioisotopes of concern to physicians, public health officials, and epidemiologists during the nuclear reactor crisis at Fukushima Daiichi. The following facts are drawn from radioisotope profiles produced by the US Centers for Disease Control and Prevention ([www.cdc.gov](http://www.cdc.gov)).

Cesium-137 (Cs-137) Half-life: 30.17 years  
*Mode of decay: Beta and gamma radiation*

Cs-137 is produced by nuclear fission for use in medical devices and gauges. Cs-137 also is one of the byproducts of nuclear fission processes in nuclear reactors and nuclear weapons testing. Small quantities of Cs-137 can be found in the environment from nuclear weapons tests that occurred in the 1950s and 1960s and from nuclear reactor accidents, such as the Chernobyl power plant accident in 1986, which distributed Cs-137 to many countries in Europe. External exposure to large amounts of Cs-137 can cause burns, acute radiation sickness, and even death. Exposure to Cs-137 can increase the risk for cancer because of exposure to high-energy gamma radiation. Internal exposure to Cs-137, through ingestion or inhalation, allows the radioactive material to be distributed in the soft tissues, especially muscle tissue, exposing these tissues to the beta particles and gamma radiation and increasing cancer risk.

Iodine-131 (I-131) Half-life: 8.06 days  
*Mode of decay: Beta particles and gamma radiation*

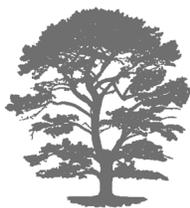
I-131 is produced commercially for medical and industrial uses through nuclear fission. It also is a byproduct of nuclear fission processes in nuclear reactors and weapons testing. External exposure to large amounts of I-131 can cause burns to the eyes and on the skin. Internal exposure can affect the thyroid gland...which cannot distinguish between radioactive iodine and stable (nonradioactive) iodine. If I-131 were released into the atmosphere, people could ingest it in food products or water, or breathe it in. In addition, if dairy animals consume grass contaminated with I-131, the radioactive iodine will be incorporated into their milk. Consequently, people can receive internal exposure from drinking the milk or eating dairy products made from contaminated milk. Once inside the body, I-131 will be absorbed by the thyroid gland exposing it to radiation and potentially increasing the risk for thyroid cancer or other thyroid problems.

Strontium-90 (Sr-90) Half-life: 29.1 years  
*Mode of decay: Beta radiation*

Sr-90 is produced commercially through nuclear fission for use in medicine and industry. It also is found in the environment from nuclear testing that occurred in the 1950s and 1960s and in nuclear reactor waste and can contaminate reactor parts and fluids. Sr-90 can be inhaled, but ingestion in food and water is the greatest health concern. Once in the body, Sr-90 acts like calcium and is readily incorporated into bones and teeth, where it can cause cancers of the bone, bone marrow, and soft tissues around the bone.

Plutonium Half-life: Pu-238—87.7 years; Pu-239—24,110 years;  
Pu-240—6,564 years  
*Mode of decay: Alpha particles*

Plutonium is created from uranium in nuclear reactors. It is a by-product of nuclear weapons production and nuclear power operations. Because it emits alpha particles, plutonium is most dangerous when inhaled. When plutonium particles are inhaled, they lodge in the lung tissue. The alpha particles can kill lung cells, which causes scarring of the lungs, leading to further lung disease and cancer. Plutonium can enter the blood stream from the lungs and travel to the kidneys, meaning that the blood and the kidneys will be exposed to alpha particles. Once plutonium circulates through the body, it concentrates in the bones, liver, and spleen, exposing these organs to alpha particles. Plutonium that is ingested from contaminated food or water does not pose a serious threat to humans because the stomach does not absorb plutonium easily and so it passes out of the body in the feces.



## EDITORIALS

---

As the nuclear reactor crisis in Japan unfolded in the days and weeks following the earthquake- and tsunami-induced disaster at the Fukushima Nuclear Power Station, IPPNW doctors, medical students, and policy experts wrote numerous editorials and commentaries that were published in newspapers and magazines, online news sites, and the federation's own Peace and Health Blog ([peaceandhealthblog.com](http://peaceandhealthblog.com)). Many of these articles are collected here, with the publication date and source noted.

---

### **IPPNW has been a constant voice against nuclear energy**

For the past six days, IPPNW doctors in a number of countries have been overwhelmed with requests from journalists hungry for information about the health effects of radiation and the potential health consequences of the crisis at Japan's nuclear reactors.

The leaders of IPPNW-Germany, many of them experts on radiation and on Chernobyl-related illnesses, happened to be meeting in Frankfurt on the weekend the disaster unfolded, and have worked around the clock ever since analyzing what information is available and putting it into a medical and public health context (see Xanthe Hall's excellent piece, "Nuclear power—basta!").

In the US, PSR has mobilized its own physician leadership to help reporters (who are openly frustrated with the quality of "official" briefings) understand what is going on. A PSR press briefing conducted by telephone from Washington, DC yesterday drew questions from the country's leading newspapers not only about the basic science of radiation, but also about how to interpret and evaluate the information coming from official sources.

Physicians in Japan, Switzerland, Australia, India, Greece, France, and other countries are explaining the biological effects of cesium-137, iodine-131, strontium-90, and

plutonium-239 (a component of the MOX fuel in one of the Fukushima reactors) to an apprehensive and confused public.

To take just one example, if you google Ira Helfand, a PSR/IPPNW leader whose skill as an emergency physician is obvious in his clear, calm explanations of complex and terrifying facts, you will find so many print, television, and radio interviews since March 11 that one can only wonder when he has slept let alone treated patients since this started.

What IPPNW is saying in the midst of crisis, sadly, is no different from what we have been warning for many years. A look back through the historical record shows that PSR issued an appeal to halt nuclear energy development in the US in 1979, mere weeks before the Three Mile Island incident.

IPPNW-Germany has made it a special part of their mission to study and document the effects of Chernobyl—an understandable response to the large amounts of radioactive fallout from Chernobyl that landed on German soil. They have held major conferences on Chernobyl over the years, and were planning the next one in Frankfurt when reality intruded.

PSR/IPPNW-Switzerland held its own conference, "Rethinking Nuclear Energy and Democracy After September 11, 2001," in 2003. The conference presentations, some of them calling the whole concept of "nuclear

IPPNW's Peace and Health Blog ([peaceandhealthblog.com](http://peaceandhealthblog.com)) contains a special section devoted to the Japan nuclear crisis, including links to online interviews, news articles, and analysis by IPPNW experts.

---

**What IPPNW is saying in the midst of crisis, sadly, is no different from what we have been warning for many years.**

---

safety” into question, were gathered into a publication that is still worth reading almost a decade later.)

IPPNW’s organizational position on nuclear energy was adopted at the 13th World Congress in Melbourne, in 1998. The vote was not unanimous (the notes from the International Council meeting reflect opposition from the Finnish and Japanese affiliates), but the rejection of nuclear energy approved by a large majority was unambiguous and the reasons given touched on every major concern: the link with nuclear weapons proliferation; the unsolved (to this day) problem of

nuclear waste; health and environmental dangers, whether from accidents, terrorist attacks, or “normal” operations; economic costs; and the availability of wiser alternatives.

In the aftermath of Fukushima, the Melbourne resolution sounds even more urgent today than it did some 12 years ago.

—John Loretz

*IPPNW Peace and Health Blog*

*March 17, 2011*



**Nuclear Energy Resolution  
IPPNW International Council  
December 9, 1998  
Melbourne, Australia**

**BEARING IN MIND THAT:**

- The acquisition of nuclear-weapons-usable materials is the most difficult step in the making of nuclear weapons and the most important obstacle to proliferation;
- Commercial reprocessing produces plutonium that can be used to make nuclear weapons;
- The creation of a technical infrastructure and of plutonium (and/or uranium-233) is an inevitable accompaniment of the use of nuclear energy, and large surpluses of weapons-usable commercial plutonium have been built up as a result;
- Nuclear power makes proliferation more likely and verification more difficult;
- All existing designs of nuclear reactors are vulnerable to accidents and can become targets of attack, for instance in conventional wars or due to terrorism, thereby creating an intolerable risk for health and environment;
- The commercial nuclear fuel cycle creates health risks for many generations in a manner similar to nuclear weapons production;
- There are far more satisfactory ways from the point of view of economy and health to meet the world's energy needs than nuclear energy;
- Unless the industrialized countries of the West make a firm commitment to phase out nuclear energy other countries are unlikely to give it up.

**BE IT RESOLVED THAT IPPNW WILL WORK TOWARDS THE FOLLOWING GOALS:**

- Reprocessing, both commercial and military, should be stopped.
- No new nuclear power plants should be built or commissioned in any country and existing nuclear power plants should be phased out at most by the end of their current license periods.
  - Separated plutonium, whether from commercial or military sources, should not be used in nuclear reactors to generate energy.
  - Immobilization of plutonium should be used as a way to put all military and all separated commercial plutonium stocks into non-weapons-usable form.
  - The financial, scientific, and technological resources of society should be used to meet energy needs in far more efficient and less dangerous ways than nuclear power.

**THE FIRST STEPS TO BE TAKEN SHOULD INCLUDE:**

- Informing all IPPNW affiliates about the links between nuclear power and nuclear weapons.
- At this crucial juncture, creating a project to work in coalition with other groups to stop all military and commercial reprocessing.
- Creating a project to analyze the health implications of use of nuclear energy as a power source.

## Nuclear power—“basta”!

It really is enough now. Hiroshima, Nagasaki, Windscale, Harrisburg, Chernobyl and now Fukushima. When will it be enough for governments around the world to understand that there is no playing with nuclear fire? The moment that Oppenheimer saw the first nuclear explosion he understood the magnitude of this new and awful kind of energy. Now the raw power of nature meets our technical arrogance and is destroying Japan in the form of earthquakes, tsunami and the unleashing of terrifying quantities of radiation. It hardly bears thinking about. But we must think about it and act upon it.

As I boarded the train this morning in Frankfurt heading back to Berlin, an exhausting day behind me, the news was still totally unclear. Had there already been a meltdown or was it yet to come? Would there be more than one meltdown? How much radiation had already leaked out of the reactor that had exploded and how much had they deliberately released to reduce pressure in the core?

In one of the television interviews I gave yesterday the interviewer began by saying “With what we know now about the accident at the Fukushima reactor, what will be the consequences for the Japanese people?” and I had to ask back “what do we know now? We know hardly anything at all.” Impossible to answer other than to say, as our outgoing Chairperson Angelika Claussen did: “we need more transparency.” How can physicians even begin to react to a disaster such as this without any real knowledge of the amounts of radiation and measurements of isotopes? It reminded me of Chernobyl where it took days before they even admitted what had really happened.

But here it could be even worse. More than one reactor is affected. Maybe more earthquakes are on their way. Evacuation is hampered by the destruction caused by the earthquake. Presumably medical services are also severely hindered from helping radiation victims and have their hands already full with mechanical injuries caused by the earthquake. It is not over yet, maybe it is just beginning. I fear the dragon has only opened its mouth, but not yet breathed out its horrific fire.

IPPNW-Germany was meeting in Frankfurt this weekend for their annual gen-

eral meeting. By Saturday morning it was clear that we could not continue with our planned agenda. For the first hour or two a small group tried to gather information and draw conclusions from what had happened or might have happened. Most of the media reports were conflicting. We studied the pictures of the reactor and tried to surmise how big the leak might be and whether we were already facing a meltdown. After a two-minute silence, we then separated into groups to decide how to act, how to react. At the same time, our press officer Angelika Wilmen rang the main TV stations and offered them interviews with our experts. The one good thing was that we were all together: Henrik Paulitz, Angelika Claussen, Reinhold Thiel, Winfred Eisenberg—all experts on radiation and health, or on security deficits in nuclear power plants. The media reaction was nothing short of overwhelming. Other doctors were quickly briefed so they

could help in reacting to all the interview requests. All of us, including myself, were called upon to give statements, appear on TV or speak to the radio.

Meanwhile the other doctors were ready to take to the streets. Equipped with banners, balloons, and “nuclear” umbrellas, we organised a flashmob in the centre of Frankfurt. About 100 of us were there, chanting loudly for the nuclear power plants to be shut down. One group shouted “nuclear power” and the other answered “basta!” The TV filmed us and people around showed their approval. It felt good to be shouting our frustration and anger. No doubt there will be more actions in the next few days and weeks. What else

---

**It really is time that politicians admit that the use of nuclear energy, both civilian and military, starting with uranium mining and ending with a chain reaction, controlled or uncontrolled—contaminates, kills and causes immense suffering.**

---

can we do?

The answer to that question was also brainstormed and ideas emerged. More information on radiation and health in short, easy-to-read flyers that can be handed out on the streets is needed. The call for people to immediately change their electricity supplier to one that only provides renewable energy to the net should be insistent, so that money is cut off from the nuclear industry. Moving money from banks that invest in the nuclear industry, asking “how radioactive is my bank?” Flooding the government with letters demanding that nuclear power plants are shut down, right away. Calling worldwide for an end to nuclear power, starting immediately

with all nuclear power plants in regions where there is any seismic activity. These were just a few of the ideas that were voiced.

It really is time that politicians admit that the use of nuclear energy, both civilian and military, starting with uranium mining and ending with a chain reaction, controlled or uncontrolled—contaminates, kills and causes immense suffering. There have been enormous attempts to cover up the data from Hiroshima and Chernobyl so that people swallow the nuclear lie. It is not safe, it is not clean, it is not the answer to climate change, it does not keep the peace. It is our only enemy and it will kill us. Those who are not killed will helplessly watch the others die and not be able to help them. I do not exaggerate. We are doing exactly that right now, watching the people of Japan—already history's hibakusha—dying, and we cannot do anything. We can only raise our voices loud and clear and say—basta!

—Xanthe Hall  
*IPPNW Peace and Health Blog*  
March 13, 2011

### **Nuclear energy is no alternative**

The events around the Japanese quake and nuclear-reactor damage are tragic and will be repeated again in some other iteration as long as we embrace nuclear energy as an alternative to fossil fuels. The damage to the nuclear reactor and release of nuclear waste compound the tragedy of the earthquake because they now likely condemn the people of Japan (especially the children) to higher rates of cancer over the following decades as well as an expensive cleanup of waste that has an extraordinarily long half-life.

The Japanese government put down the most sophisticated system possible to prevent this exact course of events and it still happened. As we mourn this catastrophe, I hope we do not forego the opportunity to learn from it as well. We owe it to ourselves and the Japanese people.

—Richard Grady  
*Letter, Seattle Times*  
March 14, 2011

### **A potential source of radiation**

Indian Doctors for Peace and Development (IDPD) has expressed its grief over the devastation caused by the tsunami and earthquake in Japan. The blast at the nuclear power plant vindicates the stand of the International Physicians for the Prevention of Nuclear War (IPPNW) and IDPD that nuclear power plants are a potential source of radiation. We doctors have always maintained that the option of produc-

ing electricity from nuclear power is dangerous and expensive.

The world still remembers the Chernobyl nuclear accident; an estimated 93,000 people are reported to have perished. The health of the “liquidators” (clean-up workers), engaged in the task of clearing the area, is a matter of serious concern even today.

An accident in a nuclear power plant is almost like an atomic explosion with devastating consequences on flora, fauna and ecology. The Government of India should review its nuclear power policy and use other safe renewable options for power generation. These are widely available alternatives in our country. Japan has the best disaster management capacity; in contrast India's track record is extremely dismal. Our policy-makers ought to derive a lesson from the calamity in Japan.

—Subhas Chakraborty  
*The Statesman (India)*  
March 14, 2011

### **Futility of nuclear energy: Alternatives for Nigeria**

The footage of the double sets of tragedy in Northern Japan are a common scene on our television screens and internet pages. One set being natural (earthquake and Tsunami) and the second, technology failure (nuclear plant accidents and potential radioactive leakages).

On Friday 11th March, 2011 at 2.46pm (Japanese time) 8.9 magnitude earthquake hit the port city of Sendai in Northern Japan sending severe shock waves across the country and region. As if this was not enough, a heavy tsunami with waves as high as 8-10 meters raged across Japan and the Pacific sea at the speed of about 1000km/hr. Tsunami alarm was immediately sounded within Japan and 53 countries on the path of this monstrous phenomenon.

My treatise would be limited to the nuclear plant (NP) explosions and the potential radioactive leakages with reflection on the Nigerian planned Nuclear energy acquisition with the evitable risk such investment present for public health and human survival.

The much talked about reform in the energy sector had been raised as political bait tossed around by government since the return to democracy in 1999. Several solutions to “blackouts” had been promised but never delivered. The roadmap to Nigerian's energy sectors should be robustly driven by diversities in clean and modern sources of power production.

Our nuclear energy adventure would be aborted even before take off by monumental bureaucracy and technical challenges; we

have no proven maintenance culture not to think of an uninterrupted electric supply supported by an effective backup to an acquired NP. The NPs at Fukushima Daiichi, Japan had three tiers of electricity supply to the cooling system, all of which failed by forces of nature, the quake and tsunami. Should Nigeria be lucky to have regular electricity supply to power the cooling system, we may run out of water for one phantom reason or another.

The outcome of the failed cooling system at Fukushima-1 NP was a built up of pressure within the reactor and an eventual explosion releasing radioactive substances into the environment- a scary development of an immense historical dimension. However, conflicting reports of the exact amount of radioactivity has deepened the crisis and prompted heightened fears on the Citizens and the Government. The Nuclear watchdog Chief, Ambassador Amano would be travelling to Japan to see things for himself. Fukushima-3 NP exploded on 14 March and Fukushima-2 the following day while fire was reported in Fukushima-4 NP.

Plutonium, a highly radioactive and vital component of nuclear reactors is the element release in the event the core of the reactor is compromised. The risks of exposure of humans include radiation illnesses, future carcinoma and deaths depending of the dose of exposure. However, it is hope that the winds would blow the emissions eastwards to reduce contamination.

Apart from leakages and accidental fallouts, disposal of nuclear waste have always posed a regrettable environmental and health disasters of unimaginable proportion.

Chernobyl in Ukraine is a case in context where effects of radioactive fallout of 1986 are still felt as far as the Nordic countries. Other NP accidents resulting in release of radioactive materials were Windscale, UK in 1957, Kyshtym, Russia in 1957 and Three mile Island, USA in 1979 just to mention a few. Debate has been re-ignited as to the closure of some of the 104 NPs in USA as the result of the current nuclear disaster in Japan.

In 2006, a near meltdown of the reactor occurred after fire broke out at a NP in Ringhals, Sweden few months after a reactor in Forsmark also in Sweden went up in flames. Health and environments campaigners have not ceased advocating for complete elimination of NP in Sweden, Germany and other European countries.

The International Physicians for the Prevention of Nuclear War (IPPNW) for over 30 years have advocated and educated the public on the dangers of eventual radiation fallout from nuclear weapons. It is universal

knowledge that nuclear reactors are precursors of nuclear weaponry. An accidental meltdown of such weapons and reactors as currently witnessed in Japan poses an enormous danger to the environment, health of humans and living things. IPPNW's effort was recognized by the UNESCO Peace Education Prize in 1984 and by the Nobel Peace Prize in 1985.

In Nigeria, the affiliate of IPPNW is known as Society of Nigerian Doctors for the Welfare of Mankind with membership all over Nigeria.

There are viable alternatives for power generation in this modern age. Hydroelectricity could be relevant and sustainable in some communities for example, NESCO was efficient at electricity supply to Bukuru and part of Jos in Plateau state from Kura falls when I resided there. Shiroro falls had its area of supply. Qua falls in Cross River state should be exploited to generate electricity for her catchment areas.

Hydropower may be complimented with other sources such as wind turbines that could be conveniently mounted offshore across the vast Bight of Benin to supply electricity to the entire South West, South South and South Eastern zones of Nigeria. Communities in the other zones could also benefit from electricity generated from wind depending on their topography.

What of our God given sunlight? This source is an envy of countries in the northern hemisphere especially those with long dark nights.

A European consortium has planned to tap sunrays from the Sahara desert to supply electricity to most of Europe, a project that if completed would begin shut down of NPs in the subscribed nations. A paradox hits hard on our psyche that is comparable to having crude petroleum oil and refineries but we wait in long queues for its by-products. Countries without crude petroleum oil or refinery have petroleum products 24/7. It would be reasonable that we hide our faces in shame if we cannot use technology to harness the benefit of our abundant sunlight.

Biodegradation has been successfully utilized for energy generation in many communities and countries. Why not in Nigeria? If well utilized, our cities would be rid of waste keeping them clean. Waste would become marketable and employment generated from organized waste collections and disposals through sales to biodegradation plants.

The suggestions above are not new; several commentators had made similar and perhaps better proposals in the past. However, one of the reasons for an apparent disregard to these ideas is situated in the misplaced priorities of successive Nigerian

Governments, corruption and huge governments; a push to satisfy political cronies outweighs instituting a legacy for a modern nation.

Unfortunately, in an event of radioactive accidents, there's just no sustainable remedy; iodine tablets have very limited solution. Evacuations to far distances have mere palliative effect. In case of Fukushima, an initial 20 km was advised and later 30 km safe zone was advocated. Many are impressed by the resilience of the Japanese people and the rescue teams who are searching all nooks and crannies despite unfavorable terrain couple with snow and falling temperatures.

One ponders how we would have managed should such a disaster confront us? What relief can we muster when a dam breaks its banks? Nigerians were stranded in Tripoli for weeks before being evacuated home. The risk of radioactive contamination should be weighed against other electricity generating options before taking a dive to disaster.

—Ime John  
*Nigeria Plus Citizen Journalism*  
March 16, 2011

### What could be worse?

Each day the news out of Japan is that much worse than the day before. Desperate attempts to scoop loads of water out of the ocean and dump them from helicopters onto overheating spent fuel pools at the Fukushima Nuclear Power Plant failed today. So did a plan to spray the reactor buildings with water cannons normally used for crowd control. Neither the helicopters nor the cannons could get close enough to their targets because radiation levels were too high. The secondary containment around one reactor is now reportedly destroyed.

Thousands of people have been evacuated from around the plant, adding to the hundreds of thousands already made homeless by the earthquake and tsunami—events that would be dominating the news under any other circumstances but now seem almost like afterthoughts (or pre-shocks?). We keep hearing that Tokyo is not in any danger from radiation right now, but our Japanese friends have told us that people in Tokyo are under enormous stress, unsure of how to balance individual and family anxiety with their deeply ingrained sense of collective responsibility.

In less than a week, the Japanese economy, like the tsunami-ravaged coast, has fallen into shambles. Any natural disaster of this magnitude has vast social, environmental, and economic repercussions, and even without the destruction of the Fukushima reactors Japan would have faced a prolonged period

of recovery and billions of dollars in costs. The nuclear crisis, however, threatens the very foundation of Japan's economy, which has been organized, for better or worse, around nuclear power.

"Worse" has now arrived. We keep hearing from Japanese leaders (who are in an impossible position) and from "nuclear safety" experts (a term that is now the dictionary definition of "oxymoron"), that this is not the worst case scenario, that full core meltdowns at the plants are unlikely, and that even if one were to occur, there would not be Chernobyl-like consequences.

Is anyone actually supposed to take any comfort from that? Are the Japanese people—or any of us, for that matter—supposed to be reassured that the damage from this incident, if it ends here, will be "limited?" Limited to what? The displacement of and trauma to thousands of people whose lives will never be the same? The creation of an uninhabitable sacrifice zone many kilometers out from the hopelessly contaminated reactor site? Tens of billions of dollars of direct and indirect costs? The devastation of an entire national psyche?

And that's not the worst-case scenario?

The case for nuclear energy, if there ever was one, has now collapsed. Far from being a cheap source of electricity, nuclear power has proven itself to be extraordinarily expensive. It is an ineffective answer to global warming because even if all other restrictions were removed we would not be able to build enough nuclear power plants to make a dent in carbon emissions in time to make a difference. Even worse, the proliferation of nuclear weapons is inextricably linked to the global expansion of commercial nuclear power reactors, which are not themselves bomb factories, but which produce the fissionable materials needed in bomb factories.

And now the things that "couldn't happen," or "couldn't happen here," or were such remote possibilities that they were worth the risk, have happened. There's even an identifiable trajectory. Three Mile Island was a catastrophe narrowly averted; Chernobyl was a "unique" catastrophe unlikely to be repeated; Fukushima was the outcome of overwhelming natural events that could not have been anticipated.

Except, of course, that they could have been—and were—anticipated by opponents of nuclear power who have been aggressively demonized by the nuclear industry and its supporters as doomsayers and fearmongers. Even this week, nuclear energy propagandists on Fox have complained that the world is "overreacting" to Fukushima.

