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Japan Plant Explosion Threat Reduction Operation Proceeds

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Workers successfully began inserting nitrogen gas into the No. 1 reactor of Japan's Fukushima Daiichi nuclear power plant, a measure aimed at preventing new hydrogen detonations similar to blasts that previously blew open several radiation containment structures at the site, facility operator Tokyo Electric Power said on Thursday (see *GSN*, April 6).



(Apr. 7) - An ambulance last month transports nuclear plant workers exposed to intense radiation at Japan's Fukushima Daiichi nuclear power plant. Personnel have begun injecting nitrogen into a reactor at the damaged facility in a bid to prevent new explosions, the site's operator said on Thursday (*Getty Images*).

The company over more than eight hours transferred into the reactor container roughly 3 percent of the 6,000 cubic meters of nitrogen the vessel is set to receive in a six-day period, Kyodo News reported. The amount of radioactive material escaping the site could increase, though no change in airborne contamination has so far been detected, the operator said.

The six-reactor site was crippled by the 9.0-magnitude earthquake and devastating tsunami that hit Japan on March 11; the confirmed death toll from the events now exceeds 12,000 people. Hydrogen explosions damaged containment structures at the No. 1, No. 3 and No. 4 reactors within days of the initial disaster (*Kyodo News I*, April 7).

Tokyo Electric Power indicated it intended to also insert nitrogen in the plant's No. 2 and No. 3 reactors, Agence France-Presse reported (Harumi Ozawa, Agence France-Presse, April 6).

A 7.4-magnitude aftershock hit Japan on Thursday, forcing workers to seek protected shelter within the nuclear plant, the Associated Press reported. There was no early sign of new problems at the site caused by the latest earthquake (Cara Rubinsky, Associated Press/*Yahoo!News*, April 7).

Meanwhile, Tokyo Electric Power continued dumping contaminated water into the ocean to open containment space for more highly radioactive water collecting in the facility, Kyodo News reported. Personnel would eliminate the bulk of the fluid by Thursday afternoon and the remainder by the week's end, according to the Japanese Nuclear and Industrial Safety Agency.

The operator plans to perform maintenance for around one week on a storage area emptied of fluid before starting to fill it with higher-radiation water, agency Deputy Director General Hidehiko Nishiyama said. The area could contain about 50 percent of the roughly 60,000 tons of fluid flooding portions of the facility, according to Kyodo News. Contaminated water has hindered efforts to restore cooling mechanisms needed to help prevent additional radioactive material from escaping the site.

The firm noted a short-term increase in the amount of fluid flooding a subterranean passage linked to the No. 2 reactor after closing a fissure that had allowed radiation-tainted water to flow freely into the ocean. The water returned to its previous depth, though, suggesting the contaminated fluid was escaping through another opening, Nishiyama said.

The iodine 131 concentration in an ocean water sample taken after the leak was closed was a fraction of the iodine level measured on Saturday, Tokyo Electric Power indicated.

The operator intends to deploy iron and "silt fence" structures near the No. 2 reactor and other parts of the facility in an effort to staunch the flow of radioactive material into the ocean, Nishiyama added. The company would place sandbags weighing a total of 100 tons near the coastline outside the plant, he said.

The company believes 70 percent of the No. 1 reactor's nuclear fuel has been compromised in the crisis, whereas 30 percent of the No. 2 reactor's fuel and 25 percent of the No. 3 reactor's material were affected (*Kyodo News I*).

A portion of the No. 2 reactor's core seems to have fallen from the machine's pressure vessel to the bottom of its containment drywell, the U.S. Nuclear Regulatory Commission indicated on Wednesday, citing high radioactivity Tokyo Electric Power had measured in the drywell. The finding suggests a greater level of damage than earlier assessed, according to the *New York Times*.

The federal entity "does not believe that the reactor vessel has given way, and we do believe practically all of the core remains in the vessel," the newspaper quoted an NRC statement as saying.

"Every available method should be used to add fresh water to the Unit 2 reactor vessel and to continue cooling the core," the statement adds (Wald/Pollack, *New York Times*, April 6). The pressure vessels in reactors No. 1, No. 2 and No. 3 were receiving steady supplies of fresh water, the International Atomic Energy Agency said on Wednesday (International Atomic Energy Agency release, April 6).

