

## **Workers again flee stricken Japanese nuclear plant**

### **But radiation contaminating more food and water.**

By ERIC TALMADGE and MARI YAMAGUCHI  
The Associated Press

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FUKUSHIMA, Japan -- Gray smoke rose from two reactor units today, temporarily stalling critical work to reconnect power lines and restore cooling systems to stabilize Japan's radiation-leaking nuclear complex.

Workers are racing to bring the nuclear plant under control, but the process is proceeding in fits and starts, stalled by incidents like the smoke and by the need to work methodically to make sure wiring, pumps and other machinery can be safely switched on.

"Our crisis is still going on. Our crisis is with the nuclear plants. We are doing everything we can to bring this to an end," Gov. Yuhei Sato of Fukushima prefecture, where the plant is located, told the more than 1,000 people moved away from the plant into a gymnasium. "Don't give up. We know you are suffering."

"Please get us out of here," yelled Harunobu Suzuki, a 63-year-old truck driver.

What caused the smoke to billow first from Unit 3 at the Fukushima Dai-ichi plant and later from Unit 2 is under investigation, nuclear safety agency officials said. Still, in the days since the March 11 earthquake and tsunami wrecked the plant's cooling systems, both reactors have overheated and seen explosions. Workers were evacuated from the area to buildings nearby, though radiation levels remained steady, the officials said.

Problems set off by the disasters have ranged far beyond the devastated northeast coast and the wrecked nuclear plant, handing the government what it has called Japan's worst crisis since World War II. Rebuilding the ruined northeast coast may cost as much as \$235 billion. Police estimate the death toll will surpass 18,000.

Traces of radiation are tainting vegetables and some water supplies, although in amounts the government and health experts say do not pose a risk to human health in the short-term. China, Japan's biggest trading partner, ordered testing of Japanese food imports for radiation contamination.

"Please do not overreact, and act calmly," said Chief Cabinet spokesman Yukio Edano in the government's latest appeal to ease public concerns. "Even if you eat contaminated vegetables several times, it will not harm your health at all."

Edano said Fukushima's operator, Tokyo Electric Power Co., would compensate farmers affected by bans on the sale of raw milk, spinach and canola.

The troubles at Fukushima have in some ways overshadowed the natural catastrophe, threatening a wider disaster if the plant spews more concentrated forms of radiation than it has so far.

The nuclear safety agency and Tokyo Electric reported significant progress over the weekend and Monday. Electrical teams, having finished connecting three of the plant's six units, worked to connect the rest by Tuesday, the utility said.

The U.S. Nuclear Regulatory Commission said Monday that containment at three reactors at Japan's crippled nuclear complex is currently intact and the situation at the plant appears to be stabilizing.

Once done, however, pumps and other equipment have to be checked - and the reactors cleared of dangerous gas - before the power can be restored. For instance, a motorized pump to inject water into Unit 2's overheated reactor and spent fuel storage pool needs to be replaced, said Hidehiko Nishiyama, an official at the Nuclear and Industrial Safety Agency, or NISA.

The crisis has brought renewed scrutiny to Tokyo Electric, a wealthy, politically influential utility that has been accused in the past of safety violations. Days before the disaster, a NISA report criticized Tokyo Electric for failing to inspect crucial equipment related to cooling systems at Fukushima, though agency officials refused Monday to draw a link between the inspection lapses and the breakdown of cooling systems after the tsunami.

Radioactive iodine, which breaks down after a week, has been the most widespread contaminant found, but so have traces of cesium, which lasts decades and may cause cancer.

That cesium was likely generated when nuclear fuel rods partially melted last week, NISA's Nishiyama said, and is an indication of potential harm to the environment and how badly damaged some of the reactors are.

Early Monday, the Health Ministry advised Iitate, a village of 6,000 people about 30 kilometers (19 miles) northwest of the plant, not to drink tap water due to elevated levels of iodine. Ministry spokesman Takayuki Matsuda said iodine three times the normal level was detected there - about one twenty-sixth of the level of a chest X-ray in one liter of water.

The World Bank said in a report Monday that Japan may need five years to rebuild from the disasters, which caused up to \$235 billion in damage, saying the cost to private insurers will be up to \$33 billion and that the government will spend \$12 billion on reconstruction in the current national budget and much more later.