What we have to focus on now (after

helping the victims in Japan get through the acute stages of this crisis as best they can), is the real lesson of Fukushima. The industry—and governments invested in the industry—are already promoting the self-serving message that Fukushima can teach us how to make nuclear power operations still safer and less vulnerable to natural disasters.

The lesson we ought to be learning is that we are finished with this whole misguided enterprise and with the people who persist in promoting it. That it's time (long past time, in fact) to halt the construction of any new nuclear power plants, to phase out and close down the ones that exist as soon as possible (and no later than the end of their current operating licenses), and to accelerate the transition to clean, sustainable, renewable systems for producing and consuming energy.

—John Loretz  
*IPPNW Peace and Health Blog*  
March 17, 2011

### **From Hiroshima to Fukushima and back**

Settled agriculture began about 12,000 years ago. If human children are still born and play on a hospitable planet in another 12,000 years, it will be because we succeeded in eradicating the terror of nuclear weapons and preventing runaway climate change. Twelve thousand years is not very long really.

Earth has been around for 4.6 billion years. 400 human generations; one half of one half-life of plutonium-239, among the most potent radioactive carcinogens, produced in every nuclear reactor, present in large amounts in the mixed uranium/plutonium fuel in the Fukushima Daiichi No.3 reactor, and one of the two fuels for nuclear weapons.

If people can look back in 12,000 years, they will scratch their heads at the unrivalled folly of the 20th and 21st centuries. Very cleverly packaging the primordial energy that powers the stars into nuclear weapons in their tens of thousands, about 2,000 still ready to be launched in minutes. Weapons by which a self-selected few claim the right to threaten the birthright of all. Weapons able to unleash temperatures hotter than the sun, and radiation which can deliver a lethal dose with little more energy than the heat in a cup of coffee.

The same awesome power dispersed in hundreds of nuclear reactors to boil water for electricity in the most hazardous way possible, amplifying the radioactivity of the starting fuel around one million times. After a few decades the reactors themselves become radioactive waste, needing absolute isolation for hundreds of thousands of years on a small interconnected planet, with 11 earth-

quakes of magnitude 8.5 or greater in the 20th century, and 5 in the first 11 years of the 21st, almost all of them followed by tsunamis. More nuclear reactors raising further the danger of nuclear war have been justified on the pretext of slowing climate change.

Our paramount shared responsibilities are clear: first, negotiate an irreversible, verifiable global treaty to outlaw and eliminate nuclear weapons, urgently. This will require enrichment of uranium to be very tightly restricted, and extraction of plutonium from spent nuclear fuel to cease. Second: prevent rampant global warming by massively and speedily scaling up energy efficiency, demand reduction and benign, renewable energy production.

In our ordinary, fallible, uncontrollable world, there are already enough primordial forces capable of great destruction. We don't need any more. The power of nuclear fission and fusion belong in the stars. And that is where they should stay. The recent catastrophe in Fukushima is a strong vindication of this truth.

—Tilman Ruff  
*Kyodo News*  
March 19, 2011

### **The nuclear chain – splitting atoms, hairs and personalities**

It is no coincidence that one speaks of the civilian and military use of nuclear energy. There is nuclear energy on the one hand and on the other there is the way it is used. It can create a nuclear explosion or it can be harnessed to make electricity, but intrinsically, it is the same thing.

After the earthquake and tsunami hit Fukushima, many people around the world asked the question: after what the Japanese had suffered from the military use of nuclear energy on Hiroshima and Nagasaki, why did they invest so greatly in the civilian use? Indeed, it is surprising that the original distaste for all things nuclear was lost in the sixties, when Japan began building nuclear power plants to beat the band. More than just about any other country, except perhaps France, the Japanese seemed to think nuclear energy was the best thing since sliced bread. And while just about everyone else (except the Russians) was shifting away from the plutonium economy, saying that it was too dangerous and too expensive, Japan began using MOX and expanding its reprocessing facilities.

Yet this inexplicable splitting of the collective personality into nuclear good and nuclear bad is not just a Japanese phenomena. Attend any Review Conference of the Non-Proliferation Treaty (NPT), you will

hear the same weird belief that nuclear energy is bad in weapon form, but good if you plug it in and run your kettle off of it. A whole institution has been built on this lie that was part of the 50s propaganda "Atoms for Peace", the International Atomic Energy Agency (IAEA).

Nuclear energy is not good or bad, in my view. What I condemn is the human arrogance and ignorance that leads us to think that we can control a force as massive and potentially destructive as this, or that the risks inherent in harnessing it as a source of electricity are calculable. Chernobyl showed us how humans make mistakes. Fukushima has made it abundantly clear that we are not in control, and that we are pitiful in the face of nature's ability to determine our fate. The disaster that hit Japan was bad enough, but did we need to compound it by adding our own stupidity to the equation by building nuclear reactors on fault lines?

It starts at the front end with the mining of uranium. Locked up in rock, uranium was not meant to be taken out of the earth—so we are wisely advised by the indigenous peoples of the world, who have lived on top of uranium-filled rock for centuries. Remove it from its natural habitat and it becomes dangerous, releasing particles that, when breathed in, can cause cancer.

After being processed, the uranium then has to be enriched. Again, the difference is minimal. Once you have the technology to enrich, then you can choose how much you enrich your uranium—roughly, 3-5% for nuclear power, 20% for medical isotopes, 85-90% for weapons. The only thing that stands in your way is the view that there is nuclear good and nuclear bad. And a treaty. But you can choose not to sign the treaty in the first place, or use it to get the nuclear technology and then leave the treaty. So far, so good (or bad).

The chain does split into two different branches when you get to putting your enriched uranium to use—you can put your enriched uranium into a nuclear power plant and make electricity with it, or you can enrich it a bit more and make nuclear weapons. (By the way, you can also use the by-product of the enrichment process, depleted uranium, to make weapons as well.)

When it gets to the question of waste, however, it gets more complicated. What should you do with it all? Rather than just throwing it all away (and where should it go?) you can reprocess it. And because you've successfully made plutonium by burning your uranium in a nuclear reactor, you can separate this out and, bingo, you have the stuff to make MOX. Or nuclear weapons. Japanese politicians have repeatedly remind-

ed the world that they had enough plutonium stockpiled that they could easily make a whole load of nuclear weapons, should they be so inclined. What stopped them? The view of nuclear good and nuclear bad.

When it comes to Iran, there is only nuclear bad in the eyes of the West. It was the conflict with Iran that really started to shake the foundations of Article IV of the NPT that says everyone has a right to use nuclear energy "peacefully." Actually, the discovery in the early 90s that Iraq had hidden a well-developed military nuclear programme successfully behind its "peaceful" programme while remaining an NPT member was the first major wake-up call. Then the lid blew on A.Q. Khan's network and people began to realise that the proliferation of nuclear energy could lead and had led to the proliferation of nuclear weapons. The good, the bad and the ugly.

What we forget is that while the intention may be peaceful, the energy itself is not. The difference between "peaceful" and "military" use is no more than a hair's breadth. From outside, it is hard to see the difference, you have to send in the IAEA to inspect, probe and interrogate. Still, we don't really know whether Iran's nuclear programme is good or bad and the IAEA is still looking for actual (rather than circumstantial) evidence.

Instead of splitting hairs over whether there is a difference between nuclear energy and nuclear energy, we should begin to understand the connection between all the aspects of the nuclear chain. There is an inextricable link that binds uranium mining, enrichment, nuclear power, reprocessing, nuclear weapons, radioactive waste and fallout together. When we talk about one, we should not forget all the others. They add up to make an ugly picture of death and destruction, of incalculable risk and contamination.

—Xanthe Hall

*IPPNW Peace and Health Blog  
March 21, 2011*

### **Just in case you missed it, here's why radiation is a health hazard**

The March 11 earthquake and tsunami in Japan and complicating nuclear crisis throw into sharp focus concerns about exposure to ionising radiation. What is it, how is it harmful, how much is too much?

Inside a nuclear reactor, the radioactivity is increased about a million times as some of the uranium or plutonium is converted to a cocktail of hundreds of different radioactive elements.

There are many different pathways through which people can be exposed to radiation: inhalation of gases or particles in the air, deposits in soil or water, ingestion of

food, water or dust. Some radioisotopes mimic normal chemical elements in living systems and therefore make their way up the food chain and onto our plates.

### *Ionising radiation*

Radiation is called “ionising” when it has sufficient energy to knock the electrons off atoms to produce ions (atoms which have a net positive or negative electrical charge). Ionising radiation damages large complex molecules either directly or by creating highly reactive chemicals inside cells.

The biological potency of ionising radiation is not related to the amount of energy it contains so much as that this energy is packaged in a form which can reach and damage complex molecules—particularly the DNA that is our genetic blueprint, that is passed on to form each new generation.

A lethal dose of radiation may contain as little energy as the heat in a cup of coffee. Our senses cannot warn us about ionising radiation—it cannot be seen or touched or felt or tasted or smelt.

### *Levels of exposure*

Some effects of radiation only occur above certain thresholds. In the short term, high levels of radiation exposure can cause acute radiation sickness. In the longer term there is an increased risk of cataracts, birth defects, sterility and hair loss.

High doses of radiation can kill cells - this is the reason targeted radiation is used in the treatment of some cancers.

Acute radiation exposure at doses over 100 milliSieverts (mSv), and particularly over 1000 mSv, has most impact on our rapidly dividing cells. These are the blood-forming cells of the bone marrow, lining of the gut, and ovaries and testis. The symptoms of acute radiation sickness therefore include vomiting and diarrhea, bleeding, and reduced ability to fight infection.

The major long-term effect of ionising radiation exposure is an increased risk of a wide variety of cancers. There is no “safe” level of radiation below which there is no increase in cancer risk. The earliest to appear, after around three to five years, are leukemia and thyroid cancer. The 1986 Chernobyl disaster, for instance, has resulted in an epidemic of thyroid cancer with 6,500 children affected so far.

Other cancers begin increasing after 10 years—lung, breast, colon, ovary, bladder and many others. Excess rates of cancer in the Hiroshima and Nagasaki survivors continue to rise.

### *Sources of exposure*

All of us are exposed to ionising radia-

tion all the time - from the stars, from the earth and rocks, from common equipment and appliances. The global average estimated human exposure is 2.4 mSv per year.

The biggest natural source is radon gas produced from radium, part of the decay chain of uranium, which is widely distributed in the Earth's crust. After smoking, radon is the second most important cause of lung cancer worldwide.

The bulk of ongoing exposures of human origin are from medical X-rays, and there is considerable concern about the rapidly rising medical radiation exposures, particularly from the growing number of CT scans being performed. CT scans involve radiation doses of between 3 and 11 mSv.

Exposure to ionising radiation from all sources should be kept as low as is feasible. In Australia and most countries, it is recommended that 1 mSv per person per year be the maximum permissible exposure from non-medical sources for the general population; and 20 mSv per year the annual permissible limit for nuclear industry workers. In Japan the maximum permissible dose for the emergency nuclear workers in Fukushima has been increased to 250 mSv.

### *Health harms*

The most authoritative current estimates of the health effects of low dose ionising radiation are contained in the Biological Effects of Ionising Radiation VII report from the US National Academy of Sciences (BEIR VII). This report reflects the substantial weight of scientific evidence that there is no exposure to ionising radiation that is risk-free. The greater the exposure, the greater the risk.

BEIR VII estimates that each 1 mSv of radiation is associated with an increased risk of solid cancer (cancers other than leukemia) of about 1 in 10,000; an increased risk of leukemia of about 1 in 100,000; and a 1 in 17,500 increased risk of cancer death.

But while radiation protection standards are typically based on adult males, it is important to note that not everyone faces the same level of risk. For infants (under 1 year of age) the radiation-related cancer risk is 3 to 4 times higher than for adults; and female infants are twice as susceptible as male infants.

Females face a lower risk of leukemia, but a 50% greater risk of developing a more common solid tumour, so their overall risk of cancer related to radiation exposure is 40% greater than for males. Fetuses in the womb are the most radiation-sensitive of all.

Over time, estimates of the health risks associated with radiation exposure have inexorably risen. Some of these risks are probably still under-estimated, particularly

the impact of internal contamination, such as from plutonium particles lodging in the lung. Internal contamination may not be picked up by external devices designed to detect gamma radiation alone, such as the hand-held radiation monitors now being widely used to screen people in Japan.

In Germany, a recent national study showed that normal operation of nuclear power plants in Germany is associated with a more than doubling of the leukemia risk for under five year olds living within 5 km of a nuclear plant, and increased risk was seen to more than 50 km away. This was much higher than expected.

The longevity of some radioactive minerals is almost incomprehensible. Plutonium-239 has a half-life of 24,400 years. It will take almost a quarter of a million years for it to decay to less than one thousandth of the starting level. So the same particle inhaled into someone's lung could go on to increase cancer risk for other individuals over successive generations.

—Tilman Ruff  
*The Conversation (Australia)*  
March 24, 2011

### There really is no safe level of radiation

As the radioactive contamination of food, water, and soil in Fukushima, Japan worsens, the media is continuously reassuring us that these levels are "safe." But there is no safe level of radiation.

Yes, at lower levels the risk is smaller, but the National Research Council of the National Academies of Science has concluded that any exposure to radiation makes it more likely that an individual will get cancer.

The press is reporting that 100 millisieverts (mSv) is the lowest dose that increases cancer risks. This simply isn't true. According to the NAS, if you are exposed to a dose of 100 mSv, you have a one in 100 chance of getting cancer, but a dose of 10 mSv still gives you a one in 1,000 chance of getting cancer, and a dose of 1 mSv gives you a one in 10,000 risk.

Those odds sound fairly low for one individual, but if you expose 10,000 people to a one in 10,000 risk, one of them will get cancer. If you expose 10 million people to that dose, 1,000 will get cancer. There are more than 30 million people in the Tokyo metropolitan area.

To understand the danger of low levels of radiation exposure, consider several factors.

First, the total dose is the most important factor, not the dose per hour. When you get an X-ray, you're exposed to a one-time

burst of radiation. If you work for 10 hours in a spot where the radiation level is 1 millisievert per hour, your dose is 10 millisieverts, and the dose goes up the longer you stand there.

Second, there's a big difference between external and internal radiation. If you're standing in a spot where you're exposed to external radiation, that exposure ends as soon as you move away. But if you ingest or

inhale a radioactive particle, it continues to irradiate your body as long as it remains radioactive and stays in your body.

Further, if you ingest radioactive particles, the dose isn't spread evenly over your entire body. It concentrates where the particles lodge. The average

total body dose may be relatively low, but the dose at the site may be large enough to damage that tissue and cause cancer.

That's why the radiation being found in Japan in spinach, milk, and other food—as well as water—is so worrisome. If consumed, it will create ongoing radiation exposure and increase the risk of cancer. A large majority of the hundreds of thousands of cancer cases that have occurred in the former Soviet Union because of the Chernobyl catastrophe were caused by people eating radioactively contaminated food.

Finally, it makes a big difference who gets irradiated. Children are much more vulnerable than adults. If a fetus is exposed to only 10 mSv in utero, his or her risk of getting cancer by age 15 doubles. So it's particularly dangerous when children or pregnant women consume radioactive food or water.

Reports indicate that the total radioactive releases in Fukushima have been relatively small so far. If this is the case, then the health effects will be correspondingly small. But it's not "safe" to release this much radiation. Some people will get cancer as a result. Most importantly, we don't know at this point how much more radiation there will be.

That's why the U.S. government has said that people shouldn't be allowed within 50 miles of the plant.

If a comparable accident were to occur at the Indian Point nuclear reactors 24 miles north of New York City, 17 million people would need to evacuate. That's something to think about when we're told everything is OK at our nuclear plants.

—Ira Helfand  
*CommonDreams.org, widely syndicated*  
March 28, 2011

---

Over time, estimates of the health risks associated with radiation exposure have inexorably risen. Some of these risks are probably still underestimated...

---

## Anger is renewable energy

Some weeks ago, I had a 9 year old patient who was suffering from enormous temper tantrums. Whenever he felt overwhelmed and helpless, when it was clear to him that no one would listen to his voice, he didn't know of any better way to deal with his feelings than to hurt himself and everyone around. Kicking, beating, biting and scratching, he tried to gain control of the situation and forced helplessness onto the adults who had been so ignorant before.

When I read about what is going on in Japan now, I somehow feel like this little boy. I feel overwhelmed with anger, but there's no one to address, no one listening to people's questions and concerns. I feel helpless to the point of being paralyzed. Haven't we warned our governments of the hazards of using nuclear power again and again? Aren't there already thousands and thousands of innocent people suffering from the consequences of a man-made disaster, in vast areas around Chernobyl?

Prevention is a medical doctor's most important contribution for securing their patients' well being and survival. In this case, it means putting an end to nuclear technology once and for all. The use of nuclear power, be it civil or military, has brought an intolerable risk upon us. People's health is constantly at stake, so to speak from the cradle to the grave of the radioactive material needed for the nuclear fuel rods.

The tragedy starts with the neglected suffering of the uranium miners in Canada, Australia, Niger, Namibia, India or the United States. Many of them indigenous people who have been tricked into sacrificing their sacred lands for nuclear weapons and the Western world's craving for more and more energy. Those sacred lands have become wastelands, the radioactive tailings making them unsafe for centuries.

It goes on with the children living near one of the many nuclear power plants. Their leukemia risk increases 1.2 fold if their home is located within a range of 5 kilometers around a nuclear power plant. To make myself clear on that point: We speak of the risk emerging under normal operation. Still, politicians and so-called independent scientists do not seem to be concerned. Besides, the World Health Organization, having the mandate to promote and protect the health of all peoples, is subjected to the interests of the International Atomic Energy Agency by a working agreement approved in 1959. Oh, the IAEA's objective is to promote the civil use of nuclear technology throughout the world, right?

In addition, nobody knows how to deal

with the radioactive waste adding up with every second of running a nuclear power plant. Burying it in ancient salt mines or using outer space as a nuclear landfill? One solution is more insufficient than the other. Depleted uranium, a byproduct of uranium enrichment for nuclear power plants or weapons, has been used by the U.S. and other NATO forces for developing weapons with unusual armor-piercing capabilities. Dumped on the battlefields in Iraq or the Balkans, the cheap and abundant material threatens the health of everyone living in the surroundings because of its radioactivity and chemical toxicity.

Nuclear power powers the bomb. Research in the field of nuclear technology, even if for medical purposes, always bears the risk of being used for the development and proliferation of the most cruel weapon of mass destruction humanity has ever invented. We won't escape the nuclear vicious circle if we overlook the link between the civil use of nuclear energy and its even more evil siblings, the nuclear weapons still being stored all over the world.

I don't want to silently swallow all that anger and sadness. I want to tell the world about it even if there's this meanly nagging suspicion that no one's really listening. I'm afraid that the world's leaders interest will abate within short notice, that the media will find another topic of urgent interest in no time. Sometimes it is better to be outraged than to be paralyzed. Maybe we should store some of this anger and use it as a renewable source of energy. We'll have to apply it wisely and persistently in order to make sure that the nuclear lobby won't have the final say.

—Ursula Völker

*IPPNW Peace and Health Blog*

*April 4, 2011*

## Children of Fukushima need our protection

I was dismayed to learn that the Ministry of Education, Culture, Sports, Science and Technology earlier this week increased the allowable dose of ionizing radiation for children in Fukushima Prefecture.

The dose they set, 3.8 microsieverts per hour, equates to more than 33 millisieverts (mSv) over a year. This is to apply to children in kindergartens, nursery, primary and junior high schools. Let me try to put this in perspective.

Widely accepted science tells us that the health risk from radiation is proportional to the dose—the bigger the dose the greater the risk, and there is no level without risk.

The International Commission on Radiological Protection recommends that all

radiation exposure be kept as low as achievable, and for the public, on top of background radiation and any medical procedures, should not exceed 1 mSv per year.

For nuclear industry workers, they recommend a maximum permissible annual dose of 20 mSv averaged over five years, with no more than 50 mSv in any one year.

In Japan the maximum allowed annual dose for workers, 100 mSv, was already higher than international standards. This has been increased in response to the Fukushima disaster to 250 mSv.

The U.S. National Academy of Sciences BEIR VII report estimates that each 1 mSv of radiation is associated with an increased risk of solid cancer (cancers other than leukemia) of about 1 in 10,000; an increased risk of leukemia of about 1 in 100,000; and a 1 in 17,500 increased risk of dying from cancer.

But a critical factor is that not everyone faces the same level of risk. For infants (under 1 year of age) the radiation-related cancer risk is 3 to 4 times higher than for adults; and female infants are twice as susceptible as male infants. Females overall risk of cancer related to radiation exposure is 40 percent greater than for males. Fetuses in the womb are the most radiation-sensitive of all.

The pioneering Oxford Survey of Childhood Cancer found that X-rays of mothers, involving doses to the fetus of 10-20 mSv, resulted in a 40 percent increase in the cancer rate among children up to age 15.

In Germany, a recent study of 25 years of the national childhood cancer register showed that even the normal operation of nuclear power plants is associated with a more than doubling of the risk of leukemia for children under 5 years old living within 5 kilometers of a nuclear plant.

Increased risk was seen to more than 50 km away. This was much higher than expected, and highlights the particular vulnerability to radiation of children in and outside the womb.

In addition to exposure measured by typical external radiation counters, the children of Fukushima will also receive internal radiation from particles inhaled and lodged in their lungs, and taken in through contaminated food and water.

A number of radioactive substances are concentrated up the food chain and in people. As a parent, as a physician, the decision to allow the children of Fukushima to be exposed to such injurious levels of radiation is an unacceptable abrogation of the responsibility of care and custodianship for our children and future generations.

—*Tilman Ruff*  
*Kyodo News*  
*April 26, 2011*

## The writers

**Subhas Chakraborty** is Secretary, Indian Doctors for Peace and Development, Kolkata.

**Richard Grady** is President, Washington Physicians for Social Responsibility, Seattle.

**Xanthe Hall** is a nuclear weapons and nuclear energy policy expert and campaigner with IPPNW-Germany.

**Ira Helfand** is an internist and emergency physician in Springfield, Massachusetts; past president of Physicians for Social Responsibility; and North American regional vice president of International Physicians for the Prevention of Nuclear War.

**Ime John** is a former co-president of International Physicians for the Prevention of Nuclear War.

**John Loretz** is program director of International Physicians for the Prevention of Nuclear War.

**Tilman Ruff** is associate professor, Nossal Institute for Global Health, University of Melbourne; regional vice president of International Physicians for the Prevention of Nuclear War for Southeast Asia and the Pacific; and chair of the International Campaign to Abolish Nuclear Weapons (ICAN).

**Ursula Völker**, a physician from Tübingen, Germany, specializes in child and adolescent psychiatry, and is on the board of IPPNW-Germany.

---



## COMMENTARIES

---

In addition to articles written for the press, IPPNW and its affiliates published their own statements about events at Fukushima; recommendations for action by the Japanese government, their own governments, and international agencies; and the need to phase out and end reliance on nuclear energy around the world. A number of those statements are reproduced in this section.

### **IPPNW-Germany demands the closing of all nuclear power plants worldwide**

**25** years after Chernobyl, and on the day of the catastrophe in Fukushima that resulted in an uncontrolled release of radioactivity, the German affiliate of the International Physicians for the Prevention of Nuclear War (IPPNW) demands that all nuclear power plants worldwide should be closed down. The risks of nuclear technology are uncontrollable even for allegedly safe nuclear power plants of the western world.

IPPNW points out that the population density in Japan is about 15 times higher than it is in the Chernobyl region. (Japan: 337 inhabitants/square kilometre). Depending on the direction of wind and weather situation the health consequences in Japan may be dramatic.

As physicians we wish to emphasise the global health risk that is a result of this catastrophe.

The radioactive cloud will not halt at Japan's borders. Increased levels of radioactivity were detected after Chernobyl even several thousands of kilometers away in Japan.

The time has come for politicians to prevail against the mighty lobby of the nuclear industry.

It is irresponsible to endanger us citizens for the profit interest of a few companies.

—IPPNW-Germany  
12 March 2011

### **Medical specialists urge full information on Japan health risks**

**S**pecialists from the Medical Association for Prevention of War today lamented the lack of accurate information about the continuing

nuclear crisis in Japan. It is deeply concerning that our government has now advised that Australian citizens should evacuate 80 km from Fukushima, having only yesterday reassured Australians that the 30km Japanese evacuation zone was adequate.

