

## **Japan's Comprehensive Report on Conditions at Fukushima Daiichi Nuclear Power Station updated on IAEA's webpage**

The Government of Japan has updated its comprehensive report on conditions at TEPCO's Fukushima Daiichi Power Station, which has been uploaded to the International Atomic Energy Agency's (IAEA) website. Through the IAEA, this report provides the international community with information about events and highlights related to recovery operations at the Fukushima Daiichi Nuclear Power Station. Along with this report, the IAEA is also providing an assessment of the situation on their website.

### Highlight of IAEA's Latest Assessment:

While it recommended that Japan takes measures to prevent further leaking of contaminated water and human error, the IAEA positively assessed the concentration of radionuclides in ocean water as not concerning, and the safety of Japan's food supplies.

The updated report as of March 8<sup>th</sup>, 2014 is available at the following link:  
[http://www.iaea.org/newscenter/news/2014/infcirc\\_japan0314.pdf](http://www.iaea.org/newscenter/news/2014/infcirc_japan0314.pdf)

The same information can be viewed on the following Japanese government websites:

Ministry of Foreign Affairs

[http://www.mofa.go.jp/dns/inec/page18e\\_000038.html](http://www.mofa.go.jp/dns/inec/page18e_000038.html)

Prime Minister of Japan and His Cabinet

[http://www.kantei.go.jp/foreign/96\\_abe/decisions/2014/osensui\\_e.html](http://www.kantei.go.jp/foreign/96_abe/decisions/2014/osensui_e.html)

*An excerpt from the IAEA's full report:*

### **IAEA assessment on aspects presented in the March 2014 report "Events and highlights on the progress related to recovery operations at Fukushima Daiichi NPS"**

#### **Water overflow from a tank in H6 area on 20 February 2014**

On 20 February 2014, TEPCO announced that approximately 100 tons of water overflowed from a tank storing radioactive concentrated saltwater from the reverse osmosis desalination system ([http://www.tepco.co.jp/en/press/corp-com/release/2014/1234394\\_5892.html](http://www.tepco.co.jp/en/press/corp-com/release/2014/1234394_5892.html)). According to TEPCO, this incident happened because valves in the inlet pipe were left open

improperly, and this led to overflowing of the tank. The excess water escaped through the flange of the top plate and flowed to the ground through a rainwater drain pipe connected to the upper part of the tank. TEPCO was able to stop the overflow by closing the valves, and immediately started removing accumulated water and contaminated soil from the surrounding area. TEPCO believes none of the overflowed water reached the ocean as there is no pathway leading from that area to the sea, which is approximately 700 meters away. TEPCO checked the other storage tanks to make sure there were no additional overflows, and started an investigation into the cause of this incident.

Considering the high radioactivity concentration of the water stored in the tank, the IAEA recommends that TEPCO should take adequate measures to monitor and limit the spread of contamination due to this incident. The IAEA also encourages TEPCO to complete a thorough investigation and determine the root cause of this incident, and to take appropriate actions to prevent a similar occurrence in future.

When this incident occurred, the IAEA was notified and quickly shared this information with the international community through the public IAEA website and other communication channels. The IAEA considers the actions taken by Japan's Nuclear Regulatory Authority (NRA) following this incident to be appropriate. Based on the information that has been provided, IAEA experts consider that the leak poses no danger to the public.

- <http://iaea.org/newscenter/pressreleases/2014/prn201404.html>

#### **Other reports on leaking storage water tanks**

The NRA reported on leaks of contaminated water that were detected within the on-site area on 21 January 2014, 6 February 2014 and 20 February 2014. These spills were limited to the immediate vicinity of the leak; areas outside the Fukushima Daiichi Nuclear Power Plant (NPP) were not affected. The IAEA considers the actions ordered by NRA to be appropriate measures to prevent further dispersion of the radioactive spills.