Growing concerns about radiation add to the chain of disasters Japan has struggled with since the 9.0-magnitude quake. The resulting tsunami ravaged the northeastern coast. All told, police estimates show more than about 18,400 died. More than 15,000 deaths are likely in Miyagi, the prefecture that took the full impact of the wave, said a police spokesman.

"It is very distressing as we recover more bodies day by day," said Hitoshi Sugawara, the spokesman.

Police in other parts of the disaster area declined to provide estimates, but confirmed about 3,400 deaths. Nationwide, official figures show the disasters killed more than 8,800 people, and leaving more than 12,000 missing, but those two lists may have some overlap.

The disasters have displaced another 452,000, who are in shelters.

In an example of the tsunami's force, the wave swept a collapsed house out of a devastated neighborhood in the city of Ishinomaki and deposited it near a river about 100 meters (yards) away. A 16-year-old boy and his grandmother who were trapped inside survived and were rescued Sunday when the boy, Jin Abe, was finally able to crawl out of the smashed home and get the

attention of a police patrol. Abe told Japanese broadcaster NHK on Monday from his hospital bed: "I'm so relieved to be rescued."

He and his 80-year-old grandmother, Sumi Abe, were wedged under debris in the kitchen of their smashed two-story home and ate snacks and drank water from the nearby refrigerator as they lay trapped in the debris.

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*Yamaguchi and Associated Press writers Shino Yuasa, Mayami Saito and Elaine Kurtenbach reported from Tokyo.*

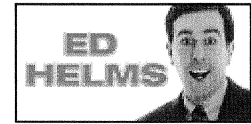
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March 21, 2011

# New Repairs Delay Work at Crippled Nuclear Plant

By KEN BELSON, HIROKO TABUCHI and DAVID JOLLY

TOKYO — Efforts to stabilize the crippled nuclear power plant in Fukushima stalled on Monday when engineers found that crucial machinery at one reactor requires repair, a process that will take two to three days, government officials said.

A team of workers trying to repair another reactor, No. 3, was evacuated in the afternoon after gray smoke rose from it, said Tetsuro Fukuyama, deputy chief cabinet secretary. But no explosion was heard and the emission ended by 6 p.m., NHK, the national broadcaster, said.

In a separate incident the broadcaster cited the Japanese Nuclear and Industrial Safety Agency as saying white smoke was coming from the building housing Reactor No. 2, where machinery needs repairs. Significantly higher levels of radiation have not been detected around the two reactors, Mr. Fukuyama said.

The United States State Department, meanwhile, said it would offer potassium iodide to its staff members and dependents in the Tokyo region and to the north on Honshu, Japan's main island and the site of the troubled power station, as a precaution against a possible radiation release. In a travel warning posted online, the State Department advised against taking the compound "at this time," and urged consultation with the United States government before consuming it.

Hundreds of employees from the Tokyo Electric Power Company, which owns the disabled Fukushima Daiichi Nuclear Power Station, worked through the weekend to connect a mile-long high-voltage transmission line to the No. 2 unit in hopes of restarting a cooling system that would help bring down the temperature in the reactor and spent fuel pool.

After connecting the transmission line on Sunday engineers found on Monday that they still did not have enough power to fully run the systems that control the temperature and pressure in the building that houses the reactor, officials from the Japanese nuclear safety agency said.

Engineers were also trying to repair the ventilation system in the control room that is used to monitor conditions in the No. 1 and No. 2 units. When that work is completed, possibly on Monday, it will allow the power company, also known as Tepco, to begin cleansing the air in the control room so workers can eventually re-enter and begin using equipment inside to monitor conditions in the two reactor units.

An official at the United States Nuclear Regulatory Commission said on Monday that those reactors were too damaged for cooling systems to restart immediately, even when electricity is restored. But the official, William Borchardt, also said that the situation at the plant appeared to be “on the verge of stabilizing.”

Workers at the power plant were trying to connect a separate power cable to Reactor No. 4.

Firefighters from Tokyo doused Reactor No. 3 overnight, and fire trucks from the Japan Self-Defense Forces and the American Army spent two hours on Monday morning spraying water on Reactor No. 4.