"We call on the Australian Government to seek and distribute comprehensive information from Japanese authorities about radiation releases from the ailing Fukushima reactors," said MAPW President Dr. Bill Williams.

"We are gravely concerned for those emergency workers on-site at Fukushima, and the hundreds of thousands of desperate people now sheltering or fleeing from radioactive fallout. Without accurate data, it is impossible to accurately assess risk levels."

MAPW notes that the lack of detailed data has already led to mischievous claims from industry representatives that people are at no risk. Equally disturbing has been the trend in some official statements trivialising the risks associated with lower level exposures.

"The current scientific understanding of the health risks from ionising radiation exposures are based on decades of research," said Dr Williams. "The worldwide expert consensus conforms with the so-called 'Linear No Threshold' model: this means there is no safe dose of ionising radiation."

While it is essential that a calm and rational approach is adopted in advising the public, it is equally important not to give false assurance or to trivialise the dangers. Because of the chromosomal disruption caused by the radioactive matter being released from the damaged reactors and spent fuel ponds, inhalation or ingestion can lead—even at low doses—to cancers. This is

particularly so for children, babies and of course developing embryos. Many of the cancers caused by radioactive fallout from the Chernobyl accident were due to relatively low levels of radiation in the form of ingested I-131 in children drinking milk from cows which ate contaminated grass.

"We hope and pray that the Japanese emergency response averts the danger of larger releases over the coming days," said Dr Williams, "but the environment has already been contaminated, and people will be at risk of exposure to radioactive agents like iodine-131 and caesium-137 for many years to come."

—*Medical Association for Prevention of War, Australia*  
March 17, 2011

### **India Should Use Renewable Resources for Power Generation; Shun Nuclear Power Plants**

While expressing solidarity with the people of Japan at the devastation caused by Tsunami and Earthquake, Indian Doctors for Peace and Development (IDPD) has demanded that India should shun the pursuit for nuclear power plants and instead look forward to utilize renewable energy resources like, wind power, biowaste, micro-hydel and solar which are in plenty in our country.

We demand the government to immediately put moratorium on all ongoing nuclear activity.

Events in Japan are very shocking and vindicate the stand of International Physicians for the Prevention of Nuclear War (IPPNW) and IDPD that nuclear power plants are a potential threat of radiation. The cost of producing electricity from nuclear power is fraught with dangers and is 2-3 times more expensive than from conventional sources like coal and gas. There cannot be any comparison with the renewable resources which are totally non hazardous.

It is pertinent to note that US has not built any nuclear power plant since the 3 Mile Island incident and France which pioneered the nuclear technology and nuclear power plants have not built one in the last 25 years. The nuclear plant can never be dismantled as the half life of Uranium in the reactor is 24000 years that means the danger is reduced to half 24000 years and they have to be kept for an eternity, literally, before the spent fuel (the used Uranium from reactors) for it to become safe completely.

More over the cost of dismantling is much more than the cost of installation. The track record of safety in the nuclear facilities in India is far from satisfactory.

According to reports an estimate 300 incidents of serious nature have occurred causing radiation leaks and physical damage to the workers. But these have remained official secrets so far. During Tsunami water had entered the Kalpakkam Nuclear Plant in Tamil Nadu. The people around Uranium mines in Jadugoda are total unprotected. As per the reports the technology being used by the French company, Areva, which is building the world's largest nuclear power plant in beautiful coastline of Ratnagiri (Jaitapur Town), India has not been completely tested.

The world still remembers the Chernobyl nuclear accident where about 93000 people are reported to have died. Health of liquidators (cleanup workers) engaged in the job of cleaning the area is a matter of serious concern even today. An accident in a nuclear power plant is almost like an atomic explosion with serious consequences on flora & fauna and ecology. We demand that the Indian government should review its nuclear power policy and use other safe renewable options for power generation which are available in abundance in our country. Japan has the best disaster management capacity but in contrast our country's track record in disaster management is extremely dismal.

The explanation by some of our nuclear lobbyists that our country falls in the low seismic zone is unfounded and ignoring the reality as next time the disaster may not be due to earthquake but due to terrorism, climate change, technology failure, proliferation of plutonium or human error.

IDPD is writing a letter to Prime Minister and all MPs in this regard.

—*Indian Doctors for Peace and Development*  
March 17, 2011

### **PSR Statement on Radiation Exposure in the United States from the Japan Nuclear Accident**

The unknown and changing situation in Japan regarding radiation releases is continuing to cause concern and confusion here in the United States. PSR National and our Chapters are receiving many questions regarding radiation effects and requests for medical advice. It is not possible for PSR to provide specific case-by-case medical advice. This should be given by individual health care providers and public health officials.

Currently, the primary public health risk from radiation exposure is to people closest to the plant site in Japan and in particular the workers. At this time, it is not known how much radiation may reach the US. It will depend on the amount of radiation released

and how the wind blows. Given the long distance across the ocean between the US and Japan, much smaller amounts are likely to reach the US and will likely not require any special treatment. However, avoiding radioactively contaminated food and water is strongly recommended.

For those people who are close by and directly affected by the radioactive plume, protective measures include staying indoors, moving to safer areas, and having children, pregnant women and lactating mothers take potassium iodide (KI). Pregnant mothers should do this only in consultation with their physician. Patients with known thyroid disorders should also consult a physician.

At this time, we do NOT recommend that people in the US purchase or take potassium iodide (KI). We do not recommend further preventive measures at the present time. We will continue to monitor the situation as best we can.

—Physicians for Social Responsibility  
March 21, 2011

### **Physicians for Social Responsibility Deeply Concerned About Reports of Increased Radioactivity in Food Supply**

Physicians for Social Responsibility (PSR) expressed concern over recent reports that radioactivity from the ongoing Fukushima accident is present in the Japanese food supply. While all food contains radionuclides, whether from natural sources, nuclear testing or otherwise, the increased levels found in Japanese spinach and milk pose health risks to the population. PSR also expressed alarm over the level of misinformation circulating in press reports about the degree to which radiation exposure can be considered “safe.”

According to the National Academy of Sciences, there are no safe doses of radiation. Decades of research show clearly that any dose of radiation increases an individual’s risk for the development of cancer.

“There is no safe level of radionuclide exposure, whether from food, water or other sources. Period,” said Jeff Patterson, DO, immediate past president of Physicians for Social Responsibility. “Exposure to radionuclides, such as iodine-131 and cesium-137, increases the incidence of cancer. For this reason, every effort must be taken to minimize the radionuclide content in food and water.”

“Consuming food containing radionuclides is particularly dangerous. If an individual ingests or inhales a radioactive particle, it continues to irradiate the body as long as it remains radioactive and stays in the body,” said Alan H. Lockwood, MD, a member of the Board of Physicians for Social

Responsibility. “The Japanese government should ban the sale of foods that contain radioactivity levels above pre-disaster levels and continue to monitor food and water broadly in the area. In addition, the FDA and EPA must enforce existing regulations and guidelines that address radionuclide content in our food supply here at home.”

As the crisis in Japan goes on, there are an increasing number of sources reporting that 100 milliSieverts (mSv) is the lowest dose at which a person is at risk for cancer. Established research disproves this claim. A dose of 100 mSv creates a one in 100 risk of getting cancer, but a dose of 10 mSv still gives a one in 1,000 chance of getting cancer, and a dose of 1 mSv gives a one in 10,000 risk.

Even if the risk of getting cancer for one individual from a given level of food contamination is low, if thousands or millions of people are exposed, then some of those people will get cancer.

Recent reports indicate the Japanese disaster has released more iodine-131 than cesium-137. Iodine-131 accumulates in the thyroid, especially of children, with a half-life of over 8 days compared to cesium-137, which has a half-life of just over 30 years. Regardless of the shorter half-life, doses of iodine-131 are extremely dangerous, especially to pregnant women and children, and can lead to incidents of cancer, hypothyroidism, mental retardation and thyroid deficiency, among other conditions.

“Children are much more susceptible to the effects of radiation, and stand a much greater chance of developing cancer than adults,” said Dr. Andrew Kanter, president-elect of PSR’s Board. “So it is particularly dangerous when they consume radioactive food or water.”

All food contains some radioactivity as a result of natural sources, but also from prior above-ground nuclear testing, the Chernobyl accident, and releases from nuclear reactors and from weapons facilities. The factors that will affect the radioactivity in food after the Fukushima accident are complicated. These include the radionuclides that the nuclear reactor emits, weather patterns that control the wind direction and where the radionuclides are deposited, characteristics of the soil (e.g., clays bind nuclides, sand does not) and the nature of the food (leafy plants like spinach are more likely to be contaminated than other plants like rice that have husks, etc.). However, radiation can be concentrated many times in the food chain and any consumption adds to the cumulative risk of cancer and other diseases.

“Reports indicate that the total radioactive releases from the Fukushima reactor

have been relatively small so far. If this is the case, then the health effects to the overall population will be correspondingly small," said Ira Helfand, MD, a member of the Board of Physicians for Social Responsibility. "But it is not true to say that it is "safe" to release this much radiation; some people will get cancer and die as a result."

—Physicians for Social Responsibility  
March 23, 2011

### **Nuclear catastrophe in Fukushima: extend the evacuation zone**

The physician's organisation IPPNW-Germany and the President of the German Society for Radiation Protection (GfS), Sebastian Pflugbeil, believe that an extension of the evacuation zone around the damaged Fukushima nuclear plant is urgently needed. They call on the Japanese government to evacuate the population promptly from a much wider area, in particular to ensure the protection of children and pregnant women.

The recommendation of the US Nuclear Regulatory Commission (NRC) and the Australian Radiation Protection and Nuclear Safety Agency that the evacuation zone be extended to 80 kilometres could be a helpful first step, say the two organisations. Evacuation zones, however, are only a method of helping to roughly mark out a possible area of contamination and in reality the radioactive exposure depends on wind direction, strength and precipitation. Twenty-five years ago, when the Chernobyl disaster occurred, there was an irregular distribution of contamination and "hot spots" emerged, where the Soviet authorities found contamination of more than 555,000 becquerel per m<sup>2</sup>.

Reinhold Thiel, member of the German Board of IPPNW, is especially worried about the danger posed by unit 3: "This unit is run on MOX fuel which contains plutonium and black smoke is billowing out of it. I am concerned that large amounts of plutonium are

now being released into the air." IPPNW calls on the German government to press for an immediate publication of all existing measurements of plutonium levels. "It could be, however, that Chancellor Merkel already has that information" said Thiel.

Plutonium is a highly toxic emitter of alpha radiation which does approx. 20 times more biological damage than the same dose of gamma emitting radionuclides such as Cesium-137. Breathing in plutonium easily leads to bronchial and lung cancer. If plutonium is taken into the body via food and drink, it concentrates in the liver and bones and has a biological half-life of 40 years in the liver, 100 years in bones.

According to IAEA, high levels of beta-gamma radiation were found at distances between 15 and 58 km away from the nuclear power plant. The measured levels were between 200,000 und 900,000 becquerel per m<sup>2</sup>. This means, according to Prof. Edmund Lengfelder of the Otto Hug Institute on Radiation, that the Fukushima disaster has evidently reached the same dimensions seen in Chernobyl. After the Chernobyl disaster, contamination reached more than 555,000 bq/m<sup>2</sup> (Cesium-137) in Ukraine, Russia und Belarus.

Japanese authorities have found up to 55,000 bq/kg iodine-131 in spinach from the Ibaraki prefecture. These levels are way above the acceptable levels for Japan for consumption (2,000 bq/kg).

IPPNW and GfS call on foreign minister Guido Westerwelle to actively pursue the publishing of the radiation measurement data that the Comprehensive Test Ban Treaty Organisation (CTBTO) has collated through its global network of monitoring stations. The CTBTO shares this information with the WHO and IAEA but has not yet made this data public.

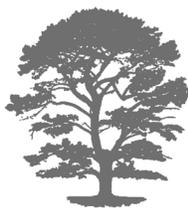
—IPPNW-Germany; German Society for  
Radiation Protection  
March 24, 2011



MAPW President Bill Williams  
YouTube video posted on March 29, 2011

Noting that Australia is a major source of the world's uranium for nuclear power plants, Dr. Bill Williams, President of IPPNW's Australian affiliate, MAPW, said "the Tokyo Electric Power Company is buying about a third of their uranium from us. Think about it. That cloud of radioactive gas and other materials that's depositing over Japan right now, some of that actually started here in Australia....On a good day for the nuclear industry, that uranium ends up as radioactive waste and we don't know what to do about that. But on a really bad day for the nuclear industry and for the rest of us, it ends up as radioactive fallout."

—[www.youtube.com/watch?v=LziwRNUivPM](http://www.youtube.com/watch?v=LziwRNUivPM)



## IN THE NEWS

---

Reporters and editors looking for an independent perspective on the health implications of the Fukushima nuclear disaster called upon experts at IPPNW and its affiliates to explain the dangers of rising radiation levels for the people in contaminated areas, and the potential dangers for those in other parts of the world should the radiation spread as it did after the Chernobyl explosion. A representative sample of quotes and citations from the international press are reproduced in this section, in chronological order.

"It is not known how much radiation has been or will ultimately be released from the damaged Daiichi nuclear reactor in Japan, but as found by the National Academy Sciences, any exposure to radiation increases a person's risk of cancer. No one, including the plants operators, can say what is going to happen, and potentially millions of people are in harm's way. The Japanese government should be preparing for the worst-case scenario. After one year of operation, a commercial nuclear reactor contains 1,000 times as much radioactivity as was released by the Hiroshima bomb. From a public health perspective, the most important isotopes are short-lived isotopes of iodine (like Iodine-131), Cesium-137, Strontium-90, and possibly Plutonium-239. Radioactive iodine caused thousands of cases of thyroid cancer in children after the Chernobyl accident. Cesium and strontium cause a number of different kinds of cancer and remain dangerous for hundreds of years; plutonium causes lung cancer as well as other types of cancer and remains deadly for hundreds of thousands of years."

—*Ira Helfand, Physicians  
for Social Responsibility  
Coal Geology  
March 12, 2011*

severe and damage one of our reactors. So we think all reactors should be closed down as soon as possible and we should get our energy from renewables."

—*Winfried Eisenberg, IPPNW-Germany  
Interviewed by RT (Russia Today) TV,  
March 12, 2011*

"The accident in Japan could lead to a major rethink in Europe. And not before its time. Governments have not been transparent enough about the safety levels of the nuclear power sector."

—*Henrik Paulitz, IPPNW-Germany  
New York Times  
March 13, 2011*

"Each reactor has the radioactivity of 1,000 Hiroshima bombs," said Ira Helfand, MD, an expert on radiation exposure in Leeds, Massachusetts, and a board member of the group Physicians for Social Responsibility, referring to the atomic bomb dropped on Hiroshima, Japan, during World War II.

—*Medscape Medical News  
March 14, 2011*

"I really cannot understand how such a number of nuclear reactors is built along the east coast [of Japan] which is known for danger of earthquakes, and we have seen now what has happened. Even here with us in Germany, we have minor earthquakes and nobody knows if one day they may be more

### **Radiation fears for residents near nuclear plant**

The International Atomic Energy Agency says radiation levels around the plant are now 400 millisieverts an hour. That's eight times the amount, every 60 minutes, that nuclear workers are normally sup-

posed to absorb in a year.

**Ira Helfand:** That means that somebody who is exposed to this for a couple of hours would develop radiation sickness. This is a very, very large increase from the radiation readings that have been recorded just a few hours before the most recent explosion.

**Bronwyn Herbert:** Ira Helfand is a medical doctor based in Washington, DC who has written extensively on the impacts of radiation.

**Ira Helfand:** Well there are two different kinds of harm. If you get a high enough dose of total body irradiation you'll develop something called radiation sickness and you, over the course of a period of days to weeks, develop nausea, vomiting, suppression of your bone marrow which allows you to become susceptible to infections which promotes bleeding and you become weak, dehydrated. And if you absorb a large enough dose you die from this over a period of several weeks.

But even if you don't get that kind of large total body dose of radiation, if you inhale or ingest radioactive nuclides like radio-iodine or caesium or strontium or plutonium you can develop cancer subsequently and this is a second distinct danger that people will be facing if there is a very large release of radiation in this disaster.

— *Australian Broadcasting Corporation*  
March 15, 2011

---

### Health Risk Fears Escalate as Japan Nuclear Plant's Radioactive Release Remains Uncertain

Although the most pressing immediate health concern is the powerful direct gamma radiation that threatens workers at the plant, "we need also to focus on the radioactive isotopes that are being dispersed at some distance from the plant," Ira Helfand, a former president of Physicians for Social Responsibility, said at a Wednesday news conference organized by that group, which is opposed to nuclear power. ...

Some nuclear experts are concerned that "even if the total radiation dose is not real high downwind from a plant, the concentration of these isotopes can pose a very serious health problem," Helfand said. ...

The clean "linear relationship between your dose of total body radiation and the effect on your health is really lost when you're talking about low-dose radiation at some distance from the source," Helfand said. "You can have a very small total body radiation dose and end up getting thyroid cancer, or ingest some radioactive strontium and end up getting leukemia."

— *Scientific American*  
March 18, 2011



IPPNW-Germany participated in a spontaneous demonstration against nuclear energy in Frankfurt on March 12, 2011—one day after receiving news of the disaster at the Fukushima Nuclear Power Station in Japan. IPPNW-Germany photo.

---

### Radiation might affect Japan's youngest

You can't smell it, you can't taste it and you can't feel radioactive materials in the air. But exposure to it can affect the health seriously.

For normal adults, depending on the amount of radiation, exposure might cause cancer, premature aging, organ diseases or even acute poisoning which usually ends in death, explains Dr. Winfrid Eisenberg from IPPNW, a German working group on nuclear energy.

He also points out that radiation is a particular threat to unborn children. The young embryos, especially in the first three months of pregnancy, are the most susceptible to radiation damage, much more than born children or adults, he says. "An embryo grows very fast and it means that cells are dividing all the time," he explains further. "These cells are more sensitive to the effects of radiation than older cells."

Eisenberg says even a very small elevation of radioactivity or ionizing radiation may be harmful to embryos or fetuses.

— *Deutsche Welle*  
March 18, 2011

---

"The nuclear lobby, after being silent for about 15-20 years, once again has begun to provoke discussions in favour of nuclear energy, arguing that 'oil prices are rising,' 'this is the only solution to the economic cri-

sis,' and that 'lignite is also dangerous for human health.' These people managed to impose the perception in the European Union that this [nuclear] energy is 'green,' which is a big lie. I'll explain why. Although the nuclear power plant does not contribute to increasing carbon dioxide in the atmosphere during its operation, very large amounts of carbon dioxide are produced during the stages of its construction, the extraction of the nuclear fuel and the destruction of the nuclear reactor. So, it is wrong to say that this is 'green' energy.

"The most negative is that all these nuclear power plants are associated with nuclear and radioactive weapons. Governments of countries that need nuclear weapons always strive to have nuclear power plants. This connection makes the companies and people who build them even more powerful. Of course, since people were afraid in recent years and governments have required very high security specifications, the construction cost of a nuclear power plant, which is half the value of its destruction cost, has become very high. For this reason, renewable energy sources began to compete with nuclear technology on price basis and they should be preferred....

"As I said, I was concerned about the ongoing discussion in Greece on the good side of nuclear energy. Even a political leader argued some time ago: 'when our neighbours build nuclear power plants, why don't we?' This is crazy. We think that we should exert pressure and we should do it again just like we stopped the construction of the Akuyu nuclear power plant in Turkey the first time, and just as we could 'freeze' the construction of Belene NPP we should not allow it to start again. We do not want the countries to lose their energy independence, but to provide the funds they spend now for making safer nuclear power plants for alternative energy development."

—Maria Arvaniti-Sotiropoulou,  
IPPNW-Greece  
Interviewed in GR Reporter  
March 18, 2011

U.S. radiation-safety experts said that, based on radioactivity levels detected in Tokyo's tap water, health risks for most people generally were slight.

Government officials in Tokyo urged special precautions with drinking water after detecting traces of radioactive iodine-131 in the water supply that were twice the acceptable level of exposure for children. The material was below the government's exposure limits for adults.

Radioactive iodine is especially worrisome to pregnant women and children because the body naturally concentrates the isotope in the thyroid gland, where it quickly can affect growth.

"The reason that iodine-131 is so dangerous in children is that their normal growth and development, especially of the brain, depends on the thyroid gland," said University of Buffalo Medical School neurologist Alan Lockwood, who sits on the board of Physicians for Social Responsibility, a non-profit group that advocates against nuclear proliferation. "And if there is exposure as a child, the risk of developing thyroid cancer later in life is higher."

—Wall Street Journal  
March 23, 2011

"Plutonium is a very dangerous and harmful substance. Even in small quantities, plutonium, if ingested by the human body, almost certainly leads to the development of cancer. There is no concept for how to monitor and how to store the radioactive fuel, which will radiate for many, many thousands of years. According to the information provided by the IAEA last week, already a significant amount of radioactive substances such as iodine-131 and cesium-137 will be released; it might lead to a situation where we might compare Chernobyl and Fukushima if it comes to the release of the radioactive substances. Plus, at this time there is a danger of a release of plutonium."

—Lars Pohlmeier, IPPNW-Germany  
Interviewed by RT (Russia Today) TV,  
March 29, 2011



Indian Doctors for Peace and Development (IDPD), IPPNW's Indian affiliate, held a press conference on March 17, 2011 to express "solidarity with the people of Japan" and to demand that India "shun the pursuit for nuclear power plants and instead look forward to utilize renewable energy resources." IDPD photo.

“Monbiot's assumption ignores all that is known about the health effects of previous nuclear accidents, particularly Chernobyl. Leaving aside the deaths of workers killed either by the initial explosion or through exposure to dangerous levels of radiation during the clean-up, the impact on health from nuclear accidents continues—25 years and more than 6,000 cases of thyroid cancer later, the effects of Chernobyl are still being felt in the UK. Today, more than 300 farms remain contaminated and are still under food restriction orders.

“Supporters of nuclear power often fail to address the threat to the health of future generations by the unsolved problem of nuclear waste. Buried in the ground, it remains radioactive for tens of thousands of years, and is vulnerable to climate change and natural disasters. What right do we have to dump this lethal legacy on future generations?

“Monbiot worries about the impact of wind farms, pylons, power lines and reservoirs on the landscape. Can we really balance the altered appearance of the landscape with the impact that drinking water contaminated by radiation would have on children's health? Given the potentially devastating impact on the health of future generations, the cost of nuclear power is just too high.”

—Marion Birch, *Medact*

*Letter to the Editor, The Guardian*

March 29, 2011

(in response to an article by George Monbiot arguing that the Fukushima disaster had shown that nuclear energy, even in the worst of circumstances, was less dangerous to public health and the environment than the alternatives)

“The discovery of plutonium in the area around the Fukushima plant is another indication of the seriousness of this accident. The dangers of such a release, to public health and the environment, cannot be overstated. If a minute amount of plutonium is trapped in the lung, it will deliver an intense dose of radiation to a very small volume of tissue for a very long time. This makes it highly carcinogenic.”

—Alan H. Lockwood, *Physicians*

*for Social Responsibility*

*eNews Park Forest, Illinois*

March 30, 2011

“Japan's government and TEPCO must be completely transparent about the facts of this situation....In order to properly protect the public and our precious natural



**Medact director Marion Birch calls for an end to nuclear energy in Britain during a demonstration in London to commemorate the 25th anniversary of the Chernobyl disaster on April 26, 2011. Campaign for Nuclear Disarmament photo.**

resources, it's vital that they give us a full accounting of what they've discovered around the plant.”

—Jeffrey Patterson, *Physicians*

*for Social Responsibility*

*eNews Park Forest, Illinois*

March 30, 2011

“[T]here's a current major controversy in Japan because the government has decreed that the maximum permissible limit for children in Fukushima will be not one millisievert, which is the normal standard internationally and in Japan, but 20 millisieverts. Now that involves significant risks. That means that if you say that there are two million people living within 80 kilometres of Fukushima, if you say roughly half a million of them might be under 20 then you're talking about potentially 3,000 or 4,000 additional cancers per year in those from 20 millisieverts. So that's currently under intense controversy, as it should be, in Japan....

“[R]adiation in foodstuffs is long term a

significant hazard from nuclear fallout from either nuclear weapons or from accidents involving nuclear reactors or spent fuel. That's complicated and exacerbated by the fact that a number of important isotopes...mimic important biological constituents that are normally part of our bodies and how they work.

