

# Massive levels of radioactive cesium around Fukushima plant and beyond

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## Massive levels of radioactive cesium detected at quarry near Fukushima plant

FUKUSHIMA — Massive levels of radioactive cesium have been detected from gravel at a quarry near the crippled Fukushima nuclear plant, after high radiation was detected at buildings using gravel from the same quarry, prefectural officials said.

The Fukushima Prefectural Government examined samples of the gravel from the quarry in the town of Namie after inspecting the site on Jan. 20.

Tests detected up to 214,200 becquerels of radioactive cesium per kilogram of gravel, far above the levels at other quarries operating in the evacuation zones around the Fukushima No. 1 nuclear plant. About 60,000-210,000 becquerels of cesium was found in most of the gravel that had been kept outdoors at the quarry since the disaster.

High radiation levels have been detected at apartment blocks and other construction projects built with gravel from the Namie quarry, and the findings lend further backing to the theory that this gravel was seriously contaminated with large amounts of cesium.

Among 25 quarries in the evacuation zones, up to 122,400 becquerels of radioactive cesium was found at one that has been closed since the nuclear crisis broke out on March 11, 2011. A high of 5,170 becquerels was found at one of 14 operational quarries within the evacuation zones.

The national and prefectural governments have done spot inspections of about 150 of some 1,100 construction sites where gravel from the Namie quarry is believed to have been used.

Higher levels of radiation than surrounding areas were detected at 27 locations in five towns and cities, including Nihonmatsu and the city of Fukushima. Of these, 22 were residences. The central and prefectural authorities are expected to finish their inspections by the end of March.

In a related development, the Economy, Trade and Industry Ministry held an expert panel meeting to consider standards for shipping gravel from quarries in the prefecture.

Noting that extraordinarily high levels of radiation were detected from only the Namie quarry, the experts said they recommended that the ministry only set standards for areas in Fukushima Prefecture where radiation levels remain high.

The ministry will work out the standards in March.

*Mainichi Shimbun*, February 16, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/02/16/20120216p2a00m0na006000c.html>

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## **High level of radioactive cesium found in Okinawa noodles**

NAHA — High levels of radioactive cesium have been detected in noodles produced in Okinawa, apparently because they were made with water filtered by ashes from Fukushima-produced wood.

The noodles, called “Okinawa soba,” had a level of radioactivity of 258 becquerels of cesium per kilogram. The restaurant that produced them had kneaded them with water filtered by the ashes of Fukushima Prefecture-produced wood.

The Forestry Agency on Feb. 10 notified prefectures across Japan not to use ashes made from wood or charcoal in cooking if the materials were lumbered or produced in Fukushima Prefecture, Tokyo and 15 other prefectures following the outbreak of the Fukushima nuclear disaster in March last year, even if the wood or charcoal bore levels of cesium lower than the government-set standard — 40 becquerels per kilogram for cooking wood and 280 becquerels per kilogram for charcoal.

According to the agency, the cesium contamination of Okinawan noodles surfaced on Feb. 7 in testing conducted by the Okinawa Prefectural Government. An ensuing survey found 468 becquerels of cesium in cooking wood that was distributed through the same route as the one for wood delivered to the restaurant.

The central government set a standard on Nov. 2 last year stating that the radioactivity of cesium concentrated by burning wood or charcoal should not exceed 8,000 becquerels per kilogram — a level allowed for landfill at disposal sites. However, methods for examining the concentration were not established until Nov. 18, while the cooking wood in question was shipped on Nov. 7.

“We had not assumed that ashes would be used in food processing (when we drew up the standard),” said a Forestry Agency official.

Ashes are used in kneading noodles and sometimes in removing the bitter taste, or “aku” from devil’s tongue and wild vegetables.

*Mainichi Shimbun*, February 13, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/02/13/20120213p2a00m0na010000c.html>

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## **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.

**Kyodo Press**, February 2, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/02/02/20120202p2g00m0dm028000c.html>

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## **Famed Aomori fishing port lives in shadow of new MOX fuel nuclear plant**

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.

*Mainichi Shimbun*, January 28, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/28/20120128p2a00m0na012000c.html>

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### **High levels of cesium found in ash in wood stoves of homes in Fukushima**

NIHONMATSU, Fukushima — The Ministry of the Environment announced on Jan. 19 that high levels of radioactive cesium were detected in ash found in the wood stoves of private homes in this town.

The findings resulted from a joint survey conducted by the Japan Atomic Energy Agency and Tokyo Electric Power Co. (TEPCO) at the request of the Nihonmatsu Municipal Government in November last year.

Results show that pre-burned firewood was tainted with 1,157 to 4,395 becquerels of radioactive cesium per kilogram — radiation levels exceeding standards set by the government by some 29 to 110 times — while contamination detected in ash after the wood was burned in stoves stood at 28,660 to 43,780 becquerels per kilogram.

Based on the fact that the firewood used in the survey had been stored outdoors before March 11, officials believe that the high contamination is a direct consequence of the nuclear disaster at the Fukushima No.1 Nuclear Power Plant.

As a result of the findings, the Ministry of the Environment instructed municipal governments in all eight prefectures in the Tohoku and Kanto areas that are subject to decontamination after the Fukushima nuclear disaster, not to scatter firewood ash in outdoor gardens and agricultural fields. Instead, the ash should be collected and processed as regular garbage.

Meanwhile, the ministry maintained that cesium density detected in smoke from the burned firewood is "at levels that can be ignored in terms of its influence on health."

*Mainichi Shimbun*, January 20, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/20/20120120p2a00m0na004000c.html>

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## **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."

*Mainichi Shimbun*, January 16, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/16/20120116p2a00m0na015000c.html>

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## **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.

*Mainichi Shimbun*, January 7, 2012

<http://mdn.mainichi.jp/mdnnews/national/news/20120107p2a00m0na011000c.html>

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### **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.

**Kyodo Press**, December 21, 2011

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2011/12/21/20111221p2g00m0dm027000c.html>

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## **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.

**Kyodo Press**, January 16, 2012

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2012/01/16/20120116p2g00m0dm010000c.html>

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## **Fukushima Pref. to Conduct Radiation Checks on All Its Rice**

Fukushima, Jan. 6 (Jiji Press)—The prefectural government of Fukushima plans to conduct radiation checks on all rice to be harvested in the prefecture this year, officials said Friday.

The northeastern Japan prefecture, which is home to the crippled Fukushima No. 1 nuclear power plant, plans to fully subsidize the purchases of radiation measuring equipment by agricultural cooperatives and distributors, the officials said.

According to the prefecture, it is considering using a conveyor belt-using radiation detector, which is



being developed by a machinery maker.

It aims to introduce more than 100 units of the machine at an estimated total cost of several billion yen.

Radioactive cesium levels exceeding the national government-set limit of 500 becquerels per kilogram have been detected in rice produced in the prefecture since the March 2011 accident at the Tokyo Electric Power Co. <9501> nuclear plant.

**Jiji Press**, January 6, 2012

<http://jen.jiji.com/jc/eng?g=eco&k=2012010600452>

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## **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.

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.

**Kyodo Press**, December 13, 2011

<http://mdn.mainichi.jp/mdnnews/national/archive/news/2011/12/13/20111213p2g00m0dm143000c.html>

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