The Japanese nuclear safety agency also said that some of the water used to douse the damaged reactors had reached the ocean nearby, and that officials were investigating radiation levels in the water. Trace amounts of radioactive material were also reported to have been found on Hokkaido, Japan’s northernmost island.

Separately, residents of Iitate village, about 30 miles from the Fukushima Daiichi plant, were ordered not to drink tap water after high levels of radioactive elements were detected in the water supply, said Takashi Hashiguchi, a Health Ministry official. Residents were told that they are still able to use tap water for other tasks, such as washing their hands or taking a bath, he said.

The order came a day after the government barred all shipments of milk from Fukushima Prefecture and shipments of spinach from Ibaraki Prefecture after finding new cases of above-normal levels of radioactive elements in milk and several crops.

Abnormal levels were also found in spinach from Tochigi and Gunma prefectures to the west, canola from Gunma Prefecture and chrysanthemum greens from Chiba Prefecture, south of Ibaraki.

A spokesman for the World Health Organization said on Monday that the discovery of radiation in food was a more serious problem than the organization first expected, Reuters reported. Peter Cordingley, a Manila-based spokesman for the organization, said there was

no evidence that contaminated food from Fukushima Prefecture had reached the export market.

But, he added, “it’s a lot more serious than anybody thought in the early days when we thought that this kind of problem can be limited to 20 to 30 kilometers,” according to Reuters.

In Vienna on Monday the United Nations atomic energy chief said the nuclear crisis in Japan remained “very serious.” In a statement, Yukiya Amano, director general of the International Atomic Energy Agency, said he believed “this crisis will be effectively overcome.” He also said that “the agency’s role in nuclear safety may need to be re-examined, along with the role of our safety standards” and that “it is already clear that arrangements for putting international nuclear experts in touch with each other quickly during a crisis need to be improved.”

The food contamination and delays in repair work at the Fukushima plant are two of the challenges facing Japan since a 9.0-magnitude earthquake and subsequent tsunami struck the country’s northeast coast on March 11. Rescue teams on Monday were still searching through communities devastated by the tsunami.

NHK said Monday that the official death toll had been raised to more than 8,600. But the final toll is expected to reach nearly 20,000. On Sunday police officials in Miyagi, the prefecture hit hardest by the tsunami, said they expected the toll there alone to exceed 15,000.

More than 13,000 people are listed as missing.

The World Bank, meanwhile, citing private and Japanese government estimates, said the cost of the disaster could range from \$122 billion to \$235 billion, or 2.5 to 4 percent of gross domestic product and that it would hurt Japan’s growth through 2011.

*Norimitsu Onishi contributed reporting from Tokyo, and Kevin Drew from Hong Kong.*

# The Washington Post

[Back to previous page](#)

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## Japan nuclear plant emergency effort delayed by worker evacuation

By David Nakamura, Monday,  
March 21, 2:00 PM

TOKYO — Emergency workers lost precious hours Monday in their fight to prevent a full-scale meltdown at the Fukushima Daiichi nuclear plant after mysterious gray smoke seen emanating from the facility prompted a mass evacuation.

The smoke was spotted just before 4 p.m. coming out of the building that houses the No. 3 reactor, the most badly damaged of the plant's half-dozen reactors. It tapered off after two hours, but more smoke was seen near reactor No. 2 about 20 minutes later, according to officials from the Tokyo Electric Power Co. (TEPCO).

Though authorities concluded the smoke was steam and not coming from the overheated spent fuel pool, they acknowledged that radiation spiked one kilometer west of the facility, rising from 494 microsieverts at 5:40 p.m. to 1,932 at 6:30 p.m.

The level dropped to 442 at 8:30 p.m., but officials suspended operations for the day until further notice and the 700 employees who had been working to restore electrical power at the plant were evacuated.

"If we find the levels of radioactivity go down, we'll go back to work," Hidehiko Nishiyama, deputy director-general of Japan's Nuclear and Industrial Safety Agency, said at a news conference Monday night at the Prime Minister's office in Tokyo.

The setback stopped momentum that had been building after workers had sprayed 3,200 tons of water on reactors Nos. 3 and 4 over the weekend to cool the spent fuel rods. Deputy Cabinet Secretary Tetsuro Fukuyama had said Sunday that TEPCO was "very close to getting the situation under control." Reactors No. 5 and 6 had successfully been placed in cold shutdown and were no longer considered a danger to public health.