"So, for example, iodine-131—one of the important particularly early radioactive contaminants released in Fukushima and Chernobyl—has a half life of eight days; it's pretty short. Your body can't tell whether that iodine is radioactive or not, it treats it just as iodine which your body uses to make thyroid hormone—the hormone that's basically the accelerator pedal on your metabolism; it sort of revs you up or slows you down. Now the uptake and the risk from iodine, which is a major cause of thyroid cancer, and this major rise—about 7,000 cases of thyroid cases in the vicinity of Chernobyl so far, an increase that's likely to continue for some decades—is directly related to exposure to iodine because there were not appropriate constraints on eating iodine-contaminated green leafy vegetables or dairy products, where the iodine contaminates the soil and the grass, the cows eat, it gets concentrated in the milk and cheese and then people eat..."

"Cesium, another important isotope, behaves chemically like potassium, so your body puts it inside cells, treats it like potassium so it's widely dispersed in the body. Strontium-90, another important nuclear fallout contaminant also with a half life of 28 years—so around for a long time—behaves chemically like calcium, so it's concentrated in bones and teeth. Plutonium is also concentrated biologically. So because these sort of

mimic important substances that our bodies use, these can be concentrated in plants and animals and up the food chain...

"...[A] lot of [this information] can be used as a way of helping to minimise people's exposures in ways that make good public health sense and informing people about the risks. Particularly protecting the most vulnerable, who are children and pregnant women, who take up more radiation for example because their thyroids are relatively more active, who are more susceptible to the effects and who may have, in fact, accumulate higher levels in their bodies. So, simply things like avoiding milk in the weeks and months after a release of iodine will avoid the risk of thyroid cancer very substantially.

"So there are significant risks but certainly exposures that would involve small fractions of a millisievert of additional risk are relatively insignificant. But it's also important, I think, to say that what might be an insignificant risk at an individual level—if an individual is exposed to one millisievert extra radiation increases their lifetime risk of cancer by 1:10,000, it doesn't sound like a bit deal. But if you apply a 1:10,000 risk to a million or 10 million or 100 million people then you're talking about thousands or tens of thousands of additional cancer cases. So it's about how that burden is shared as well as the dose itself."

—Tilman Ruff

*Interview on Up Close, University of*

*Melbourne*

*May 17, 2011*

*[Full interview available at  
upclose.unimelb.edu.au/episode/144-waiter-  
theres-cesium-my-soup-health-implications-  
radioactivity]*



# A First-Hand Account of Japan's Nuclear Crisis

Katsumi Furitsu

On March 12, 2011, the day after northeastern Japan was struck by an 8.9 Richter-scale earthquake and tsunami, IPPNW began to receive first-person, detailed updates about the crisis at the Fukushima Nuclear Power Plant from Dr. Katsumi Furitsu, a specialist in radiation biology and medical genetics based in Osaka, and a member of the board of the International Campaign to Ban Uranium Weapons. Katsumi's reports, arriving several times a day, provided information and insights into the worsening situation on the ground—information sometimes in stark contrast with what has been reported in the Japanese and global media. Following are all of Katsumi's messages, from the first on March 11 to the last on March 19, with a final reflection on April 22. Katsumi is the first to advise readers that her posts, which were added as they arrived to the IPPNW Peace and Health Blog, were written in haste and amid the confusion of events on the ground. She frequently corrected and revised the information she provided from one update to the next. The real value of these communications—and the reason we include them here unedited—is not only in the information Katsumi provided to those outside Japan who were desperate for information, but also in the sense of immediacy, urgency, sadness, and empathy for the victims and the rescue workers she conveyed to readers who could only observe each day's events from a distance.

*March 11, 2011 5:54:29 PM EST  
Japan News Update*

Dear all,

You might already know the following news.

There is already radioactive leakage from the container of the core.

The TV news has just said radiation level in front of the gate of the plant increased up to the level of 8 times higher than the "normal level" (background? or limit?).

Best,

Katsumi Furitsu in Osaka

*[From Reuters/Kyodo—ed] Thousands evacuated amid nuclear leak fears*

*Japan dispatched around 160 military personnel, sending its chemical corps and an aircraft on a "fact finding mission" to the nuclear plant.*

*o Related Story: Residents near nuclear plant told to evacuate*

*o Related Story: DFAT issues Japan travel warning*

*o Related Story: Japan death toll could top 1,000*

*o Related Story: Record quake unleashes tsunami on Japan*

*o Related Story: Millions stranded in Tokyo subway shutdown*

*The Japanese government has declared an atomic emergency because of the "possibility" of a radioactive leak from a nuclear reactor in the quake disaster zone.*

*But operators of the Fukushima No. 1*

nuclear plant have warned that radiation could already have leaked.

This morning Japanese prime minister Naoto Kan said thousands of people living within 10 kilometres of the nuclear plant must evacuate.

The amount of radiation reached around 1,000 times the normal level in the No. 1 reactor's control room, the Kyodo news agency reported the Nuclear and Industrial Safety Agency as saying.

Trade minister Banri Kaieda earlier said authorities were nearing a decision to release radioactive steam from the troubled nuclear reactor in a bid to ease a pressure build-up after its cooling system was damaged by the massive earthquake.

"Pressure has risen in the container of the reactor and we are trying to deal with it," a spokesman for Tokyo Electric Power, which operates the plant, said.

The government had earlier said no radiation leaks were detected among its reactors after the 8.9-magnitude earthquake struck on Friday, Japan's biggest on record, triggering huge tsunamis.

The plant had shut down after the quake, but a reactor cooling system failure had led to the evacuation instruction, a situation the government said was "under control".

Japan has dispatched around 160 military personnel, sending its chemical corps and an aircraft on a "fact finding mission" to the nuclear plant, Kyodo said.

Prime minister Naoto Kan had earlier said no radiation leaks had been detected from Japan's nuclear power stations after the massive quake struck the country.

The IAEA's Incident and Emergency Centre had said that the four nuclear power plants closest to the quake which occurred near the east coast of Honshu, Japan, had been "safely shut down".

According to the industry ministry, a total of 11 nuclear reactors automatically shut down at the Onagawa plant, the Fukushima No. 1 and No. 2 plants and the Tokai No. 2 plant after the strongest recorded earthquake in the country's history.

A fire that broke out in the turbine building of Onagawa nuclear plant in Miyagi Prefecture had been extinguished, the government said. Operator Tohoku Electric Power said there were no indications of a radioactive leak.

Miyagi prefecture was one of the areas worst hit by the tsunami.

Millions of households were without power in north-eastern Japan, according to Tohoku Electric.

Japan - located on the Pacific Ring of Fire, where continental plates meet and create a string of volcanoes and seismic hot spots - records 20 per cent of the world's major earthquakes.

As an industrial powerhouse nation poor in energy resources, Japan also draws about 30 per cent of its total power from its 53 nuclear plants.

March 12, 2011 1:29:04 AM EST

*the core is starting to melt down*

Dear all,

The news just says that Cs 134 has just been detected surrounding the plant building.

The official nuclear safety committee has announced that it means the core may be starting to "melt".

The government decided to release the air from the containment this morning to reduce the pressure inside. However, it has become clear that they could not open the valve properly and could not actually reduce the pressure.

Then, the cooling water level is getting lower and the upper part of the fuel rods (about 170cm) has come out from the surface of water.

The temperature of the core is getting higher over 2700 degree centigrade.

The radiation level at the gate of the plant is measured to be 90 times as higher than background.

Not all the people from 10km zone has yet evacuated.

I am afraid that the situation is similar to TMI or worse.....

We cannot access to any further information now....

Katsumi

---

March 12, 2011 1:49:48 AM EST  
*the core is starting to melt down*

They have just announced that they "successfully" opened the valve to reduce pressure of the containment.

They said that pressure inside is getting lower now.

I really hope that the situation is getting better. They are releasing radioactive materials into the environment, though.

---

March 12, 2011 3:43:29 AM EST  
*getting worse...*

The news is reporting that the radiation level near the plant (?) is measured 1,015 micro Sv/h.

---

March 12, 2011 3:21:17 AM EST  
*getting worse...*

The reactor (Fukushima I) exploded!  
The walls and ceiling have fallen down.  
It is just like Chernobyl.....

March 12, 2011 1:47:22 PM EST  
cooling with sea water

Dear all,

The government and the company announced that the plant-building was broken (by phreatic eruption) but the containment and the reactor vessel are intact.

It is said that the hydrogen eruption inside the building (outside of the containment) occurred under the high temperature because of the failure of core-cooling-system.

The fuel rods inside the reactor vessel has actually "melted down" to some extent without proper cooling system (the level of cooling water was getting lower).

They decided to cool the reactor vessel and the containment vessel with sea water with boron. The media has reported that a team of the defense force is pumping the sea water and pour into the container now.

As you know, it is unusual decision (or last choice for them) to use sea water for cooling. They seem to decided not to continue to use the reactor after the settlement of critical situation.

It is also reported that the radiation level around the plant is getting lower now.

However, people have already been exposed to radioactive materials to some extent as Ryoma informed. (It is reported that a person with "positive contamination" was exposed at the point 3.7km from the reactor while he/she was getting out of 10km zone. Evacuation zone is now extended to 20km, though.)

We do not know the actual situation of exposure. We have to follow up the situation carefully.

Peace,  
Katsumi

---

March 12, 2011 6:35:44 PM EST  
some update

Dear Jeff [PSR-USA president Jeff Patterson—ed.] and all,

Thank you for the response and advice. I do not think that people (children) have already taken iodine. (I know it is most ideal to take iodine before being exposed to radioactive iodine.)

Can you imagine the situation over there? People have such a disaster of earthquake already and, in addition to it, they are facing to the serious danger of nuclear power plants. It is not a "simple" nuclear-power-plant-accident. The traffic is cut off in some places. All the life line is actually stopped.

Some people might already got injured.....

We ourselves have some friends who live within 3 km from the plant, but we cannot make contact with them since the earthquake happened. We do not know whether they are safe or not even without the problems of nuclear power plants. We only pray for their safety.

It is said that a team from the National Institute of Radiological Science was sent (or will be sent?) to the area.

I really hope they will make a proper decision to protect people.

(I am personally feeling frustration that I cannot do anything directly right now.)

The news has just reported that they found 160 people are exposed, but another news has reported 15 people are exposed and getting some treatment of decontamination. However, we do not know how they diagnosed the people are exposed.

The chief cabinet secretary, Mr. Makieda, has just announced that 9 people are contaminated. He said, "the 'count' of surface radiation was 1800-40000 cpm." (They seem to use a most simple radiation detector and checked the surface contamination of people's clothes. They do not have any information of internal exposure.) He emphasized again and agin that "the contamination level is not harmful to people".

As far as I understand from the media news, they have just pour sea water into the containment vessel, but not circulate it at this moment. However, the situation is not clear to me. If they circulate the sea water, they have to release the contaminated water into the sea....

Yes, the cooling system has not yet recovered, as far as I understand.

The bad news is that the same process has been going on in another reactor (No.3 reactor) at the same "Fukushima-I" reactor site. They have just decided to release the air inside the containment to the environment again.

It is a release of radioactive materials to the environment to avoid the worse scenario. We have to follow the things carefully.

Peace,  
Katsumi

---

March 12, 2011 11:44:00 PM EST  
all the three running reactors are going  
though the similar process

The media has reported that the Tokyo Electric Power Company has just decided to release the air from the containment of the No. 2 reactor of Fukushima-I site to the environment to reduce the pressure inside.

Therefore, all of the three reactors (No. 1-3) at the Fukushima-I site, which were running at the time of the earthquake, have been going through the same process.

About 210,000 people in total are already ordered to evacuate from the 20 km zone(180,000) from the Fukushima-I site and 10 km zone (30,000) from the Fukushima-II site. (You might remember that about 120,000 people are evacuated from the 30km zone of the Chernobyl power plant.)

However, it is not still clear that how many of them, 210,000 people, could evacuate.

---

*March 13, 2011 10:30:26 PM EDT  
reactor situation*

They are now announcing the news: just about 20 min ago, the hydrogen explosion happened at the reactor No.3; the situation is just as the No. 1 reactor.

The building of the reactor has broken. We can see on TV the walls and the ceiling have fallen.

We do not have any further information at this moment. We only hope the core containment would be intact....

---

*March 13, 2011 10:47:41 PM EDT  
reactor situation*

It is said that there are still 600 people within 20 km, most of them are old people or patients, their families and medical staff. It was not easy for them to evacuate soon.

The Chief Cabinet Secretary is now announcing that the company has reported that the containment is (seems to be) intact.

It is reported that no increased level of radiation is measured at this moment at the boarder of the site.

---

*March 14, 2011 7:32:50 AM EDT  
running on the "edge of cliff"*

Dear all,

Now the No. 2 reactor is getting into a critical situation.

The company and government announced early in the afternoon that all the cooling system is out of order.

After that the cooling water level inside the fuel vessel went lower. Then they tried to cool the core with sea water, but they could not do so from some reason. Now, it is reported that whole body of the collective fuel rods are above the water surface (or no water anymore in the fuel vessel containment?). They

say that the fuel rods might be "melting".

I do not want to believe the situation, though....

They are thinking to cool the containment anyway.

When I have written this message to this point, the announcer of the TV news program has suddenly reported, "The government has just announced that they successfully started to pour the fuel vessel with sea water!"

The situation is still unstable. Hydrogen gas might be accumulating inside the plant building....

We will continue to follow the situation carefully.

---

*March 14, 2011 12:09:45 PM EDT  
reactor No. 2/ "heating an empty bathtub"*

Dear all,

The electric power company has just had a press conference:

They started to pour the sea water into the core vessel and the level of water surface went up to the half of the fuel rods.

However, they came to fail to pour the water about two hours ago because of a high pressure inside the core vessel. They say that a valve to reduce the pressure has closed. Then the water surface level went down to the "down scale" again and the whole fuel rods are left without cooling water now (as "heating an empty bathtub"). They does not deny the fuel rods has meltdown.

They are now trying to open some other valve to reduce the pressure.

The radiation level at the boarder of the plant was once measured as high as 3,130 micro Sv/h.

I am sorry for such a complicated explanation.

The situation is really unstable and complicated....it is critical situation anyway.

---

*March 14, 2011 7:22:02 PM EDT  
a part of containment has broken*

The government has just announced:

There was an explosion at the No.2 reactor.

The "Wetwell" (suppression pool- see the figure in a document which Xanthe sent us yesterday) seems to break. The pressure inside the pool has gone down from 3 to 1 atmospheric air pressure.

The radiation level at somewhere at the plant (probably at the gate again?) increased to 965.5 micro Sv/h (later it went down a little bit, they said).

The company has ordered a part of workers to evacuate out side of the plant.

As you can understand, it means a part of containment itself has broken. This is a quite serious situation. The most important barrier to retain the nuclear materials has broken.

I have no words.... the people in the badly affected area by earthquake and tsunami are facing to the danger of nuclear plant.

The government has announced again that the radiation level is not "an immediate danger for public health".

---

*March 14, 2011 8:05:42 PM EDT  
8,217 micro Sv/h is measured after 2 hours  
from the explosion*

The company has just reported: The measurement at the gate of the plant was 8,217 micro Sv/h.

It was about two hours after the explosion at the reactor No.2.

It is also reported that about the half of the fuel rods are now above the cooling water surface.

(It was totally above the water surface for some hours during the night, though.)

---

*March 14, 2011 10:27:16 PM EDT  
a fire in the reactor No. 4*

The government is now announcing:

There is a fire in the reactor No. 4, which was not running at the time of the earthquake.

It seems to happen by hydrogen explosion. They are now working on extinguishing the fire.

The radiation level measured inside the site:

between reactor No. 2 and 3: 30 mSv/h (note it is not micro Sv/h !!)

near the reactor No. 3: 400 mSv/h

near the reactor No. 4: 100 mSv/h

Now, the government is officially saying that the level at the site of the plant is "actually harmful" for people (workers at the site). The workers, except in charge of cooling the plants, were ordered to evacuate.

The people within 20 km ordered again to evacuate completely.

The people within 20- 30 km ordered to be stay inside building.

Katsumi

P.S. An additional information from the news:

The fuel cooling ponds of both (?) reactor No. 1 and 3 are now left without any over

after the explosion of the building. It is under the open air. The cooling system is already out of order so it is not actually a "cooling pond". Unbelievable situation, but seems reality.

---

*March 15, 2011 4:51:06 PM EDT  
some updates*

Dear all,

I am sorry, but I could not follow in detail the situation since yesterday afternoon.

We, some grassroots groups, went to visit the main office of the electric power company in our region (Kansai, the area including Osaka) to request them to stop all of their nuclear power plants as soon as possible. There are around 10 nuclear power plants about 100 km from Osaka. We requested them to learn the lessons from the disaster which is now happening in Fukushima. We know there is no place in Japan which is completely free from the possible danger of the earthquake and the problems of nuclear power plants.

Anyway.....as far as I have followed the news and statements from the government and company:

#The problem of spent fuel pond in the reactor No.4 is serious:

-They cannot decide yet what the actual cause and process of the fire at the reactor No. 4. Fortunately, the fire stopped spontaneously after some hours.

- They found that the temperature of the water of the spent fuel cooling pond is increasing from 40 to 84 degree centigrade as the cooling system is now out of order. After that they cannot measure the temperature as the meter was out of order. They think this situation might link to the fire and explosion at the plant.

- The hydrogen explosion might happen at the building (hydrogen was generated from the situation of spent fuel pond?). They found two big "holes" (8m x 8m) at the wall and the ceiling.

- The situation of the spent fuel pond is now focused. They considered an idea to pour water using a helicopter from the "hole" on the ceiling. However, the hole is not just above the cooling pond and they have given up the idea.

- They are still seeking to solve the problem.

- They also reported: the fuel rods complex which was to be put into the core vessel in the pond (it is not a spent fuel) as they were just before starting to run the reactor when the earthquake happened.

- They also reported that the radiation level inside the building is too high for workers to work. That is why they are thinking to pour water from outside the building.

#The level of radiation slightly elevated in the morning yesterday, on March 15, in the south area from the plant including Tokyo (around 200km from the Fukushima plant). It seems to come from the explosion at the reactor No.2.

Tokyo (Shinjuku):0.81 (around 200 km)

Tokyo(Utunomiya-shi): 1.318 (around 200 km)

Saitama city:1.22 (around 200km)

Fukushima Iwaki: 23.72 (around 50 km)

The increase depends on the direction of the wind.

#They are now worrying about also the increasing temperature and possible decrease of cooling water of the cooling ponds of reactor No. 5 and 6.

# They reported some data about the measurement at the site:

at the gate: 9:00, March 15: 11930 micro Sv/h

15:30 : 596.4 micro Sv/h

inside the site: most recent?, March 16: 200-300micro Sv/h

The government is emphasizing the level is decreasing now.

#The Ministry of Health, Labour and Welfare decided to re-consider the "maximum permissive dose" for nuclear workers at the emergency situation. It is 100mSv at the time of "emergency situation for lifesaving", now in Japan. (In usual situation, it is 100 mSv per 5 years, at the maximum limit of 50mSv per year.) However, they have decided to set up the "maximum permissive dose at emergency situation" 250mSv that is 2.5 times as higher than the present limit. They say that under this level, 250mSv, any acute symptoms would not occur. (I do not agree with their idea, though. They might decide it as they think it impossible to manage this critical situation without letting workers work under such a high level of radiation.)

...

I think you can now read some other detailed media coverage or reports from specialists on these situations even in English, though.

It is really hard for us to see the situation of people who have been suffering from the disaster of earthquake and tsunami, and in addition to it, they have to evacuate again or ordered to keep inside building. They cannot even try to find out their loved ones who are still under such huge wrecks.

Some (or many) people are now trying

to leave from the 30 km zone.

I am sorry for I do not cover all the disaster and suffering of the people in the affected areas, but only focusing the issue of nuclear power plants.

I hope you can follow the whole situation, which I could not write here, from the media coverage.

Best,  
Katsumi

---

*March 15, 2011 5:55:28 PM EDT  
another fire/ No.4*

The company has just announced that there was another fire at the reactor No. 4 early in this morning!

We do not have further information now. Hydrogen explosion again??

---

*March 15, 2011 9:45:10 PM EDT  
the fire seems to be continuing*

It is something like a nightmare...

We are now seeing the video of the Fukushima-I plant site, which was taken from the distance of 30 km.

The image is not clear, though.

We can see white smoke from one of the reactor buildings.

It might be reactor No. 4....the water temperature of the spent fuel pond with non-spent-fuel-rods-complex might be getting higher or it might be already boiling and in a possible worse scenario, some part of fuels are above the water surface and starting to "melt"....

I am not a specialist of this kind of technical things. So, I should not make comment on this, though.

The site, especially close to the building of No. 4 is now in the very high level of radiation.

It is not easy to extinguish fire. They might send a special unit to do the proper work at the site as they did in Chernobyl.....

Please note that it is only my personal "imagination"....

The company have just started to explain the situation:

They are saying that they themselves cannot recognize/confirm the real situation because of the highly contaminated situation inside the site. It seems that the smoke can be seen around No. 3 or No. 4. They are insisting that they do not make any comment as making comments based on speculation might cause more confusion....

We are physicians. When we treat such

serious patients, we usually think about the worst scenario and try to do everything what we could do as soon as possible.....before the situation would get worse. I really would like to believe that they, the company and government, has been working in the same way.

I wonder what we can to protect people...now....

Katsumi

---

*March 15, 2011 10:07:03 PM EDT  
the fire seems to be continuing*

The company also mentioned that 4 fire engines were sent to the site from the local fire station.

The company also said that the plant workers even cannot confirm the situation because of the high radiation level.

I am really surprised that the local fire station is still working.....well it should be working.....but, I really hope that they are well equipped for the task at such dangerous situation. It reminds me the firemen at the Chernobyl site who worked just at the time of the accident. You all might know what happened to them.

I really hope my imagination would be just an imagination and not real....

---

*March 15, 2011 10:29:49 PM EDT*

The Chief Cabinet Secretary has announced:

What we saw in the vide image was smoke/steam from the reactor No. 3.

The radiation level at the gate increased rapidly from around 600-800 micro Sv/h to mSv/h level for a while around 10:00 am.

However, it is getting down at 10:54.

They think that the steam might be coming from a possible leak of the containment of the reactor No. 3, as it happened at the reactor No. 2 yesterday.

The government has been making great effort and some staff from the government has been working at the site together with the company.

So, it was not from a fire of reactor No. 4.

---

*March 16, 2011 8:24:38 AM EDT  
The following are some updates:*

#The smoke/seam from reactor No. 3:

The company said that the smoke/steam from the reactor No. 3 came from the spent fuel pond (not from a possible leak from the containment).

The cooling system of the pond is out of order and the temperature of the water is getting higher to make steam. As you know, the building of this reactor already is broken down and there is no cover/ceiling over the spent fuel pond. It is open to the air now.

Then, they are planning to drop sea water from helicopters and fill the pond with water to stop the damage of spent-fuel rods.

A team of "Defense Force" started the training to do the task. They are ready to start now.

However, the radiation level over the pond is still high. It was measured "far more than 50 mSv/h". (They actually measured it by a helicopter.) So, they decided not to pursue this operation today. There is no guarantee that the radiation level would become lower tomorrow, though. (The government has decided yesterday to set up the maximum exposure level at an emergency situation from 100 to 250 mSv, as I wrote you yesterday.)

#The reactor No. 4:

The government has just ordered the "riot police" to go to the site as they have a special car which has a "high pressure injection system". (I do not know the proper words for such a car in English. I suppose a car which might be usually used against "riot"....or sometimes against a demonstration, as some of you might know?) They will try to fill the spent fuel with water using the special car. The defense force will lend protective suits to the "riot police". They will start to work tomorrow morning.

#The result of the radiation level measurement today:

Today, a team from the Ministry of Education and Science, measured around the 20-60 km zone:

about 20km: 0.33 mSv/h

30-60 km: 0.0253 - 0.0125 mSv/h

The government and media emphasized, "the level is not a immediate danger for the people's health, though it might be problem to live in such area continuously for a year."

(I agree that it is not an "immediate danger" but it could contribute to cause "late effect" as cancer, leukemia or other disease. It depends on the duration of exposure.)

They do not provide us, people, any information about the concentration of radioactive noble gas, iodine, cesium and so on.

Peace,  
Katsumi

---

*March 16, 2011 8:56 PM EDT  
They start dropping water.....*

We are now watching on TV a helicopter which is measuring the radiation level over

the plants.

The helicopter has just dropped water over the No. 3 reactor.....

