

Bloomberg

Radiation Danger Stalls Efforts to Repair Damaged Japan Reactors

By Michio Nakayama, Tsuyoshi Inajima and Yuriy Humber - Mar 28, 2011

Radiation levels that can prove fatal were detected outside reactor buildings at Japan's Fukushima Dai-Ichi plant for the first time, complicating efforts to contain the worst disaster since Chernobyl in 1986.

Water in an underground trench outside the No. 2 reactor had levels exceeding 1 sievert an hour, a spokesman for plant operator [Tokyo Electric Power Co.](#) told reporters in the capital today. Thirty minutes of exposure to that dose would trigger nausea and four hours might lead to death within two months, according to the [U.S. Environmental Protection Agency](#).

Preventing the most-contaminated water from leaking into the ground or air is key to containing the spread of radiation beyond the plant. A partial meltdown of fuel rods in the No. 2 reactor probably caused a jump in the readings, Japan's chief government spokesman said today.

"There's not much good news right now," said Gennady Pshakin, a former IAEA official based in Obninsk, the site of Russia's first nuclear power plant. "There're questions arising on how much fuel will leak out, what isotopes will be carried and how quickly they will settle. It's becoming less predictable."

A magnitude-9 earthquake and ensuing tsunami on March 11 knocked out power at the plant, disabling its cooling systems and forcing Tokyo Electric to dump thousands of tons of sea water on the complex as a stopgap measure. Damage to reactor buildings, including a possible breach in the No. 2 unit's containment vessel has made it harder for workers to get close enough to fix the equipment without risking their health.

Power Outages

The [number of dead and missing](#) from the earthquake and tsunami had reached 28,550 as of 3 p.m. About 200,000 households in northeast Japan remain without power and more than 350,000 have no gas, the government said today. There are 242,882 refugees living in 2,045 shelters, the

National Police Agency said. Thousands of temporary pre-fabricated homes are being built in Miyagi, Iwate and Fukushima prefectures.

Residents evacuated from a 20-kilometer (12-mile) radius of the Fukushima Dai-Ichi plant shouldn't return home, Chief Cabinet Secretary Yukio Edano said today. Some people had gone back to pick up belongings, he said.

Elevated radiation levels have been detected in crops grown near the stricken plant as well as the water supply in Tokyo, 220 kilometers (138 miles) to the south, and other regions. This has triggered bulk-buying of bottled water at supermarkets that have been forced to restrict purchases.

Some Success

Ever-higher [radiation emissions](#) at Dai-Ichi and evidence water has leaked out of the No. 2 reactor's containment vessel are undermining success at restoring lighting to control rooms and injecting fresh water into the reactor pressure vessels to keep temperatures from rising.

"The high radiation levels seem to have come from fuel rods that partially melted down and came into contact with water used to cool the reactor," [Edano](#) said at a briefing in Tokyo, citing a draft report from the nuclear safety commission. "It's very regrettable, but we're trying to contain the whole situation while preventing the health impact from spreading."

[Shares](#) of Tepco, as the utility is known, slumped 18 percent to 696 yen on the Tokyo Stock Exchange, the lowest close since February 1977.

Soil near the Fukushima plant will be tested for plutonium contamination, the government said. The radioactive metal was part of the [fuel mix](#) in reactor No. 3 and its presence outside the plant would suggest those fuel rods were also exposed.

[Tepco](#) said it needs to drain water lying in four reactor turbine buildings to determine where it came from and assess damage to the fuel rods. Water in the No. 2 turbine building is as high as 1 meter (3.2 feet) deep, a company official told reporters today.

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