Despite the setback, a top U.S. nuclear power official said Monday that the situation appeared to be stabilizing. William Borchardt, executive director of the Nuclear Regulatory Commission Operations, cited progress workers had made to connect new power lines to the facility for the first time since it

was crippled by the earthquake and tsunami.

“The fact that off-site power is close to being available for use of plant equipment is perhaps the first optimistic sign that things could be turning around,” Borchardt said at an NRC hearing outside Washington on the crisis. “I would say optimistically things appear to be on the verge of stabilizing.”

The muddled emergency effort came as the World Bank estimated that the March 11 earthquake and tsunami caused up to \$235 billion in damages, making the natural disaster one of the most expensive in modern history.

The rebuilding effort could take five years, the bank said in its report, and will cost far more than earthquakes in Haiti last year and Kobe, Japan in 1995, as well as Hurricane Katrina along the Gulf Coast in 2005 and the tsunami in South Asia in 2004.

“While it is too early to estimate accurately, the cost of the damage is likely to be greater than the damage caused by the 6.9 magnitude Kobe earthquake,” the World Bank concluded. It placed the Kobe damages at \$100 billion and estimated the total cost of the current disaster at between \$122 billion and \$235 billion.

So far, 8,649 people have died and another 13,262 are missing since the 9.0-magnitude quake struck off the coast near Sendai, Japan’s National Police Agency said. Nearly 350,000 others have been placed in shelters in the region and as far away as Tokyo, and 120,000 members of Japan’s Self Defense Forces are participating in the relief effort.

(PHOTOS: Massive rescue, cleanup efforts underway in Japan)

Martin Faller, head of the East Asia regional delegation of the International Red Cross, said Monday that the most pressing issue for displaced people in the shelters was a lack of heat because fuel remained scarce. While food has become more plentiful, he added, medicine for the large number of elderly people in the region was running low.

“It was really cold in the operation shelters, logistics had broken down, fuel and kerosene were difficult to get,” Faller said in an interview. “Electricity has gone down, so for schools and communities heated by electricity, that’s a big problem.”

Meantime, government authorities said they have banned the sale of raw milk and spinach from several prefectures after they were found to contain excessive levels of radiation. Though officials said the amounts still did not pose a threat to people’s health if consumed, they decided to take action until the radiation levels return to normal.

Government scientists are now examining fish and shellfish, said Yoshifumi Kaji, director of the inspection and safety division of the Ministry of Health, Labor and Welfare.

The health ministry called on local governments on Monday to advise residents to stop giving babies water in forms such as baby formula if radioactive iodine is found in drinking water at elevated levels, the Kyoto news service reported.

“Babies can easily absorb radioactive iodine in their thyroid glands,” the agency quoted a ministry official saying.

Greater amounts of radioactive iodine and cesium were found in rain, dust and particles in the air in



some areas over a 24-hour period from Sunday morning due to rainfall, agency reported.

In Vienna, the head of the International Atomic Energy Agency said Monday that the Japanese nuclear crisis exposed serious problems in how governments respond to disasters, AP reported. IAEA chief Yukiya Amano, who visited Japan last week, told an emergency meeting of the agency that governments must release information more quickly.

The World Bank said the economic consequences of the disaster could drive Japan's bond yields down, but that it would have only "a modest short-term impact" on the broader East Asian region.

"After the Kobe earthquake, Japan's trade slowed only for a few quarters before recovering," the bank said. "Within a year, imports had recovered fully and exports had rebounded to 85 percent of pre-quake levels."

Though estimates vary, Hurricane Katrina caused \$81.2 billion in damages in 2005, according to a widely cited study by the National Hurricane Center. Last year, the costs of natural disasters soared to a worldwide total of \$109 billion, three times the total in 2009, according to the United Nations. In 2010, the Haiti quake cost \$8 billion, floods in Pakistan \$9.5 billion and an 8.8-magnitude quake in Chile \$30 billion.

The 2004 tsunami caused between \$8 billion and \$15 billion in damages across India, Indonesia, Sri Lanka and Thailand, according to various estimates.

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**Staff writer Rob Stein in Washington also contributed to this story.**

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