The reporter said: The CH 47 helicopter can carry 7.5 ton of water. Another helicopter is now heading to the site. (9:48 am)

The second one (or the same one? again) has just drop water....9:52 am

The third drop is over No. 4.

I will write further later.....

---

*March 16, 2011 10:19 PM EDT  
more information*

Just before starting to drop water from the helicopter the government had a press conference.

The following is the information from the conference and the TV media (NHK) report showing the actual operation.

We saw white steam coming out after dropping water. You may see the video later or already seen? Not all the water could drop in pin-pont over the pond unfortunately.

# Reactor No. 3:

They will pour the spent fuel pool with water both by helicopters of the defense force and special cars with high pressure injection system of the riot police.

The helicopter, CH 47, can carry 7.5 ton of water. It dips up sea water nearby, flies to the reactor and drop the water over the pond of reactors. Before the operation, they measure radiation level and wind over a reactor and see the feasibility to work.

The defense force (DF) estimated that they have to repeat this procedure more than 100 times to fill a pond.

The reporter said that the maximum radiation limit for DF staff is set up 50 mSv with exception of life saving situation:100 mSV. (So, they seem to keep the present limit anyway.....)

On the other hand, they are collecting 11 cars with special injector from all over Japan. All or some of them are now ready to go....they have already headed to the site from 20km zone. They will start to work after the operation of dropping water from helicopters so that (hopefully) the radiation level at the site would reduce to some extent. A car can carry 4 ton of water for each. They will stay about 50 m from the building (as the maximum injection length is 50m), but they estimated only one min. would be allowed for a staff before reaching the maximum exposure level.

They decided to start from the reactor No. 3 as it is more dangerous compared to

No. 4. (You may remember that No.3 has the not spent fuel complex in the pool.) It is easier to drop water in the case of No. 3, as it has no ceiling anymore.

They have dropped water four times this morning from 9:48 to around 10:00 am. (So, the exposure dose might become up to 50 mSv for around 15 min inside the helicopter. This is only my guess.) They said that they put a lead plate on the floor of the helicopter and a staff on board is measuring radiation level during the operation. They put on protecting clothes.

#As for No. 4, they will not use helicopters, but only use the cars of the riot police, as a hole on the ceiling is far from the pool. Fortunately (?) it already has a large hole (or holes?) (seeing from the picture, it is not a hole, almost whole side wall facing to the sea has completely fallen down) on the wall. So, they think that they can inject water from the side.

#The reactor No. 5 and 6:

The temperature of the water of spent fuel ponds is increasing:

No. 5: 63 degree centigrade (5 degree increased compared to yesterday)

No. 6: 60 degree centigrade (4 degree increased compared to yesterday)

They are preparing to introduce electricity from outside of the plant site and try to recover the cooling system.

The facilities of pumping were destroyed by tsunami.

#The reactor No. 1 and 2 are stable anyway. They continue pouring sea water into the containments and core vessels.

---

*March 16, 2011 10:46 PM EDT  
some additional information*

#The minister of defense ministry is now at the press conference:

some additional information:

The radiation level measured before the operation:

4.13 mSv/h at 1000 feet

87.7 mSv/h at 300 feet

They did not start the operation, but they decided to do this morning as the situation too critical to wait anymore.

The minister does not yet have the data after the droppings.

The US force will also join the operation later.

*March 17, 2011 10:27 AM EDT  
30 tons of water was injected into the reactor No.3*

#In addition to dropping water from the helicopters this morning, the defense force has injected 30 tons of water in total to the No.3 reactor.

Five special cars were involved in the operation today. They spend around five min for each (7:35, 7:45, 7:53, 8:00, 8:07 p.m.). A pair of personnel worked staying in a car.

We hope the operation was successfully.....we do not know whether or not radiation level has decreased after the operation.

#Prior to the operation by the defense force, the riot police tried to inject water into the No. 3 reactor, but they failed to reach the target.

#It was reported the radiation dose of personnel involved in the operation by helicopter this morning was within the emergency dose limit 100 mSv (max data was 60mSv).

---

*March 17, 2011 10:27 AM EDT  
30 tons of water was injected into the reactor No.3*

#In addition to dropping water from the helicopters this morning, the defense force has injected 30 tons of water in total to the No.3 reactor.

Five special cars were involved in the operation today. They spend around five min for each (7:35, 7:45, 7:53, 8:00, 8:07 p.m.). A pair of personnel worked staying in a car.

We hope the operation was successful...we do not know whether or not radiation level has decreased after the operation.

#Prior to the operation by the defense force, the riot police tried to inject water into the No. 3 reactor, but they failed to reach the target.

#It was reported the radiation dose of personnel involved in the operation by helicopter this morning was within the emergency dose limit 100 mSv (max data was 60mSv).

---

*March 17, 2011 8:09:35 PM EDT  
some information/ they are ready to go also today.....*

# The defense force (DF) personnel who worked for injecting water into reactor No. 3 yesterday:

Dropping water from helicopters:

17 personel were involved in the operation worked around 90 m above the reactor

The exposure dose was officially reported: all of them are under 1mSv

They used a plate of tungsten (not lead, reporter revised the information) for shielding.

Injecting water from cars:

13 personel

The chief of the DF reported: exposure dose of personnel was up to 60 mSv (maximum)

#The company made comments on the effectiveness of the operation yesterday, on March 17:

There was not so much change of radiation dose rate by the operation of helicopters: changed from 3782 to 3752 micros Sv/h (somewhere inside the plant site).

However, they think a spout of steam from the building which can be seen just after dropping water might be an evidence that the operation could reduce the temperature at the fuel pond to some extent. (I also want to believe so....)

As for the injection of water from cars on ground 50m from the reactor building:

The radiation level at the gate of the plant site:

3:30 pm (before the operation): 309 micro Sv/h

11:00 pm(after the operation): 289 micro Sv/h

#The data radiation level measured by the Ministry of Education, Culture, Sports, Science and Technology on March 17:

Max: 170 mico Sv/h (14:00, 30 km northwest from the plant)

They measured at 28 places in 20-60 km zone, 9:20-15:00 : 18.3-1.1 micro Sv/h

The data depends on the direction of the wind.

#Today (March 18), the DF is ready to work for the same operation both from sky and ground.

In addition to the DF, a fire brigade with special type of cars (usually used for a fire of airplane) from Tokyo has already headed to Fukushima at the midnight. They will also join the operation.

Four helicopter will work.

More cars of DF will work.

#More sad stories are reported:

More than 20 patients (old people) passed away who were left in a hospital in the 20 km zone or on the way of evacuation from the 20 zone.

I cannot write all of these stories now, but they must be recorded.

...

We should not/cannot estimate the number of people who might be exposed to more radiation in the case of larger amount of radioactive materials from the nuclear fuel, though. I would say, at least "hundreds of thousands" people....

...

We, who know the danger of radiation, are thinking about those personnel, fire fighter and workers of the company & associate companies and their families. I believe the government and the company also know that the task is really dangerous because of the high level of radiation. However, we also know: without their work, at least several hundreds of thousands people including children, pregnant women..... might be exposed to more radiation.....

It is really sad and complicated situation....

Katsumi

---

*March 17, 2011 9:45:11 PM EDT  
30 fire engine has joined the DF*

#The 30 fire engine have just arrived at the place (probably 20km from the plant) and joined the DF.

The cars are:

- rudder truck with folding ladder of 22m
- large special (chemical?) fire engine which can spray water 5 ton/ min, even while driving
- fire engine which can pump water from 2km distance water source
- fire engine for special disaster which have equipments to clean up radioactive contamination

I do not know what actually they are, though.

I would say that they are really to do their best to avoid the worst case.

Of course, they will be measuring the radiation dose rate at the site and within the "exposure limit"....

I only hope that they could work with minimum exposure, as smaller as possible....

---

*March 19, 2011 1:47 AM*

*one week has passed.....still in a difficult situation*

Dear all,

I am sorry but I do not have time to update the things now.

Many things are happening here. I myself have to deal with the things what I can do here, in addition to my own routine work and activities.

You may see some of the updates on the following site, at least the "official" information.

<http://www.ustream.tv/channel/nhk-world-tv>

We are still in a critical situation at the nuclear power plant site. Many people, many young skilled workers, fire fighters, engineers and SD staff, at the site have been making great effort to try to stop the situation getting worse. They themselves are already exposed to radiation.....it is really sad, but we know that we cannot get rid of this crisis without their hard work.....

We, anti-nuclear-power-plants activists are starting to discuss concretely the evacuation of children and pregnant women, from the 20-30 km zone. We are afraid of the possibility of the worse situation. (We really hope it would not happen.) It might be too late if we decide after having such a situation. We never want to make people in panic. However, we have to prepare even for the worst scenario. We know that we should carry on such a measurement with an official initiative. The crisis situation makes the government too busy to work on this. They have to focus on the crisis of the plants to avoid the further disaster. It is reality.

Another important thing for us is to request government and companies to release real time and precise information and data of environmental radiation, including the data of isotopes, and the situation of the plants.

We heard that already some or many of them, who have a chance to do so, have already left the areas. However, it is not easy to do so without gas and before preparing proper place to accept them outside of the zone.

I also know that some people even in Tokyo has already left the city and been in a kind of "panic" situation. I really understand their feeling and we cannot blame none of them.

However, we have to focus on the people right now who have been facing to the most "possible" or "realistic" danger to radia-

tion exposure and also the shortage of food, water, medicine, fuel and everything.

The local governments are already starting to accept more than a thousand people from a town which is within 2km, (they evacuated already from their hometown to 20-30 km zone some days ago). Many people, including local authorities, are now trying to do their best.

I am not sure whether or not you who are living away from Japan could understand my complex feeling, sadness and realistic thinking.

Another additional thing is that NHK in Japan has stopped the continuous live news on the affected areas and the nuclear plants today. They might decide to do so as a week has already passed since the earthquake. (Of course, we can get a live image at the site from time to time, when something new happens.) It makes me strange feeling watching sports game, cultural program and other things which do not have any relation to the present disaster. I myself may be in an "unusual" mental a situation.....

I will stop now.

I wish you all have a nice week end. We have no idea about our weekend, though.

Please also continue to work hard to stop nuclear power plants in your own country....

Peace,  
Katsumi

P.S. I saw a video of WHO staff who is commenting on the evacuation. I personally thing it very sorry. They are not in a stance of "preventing" possible health impacts on the people who are staying within 20-30km or just out side of the 30km zone. We are not discussing the immediate danger of the people who are living in Tokyo! I hope he will come to Japan and stay with the people in the 20-30 km zone..... I will not say anything further now. We may discuss after we finish this crisis. Sorry in a hurry....

---

April 22, 2011

*Radiation cut off raised for Japanese school children*

I have come back from Fukushima late last night. I spent five days there.

I visited some towns and villages over there including Iitate-village, where they have highly contamination even outside of 30 km zone. They have 6,000 residents before the earthquake and accident. Some of them have

already evacuated voluntarily even before the government set of the "planned evacuation zone". (You may already read the report on the measurement of radiation dose and radioactive materials in soil in the village.)

It is really urgent to let people, especially children, pregnant women and younger people (who may have children in the future), evacuate from such a highly contaminated area. I met the head of the village and some staff members of the village. I also met with some groups of residents. I told them the real situation of the contamination in their village and explained them that it is urgent to decide to evacuate. (Some residents do not want to evacuate as they have their own life in their beautiful homeland. However, they are starting to understand what is happening in their land.) I also listen to their stories individually and gave them concrete advices as a physician. It is really sensitive situation in many ways, politically, socially and psychologically, so I cannot write all the things at this moment here. You, who are living outside of Japan, might not understand our Japanese culture, though.

It is really sad and terrible for me to see and hear that people, including babies (some dozens of babies, infants, their mothers and pregnant women have already evacuated under a official program of the village, but not all of the babies are evacuated) have been living in such an area where we can measure such radiation level (ex. indoor: 2-3 micro Sv/h, outside: 5-8 micro Sv/h at 1m above the ground, more than 10 micro Sv/h on the ground).

Some NGOs and individuals from outside are now helping people in the village by supplying non-contaminated vegetable, fruits and such fresh food. They need to have non-comtaminated food anyway before evacuation. The evacuation plan takes at least one month.

As you may know that some "specialists" say openly in public that radiation (chronic) exposure below 100 mSv makes no serious health problem. They, together with the local authority, had lectures in many places in the prefecture. They want to avoid the panic situation of people. I understand their concern, though. However, such comments of them influenced people to take their situation easy. Some families who once evacuated outside of the highly contaminated area came back to the village after having lectures and information from such specialists.

I am thinking to visit the area again early next month after the events of 25th anniversary of Chernobyl here in Osaka. I would like to help them as a physician to let them decide themselves what to do. I want to

be with them, as far as I can, and work in cooperation with them. I really do not want to make people in panic. It is important to talk to the people and listen to the people directly and think with them what to do in such a critical situation.

I would add that even outside of the litate-village, the radiation situation is still serious.

We can measure 1-3 micro Sv/h radiation rate all around in the center of the city of Fukushima, where 290,000 people are living. The problem is not limited at the schools. The "20 mSv" of radiation exposure (it is only from external exposure) is a serious problem for almost all of the residents in the contaminated cities and towns in Fukushima prefecture. Of course, "20 mSv" is the dose limit for nuclear workers in Japan in accordance to the Japanese radiation protection law. The radiation level above 0.6 micro Sv/h (1.3 mSv of radiation exposure) is the definition of the "radiation control area" according to the law. However, they are now applying the standards of "emergency version" for both workers and public following the recommendation of ICRP.

As many people are already exposed to some extent, proper health following-up and compensation will be necessary in the future.

We also have to think about the influence to the industry, agriculture dairy farming and fishing in the area. Many people are living on that.

We really need to stop all the nuclear power plants in Japan (and everywhere in the world). I know that we cannot stop them immediately, though. We, as citizens groups, will visit the Kansai-electric company to request them to listen our voices on April 26. We have 10 nuclear power plants just 100 km from Osaka, the second biggest city in Japan. We know that there are active faults very close to the plants.

I agree with the idea of Alex to make a kind of appeal from IPPNW on this occasion to support the exposed people in Japan. I



**Katsumi Furitsu speaks about the Fukushima nuclear reactor crisis at IPPNW-Germany's congress, *Timebomb Nuclear Power—25 Years after Chernobyl*, on April 9, 2011 in Berlin. Photo © Jens Jeske/IPPNW-Germany.**

think it important to make a critical comments on ICRP and Japanese government's policy of radiation protection at the emergency situation. (Note that Japanese government are following the recommendation from ICRP and many physicians and specialists in Japan have been supporting ICRP. The special adviser for the Japanese cabinet at the emergency situation is a member of ICRP.)

Sorry, but I do not have time to write more in detail now. (I have to prepare the meeting tomorrow.)

The situation is moving here in Japan. I have to work on it, as a physician, in accordance to my conscience.

Thank you for all the support from our colleagues of IPPNW in the world.

Peace,  
Katsumi

## Young doctors speak out on the Fukushima disaster

IPPNW's global network of young doctors and medical students used online social networking technologies such as Facebook, Twitter, and YouTube, which offer the potential to reach millions of users with updates, expert analysis, and informed opinion about events in Japan as they occurred. Particularly effective are short, self-made videos that can be posted to YouTube and other video-sharing sites, and then linked to blogs and websites in what is called viral communication. Below are brief excerpts from video messages by young IPPNW doctors from four countries. These and others are gathered on the IPPNW medical student website ([www.ippnw-students.org/medicalvoices/voices.html](http://www.ippnw-students.org/medicalvoices/voices.html)). Links are given to the full versions on YouTube.



**Ryoma Kayano—Japan**

It is true, nuclear power plants supply us a lot of energy. However, as we see in this situation, catastrophe can occur and we simply cannot control the huge energy....First, we have to recognize that nuclear energy is uncontrollable and dangerous. Second, we have to stop and think. Is it right to use this energy? Are there other ways to solve our energy problems without nuclear energy?

[www.youtube.com/watch?v=ktHhBSsGvzs](http://www.youtube.com/watch?v=ktHhBSsGvzs)



**Alex Rosen—Germany**

We're all very worried about the health effects from this catastrophe. ...As we see in Fukushima, nuclear power is never 100% safe; no technology is....We know about the effects of these nuclear particles because we have studied the health effects of the Chernobyl disaster, where we've seen a significant rise of thyroid cancers, a significant rise in childhood leukemia [and other diseases].

[www.youtube.com/watch?v=WL\\_Oew16vlg](http://www.youtube.com/watch?v=WL_Oew16vlg)



**Vilena Avaliani—Russia**

All stages of the nuclear fuel chain have adverse environmental impacts...If a country has nuclear energy, it increases its capacity to build nuclear weapons....We have good alternatives to nuclear power plants, and they are renewable sources of energy such as sun, wind, biomass and many others....It happened once in Chernobyl; it happened a second time in Fukushima. So what next before we say "no thanks" to nuclear energy?

[www.youtube.com/watch?v=RSjFM0mwRE](http://www.youtube.com/watch?v=RSjFM0mwRE)



**Ogebe Onazi—Nigeria**

We appeal to policy makers of governments all over the world to deemphasize the need for nuclear energy...Let us put in consideration the generation to come. Let us put in consideration the health of the people of Japan. Let us put in perspective what the unborn babies and their mothers are going through this moment in Japan. We do not have nuclear disasters going on in our country; nevertheless, we feel concern for the people of Japan.

[www.youtube.com/watch?v=Hq4EcJXqGeI](http://www.youtube.com/watch?v=Hq4EcJXqGeI)



# Japan's Nuclear Nightmare

Ronald McCoy

Former IPPNW co-president Ron McCoy, a Malaysian obstetrician who, by his own count, has delivered more than 50,000 babies, read the following paper at a public forum entitled "Eleven Days After Japan's Nuclear Fallout: Selangor's Perspective," organized by the Selangor state government on March 22, 2011. For reasons of space and general interest, paragraphs concerned solely with Malaysian policy have been cut. The paper can be read in its entirety on the IPPNW Peace and Health Blog ([www.peaceandhealthblog.com](http://www.peaceandhealthblog.com)).

Since 11th March, Japan has been reeling from an unprecedented natural disaster of awesome proportions, followed by a man-made nuclear crisis. First, a record-breaking earthquake, 8.9 on the Richter scale, off the north-eastern coast of the Japanese island of Honshu. Then, a towering ten-metre tsunami which killed tens of thousands of people and destroyed almost everything in its path. Finally, the release of radioactivity into the environment from a nuclear power plant, damaged by overheating and explosions.

The earthquake had automatically shut-down the six nuclear reactors of the Fukushima Dai-Ichi nuclear power plant, owned by the Tokyo Electric Power Company (Tepco). But it also knocked out the power grid, forcing operators to fall back on diesel generators to keep coolant flowing into hot reactor cores of radioactive uranium and plutonium fuel rods. Then the tsunami swept in, knocked out the generators and cut off power to the plant's cooling systems. All at once, four out of its six nuclear reactors were in dire trouble from overheating. Explosions then damaged fuel rods and the integrity of the primary containment structure, and radioactivity was released into the environment.

There are few environmental dangers more lasting or more fearsome than radiation from a nuclear accident. We saw this in the Three Mile Island and Chernobyl disasters, and now in Fukushima. The truth of Murphy's Law is inescapable: "If something can go wrong, sooner or later it will go wrong."

## Public health

The public health implications of nuclear power should not be subordinate to the economic considerations of the nuclear industry and government energy policies. There is a need to review the scientific evidence for public health impacts of nuclear power, to assess occupational hazards faced by nuclear industry workers, and to assess evidence that challenges the legitimacy of the underlying assumptions of nuclear safety.

A common thread running through these health concerns is the risk posed by ionising radiation. There is no safe threshold. Over the past fifty years, the claims of the nuclear industry, that nuclear power is both safe and vital for our future, have proven false and contentious.

Ionising radiation can damage DNA, causing cancer and inherited mutations.

However, whether an individual develops cancer following exposure to ionising radiation depends on whether the DNA is damaged, what part of the DNA is damaged, whether the cell line can reproduce, whether the damage is completely repaired, and whether the cell completes transformations that lead to malignancy.

The most important evidence regarding risks from exposure to radiation comes from epidemiologic studies that examine incidence of cancer in exposed populations, such as children exposed to radiation in utero, people exposed to background radiation, nuclear plant workers, patients exposed to diagnostic or therapeutic radiation, and people exposed to radiation from nuclear explosions.

The risk of mutation-related damage, including cancer, is proportional to the radiation dose. There is no threshold below which ionising radiation produces no damage. This means that background radiation from any source causes cancer and genetic mutations among exposed populations.

### **What happens in a nuclear accident**

When a reactor is operating, fuel rods containing uranium and plutonium pellets produce heat through nuclear fission and get very hot. The fuel is immersed in water and the heat produces steam, which is used to drive a turbine to produce electricity. The water also serves to keep the fuel from overheating and is continuously circulated to carry away excess heat. Even if the reactor shuts down, the fuel will remain hot for a long time and so must still be cooled.

If the pumps that circulate the cooling water are not operating, the water will heat up and evaporate, and the fuel can be exposed to the environment. At this point, the zirconium cladding on the fuel rods will start to heat up, blister, and then rupture. If the fuel is not covered by water and is exposed for a few hours, it will start to melt. The molten fuel will collect at the bottom of the steel reactor vessel, and it will be a matter of hours before the fuel melts through the steel and settles on the concrete floor of the primary containment vessel. In an accident, the amount of radioactivity released into the environment will depend on the integrity of the primary and secondary containments. The radioactive isotopes of greatest concern in a nuclear accident are iodine-131 and cesium-137.

### **Uncertain geological knowledge**

Nuclear power requires stability—politi-

cal stability and geological stability. Countries considering the option of nuclear power need to soberly assess their plans, particularly if they are located in active volcanic regions.

But geological knowledge is incomplete and imperfect. And we rely on such knowledge too heavily when making policy decisions about locating hazardous technologies.

Designed and built to withstand what is termed “design basis accidents,” nuclear power plants are usually sited in geologically stable and physically secure environments, determined by geologists. The possibility of a “design basis accident” is based on “credible events,” which are determined by an analysis of probabilities. The Fukushima disaster was a “beyond design basis accident” because the analysis was wrong. It was calculated that

the probable “credible event” expected to occur in Fukushima would be an earthquake no greater than a magnitude of 7.9 and a tsunami no higher than 6.7 metres. It was not in the analysis of probabilities that Fukushima would be struck

by an 8.9 magnitude earthquake or a 10-metre high tsunami. But geologists and the nuclear industry, like all human beings, sometimes get it wrong.

It is noteworthy that there are a number of unknown geological faults and processes which make it more difficult to accurately predict a “credible event.” In other words, it is very much an intelligent guessing game, but guessing it is nevertheless. Incidentally, the recent earthquake in Christchurch occurred on an unknown and unexposed geological fault, and was therefore unpredictable. In fact, damaging earthquakes have been known to originate from unknown faults.

### **Human error**

But earthquakes and tsunamis are not the only causes of a nuclear accident. Human error alone can lead to a nuclear accident. It happened in Windscale (later renamed Sellafield), Three Mile Island and Chernobyl.

I have heard the facetious argument that plane crashes are not sufficient reason to abandon air travel. But the scale of a nuclear accident is incomparable. Radiation could kill and injure thousands, cause cancers, and contaminate and render uninhabitable large tracts of land.

### **Nightmare at Fukushima**

Japan, the only country to have experienced nuclear warfare, now faces another nuclear nightmare. Months may pass before we can fully understand what went wrong

---

**There is no threshold below which ionising radiation produces no damage.**

---

and learn from Fukushima. It is a high price to pay for using potentially dangerous and replaceable technology. It has rekindled fading memories of Chernobyl and shifted the balance in the debate on climate change and the risks and benefits of nuclear energy.

It is forcing many countries to review the safety of their nuclear facilities and their energy policies. Germany has responded to strong public anti-nuclear sentiment by reinstating and accelerating its nuclear phase-out policy, and temporarily shutting down the oldest seven of its seventeen reactors. Both India and China, with their expanding economies and energy needs, are reviewing nuclear safety measures, but have not shelved plans to build more reactors in the next ten years.

A number of studies conclude that nuclear power cannot meet energy needs; that it is excessively expensive; that it is not carbon neutral; that it creates additional environmental and security risks. Most importantly, new evidence indicates that environmentally safe and sustainable energy technologies can be developed to meet growing energy needs.

There is a growing conviction worldwide that nuclear power should be phased out and a serious commitment made to invest in renewable energy, energy efficiency and energy conservation.