#### **Progress on the removal of fuel assemblies from the spent fuel pools**

Removal of the first fuel assemblies from the Unit 4 spent fuel pool began on 18 November 2013. As of 3 March 2014, 418 (396 spent fuel assemblies and 22 non-irradiated fuel assemblies) out of 1533 fuel assemblies (1331 spent fuel assemblies and 202 non-irradiated fuel assemblies) have been transferred to the common pool. Since 17 December 2013, the work to remove rubble, such as steel, deck plates and the roof torus from the Unit 3 spent fuel pool have been underway as a preparatory step to begin the installation process for a fuel removal cover.

On 25 February 2014, TEPCO announced that the work for removing fuel assemblies from the Unit 4 spent fuel pool was suspended due to a power failure, "caused by an incidental damage of a cable during an excavation work at the south side area of Unit 4." According to TEPCO, the cooling system was restarted approximately four hours after the power was restored, and fuel removal work then resumed.

The IAEA considers that substantial efforts have been employed by TEPCO to achieve this specific milestone towards decommissioning the plant. The IAEA also considers that although the event related to incidental damage of the cable is not significant, safety should always be

the highest priority to ensure that adequate measures are taken to prevent human errors and to promptly mitigate their consequences. The IAEA welcomes the continued progress in the removal of the fuel at Unit 4 and on the decommissioning of the plant.

### **Monitoring of groundwater and seawater**

Radionuclides in groundwater are monitored at 30 locations on the site of the Fukushima Daiichi NPP. Results are reported regularly for  $^{134}\text{Cs}$ ,  $^{137}\text{Cs}$ , the total activity of beta-emitters, tritium and occasionally for  $^{90}\text{Sr}$ . The measured activity levels vary from one observation point to another. On March 6, tritium was detected in all but three monitoring points. In eight of the monitoring points, caesium isotopes could not be detected. In two monitoring points,  $^{137}\text{Cs}$  levels above 100 Bq/L were observed. Based on the information available, IAEA experts consider that the radionuclides being measured in these on-site wells do not cause any radiological impacts to the public as there is no connection between these wells and the public water supply.

Monitoring of radionuclides in seawater is performed regularly based on the document, *Implementation Guides on Sea Area Monitoring in FY2013* from 1 April 2013. This monitoring comprises primarily fish, but also seawater, sediment and marine biota collection.

- [http://radioactivity.nsr.go.jp/en/contents/8000/7147/24/274\\_s\\_20130401.pdf](http://radioactivity.nsr.go.jp/en/contents/8000/7147/24/274_s_20130401.pdf)

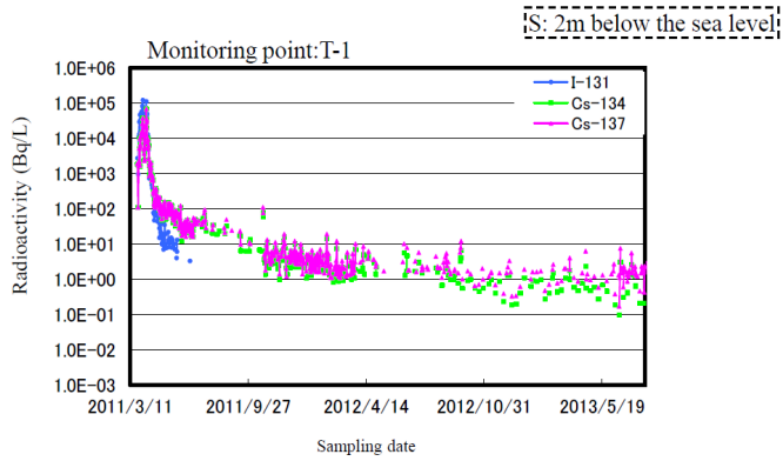
Recent results in the sea area around Fukushima Daiichi NPP have indicated that the concentration levels outside the port and in the open sea have been relatively stable. The monitoring programme includes seven measurement points in the immediate vicinity of the port of the plant and also covers offshore areas. On March 6,  $^{137}\text{Cs}$  could only be detected in one of the samples with a reported level below 1 Bq/L. Tritium was not detected in any of the sampling points. Based on the information available, IAEA experts consider that these levels in the seawater do not cause any radiological concerns.