The commission did not specify if the possible leaking core material was solid or had melted; overheating fuel could melt through the drywell, potentially allowing significant amounts of radioactive material to escape into the environment, the *Times* reported.

Unmelted material might have escaped through a pipe sealant rupture or another reactor breakage, NRC spokesman Scott Burnell said.

Tokyo Electric Power dismissed the commission's assessment. "We believe the containment for the reactor is still functioning at Unit 2; however, the damage to the suppression pool may be the source of the radiation," spokeswoman Linda Gunther said (Wald/Pollack, *New York Times*).

Conditions were stable at the plant's No. 4, No. 5 and No. 6 reactors, the U.N. nuclear watchdog indicated on Wednesday (International Atomic Energy Agency release).

France is expected to send Japan three unmanned aerial vehicles for the surveillance of radiation and heat levels as well as other activity at the plant, Kyodo News reported on Wednesday ([Kyodo News II](#), April 6).

Other countries have voiced growing levels of concern over radioactive material escaping from the plant, Reuters reported.

Representatives of various governments on Wednesday privately grilled Japanese atomic delegates at a meeting in Vienna, Austria. "People were asking pointed questions seeking information, the Russians were critical," a source said.

The Fukushima Daiichi crisis is "much more serious" than the 1979 Three Mile Island incident in Pennsylvania, though it is less severe than the 1986 Chernobyl disaster in the former Soviet Union, said Wolfgang Weiss, who heads the U.N. Scientific Committee on the Effects of Atomic Radiation.

"We have seen traces of iodine in the air all over the world but they are much, much, much lower than traces we have seen at similar distances at Chernobyl," Weiss said (Takenaka/Nishikawa, Reuters I, April 7).

Weiss said his committee would prepare an assessment on the health and environmental implications of the Japan crisis within a two-year timespan, Kyodo News reported ([Kyodo News III](#), April 6).

The Japanese government has said the controlled release of radiation-tainted water into the ocean does not comprise a short-term breach of international rules, the *Asahi Shimbun* reported on Thursday. Tokyo examined the move as it pertains to the U.N. Convention on the Law of the Sea and the Convention of Early Notification of a Nuclear Accident ([Asahi Shimbun](#), April 7).

In South Korea, lawmakers on Thursday criticized what they considered a passive response to the crisis by Seoul, the *Korea Herald* reported.

"Our government needs to stand firm on this issue of radioactive waste disposal," said Yoon Sang-hyun, a legislator with the nation's governing Grand National Party. "Being the closest country to Japan, Korea should have dispatched nuclear experts right away to investigate the leaks in Fukushima but our government stood by, passively receiving the Japanese government's feedback."

Atomic threats should be examined more carefully, he said.

South Korea should form a team with Japan and China to address the crisis, GNP lawmaker Yoo Ki-june said (Bae Hyun-jung, *Korea Herald*, April 7).

A number of South Korean schools closed on Thursday as rain dropping in certain areas was found to contain traces of radioactive iodine and cesium, Reuters reported.

"We've sent out an official communication today that schools should try to refrain from outdoor activities," an education official said.

Plant radiation was unlikely to be blown straight to South Korea, according to the Korea Institute of Nuclear Safety. Radioactive traces in the country do not threaten safety, according to most health specialists (Jack Kim, [Reuters II](#), April 6).

Radioactive particles turned up on Tuesday in spinach samples from three Chinese provinces, but the Chinese Health Ministry on Wednesday said the levels were not "harmful to human health," *China Daily* reported (Shan/Wang, *China Daily*, April 7).

Low-level radiation was found at the Sequoyah and Watts Bar atomic plants in Tennessee, the *Chattanooga Times Free Press* reported on Thursday.

“These detections are 1,000 to 10,000 times below any levels of concern,” Tennessee Environment and Conservation Department spokeswoman Tisha Calabrese-Benton said. “They are within the range expected and are far below levels of public health concern” (Pam Sohn, *Chattanooga Times Free Press*, April 7).