### Public distrust

The nuclear industry has carried the stamp of secrecy like a birthmark. From its very beginning, the nuclear industry has had a long history of cover-ups and downright deception, with the occasional lapse into silence - the silence of guilt. Public trust in the promoters of nuclear power is almost non-existent. In Britain, America, Germany, Russia, Japan and other countries, people have not been told the truth about the real economic cost of nuclear energy and the health and environmental consequences of nuclear mishaps and near-misses.

The stricken Japanese population is well aware of the culture of nuclear cover-ups. The Tokyo Electric Power Company (Tepco) owns and operates the Fukushima Dai-Ichi nuclear power plant. In 2002, Tepco's chairman and senior executives had to resign when the Japanese government discovered that they had covered up the existence of structural damage to reactors. In 2006, Tepco admitted that it had been falsifying data about reactor coolant materials.

### Vexing questions

Radiation is invisible and cannot be recalled. In a nuclear crisis, there will be

many questions about radiation. As the Japanese people are now discovering, it is a nightmare trying to make sense of the uncertainties.

- How do you know when you are in danger?
- How long will this danger persist?
- How can you reduce the danger to yourself and your family?
- What level of exposure is safe?
- How do you get access to vital information in time to prevent or minimise exposure?
- What are the potential health risks and consequences of exposure?
- Whose information can you rely on or trust?
- How do you rebuild a healthy way of life in the aftermath of a nuclear disaster?

These questions are difficult to answer, and they become even more complicated when governments and the nuclear industry maintain tight control of information, technological operations, scientific research, and the bio-medical lessons that shape public health response.

### Transparency and accountability

Transparency and accountability do not sit well with an industry, addicted to filtering and censoring information. It explains why there is no clear consensus on the local and global health consequences of Fukushima.

There is no safe threshold for radiation. The claim that exposure to low-level radiation does not pose a risk to health is a myth, generated by governments and the nuclear industry. During the nuclear arms race of the Cold War, scientific findings on health risks from nuclear fallout that contradicted the official narrative were censored. Scientists with integrity were discredited, punished or blacklisted. In 1994, the US Advisory Commission on Human Radiation Experimentation concluded that the literature on radiation and health during the Cold War was heavily sanitised and scripted to reassure and pacify public protests.

Decades of official censorship have reinforced the false core message: Human beings have evolved in a world where background radiation is present and is natural, and that any adverse health effect of radiation exposure is the occasional and accidental result of high levels of exposure.

There are other sources of conclusive data that allow a very different interpretation of the health hazards posed by a nuclear dis-

aster. These include several declassified records of US and Soviet human radiation experiments, Atomic Bomb Casualty Commission records, long-term research on Chernobyl survivors, and proceedings of the Marshall Islands Nuclear Claims Tribunal.

From these records, some important facts have emerged. For example, nuclear fallout and radioactive contamination of ocean and land ultimately enter the food chain and the human body, and therefore represent significant health risks. Chronic exposure to radiation does more than increase the risk of cancers. It threatens the immune system, exacerbates pre-existing conditions, affects fertility, increases the rate of birth defects, and can retard physical and mental development.

Japan's ongoing nuclear crisis demonstrates the degree to which the state prioritises security interests over the fundamental rights of people and their environment. Japan's response to Fukushima mimics the responses of other governments to catastrophic events, such as Chernobyl and Katrina. It has been to control the content and flow of information to prevent panic and mitigate the inevitable loss of trust in the government, reduce legal liability, and protect nuclear and other industry agendas.

There are many lessons to be learnt from Fukushima, not least of which is to recognise that nuclear energy is exceedingly dangerous and carries unacceptable, unnecessary risks to human health and the environment. In Malaysia, there must be strong public demand for transparency and accountability and an end to all plans to opt for nuclear energy.

### **Misleading information**

Nuclear energy is not cheap, clean or safe. And yet, vested interests in the government and the nuclear industry are attempting to override common sense and reason. They continue to trumpet the imaginary virtues of nuclear power and play down the enormous cost of nuclear power, the problem of nuclear waste, and the risks of an accident. Nuclear reactors, like nuclear weapons, do not forgive mistakes of judgement, simple negligence, human error or mechanical failure. Malaysia's poor record of industrial safety and its bad maintenance culture underlie concerns about public safety in the event of a nuclear accident.

The nuclear industry has a history of making misleading claims about nuclear safety that have often confused and misled the uninformed. Genuine debate and critical examination have been avoided, evidence ignored, opponents silenced or marginalised, and critical issues of public health and welfare

have been answered with standard bland platitudes. Nuclear regulatory bodies have too often acted out of expediency and ignored the health and protection of the public.

### **Proliferation of nuclear weapons**

Nuclear power is directly linked to the proliferation of nuclear weapons. Member states of the Nuclear Non-Proliferation Treaty have the "inalienable right" to peaceful uses of nuclear energy. All civilian nuclear energy programmes provide a convenient cover, as well as the training, technology and plutonium necessary for the proliferation of nuclear weapons. That was the route taken by India, Pakistan, Israel and North Korea to become nuclear weapon states. A typical 1000 megawatt reactor produces enough plutonium each year for 40 nuclear weapons.

### **Radioactive nuclear waste**

Nuclear power plants produce lethal radioactive waste that will remain radioactive for thousands of years. The half-life of plutonium-239 is 24,000 years and that of uranium-235 is 731 million years. We are talking about radiation forever.

No country in the world has been able to safely dispose of its nuclear waste, which is accumulating in pools or casks alongside nuclear reactors in forty-four countries, waiting for a solution. Finding satisfactory underground geologic repositories has proved to be an intractable problem. After twenty years and US \$9 billion of investment, the Obama administration has declared that the proposed repository site in Yucca Mountain is "not an option."

When questioned about nuclear waste, the nuclear industry argues that spent nuclear fuel should be reprocessed or 'recycled' into fresh fuel. Only the French experience with reprocessing has been technically successful, but economically it has been a failure.

If medieval man had ventured into nuclear energy, we today would still be managing his waste, assuming we had survived. Nuclear waste is not a legacy we should bequeath future generations.

### **Cost of nuclear energy**

Cheap nuclear power is a myth. "Too cheap to meter" was the false slogan in 1954. Forbes business magazine has described the failure of the US nuclear industry as "the largest managerial disaster in business history."

After fifty years of substantial government subsidies, nuclear power remains prohibitively expensive. Even among business and financial communities, it is widely

acknowledged that nuclear power would not be economically viable without government subsidies.

In the United States, the most important subsidy comes in the form of loan guarantees, which promise that taxpayers will bail out nuclear utility companies by paying back their loans if and when their projects fail.

The nuclear industry's opaque methods of accounting make it difficult to determine the full economic costs of nuclear energy. Costs are often buried in generous government subsidies or conjured into debt legacies for future generations.

Tenaga Nasional Berhad, in Malaysia, claims that it could build a 1,000 megawatt nuclear reactor for RM1 billion, but there is no mention of other costs. Real costs, such as operating costs, accident insurance, maintenance of reactor security, nuclear waste management and decommissioning costs, are buried in the nuclear industry's creative, opaque methods of accounting.

Capital costs remain a critical problem. Objective data on nuclear economics do not exist. Examination of the limited number of published capital cost estimates shows that the estimated capital cost of a new nuclear power plant has escalated rapidly since 2005 and that estimates are largely derived from manufacturers of reactor systems. It follows that it is extremely risky to accept a manufacturer's estimates and to sign a contract that does not specify a fixed cost, and yet some purchasers do exactly that.

The only relatively reliable data on the costs of nuclear power come from the United States, the United Kingdom, France and Finland. Within this limited data base, we know that cost overruns and construction delays are customary and that no nuclear power plant has been built within budget or a contractual time-frame.

As recent as 29 May 2009, two financial reports in the business section of the New York Times exposed the risky economics of nuclear power by highlighting two fiascos: the virtual collapse of Canada's global flagship, Atomic Energy of Canada Limited and the problems facing the French company, Areva, over the construction of a new third generation pressurised water reactor in Olkiluoto, which is four years behind schedule and more than US\$2 billion over budget. Both companies were overtaken by cost overruns, amounting to billions of dollars, and long delays in completion schedules extending into decades.

A recent study in the United States, which focussed on business risks and the cost of building new nuclear power plants, identified several significant risks. The cost of capital for building new nuclear power plants has been rising much faster than inflation. Major construction delays result in cost overruns of billions of dollars. Long lead times for construction also result in a "premium risk" which increases the cost of capital.

In the end, to keep afloat, new nuclear plants will have to impose high electricity rates which will make consumers very unhappy and the economy less competitive.

After more than fifty years in the business, the nuclear industry cannot attract private funding or liability insurance, cannot demonstrate an ability to build new reactors within a contractual time-frame and budget, and cannot deal with its radioactive waste.

Instead of investing billions in nuclear power, it would be far wiser and more justifiable to commit our limited resources to research and development of renewable sources of energy, energy conservation and energy efficiency.

---

**The nuclear industry's opaque methods of accounting make it difficult to determine the full economic costs of nuclear energy. Costs are often buried in generous government subsidies or conjured into debt legacies for future generations.**

---



## **“A terribly difficult situation with a lot of uncertainties”: PSR Press Conference**

*On March 16, 2011, Physicians for Social Responsibility, the US affiliate of IPPNW, briefed reporters on the medical, public health, and scientific dimensions of the unfolding nuclear disaster in Japan. More than 200 American and international journalists participated in a moderated telephone conference call that opened with presentations from three experts on radiation, health, and radioactive waste. The opening remarks were followed by an hour-long question-and-answer period.*

### *Ira Helfand*

There's been a lot of media attention over the last several days to the ambient radiation in and immediately around the [Fukushima] plant, which is very appropriate, especially given our concerns about the workers who are remaining in the plant trying to bring this situation under control. But I think we need also to focus on the radioactive isotopes that are being dispersed at some distance from the plant, because this is going to cause a whole different set of health problems. We have been told by a number of nuclear experts who've been appearing in the press over the last several days that we will not see the kind of widespread dispersal of radiation that occurred at Chernobyl because there are not graphite bars to burn here, and the graphite fires played a very important role at Chernobyl in dispersing the radioactive material.

But we have had fires already from burning spent fuel rods, and there have also been steam eruptions, explosions—I'm not sure what one would call them—that can play the same role in dispersing the radioisotopes to great distances. And once these are lofted into the air they get carried by the wind. Depending where the wind is blowing, they're

going to get deposited, and this could be at some significant distance from the plant site.

We have to be concerned about this because even if the total radiation dose is not real high downwind from the plant, the concentration of these radioactive isotopes can pose a very serious health problem. Some of them are quite long lived. Some of them are shorter lived, like iodine-131. But strontium-90 has a half-life of 29 years, and once it's incorporated into bone it essentially stays with you for the rest of your life, irradiating the bone and the bone marrow and causing leukemia and bone cancer. Cesium-137 doesn't last in your body quite so long, but it has a very long half-life as well. And of course plutonium has the longest half-life of all these elements that we're concerned about at more than 24,000 years.

So the issue is that people at some remove from the plant may be exposed to very powerfully carcinogenic radioisotopes that may enter their bodies through inhalation or through ingestion from water or food, and that land at some significant distance may be contaminated so heavily with these materials that it cannot be used by humans for extend periods of time. There are areas, you know, more than 100 miles downwind

### **The speakers:**

**Ira Helfand—  
past president,  
Physicians for  
Social  
Responsibility;  
North American  
regional vice presi-  
dent, International  
Physicians for the  
Prevention of  
Nuclear War;  
board-certified  
internist in  
Springfield,  
Massachusetts.**

**David  
Richardson—  
Associate Professor  
of Epidemiology,  
School of Public  
Health, University  
of North Carolina  
at Chapel Hill.**

**Marvin  
Reznikoff—nuclear  
physicist and inter-  
national consultant  
on radioactive  
waste issues.**

from Chernobyl which are still not safe for people to use, and this is I think an aspect of the situation which we really need to be focusing on. If the winds blow, for example, in the direction of Tokyo, it is conceivable that significant portions of the Tokyo metropolitan area could be contaminated in this way if there is a large release as this situation continues to unfold. And so I think this is something we really need to be focusing some attention on.

*David Richardson*

I would want to start by underscoring some of the points that were just made. On the one hand we have incredibly valiant efforts that are being made by the workers at the facility to deal with a really complex string of problems that continue to arise related to overheating, not only of the reactors but also of the cooling ponds. The workers are in a situation now where from an occupational safety and health perspective it's really serious. It's daunting. There are substantial non-radiological hazards: they're working in a facility where there are explosions going on and fires and extreme heat. And then we add to this some of the work areas have extremely high dose rates now, where workers have to be moved out of the work areas over short periods of time, I would imagine spanning minutes, in order to avoid problems of acute radiation poisoning. And over the period of time that they're working now they're going to accrue exceptionally high occupational doses of radiation, and this would be the external ionizing radiation which is radiation that's moving in the form of waves through the body, like X-rays, but in this case gamma radiation.

There's been a lot of focus on environmental releases related to the reactors and the question of will or will not the containments around the reactors hold and serve to mitigate the environmental releases. What's got less attention, and I would suggest that the press has taken their eye off the ball somewhat on this issue, is the ponds that are holding the spent fuel—these boiling water reactor designs have a relatively thin amount of containment. And for several of the pools—those have been damaged or entirely blown off—there's a large amount of radiation, radioactive material that's stored in those

ponds, and I believe we can—the evidence is that we're having releases from those.

Now that's different than the primary radiological concerns that the workers in the facilities are facing. It's not exposure externally to radiation in the form of radiation waves or a beam of radiation, of gamma rays. It's the concern about the intakes of radioactive particles in the form of gases or dusts, that they may inhale or ingest, or later on if you would get a skin cut you could take it internally through a puncture of the skin. And how much of that's going to be released?

We still don't know in the end, and figuring that out is going to be extremely complicated. I think given that most of offsite monitors are not functioning, it may require that we make an inventory at the end of this about what's still left in the plant, and by that we can make a reckoning of what was lost.

The other question is going to be where will it go, and that's—as people have said before, it's going to depend in part on the winds, whether they're moving out to sea or they're moving over land. And it's unlikely that the radioactive material is going to be distributed evenly in concentric circles; rather it's going to be deposited very likely in narrow bands. So it's going to be quite a while before we have anything more than a crude understanding of the magnitude and the distribution of that contamination, but we're going to need to be able to do that in order to help inform people about how to minimize their exposures. So it's an extremely serious situation.

*Marvin Reznikoff*

I'm going to try to fill in some of the points that were made previously by the other speakers. Let me start by saying that there are two hazards that have been explained. One is from reactors where there have been steam explosions, and the other is from the fuel pools. The steam explosions have released iodine gas and cesium-137. Cesium-137, because that's a semi-volatile metal, and once the cladding to the fuel is broken that material can be released along with the iodine gas, so when the steam is released then these materials are also released.

I have looked over the NOAA forecasts to see what the wind will be over the next

---

**[I]t's going to be quite a while before we have anything more than a crude understanding of the magnitude and the distribution of that contamination, but we're going to need to be able to do that in order to help inform people about how to minimize their exposures.**

---

three days. They actually have forecasts for the next seven days but three days is more reliable. And I think we're fortunate in that much of the wind will be going out from west to east, that is will be going out over the ocean. As was pointed out earlier, the Chernobyl hazard was about a 1,000 mile hazard, but over the ocean to reach the United States is approximately 2,000 miles. So material will be deposited along the way and rain will also take out some of this material, so I think in that sense we're fortunate. But material will also land in the ocean, and that means that marine life will pick up this material. People eat fish, then they will in turn intake this material. Fortunately the Japanese government has evacuated a larger zone, so the hazard is less to people.

Let me say a word about the fuel pools. You've probably seen that these fuel pools are not located on the ground. They are located up near the top of the reactor, so that generally puts them 70 or 80 feet up in the air. With some of these buildings the roofs have been blown off, so the fuel pools are actually open to the environment directly. Also what hasn't been discussed very much is there is a standalone fuel pool at Fukushima that is on ground level and that contains most of the radioactive spent fuel. A lot of it has been shipped to the reprocessing plant at Rokkasho, but a lot of the fuel is actually sitting in this building, which does have windows. And I am not certain what happened when the tsunami hit, and it would be useful to have Tokyo Electric talk a little about that for the media.

Most fuel in the fuel pools, as I said, has been removed, but for Reactor 4 the fuel was removed from the reactor core and put into the fuel pool so that they could examine the reactor. And that fuel is relatively fresh and hotter thermally, so it's not surprising when the water is no longer circulating that it has been speculated that the water was actually boiled off and a zirconium exothermic reaction - that is the zirconium burned. It burns at 1,800 degrees Fahrenheit and releases hydrogen gas at that point. But the material—any material that got into the air would be directly released into the environment. They cannot resupply this reactor with helicopters because part of the roof still remains and they cannot just dump water into the fuel pool.

*James Gland, The New York Times*

You gave a nice overview on both topics, the issue of exposure near and far from these reactors. Can you give us any numbers, say, in sort of Rems is, I guess, the favorite unit out there, in terms of what you're hearing or have heard are the levels at the reactor

and far away from it, and how that turns into levels of danger ranging from radiation sickness to cancer risk? Anything? I'm not expecting an entire numerical overview. I know all these numbers aren't available, but we're having a hard time finding them and then also turning them into meaning when it comes to actual risk.

*Ira Helfand*

In terms of the doses inside the reactor it seems to be varying dramatically from moment to moment. The highest that I've seen was a rate of about 40 Rems or four-tenths of a Sievert per hour at one point, which would have given people in that - who were working in the reactor site a dose that would cause radiation sickness after two and a half hours of exposure. That level was not sustained for a long period of time.

As you get farther away I think the dose—the total dosage that people are getting—is perhaps in some ways less important for the reasons we were talking about, several of us, during our presentations. It is unlikely, hopefully, that people at some remove from the reactor, say in Tokyo, are going to actually be exposed to high enough doses of total body radiation to cause them to have, you know, radiation sickness. But that doesn't mean that they're not inhaling or ingesting radioactive nuclides which might cause them to have cancer, and the correlation between them is not very good. You can have a very small total body radiation dose but inhale plutonium and end up getting lung cancer from it, or ingest some radioiodine and end up getting a thyroid cancer, or ingest some radioactive strontium and end up getting leukemia. And so this—the assurance that we're given that, well, the total dose of radiation that we're measuring is relatively low needs to be taken with that big grain of salt.

*James Gland*

The one number we've got from Tokyo, .809 microsievverts, you know, as a reassuring number being given by the Tokyo government, is that a justified stance on that number given this cancer issue you mentioned?

*Ira Helfand*

And what I'm arguing is that it is not. It's certainly better that the dose there is low than that it were high, but the fact that the total body radiation dose is not high does not mean that people there are not being exposed to an increased risk of cancer.

*David Richardson*

To follow up on that a little bit, it matters right—there are several things that make

you want to qualify or at least ask a question about what value they're reporting. If they're reporting, let's say, a measurement of gamma radiation activity one meter off the ground, that tells you about kind of the gamma field there at that location. The concern is that what's been released is not simply gamma-emitting radionuclides—there would also be beta emitters, for example—and that once they're taken into the body you're not so much interested in the amount of energy—so these units of Sievert or Rem are giving you a sense of what's the energy deposited per, let's say, kilogram or per unit mass. And we're not interested anymore once there's an uptake of a radionuclide which has proclivity to aggregate, for example, in the thyroid or the bone marrow. You want to know the dose delivered to a specific tissue, not the average dose when you're averaging over your total mass of your body. So there are several issues there. One is what's being measured? Is it relevant to the radionuclides of concern? And then not—no longer talking about the average dose to the whole body, but the dose to a specific organ of interest.

*Marvin Reznikoff*

There is another issue involved which is the total dose to the population; not just to the individual, but the total dose to all the individuals that are receiving this dose. When you get out past the 30-mile or 30-kilometer limit, then there are more people out there, and the total dose to the population will really tell you how many cancers might arise in the future.

I wanted to put this 400 millisievert number in another context, which is to compare that to a chest X-ray. Generally a chest X-ray is a tenth of a millisievert, and we are talking about 400 millisieverts per hour, so that's equivalent to 4,000 chest X-rays per hour.

*David Brown, Washington Post*

My first question, which was actually partially answered, is do you have any suggestions on where the best source for measurements are? Because I'm also having a hard time finding them. So anyway, that's one, but the other one is can you address the risk, at least from—as seen in the Hiroshima—the atomic bomb survivors is surprisingly low in terms of fatal cancers over a long period of time. Between 1950 and '85 among 76,000 people that were followed in the LSS study—life

span study—there's 300 excess cancers, which is obviously not a lot, and this is pretty heavy exposure. So can you sort of put your worries within the context of what's known from past high exposures?

*Ira Helfand*

One thing I think to bear in mind is the enormous difference in scale in terms of the amount of radiation involved. [The Fukushima complex] has as much radioactivity as 1,000 Hiroshima-sized bombs...So the potential amount of radiation that could be involved here if there is a large scale release, which there has not been yet, is literally orders of magnitude greater than the amount of radiation that was released at Hiroshima.<sup>a</sup>

*David Richardson*

Your first question concerned where are the best sources of measurements. That information has, to my knowledge, been released relatively sporadically, and there's been occasional press conferences noting dose

rates in certain areas for workers at the plants. There's not been a lot of information provided on environmental doses, and particularly kind of the information that would help you to understand the characteristics of the different radionuclides.

*Marvin Reznikoff*

And the reason is the monitors are located right at the site. What monitors are available have been put on the site, and the wind blows in various directions. It's generally from west to east, but you don't necessarily have a monitor where the plume is going. It's not clear that they have monitors located all around the circumference of this 30-kilometer area, so it's not surprising that we're not getting the numbers that we want.

*David Richardson*

One other follow-up regarding the life span study of atomic bomb survivors. It was—there are several aspects to this study that are important. It's an incredibly useful study for understanding what the risks of cancer are for people who have been exposed to radiation. It's worth noting that the study started in 1950 is when they enumerated a census of survivors, so it's not giving you

<sup>a</sup> Each of the six reactors in the Fukushima complex has the equivalent of 40 Hiroshimas worth of isotopes, while the spent fuel pools each have three to four times that amount.

---

**Generally a chest X-ray is a tenth of a millisievert, and we are talking about 400 millisieverts per hour, so that's equivalent to 4,000 chest X-rays per hour.**

---

information about the risks of mortality following an atomic bombing. It's telling you about the risks of mortality among people who survived five years after an atomic bombing and then were subsequently followed. So it's an unusual study in the sense that follow up began quite a period of time after the exposure happened. So you might imagine that there was—there was; you don't have to imagine—an exceptional loss of life between the point of exposure and when the study begins to follow up people.

Another thing to understand is that the design of the study was intentionally over sampling people based on different exposure categories. So while there's 70,000 or actually more people who are enumerated in the cohort, most of them aren't high dose people. In fact, the majority of them are people who had lower doses so that they could have a comparison to draw between people who had higher and lower levels of exposure. So the net numbers of cancers among the five-year survivors of the atomic bombing is in part a function of understanding the dose distribution among those survivors.

*Deborah Zabarenko, Reuters News*

I'm going to guess that I'm among those who seem rather overwhelmed with the amount of information that we have and underwhelmed with the amount of specificity that we're having. A popular question to ask these days seems to be what the worst-case scenario would be, so let me narrow that down. First, do we agree that the most troubling reactor is troublesome Reactor 4? And if we do, what's the worst-case scenario for what might happen there?

*Marvin Reznikoff*

Reactor 4 has—all the fuel was taken out of the reactor, was put in the fuel pool. And I'm just looking at it, and the fuel pool contains approximately 135 tons of nuclear fuel right now. It's likely that that material is—apparently there now have been two fires at that particular location and they cannot resupply the water from the air, so it's not clear how they're going to keep that pool cool. So that pool may actually - this exothermic reaction where zirconium actually heats up the area further, workers cannot get close to it because the direct gamma radiation coming off the pool is very high when the fuel is uncovered. Water in the pool serves as shielding and cooling, and when that water is gone the direct gamma radiation is very high. So it's not clear how they're going to recover, you know, that particular situation.

So I would have to go back and do the calculation as to what would happen if 270-some tons of fuel actually began to burn. I

don't know the answer to that off the top of my head.

*Deborah Zabarenko*

I guess I want to make sure that I've heard things right and that that's the most troubling area right now.