Marine monitoring results in recent months were relatively stable as previously described. Even the levels directly inside the port of the Fukushima Daiichi NPP are relatively low with most measurements less than 1 Bq/L for radio-caesium. This indicates that the measures from TEPCO to prevent contamination of the sea have been successful. The levels in seawater in the vicinity of the plant area are relatively stable. In most cases,  $^{134}\text{Cs}$  and  $^{137}\text{Cs}$  are below the detection limit of the analytical methods, and mostly below 1 Bq/L. The concentrations measured after the accident in March, April and May were approximately a factor of 100 000 times higher compared to present levels. The levels of tritium are below any concern.

- [http://www.tepco.co.jp/en/nu/fukushima-np/f1/smp/2014/images/intake\\_canal\\_map-e.pdf](http://www.tepco.co.jp/en/nu/fukushima-np/f1/smp/2014/images/intake_canal_map-e.pdf)

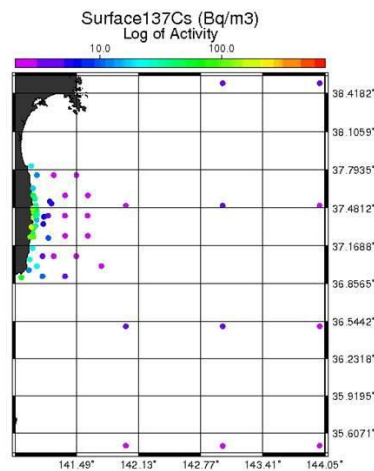
- [http://www.tepco.co.jp/en/nu/fukushima-np/f1/smp/2014/images/seawater\\_map-e.pdf](http://www.tepco.co.jp/en/nu/fukushima-np/f1/smp/2014/images/seawater_map-e.pdf)

The attached graph shows the trend over time of radio-caesium activity concentration at one station directly off-site the plant, as reported since March 2011.  $^{131}\text{I}$  has a relatively short half-life and has been virtually undetectable in the area since the summer of 2011.

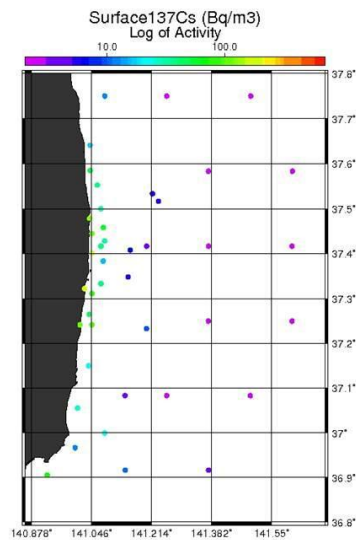


**Fig 1: Temporal trend of <sup>137</sup>Cs, <sup>134</sup>Cs and <sup>131</sup>I activity concentration at Monitoring Point T1, near the discharge point from the NPP. This graph has been taken from the NRA website: <http://radioactivity.nsr.go.jp/en/contents/8000/7742/24/engan.pdf>. This website provides further information about temporal trends of several monitoring points.**

There is a strong gradient of concentration in seawater from the discharge point to offshore areas, with higher levels at the coast and lower levels at offshore areas. This is illustrated in the following two figures on the next pages, which show surface water measurements based on the information provided by the NRA and TEPCO for 18 February 2014. These figures show that at more than 200 km offshore, there are measurements that are only slightly above the pre-accident background levels.