*Ira Helfand*

Well, they're all kind of troubling, and one other that is particularly cause of concern of course is Reactor 3, where the government has reported that there's been some breach of containment. And this is particularly disturbing because Reactor 3 is fueled with MOX fuel, not just uranium, and the possibility of a very significant plutonium release and subsequent plutonium contamination of area around the plant, which would really make this a very, very long term problem, is a big issue at Reactor 3.

*Deborah Zabarenko*

How long is this likely to play out in terms of fires, in terms of nobody being able to get in to resupply water? Is this a weeks-long problem? Is this a days-long problem? Is this a months-long problem? I guess that's one question I'd like to see answered.

*Marvin Reznikoff*

Well, this is a several months problem. The heat will be that high for months, high enough to cause an exothermic reaction. So this is not—this is going to be a continual problem for months.

*Tom Maugh, Los Angeles Times*

You say there's 135 tons of fuel in the spent fuel pool. How much is in a reactor itself?

*Marvin Reznikoff*

I don't really know the answer, but less than 135. I don't have the answer right in front of me.

*Tom Maugh*

You say there are not many monitors around the plant. Were they destroyed by the tsunami or were they just not installed in the first place?

*Marvin Reznikoff*

Again, this is an assumption on my part, that they were wiped out—this is a conjecture—and that they have temporary monitors located there right now. I'm not exactly certain on that.

*Hiramati Yoshitomi, Maniti Newspapers*

I have a question to Dr. Ira Helfand. You were talking about contamination risk in

terms of isotopes, but Japanese...government says it doesn't affect people's health, but you said [there are] serious potential risks. So could you please elaborate more?

*Ira Helfand*

Two points I think need to be made. One is that the repeated assurances that this dose is too low to affect people's health simply does not square with what we know about radiation, which is that no dose is safe, that there's no threshold dose, that any dose of radiation increases somewhat your chance of developing a cancer.

The second point is that there is a very poor correlation, as Dr. Richardson was explaining before, between the total body dose of radiation that may be measured and the dose that's delivered to a particular susceptible tissue, so that if you are exposed to a relatively low dose of total body radiation but you inhale some particles of plutonium you can still go ahead and get lung cancer. And obviously if the total body dose is high, the chances of your ingesting or inhaling a radioisotope are greater because there's more of the material in the area. But this sort of linear relationship between your dose of total body radiation and the effect on your health is really loose when you're talking about low dose radiation at some distance from the source, because the internal dose may be very significant even if the total body dose of your entire body is not. Did that explain it?

*Hiramati Yoshitomi*

[What is] the long term effect [of the isotopes] you were talking about?

*Ira Helfand*

I mean the various particles of the different isotopes that are released. There are nearly 200 different radioactive isotopes released potentially from the reactor. There are a few of them that are particularly important because of their biological activity and their radioactive properties: iodine-131 because it concentrates in thyroid and causes thyroid cancer, strontium-90 because it concentrates in bone and causes bone cancer and leukemia, cesium-137 because it's very prevalent and is widely dispersed throughout your body in all tissues and therefore can irradiate any part of your body, and plutonium-239 because of its extreme carcinogenicity in very low doses and because of its very long half-life. And that causes primarily lung cancer when it's inhaled; if it's ingested it's usually not a problem. But if it's aerosolized and you inhale the plutonium you are at significant risk for lung cancer at a very, very low dose of inhalation, which would give you—if

they were measuring the total body dose from that plutonium might be very low. But the dose delivered to the vulnerable part of the tubes leading to your lungs, the bronchi, would be enough to cause cancer.

*Marvin Reznikoff*

It's important to point out just so that we're in the same ballpark with units the general background radiation—except for radon—is on the order of 1,000 microsieverts per year. So whatever the Japanese government is telling you, you need to compare it to the microsieverts per year, not the microsieverts per hour.

*Jenny Uechi, Vancouver Observer*

I've been keeping in contact with Japanese relatives and reading up on the Japanese news as well, but they seem to be quite reassured that it's not going to affect their health at this moment. In your view, would the radiation released at present be affecting the health—you know, is this true, is what I'd like to know. Are they safe in places like Tokyo and in the south of Japan in terms of radiation affecting people's health?

*Ira Helfand*

The doses of radiation that have been released so far in this accident have been relatively small, and the health effects to people as far away as Tokyo presumably is quite low, but it's not zero. The real concern is that the situation remains completely out of control at this point and that the releases that we might see in the coming days could result in a much higher exposure to populations even as far away as Tokyo.

*Jenny Uechi*

But the government seems to have been reassuring people that there is no need for leaving Japan or leaving places near that area at this moment, but do you feel that there's been not enough information about the risks in the Japanese media so far?

*Ira Helfand*

Well, it's very difficult to remove large numbers of people from an area. I think the government has acted prudently in removing people from the evacuation zone out to 20 kilometers and taking additional precautions out to 30 kilometers. Hopefully that will be adequate, and since you don't know which way the wind's going to blow it's hard to know where else you would evacuate beyond the immediate area. The danger, of course, is if there's a major release where the winds are blowing from northeast to southwest. That radiation's going to blow down

onto Tokyo, and we just can't predict that. As Professor Reznikoff was saying, this process, this radiation leak could go on for months. During that time, there may be periods when the wind is blowing in the wrong direction and large amounts of radiation are released. This is a terribly difficult situation with a lot of uncertainties as to how exactly it's going to play out.

*Sam Trantum, Nuclear Intelligence Weekly*

I noticed that you had a number for the amount of spent fuel in the pool at Unit 4, and I'm just wondering where you got that number. I was hoping to find out how much spent fuel is in the other pools on site.

*Marvin Reznikoff*

Reactor 1—this is what's in the fuel pool. Reactor 1, 50—this is all in tons—Reactor 2, 82; Reactor 3, 88; Reactor 4, 135; Reactor 5, 142; Reactor 6, 151, and in the separate fuel pool that's sitting at ground level, 1,097 tons. There's also some material in dry storage, I should mention: 70 tons.

*Sam Trantum*

I also wanted to ask you about the possibility of a zirconium fire. I've heard some people talk about this, but I was reading the NEI fact sheet on the spent fuel pool situation and they said that studies performed by the Department of Energy indicate that it is virtually impossible to ignite zirconium tubing. So where's the disconnect between people talking about how if the pool drains you could have a zirconium fire and the NEI saying that's not possible?

*Marvin Reznikoff*

It appears possible.

*Ira Helfand*

The disconnect seems to be reality. It appears that this has happened to some degree already.

*Sam Trantum*

If there is a zirconium fire, how do you put it out? Does just pouring water on it put it out, if that's possible?

*Marvin Reznikoff*

Yes, cool it down below the temperature. Yes.

*Sandi Doughton, The Seattle Times*

You were talking about the kind of lack of monitoring even immediately around the reactors. If there is a large release and radionuclides begin migrating, who's going to be tracking that?

*David Richardson*

I think that's a very good question. Right now there's - as far as I understand they have malfunctioning monitoring posts, and the Nuclear and Industry Safety Agency doesn't know when they'll be back up in operation. So it would not be monitoring in a sense of having environmental radiation monitors onsite and deriving your exposure estimates from that sort of information. It would be much less ideal than that. As I said, it might require doing an inventory of what was released, trying to figure out the time sequence of releases, and then taking into account the topography and wind and doing kind of local dispersion modeling, which is a long, drawn-out process. It's not something that would be done promptly, which means that you're left with sort of crude estimates of kind of the average - you know, average releases over large kind of circles drawn, concentric circles. And that's not really reflective of the exposure that a particular individual in a particular place may receive. So yes, there's a huge gap right now in the information kind of—as far as I can tell on what can be done to do environmental dose estimation or reconstruction.

*Sandi Doughton*

Obviously the risk is much less to people in the United States, but in the case of a plume coming across the Pacific Ocean, once again, do you have to wait until it, you know, hits—goes above onshore monitors, or is there likely to be any kind of aerial monitoring at that point?

*Marvin Reznikoff*

The time for material to get across the ocean is on the order of five to eight days. I don't know whether that's useful to you, but once you begin to see whatever results are coming—whatever material is coming over to the United States in that time period. It looks like from the NOAA maps that Alaska and then Canada will be first, and then - and then as—you'll get down to Seattle. And we should be able to detect what's coming across.

*David Richardson*

My sense right now is that, I mean, most of our focus of attention and concern is more local than that, and that the exposures and the environmental contamination of greatest concern right now that we're talking about are those that are not distributed globally but those that are distributed locally in Japan.

*Ira Helfand*

I think it's obviously understandable that people here in the United States are concerned about potential risks here, but I think

the real lesson for us to draw from this is what's happening in Japan, and do we court the same risk here in the United States from a future accident at one of our own plants.

*Marilynn Marchione, Associated Press*

Dr. Helfand, I find your biography that says you have made a career of writing - you're an internal medicine doctor. You've made a career of writing about the risks of nuclear power, and I just would like all three of you to please state if you have any personal opinions or if Physicians for Social Responsibility has a position for or against nuclear power, nuclear plants—just want to have all this on the table.

*Ira Helfand*

PSR is very clear in its position. We believe that nuclear power poses an unacceptable risk to public health, both because of the danger of catastrophic accident, which we're witnessing now in Japan, and because of the unsolved problem of what to do with the long-term storage of waste, and perhaps most importantly because of the extraordinary role that nuclear power plays in furthering the proliferation of nuclear weapons. We have been in the United States promoting the dissemination of nuclear power technology around the world, and that technology has been in use in the nuclear weapons programs of a number of countries that we are now very worried about. And for all of these reasons PSR since 1978 has had a clear and explicit position against the further development of nuclear power, which position has been supported by broad segments of the American medical community.

*Allison Rose Levy, The Huffington Post*

Understanding your point that the most immediate concerns are local and in Japan, but also kind of extending a little bit the question from the reporter from Seattle, if this exposure continues and as we're told over many months, you know, this is going to continue to develop or, you know, if a worst case scenario evolves, would there be - you know, not simply toward the West Coast of the United States, which would be, you know, the most immediate sort of next recipient of plumes or anything coming in via air patterns, but in terms of, you know, the entire globe even, you know, with these kinds of materials and gases circulating, would there be any overall global effect, you know, in terms of water, air, overall radioactivity? I know this is a really big question, but just to ask it, if this process in this location kind of continues unabated or worsens.

*David Richardson*

I can answer in a sort of historical sense, is that yes, we currently have—some part of what we call our background radiation exposure involves the release of radionuclides from the use of nuclear technologies. So we've had a history of nuclear weapons testing, in a few cases nuclear weapons use in Hiroshima and Nagasaki. We've had unintentional releases of radionuclides at commercial plants and weapons factories, and they've contributed to what you would say are detectable levels, albeit small, of radionuclides in the soil and the air and the water. So yes, presumably we'll make a contribution to that.

I think the primary concern right now is not about kind of the global background level of radiation and an incremental increase in that so much as—from my point of view anyway—the kind of more local concerns in Japan.

*Allison Rose Levy*

Can I ask a follow up to...the statement that it's not the level but the level of dose that is absorbed by a particular tissue or part of the body? Where would one find some of the scientific research articles that talk about that? Because it seems that part of, you know, the kind of health communication message around all of this is the sense that it has to be a high dose, and—you know, so understanding how a small low dose in the wrong place can lead to a health impact? Where would be the existing body of literature on that?

*David Richardson*

One place to look would be the National Academies—what's called the BEIR VII report, Health Effects of Exposure to Low Levels of Ionizing Radiation. The most recent one is the BEIR VII, and it would lay out the general principles for understanding that at least the way that we're - most current radiation protection models are developed is with the idea that the carcinogenic risks of ionizing radiation—the probability with the likelihood that you're going to cause a cancer is proportional to the dose of ionizing radiation, so that as you increase exposure to radiation you're going to increase the likelihood that you'll cause damage to a cell, which will be a stepping stone to a subsequent cancer. Now that's sort of the idea that there's not a threshold, that there's a certain level where we say there's no health effect; rather, we say that the risk is proportional to the dose.

The question about whether the proper dose metric to talk about is an estimate of your total dose divided by your total mass as opposed to a dose to a specific organ gets more into a more complicated field, which is

kind of how you describe the radiation doses for internally deposited radionuclides. And there they tend to irradiate locally; that is, they're taking up and they'll reside in a piece of tissue or a target organ and they'll just irradiate locally, or they'll deposit most of the dose to an area that's smaller, and so you want to understand the dose to that organ. And most of the effects will be observed in the organs that have been locally irradiated. Now there are some exceptions to that, things like tritium, which tend to move around like radiated water, and they can, like water in your body, be distributed almost across the whole body. But those are sort of exceptional.

*Marvin Reznikoff*

Just to add to that, for example, strontium-90 would concentrate in the bone, and then you would be concerned about the leukemia effect. Iodine would concentrate in the thyroid so you'd be concerned about thyroid cancer.

*Jesse Emspak, International Business Times*

You mentioned earlier the spent fuel pools and how much is in them and that there's a risk of zirconium fire. And we had the question regarding the NEI position that you can't ignite zirconium alloy, and I was wondering is this—and you're saying the disconnect is reality. And I just wanted to make sure that—do we know for sure that that's what's burning, and if so what the evidence was that that's the case? And then the sort of next operative question is how many plants in the US are using a similar design and how many of those are located near fault lines? 'Cause it seems to me that if you've got, you know, what amounts to a great big swimming pool full of spent fuel elevated you need pumps to keep it going. So, you know, how many in the plants here might end up being in a similar situation if they get hit with a very large earthquake?

*Ira Helfand*

Well, there are 23 plants in the United States that are exactly of the same design as the Fukushima Reactor 1, and I'm not sure which of those are located near identified fault lines. I think that one of the more interesting articles that's appeared in the last couple days was sort of an assessment of which reactors are most at risk of earthquake damage, and it turns out it's not the ones in California. It's Indian Point north of New York City, and then a reactor here in Massachusetts were the two that were felt to have the highest risk of earthquake because of the relatively less strenuous design criteria

that they were held to, so—to answer that part of your question.

*David Richardson*

Regarding the spent fuel pools, I think I would refer you—there's a really useful report called *Safety and Security of Commercial Spent Nuclear Fuel Storage*. It's National Academies, at press in 2006, so it's by the National Research Council of the National Academies. And it's got a chapter—it's the third chapter of that book where they lay out in detail kind of how what they call a cladding fire will evolve, and they describe both the chemistry of it and describe scenarios. So I think it's actually—it's not really contested.

*Jesse Emspak*

Well, the follow-up I'm going to ask, the situation now then, we've got—you're saying it's going to last for a certain amount - I mean, you have a situation—how long would it ordinarily sort of burn for if you can't put any more water on it? I mean, there's only a limited amount of time I think they can keep the seawater going, and that's pretty corrosive anyway. So the question then becomes what - I guess, again, you're sort of asking worst case. Okay, let the stuff burn. You were saying it's several weeks that that could keep going and releasing stuff into the air?

*Marvin Reznikoff*

The fuel in the fuel pools in Reactor 4, 5, and 6 is relatively fresh because they shut down those reactors, they removed all the fuel from the reactors and put them into the fuel pool, so that fuel is hotter. If you're asking the question at what point will it not—will the fuel pool not be able to reach a temperature of 1,800 degrees Fahrenheit where this exothermic reaction takes place, I'd have to, you know, do some calculations. I don't know the answer to that off the top of my head. But this fuel is relatively fresh that's in Reactor 4 fuel pool.

*Ira Helfand*

Part of the problem here is that there might be a sequence of bad events. There could be a fire at one of the reactor pools - one of the storage pools this week, but the need to cool the other pools is ongoing so we could have another problem three or four weeks from now if at that point we lose the ability to adequately cool the pools. And the problems of increasing radiation—radioactive contamination around and within the plant site are going to make it increasingly difficult, not easier, for people to move about in there and do work and continue to control the situation. And I think that's what got everybody

who's working on trying to actually control the situation so disturbed and upset, because there seems to be no way of quickly bringing this to closure, and the longer it persists the more potential problems can develop.

*Marvin Reznikoff*

The fuel pool is not located at the same level as where they are putting water into the reactor. The fuel pool is located 70 or 80 feet up and not where they're trying to relieve the pressure in the reactors. So it makes a more difficult situation to actually do both.

*Nancy Gaarder, Omaha, Nebraska World-Herald*

Ira, you said that each reactor has the equivalent of 1,000 Hiroshima bombs, the spent fuel pools several times that, and so the potential release is orders of magnitude. Are you saying that there's a plausible possibility over the next coming months that we could have Hiroshima-type releases of many thousand times? And then if that were to happen, what can we expect in the US and what should we be doing? And how would we know? How would we know that it - you talked about we'd know from Alaska to Canada, but how will we know that?

*Ira Helfand*

Well, we certainly - we could have releases that are 1,000 times as much as Hiroshima. That's a real possibility. At Chernobyl, I believe it was about 400 Hiroshima equivalents of radiation that were released, and we're dealing here with, you know, four reactors and five storage pools. There is an enormous, enormous inventory of radioactive material here that is potentially at risk. How would we know about it? Well, we will be monitoring—I mean, if there's a major release that's going to be picked up very quickly, as the spikes have been picked up over the last couple of days. And I assume that the United States has the technical means to track a plume of radiation even over the Pacific. We have planes with sensors that are part—and we have the whole system put in place to detect radioactive releases from nuclear tests as part of the regimen that was established to implement the Comprehensive Test Ban Treaty should it ever go into effect. So there are the technical means to monitor and track these releases.

*Nancy Gaarder*

And then the follow up question would be is there anything Americans should be doing to prepare in any way? I know we hear about people snapping up those pills on the West Coast. And then if you had family in

Tokyo, would you ask them to leave?

*Ira Helfand*

If I had family in Tokyo I'm not sure what I would tell them to do, and I'm not sure where I would urge them to go to. And I know that's a really bad answer to a very legitimate question, but that's the best I can do on that one.

*Marvin Reznikoff*

Let me just add to what was said. I just wanted everyone to understand why there are so much more inventory in these reactor than released by the Hiroshima bomb. The Hiroshima bomb had fissions on the order of milliseconds, and that produced the cesium and strontium. But these reactors have fuel that's sitting in the reactor for three years continuing to fission, so there are many more fissions and much more fission products than occurred in the Hiroshima bomb.

*David Richardson*

If I could follow up on that also, I'd like to just make clear we're not saying that a nuclear explosion is going to occur. We're talking about the mass of material which is there, and it would be distributed in a way that would be different than happened in Hiroshima and Nagasaki, where there was a prompt explosion. More likely what's happening here is that there are fires, a lot of the material may stay in place or may burn and some of it aerosolize; the comparison being made is in terms of volume, not in terms of the type of explosion that's going to occur or something like that. These are fires and not nuclear explosions that we're talking about.

*Sandi Doughton, The Seattle Times*

Do you know if any of the reactors in the United States use the MOX fuel? And the second part of that, how dangerous is even a slight exposure to plutonium? I mean, can you get lung cancer from a single particle?

*Ira Helfand*

I can answer that second question. You can get lung cancer from a single particle of plutonium, depending on how large it is. The carcinogenic dose is felt to be measured in micrograms, millionths of a gram.

*Sandi Doughton*

Do we have any MOX fuel reactors in the United States?

*Ira Helfand*

My understanding is that we do not have any commercial reactors that use MOX fuel. There may be research reactors, but I do

not believe that we have any commercial reactors using MOX fuel. But I'm not 100 percent certain of that.

*David Brown, The Washington Post*

Just getting back to these estimates of the amount of radioactivity that was released in various events, I have in front of me the Human Radiation Experiments report—the final report of the President's advisory committee in 1996. There's a chart, and it mentions that at Chernobyl approximately 20 million curies were released. And it says in the first A-bombs, Hiroshima and Nagasaki, approximately 250 million curies released. But Dr. Helfand or someone said earlier that Chernobyl was, like, 400 times Hiroshima—so anyway, could you clarify that?

*Ira Helfand*

I'm not sure of those figures, and I believe that the release at Chernobyl was sub-

stantially larger than Hiroshima. Part of the difference is that much of the radiation at Hiroshima was direct radiation emanating from the explosion itself as opposed to the isotopes that were distributed afterwards. There is a direct blast of radiation that comes out when there is a fission explosion, and what we're talking about at Chernobyl is the radioactive isotopes with their longer half-lives that are distributed from an accident of that type. There was not a nuclear explosion at Chernobyl and so there was not that burst of radiation coming out directly from the explosion itself.

*Marvin Reznikoff*

So the comparison is with the longer lived material, such as cesium, and if you look at that and compare Chernobyl to the Hiroshima blast, then the numbers are greatly different.



## What may we learn from Fukushima?

Frank Boulton

Medact's Chair Frank Boulton, the chair of IPPNW's British affiliate, Medact, is a retired consultant physician with the National Blood Service, Southampton University Hospital Trust. The following essay, written in April 2011 while events at Fukushima were still unfolding, considers the implications for the UK's nuclear power industry and revisits the health effects of the Chernobyl disaster 25 years ago.

Our heartfelt sympathies go to all the Japanese people in these most testing of times following the earthquakes and tsunami of March 11th. Indeed, were it not for the impact on their nuclear power industry we would be marvelling at the civilized nature of the way Japanese society has responded to the loss of billions of dollars' investments and thousands of human lives. But the still-unfolding events at Fukushima Daiichi throw a different light, and the global implications from the nuclear disaster are very profound even though the death toll is, as yet, very low. Radioactive materials are still leaking and the calculated amount of released radiation has been revised drastically upwards to about a tenth that estimated from Chernobyl in 1986, the biggest nuclear "accident" yet.

Tokyo Electric Power Company (Tepco), assembled in 1951 to help reconstruct Japan after World War 2, is the largest electric power company in Asia and a major component of Japan's very significant nuclear economy.<sup>1</sup> About a third of Japan's energy supply comes from nuclear power. Tepco does not have a sound reputation and questions have been raised about its democratic and societal accountability.<sup>2,3</sup> In 2002, safety reports

from three nuclear power stations were apparently faked,<sup>3,4</sup> and in 2007 Tepco was forced to shut the Kashiwazaki-Kariwa Nuclear Power Plant (the biggest complex in Japan) after the Niigata-Chuetsu-Oki Earthquake on the western side of the country caused initially unreported radiation leaks.<sup>5</sup> The plant was off-line until 2009 and Tepco posted losses of 150.11 billion yen in 2007/8 and expected a loss of 280 billion yen (\$2.60 billion) for 2008/9.<sup>6</sup>

The video-clips of the blasts in Reactors Nos. 1 to 4 at Fukushima in mid-March this year<sup>a</sup> give some indication of the scale of damage at these old-style 1970s-built boiling water reactors. Nevertheless Tepco continued to issue falsely reassuring reports for several days until human error—in all likelihood brought on by exhaustion—caused them on March 28 to overestimate the radionuclide contamination of the water in the turbine halls by a hundred-fold.<sup>7</sup> The detection of traces of I-131 in the air over the UK reported the same day indicate, however slight these traces were, the degree of atmospheric contamination—enough to spread over 10,000 miles—and that Tepco's control

<sup>a</sup>(see <http://video.ft.com/v/825918290001/Fukushima-nuclear-plant-explosion>)

of the train of events was being tested to breaking point.

The leak of radioactive water into the trenches of Reactor No. 2 (and the surrounding sea) was only plugged on April 6—after great difficulties<sup>8</sup> and as yet uncertain permanence. The “Mark I” container design for these reactors has been criticised as being “weak”:<sup>9</sup> these containment vessels deteriorate through continuous radiation exposure and careful monitoring is needed. Furthermore, the local authorities apparently ignored expert warning in 2005 about the dangers of allowing too much spent fuel to accumulate in the plants’ cooling ponds.<sup>2</sup> Plutonium now detected in the soil near Reactor No. 3 indicates a melt-down from its fuel, which from September 2010 had been of the “MOX” type<sup>9</sup> (see comment on MOX below). All four reactors must be decommissioned and the fuel rods removed (and reprocessed): but they cannot be dismantled for at least 40 years as too much radioactivity would be released. They may well need to be entombed long-term and at great expense. The fuel rods in reactors 5 and 6 were shut down successfully but there are eventual plans to re-activate them.<sup>8</sup>

Yet advocates of civil nuclear power, who include Barack Obama and George Monbiot,<sup>10,11</sup> persist in promoting greater expansion with new “safer” installations. How much Japanese society will continue to support nuclear energy remains to be seen but it will be very difficult for Japan to disentangle itself from a rampant addiction which its political system and societal structures seem impotent to control.<sup>3</sup>

In the UK, Sir David King—former governmental chief scientific advisor—advocates still expanding our civil nuclear industry and building a new plant at Sellafield (at £3bn) for re-processing nuclear waste into “MOX” (mixed uranium/plutonium oxide).<sup>12</sup> King proposes that the current but defective plant at Sellafield be replaced, and attributes its notorious failures to “faulty design.” Spent waste is very hot to handle while MOX is relatively safe and, from the viewpoint of nuclear power advocates, has the added virtue that MOX manufacture consumes spent waste from uranium-fuelled power plants thereby reducing hazardous stocks.

King also states—with some, but limited, justification (in that coal mining and drilling for oil at sea are notoriously hazardous)—that nuclear power workers have a much lower accidental death rate than conventional power workers,<sup>12</sup> but he ignores the uniquely silent start and horrifically irreversible nature of radiation poisoning and also the health hazards of uranium mining (which his reprocessing scheme would, at least in theory, reduce).

However, MOX is inherently more dangerous radio-actively than uranium, is readily converted to weapons-grade materials and accurate quantitative accounting for its production is impossible (Barnaby and Kemp, 2007<sup>13</sup>). Thus, large scale MOX production from and for a global “nuclear renaissance” would encourage nuclear weapons proliferation by making it much harder to control unauthorized access to weapons-grade materials. It doesn't even need to be used in a fission explosion

as it would make an effective “dirty bomb.” Barnaby and Kemp also point out—very tellingly—that MOX-based energy production systems are far from carbon-free.

A MOX-based nuclear renaissance will still produce waste—indeed in vastly increased amounts: to deal with this King advocates disposal through “geological storage.”<sup>12</sup> This would be in vitrified blocks trapping the waste and hopefully making it inaccessible to the general environment. Although theoretically attractive, major technical problems have yet to be solved, and vast amounts of industrial energy would be required for the vitrification—either from carbon-intensive combustion or by high intensity (and power-consuming) electric arc furnaces which have other adverse environmental impacts.<sup>14</sup> So any such approach to waste disposal would add great expense and still leave a poisoned legacy for hundreds of generations.

Observers such as Hamish McRae, less obsessed with scientific and technological fixes and taking a long-term financial outlook, offer a different strategy based on non-nuclear renewables and more efficient conservation.<sup>15</sup>

### Revisiting Chernobyl

The Chernobyl reactor had no contain-

---

**How much Japanese society will continue to support nuclear energy remains to be seen but it will be very difficult for Japan to disentangle itself from a rampant addiction which its political system and societal structures seem impotent to control.**

---

ment facility<sup>16</sup> so its burning graphite fuel-rods were exposed and ejected more radiation than that so far coming from Fukushima.

In reference 16 there are claims that earlier accounts of the numbers of casualties from Chernobyl following April 1986 were exaggerated. However, two authoritative reports in April 2006 (Fairlie and Sumner;<sup>17</sup> and IPPNW-Germany, updated 8 April, 2011)<sup>18</sup> challenge many of the conclusions of the UN/WHO report on the Health Effects of the Chernobyl Accident<sup>19</sup> which gives a total of 9,000 related cancer deaths compared with 900,000 expected cancer deaths in the affected region over the same period. Fairlie and Sumner predict up to 60,000 excess deaths from cancer, and the IPPNW reports describe many Chernobyl-related deaths and much morbidity not due to cancer. A press release from the International Agency on Research in Cancer (IARC, part of the WHO) of 20 April 2006, stated that “the cancer burden from Chernobyl cannot at present be directly measured” but referred to work on prediction models based on other studies, particularly the survivors of Hiroshima and Nagasaki. The press release went on to predict that by 2065 a mean of about 16,000 cancer deaths—with an “uncertainty interval” of between 6,700 to 38,000—may be expected due to radiation from the Chernobyl accident, and a mean of 16,000 cases of thyroid cancer (most of which would respond to treatment) and of 25,000 for other cancers. It also noted that these figures would represent a very small proportion of the total cancer deaths.<sup>20</sup>

Fairlie and Sumner state that the UN/WHO report was conducted meticulously by respected experts, but they also point out inadequacies—for example restricting the study area to Russia, Belarus and Ukraine and under-quoting the numbers of the “liquidators” who physically cleaned up the reactor site. “Only” 9,000 excess cancer deaths still represent 9,000 avoidable tragedies even though being just 1% of the deaths expected. Bob Gale, the American transplant specialist sent to graft bone marrow to those receiving supra-lethal radiation, such as the helicopter crews dowsing the openly burning Chernobyl core (none survived), gives a valuably informative medical history.<sup>21</sup>

It should be noted that observations on non-human life currently around Chernobyl

indicate profoundly adverse ecological effects associated with the excessive radiation.<sup>22</sup>



All these accounts should be considered afresh when deciding the future of nuclear power. This is even though the reactor at Chernobyl had no “containment” and that

---

**[I]t is a common experience that no regulatory system can completely protect humankind from even well-established health hazards...**

---

lessons may be learnt from the vulnerable “Mark I” container designs at Fukushima. Leaks appear to be continuing which makes it likely that upward revisions of the calculated total radiation exposure from Fukushima will continue. The abysmal reputation of Tepco and the way in which it became a virtually unaccountable independent hegemony to

which Japanese society is so dependent is now very apparent, and a profound lesson to all societies of any political persuasion. However, massive and unaccountable irresponsibility is not confined to the nuclear industries—military or civil, banking and the arms trade also exemplify global fields of human endeavour where good regulatory intent has cracked under the pressure of “progressive” instincts and the drive for “growth.”

Nuclear advocates will argue that their installations can be regulated into safety. Dr Mike Weightman, the highly respected Head of the UK’s independent safety regulator under the Health and Safety Executive, has been charged by the government to issue an interim and then a full report on the implications of Fukushima for the UK and has invited comments.<sup>23</sup> This exercise is not meant to help decide whether the UK has a nuclear future but to define improved control, and as such is very important (see ref 24 for an informative response from a nuclear sceptic organisation). However, although it is perfectly feasible to design much improved systems for nuclear safety—and even putting the costs issue on one side—it is a common experience that no regulatory system can completely protect humankind from even well-established health hazards: oft-quoted analogies in, for example, blood transfusion and the pharmaceutical and airline industries, support this attitude and hence the application of the “precautionary principle.”

Hence, while offering our most heartfelt consolations to the Japanese people and recognising that there are no major geological fault-lines in Britain, we need still to heed the

lessons of human frailty and the unpredictability of major events affecting the integrity of nuclear power plants. The better appreciation of 1) the nature of unexpected life-threatening leaks and accidents at nuclear power stations, reinforced by Fukushima; 2) the costs of dealing with all the sequelae of nuclear power including improved safety, build and waste disposal; and 3) the increased insecurity generated from vastly higher global stocks of MOX, provides the framework for a particularly potent case

**against** a global nuclear renaissance and

**for** a healthy non-nuclear world based on entirely different economies and life-styles.

Even though establishing such a world is probably the greatest challenge yet to face humankind and would entail significant suffering, this would be much preferred to nuclear annihilation.

## References

1. [http://en.wikipedia.org/wiki/Tokyo\\_Electric\\_Power\\_Company](http://en.wikipedia.org/wiki/Tokyo_Electric_Power_Company)) (accessed 7 April 2011).
2. Mycle Schneider: 23 March 2011. <http://fukushima.greenaction-japan.org/2011/03/23/mycle-schneider-nuclear-cloud-comes-with-aura-of-arrogance> (accessed 14 April 2011).
3. The Worden Report. <http://thewordenreport.blogspot.com/2011/03/ethical-meltdown-in-japan-on-toxicity.html>. (accessed 14 April 2011).
4. <http://business.highbeam.com/435557/article-1G1-102917548/lead-hiranuma-visits-niigata-apologize-tepco-scandal> (accessed 7 April 2011).
5. [www.grmcat.com/images/Niigata-Chuetsu-Oki-Japan-Report.pdf](http://www.grmcat.com/images/Niigata-Chuetsu-Oki-Japan-Report.pdf) (accessed 7 April 2011).
6. <http://uk.reuters.com/article/2008/07/28/sppage023-t91589-oisbi-idUKT9158920080728> (accessed 7 April 2011).
7. <http://alienatedinvancouver.blogspot.com/2011/03/what-youve-got-to-understand-about.html> (accessed 7 April 2011).
8. Japan's nuclear reactor: radioactive leaks; [www.bbc.co.uk/news/world-asia-pacific-12911190](http://www.bbc.co.uk/news/world-asia-pacific-12911190) (accessed 7 April 2011).
9. <http://modernsurvivalblog.com/nuclear/fukushima-reactor-no-2-the-most-vulnerable-design/> (accessed 7 April 2011).
10. [www.marketwatch.com/story/text-of-obama-speech-on-energy-2011-03-30?siteid=rss&rss=1](http://www.marketwatch.com/story/text-of-obama-speech-on-energy-2011-03-30?siteid=rss&rss=1).
11. George Monbiot; Guardian, 22 March 2011 [www.guardian.co.uk/commentisfree/2011/mar/21/pro-nuclear-japan-fukushima](http://www.guardian.co.uk/commentisfree/2011/mar/21/pro-nuclear-japan-fukushima).
12. [www.guardian.co.uk/environment/2011/mar/29/nuclear-power-safe-sir-david-king](http://www.guardian.co.uk/environment/2011/mar/29/nuclear-power-safe-sir-david-king).
13. Barnaby F and Kemp J, 2007. *Secure Energy? Civil Nuclear Power, Security and Global Warming*. Oxford Research Group. ISBN 978-0-9552846-1-8.
14. [http://en.wikipedia.org/wiki/Electric\\_arc\\_furnace#Environmental\\_issues](http://en.wikipedia.org/wiki/Electric_arc_furnace#Environmental_issues) (accessed 14 April 2011).
15. Hamish McRae. The Fukushima effect globally, will be colossal. Independent 30 March 2011.
16. [www-formal.stanford.edu/jmc/progress/chernobyl.html](http://www-formal.stanford.edu/jmc/progress/chernobyl.html) (accessed 7 April 2011).
17. Fairlie, I and Sumner D, 2006. *The Other Report on Chernobyl (TORCH)* pdf available on request.
18. <http://shop.ippnw.de> and [www.ippnweurope.org/commonFiles/pdfs/Atomenergie/ippnw\\_bulletin\\_web.pdf](http://www.ippnweurope.org/commonFiles/pdfs/Atomenergie/ippnw_bulletin_web.pdf).
19. Report of the UN Chernobyl Forum Expert Group "Health". Health Effects of the Chernobyl Accident and Special Health Care Programmes. Geneva 2006.
20. IARC Press Release No. 168. [www.iarc.fr/en/media-centre/pr/2006/pr168.html](http://www.iarc.fr/en/media-centre/pr/2006/pr168.html).
21. RP Gale and T Hauser, 1988. *Final Warning: The Legacy of Chernobyl*. Warner Books; New York.
22. AP Møler and TA Mousseau, 2011 Rigorous methodology for studies of effects of radiation from Chernobyl on animals... *Biology Letters* <http://rsbl.royalsocietypublishing.org/content/5/3/356.abstract>.
23. [www.hse.gov.uk/nuclear/news/2011/mar-japan.htm](http://www.hse.gov.uk/nuclear/news/2011/mar-japan.htm) (accessed 14 April 2011). See also the attachments on this report.
24. <http://nuclearinfo.org/view/policy/government/a2132>.



# Radiation in medicine and in nuclear power plants: the same but very different

Andreas Nidecker

Dr. Andi Nidecker, a specialist in radiology in Basel, Switzerland and a member of the board of IPPNW, was asked to explain for non-specialists how exposure to ionizing radiation affects human health, and what factors need to be considered when radioisotopes are used in diagnostic and therapeutic medical procedures. Dr. Nidecker produced the following fact sheet, which IPPNW made available to its affiliates for public education and to answer questions from the media.

I have been asked to explain as diagnostic radiologist briefly the difference between radiation used in diagnostic x-ray and nuclear medicine studies and the radiation being emanated from a failing nuclear power plant as is unfortunately now happening in Japan.

## Different types of ionizing radiations

Radiation is called “ionizing” because it can harm the cell nuclei in living tissues, cause disease and even death depending on the dose. Radiation occurs naturally in certain rocky areas in the world and is being emitted by certain substances called radioactive isotopes. The most powerful of those ionizing radiations is gamma radiation which is used for diagnostic x-ray and for radiotherapy but also in nuclear power plants for electricity production.

### *Radiation in medicine*

As gamma radiation can penetrate tissues, it has the advantage—if used with caution and in reasonably small dosages—to make the inner organs of the human body visible. This is done in two ways: either by using an x-ray tube to send gamma-rays through

the body or by injecting into the body very small doses of a short lived radioactive radioisotope, usually technetium. The information compiled through the use of computers will be transmitted via x-ray films or CT sensors or gamma cameras to give information about different organs and measure accumulation of technetium or other radioisotopes in the body.

Being short lived, all injected radioactive material will have disintegrated and been eliminated by the patient within minutes or hours. Whether using external radiation in x-ray machines or CT scanners or whether injecting radioactive substances in nuclear medicine studies, radiologist always use minute doses which are known not to harm the patient. Every patient seen by them needs a diagnosis and radiation may be used if medically justified: the risk of missing a patient's serious disease is much higher than the risk potentially induced to him by the burden of ionizing radiation. Occasionally other non-radiological methods, i.e., non ionizing, such as ultrasound or magnetic resonance imaging, can also be used to render a diagnosis.

### *Radiation in the nuclear power industry*

In a nuclear power plant radiation effects occur in so called fuel rods made by uranium. Uranium exists in different forms and breaks down in the fuel rods by emitting Gamma rays just like in medicine. But this radiation is much stronger and is used to heat water which then produces steam in order to propel a steam turbine which in turn produces electricity. As long as the radioactive fuel rods are covered by water this process occurs in a controlled manner and the water keeps on being heated and produces steam.

So far this was considered an elegant although expensive way to produce electricity. However, there are safety issues involved and this makes nuclear power a potentially risky method to produce electricity. If the radioactive fuel rods are not persistently kept cool, they start to heat up and increase the temperature and pressure in the innermost location of the power plant. This so-called core or inner contain-

ment may break under pressure if the cooling is not maintained. The fuel rods then disintegrate and a large amount of radioactivity will be blown out into the atmosphere.

Radioactive isotopes in the fuel rods, such as uranium, plutonium and cesium, are much longer lived than the radioisotopes used in medicine. They will continue to send out harmful radiation as long as they are around. These particles can be blown as clouds over oceans and continents, but once they land somewhere, they still will emit radiation and will do this sometimes for many years e.g. the strontium and cesium isotopes for about 50 years, yet plutonium 40,000 years and uranium over 400,000 years.

As these radioisotopes can penetrate the ground, they will accumulate in the water and will be ingested by humans or animals through plants: once inside the body, they will build up in inner body organs, just like

the short lived isotopes used in nuclear medicine studies. However, due to their much longer life, these isotopes may submit the body or a particular organ e.g. the thyroid gland, to continued harmful radiation. Through this process, the cells in the body could experience genetic damage, heart disease and malignant tumours.

Today it is known that even small doses or so called low level radiation, if ingested repeatedly as by the people living in radioactive contaminated regions, can be harmful and lead to disease.

### **Extremely helpful and extremely harmful**

In summary one can say that radiation used in the core of a nuclear power plant is dangerous, obviously more so when set free in an accident: it is produced by highly radioactive corpuscular substances which are long lived. As the radiation comes from particles, these may be blown over large distances and can potentially be ingested,

unnoticed by humans, and lead to chronic radiation diseases including cancer. On the other hand, the radiation produced by an x-ray tube affects the body for milliseconds to minutes and that used in nuclear medicine disappears from the body within minutes to hours.

Radiation used in medicine has the beneficial effect of allowing early detection of a serious disease, whereas radiation from the power plant accident had a high chance to produce serious disease and death, depending on the doses experienced. In conclusion, radiation is of the *same* type in medicine and nuclear power but very *different*: small doses are used in a controlled way in medicine and dangerous long lived radioisotopes are blown into the atmosphere in an uncontrolled way in a nuclear accident.

---

**Radiation used in medicine has the beneficial effect of allowing early detection of a serious disease, whereas radiation from the power plant accident had a high chance to produce serious disease and death...**

---



# Children, Teens and the Japan Disaster

Harry Wang

Dr. Wang, a child and adolescent psychiatrist in Sacramento, California, is Clinical Professor of Psychiatry at the University of California Davis School of Medicine. He is also the President of the Sacramento chapter of Physicians for Social Responsibility. Dr. Wang said he compiled the following guidelines for possible use by others, because “during this difficult time.... I am dealing with a lot of anxious children and teens.”

**A**s we all know, Japan is suffering through a horrific disaster caused by the 9.0 earthquake, tsunami, and probable meltdowns at the Fukushima nuclear power plants. Unfortunately, this crisis will not end any time soon. I have already heard a variety of fears that young clients have expressed as they grapple with this tragedy. Children and teens who have, themselves, experienced traumas and/or losses will be more susceptible to what has happened in Japan. The amount of news that is watched on television may also increase the anxiety level of children and teens.

The American Academy of Child and Adolescent Psychiatry has information on children and news of disasters. “Children and the News” can be downloaded at: [www.aacap.org](http://www.aacap.org). I have copied their guidelines below (in italics).

*Guidelines for minimizing the negative effects of watching the news include:*

- *monitor the amount of time your child watches news shows*
- *make sure you have adequate time and a quiet place to talk if you anticipate that the news is going to be troubling or*

*upsetting to the child*

- *watch the news with your child*
- *ask the child what he/she has heard and what questions he/she may have*
- *provide reassurance regarding his/her own safety in simple words emphasizing that you are going to be there to keep him/her safe*
- *look for signs that the news may have triggered fears or anxieties such as sleeplessness, fears, bedwetting, crying, or talking about being afraid*

*Parents should remember that it is important to talk to the child or adolescent about what he/she has seen or heard. This allows parents to lessen the potential negative effects of the news and to discuss their own ideas and values. While children cannot be completely protected from outside events, parents can help them feel safe and help them to better understand the world around them.*

As adults it is also important that we monitor our own reactions to these events. One’s own history, present sense of safety, and anxieties can effect how we interact with our children and other family members and friends. Here are some helpful guidelines to

consider (in italics) from the American Psychological Association found at: <http://www.apa.org/helpcenter/distress-earthquake.aspx>.

### *Managing Your Distress About the Earthquake from Afar*

*For people with friends and family living in regions affected by earthquakes, watching news coverage of the earthquake's devastation can be very distressing, particularly if there is no news on their safety and well-being. Even for those without personal connections to the country, the news coverage can be overwhelming.*

*APA offers the following tips to manage your distress:*

- *Take a news break. Watching endless replays of footage from the disaster can make your stress even greater. Although you will want to keep informed – especially if you have loved ones in earthquake-affected areas – taking a break from watching the news can lessen your distress.*

- *Control what you can. There are routines in your life that you can continue such as going to work or school and making meals. It is helpful to maintain these routines and schedules to give yourself a*

*break from constantly thinking about the earthquake.*

- *Engage in healthy behaviors. Eat well-balanced meals, engage in regular exercise like going for a long walk, and get plenty of rest. Bolstering your physical well-being is good for your emotional health and can enhance your ability to cope.*

- *Keep things in perspective. While an earthquake can bring tremendous hardship and loss, remember to focus on the things that are good in your life. Persevere and trust in your ability to get through the challenging days ahead.*

- *Find a productive way to help if you can. Many organizations are set up to provide various forms of aid to survivors. Contributing or volunteering is a positive action that can help you to make a difference.*

- *Strive for a positive outlook. Many people who have experienced tragedy find that they grow in some respect as a result of persevering through the hardship. Over time, people can discover personal strengths and develop a greater appreciation for life.*

I hope that these ideas are useful as we interact with children and teens during these difficult times.



# Livres numériques édités

en téléchargement gratuit à cette adresse : <https://editionsdefukushima.fr/>

CLAUSSEN (Angelika), ROSEN (Alex),

***Vivre 5 ans avec Fukushima. Résumé des effets sanitaires de la catastrophe nucléaire***, traduit de l'anglais par Odile GIRARD, mise en page Georges MAGNIER, Editions de Fukushima, 2016, 35 p.

COLLECTIF,

***Rapport officiel de la Commission d'enquête indépendante sur l'accident nucléaire de Fukushima***, traduit de l'anglais, Editions de Fukushima, 2012, 105 p.

COLLECTIF,

***Les conséquences médicales et écologiques de l'accident nucléaire de Fukushima***, Actes du symposium de New York des 11 et 12 mars 2013, Éditions de Fukushima, 2021, 378 p.

GIRARD (Odile),

***Daiichi Nuclear Plant, 2012-2014***, Collection Fukushima-is-still-news, vol. 1, Éditions de Fukushima, 2022, 1336 p.

***Daiichi Nuclear Plant, 2015-2019***, Collection Fukushima-is-still-news, vol. 2, Éditions de Fukushima, 2022, 472 p.

***Radioactive Fallout And Waste, No.4 Fuel Removal, Nuclear Workers, and UN Conference***, Collection Fukushima-is-still-news, vol. 3, Éditions de Fukushima, 2022, 1118 p.

***Nuke Safety, 2012-2015***, Collection Fukushima-is-still-news, vol. 4, Éditions de Fukushima, 2023, 1272 p.

***Nuke Safety, 2016-2019***, Collection Fukushima-is-still-news, vol. 5, Éditions de Fukushima, 2023, 836 p.

***Reprocessing, Storage of Nuclear Waste, Decommissioning***, Collection Fukushima-is-still-news, vol. 6, Éditions de Fukushima, 2023, 733 p.

***Practical Problems For The Japanese Population, 2012-2014***, Collection Fukushima-is-still-news, vol. 7, Éditions de Fukushima, 2023, 1427 p.

***Practical Problems For The Japanese Population, 2015-2016***, Collection Fukushima-is-still-news, vol. 8, Éditions de Fukushima, 2023, 760 p.

***Practical Problems For The Japanese Population, 2017-2019***, Collection Fukushima-is-still-news, vol. 9, Éditions de Fukushima, 2023, 470 p.

***Health Effects Of Radiation and Collateral Effects***, Collection Fukushima-is-still-news, vol. 10, Éditions de Fukushima, 2024, 925 p.

***Anti-Nuclear Activity-Opinion***, Collection Fukushima-is-still-news, vol. 11, Éditions de Fukushima, 2024, 1037 p.

***Vested Interests - Transparency - Corruption***, 2012-2016, Collection Fukushima-is-still-news, vol. 12, Éditions de Fukushima, 2024, 2534 p.

***Vested Interests - Transparency - Corruption***, 2017-2019, Collection Fukushima-is-still-news, vol. 13, Éditions de Fukushima, 2024, 643 p.

***Nuclear Weapons***, Collection Fukushima-is-still-news, vol. 14, Éditions de Fukushima, 2024, 919 p.

***Nuclear Future - Start Again - New Techniques - Alternatives & Renewables***, Collection Fukushima-is-still-news, vol. 15, Éditions de Fukushima, 2024, 2359 p.

***Books & Films***, Collection Fukushima-is-still-news, vol. 16, Éditions de Fukushima, 2024, 181 p.

***2011, l'année terrible. Compilation d'articles anglophones de la presse japonaise après la catastrophe nucléaire de Fukushima***, Éditions de Fukushima, 2024, 1878 p.

MAGNIER (Georges),

***Vivre après Fukushima***, Éditions de Fukushima, 2022, 899 p.

Pectine Nonuke,

***Pectine Actualités 2018 : revue de presse d'informations sur le nucléaire, à Fukushima et ailleurs***, Éditions de Fukushima, 2019, 370 p.

***Pectine Actualités 2017 : revue de presse d'informations sur le nucléaire, à Fukushima et ailleurs***, Éditions de Fukushima, 2020, 306 p.

***Pectine Actualités 2016 : revue de presse d'informations sur le nucléaire, à Fukushima et ailleurs***, Éditions de Fukushima, 2022, 410 p.

***Pectine Actualités 2015 : revue de presse d'informations sur le nucléaire, à Fukushima et ailleurs***, Éditions de Fukushima, 2022, 532 p.

***Pectine Actualités 2014 : revue de presse d'informations sur le nucléaire, à Fukushima et ailleurs***, Éditions de Fukushima, 2023, 536 p.

***Pectine Actualités 2013 : revue de presse d'informations sur le nucléaire, à Fukushima et ailleurs***, Éditions de Fukushima, 2024, 622 p.

***Pectine Actualités 2012 : revue de presse d'informations sur le nucléaire, à Fukushima et ailleurs***, Éditions de Fukushima, 2024, 313 p.