**Fig 2: Surface activity concentration in seawater merged with data provided for 18 February 2014. The concentration is indicated with a logarithmic scale in order to cover the large gradient from the source near the Fukushima Daiichi NPP to the offshore area. The picture covers about 260 km offshore from the coast.**



**Fig 3: Surface activity concentration in seawater merged with the data provided for 18 February 2014. The concentration is indicated with a logarithmic scale in order to cover the large gradient from the source near the Fukushima Daiichi NPP to the offshore areas. The picture is the same as Fig. 2, but covers only 50 km offshore from the coast.**

### **Regarding the monitoring of food products**

The situation regarding food and agricultural production remains stable. Monitoring of food, including seafood, both on the market and also in production fields, continues and has been in place since the early days of the emergency. Due to the reported leaks of radionuclide contaminated water at the Fukushima Daiichi NPP, there is a heightened interest in monitoring of the terrestrial and marine environments in the vicinity of the Fukushima Daiichi NPP. It is, therefore, understandable that reports from the authorities in Japan highlight the information available on the monitoring of fishery products in relation to the continuing suspension of general fishing activities offshore of Fukushima prefecture.

The results of monitoring and surveillance of caesium radionuclides in food items is complementary to the environmental monitoring of radionuclide levels in the immediate vicinity of the Fukushima Daiichi NPP. Food monitoring results do not indicate any new or any immediate issues for food products or the food supply chain. Revisions and up-dates to food restrictions are based on the levels of caesium radionuclides detected in food. Any changes to food restrictions indicate the continued vigilance of the authorities in Japan, and demonstrate their commitment to protecting consumers, commerce and trade.

Sampling results indicate that caesium radionuclides in the majority of food items sampled are either not measurable or their concentrations are below regulatory limits. However, some food samples (much less than 1%) are found to contain levels of caesium radionuclides above regulatory limits (mainly in the meat of wild animals such as boar, pheasant and deer, but also to a lesser degree in fish). A comprehensive surveillance and control regime remains in place in Japan. The monitoring and sampling regime is used to identify where and when foods become affected as the caesium radionuclides disperse in the environment. The mechanism

for placing restrictions on affected food products is based on the results of surveillance monitoring targeted specifically at food commodities. Legal measures apply under domestic food law to prevent unacceptable food from being marketed and, where necessary, further legal restrictions or voluntary measures are also applied to production fields or activities related to the collection or distribution of food. In summary, systems are in place to prevent food and agricultural products with caesium radionuclide levels in excess of Japan's legal limits from entering the supply chain, and these systems continue to be implemented.

Based on the information that has been made available, the Joint FAO / IAEA Division understands that the measures taken to monitor and rapidly respond to any issues in the food system regarding radionuclide contamination are appropriate, and that the food supply chain in Japan is safely under control.

#### **Reporting on hilgendorf saucord (a type of fish) restrictions implemented in late February**

On 28 February 2014, Japan provided the IAEA with an information update, stating that they have taken actions in response to a sample of hilgendorf saucord (a type of fish) caught offshore in the Fukushima region that was monitored and found to exceed national criteria for distribution to markets.

- [http://www.iaea.org/newscenter/news/2014/infcirc\\_mofa280214.pdf](http://www.iaea.org/newscenter/news/2014/infcirc_mofa280214.pdf)

The sample that exceeded the Japanese criteria had a combined  $^{137}\text{Cs}$ ,  $^{134}\text{Cs}$  specific activity of 112.266 Bq/kg. Based on this survey, the distribution of all the hilgendorf saucord that were caught on 27 February 2014 was suspended (total amount of approximately 13.2 kg). Any of the hilgendorf saucord caught in the same survey will never be provided to the market. The experts at the IAEA consider that compared to the normal results reported for the fish in the area, this specific measurement appears to be an exception. Most of the fish monitored generally have levels less than 100 Bq/kg.

The Agency considered that this situation demonstrated the capability of the monitoring programme in Japan to detect food that exceeds national criteria, and to take appropriate measures in response. The Agency considered that this information provided good assurance on the quality of the management and the safety of the food supply chain.

#### **Japan request for an Integrated Regulatory Review Service mission**

The IAEA has received a request for conducting an Integrated Regulatory Review Service (IRRS) mission in Japan to be scheduled for late 2015, and the Agency is currently working with NRA to prepare for the upcoming IRRS, including the self-assessment of the governmental and regulatory nuclear and radiation safety infrastructure, which is a pre-requisite for an IRRS mission. The first activity, covering the IRRS process and the IAEA self-assessment methodology is planned for May 2014.