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Radioactive contamination found in tunnels, soil outside Japan nuclear plant

By Michael Alison Chandler, Monday, March 28, 8:19 PM

TOKYO — Attempts to contain radioactive contamination at [the embattled Fukushima Daiichi power plant](#) stumbled Monday when officials found it had spread into three underground tunnels and soil outside the nuclear reactors.

Small amounts of plutonium were found in five soil samples taken last week around the facility, the owner of the plant said Monday night.

The levels of the radioactive element were low enough that they should not pose a significant health risk, said Sakae Muto, vice president of Tokyo Electric Power Co.

Workers at the Daiichi plant are trying to fully restore power, needed to cycle cool water around nuclear fuel rods and keep them from overheating, and Japanese national broadcaster NHK reported that the soil finding will not require work to stop.

Officials also said Monday that dangerously radioactive water had been found a day earlier four inches below ground level in one tunnel. They are concerned that it could overflow and spread into the soil or out to sea, less than 200 feet away.

Plutonium is produced as a byproduct of uranium fission; it is also an ingredient in the mixed oxide fuel — known as MOX — that has been used in the plant's third reactor. If inhaled, plutonium can cause

cancer in the lungs or other organs or bones. It has an extremely long half-life, meaning it will linger for thousands of years.

[Company officials said](#) plutonium in two of the five soil samples may be linked to the recent accident. The others could be the result of nuclear fallout; trace amounts of plutonium were found around the world after nuclear weapons tests a half-century ago.

Radiation levels found in the tunnels, meanwhile, were similar to those found in water that has pooled in turbine rooms adjacent to three of the six nuclear reactors in the [Daiichi plant](#). The highest levels, measuring at more than 1,000 millisieverts per hour, were found outside the second reactor. Such a high reading would deliver a year's radiation dose legally permitted in an emergency in just 15 minutes. The levels in the other two tunnels were much lower.

Water that has leaked into the turbine room in the second reactor probably came into contact with partially melted nuclear fuel rods, Japan's nuclear safety agency reported Monday. Workers are still trying to determine how the water leaked out.

Japan's chief government spokesman, Yukio Edano, called the discovery of contaminated water outside concrete buildings designed to seal off contamination "regrettable." He told reporters that the government "will do everything it can to bring the problems under control" and "to minimize the impact on human health."

In the United States, opponents of MOX fuel — which is made from reprocessed nuclear weapons — seized on the report of leaking plutonium to question plans to use the fuel here. [Rep. Edward J. Markey](#) (D-Mass.) called for "an immediate safety review" of plans to use MOX at power plants in Alabama, Tennessee and Washington state.

Gregory Jaczko, the chairman of the U.S. Nuclear Regulatory Commission, traveled to Tokyo on Monday to support the work at the badly damaged plant. "The unprecedented challenge before us remains serious, and our best experts remain fully engaged to help Japan address the situation," he said in a statement issued by the U.S. Embassy.

The hazardous water was first discovered outside reactors Thursday, when three workers were hospitalized after suffering radiation burns in the turbine room of the second reactor. The workers were released Monday, and doctors said they had no internal injuries or lingering skin abnormalities.

As power company officials investigate the source of the leaks, the amount of water being sprayed into the second reactor Monday was reduced from nine tons to seven tons, according to Japanese news reports. The reduction might limit flooding, but it could also increase the risk that the fuel rods will overheat.

The additional contaminated water complicates an already difficult cleanup job.

The stagnant water still has not been drained from the turbine buildings, Hidehiko Nishiyama, deputy general for the government's Nuclear and Industrial Safety Agency, said at a news conference. A pump has been placed in the first building, he said, but in two others, "we are considering what to do."

He added: "We need to make a decision and act as soon as possible."

Radioactive water was measured in the sea surrounding the plant for the third consecutive day. The

levels of iodine-131 in water sampled Sunday were 1,150 times greater than government-set safety levels.

The nuclear safety agency said it had ordered water sampling in additional places throughout the ocean. Hundreds of people who live or work around the plant are also being [screened for radiation exposure](#).

Questions over the power company's monitoring arose Sunday, when officials reported inaccurate information about the level of radioactive iodine in the plant. Leaked water sampled from one unit was 100,000 times more radioactive than normal background levels, but it was initially reported as being 10 million times the norm, prompting an evacuation of the building.

Workers at the plant "are becoming very tired," Edano said. "However, measurement of the radioactivity is vital for insurance of safety for the workers. Such a mistake is not something that should be forgiven or acceptable."

In Vienna, the International Atomic Energy Agency announced a high-level conference to pick apart the Daiichi crisis and apply any safety lessons to the rest of the world's 443 nuclear reactors.

"It is vitally important that we learn the right lessons from what happened on March 11, and afterwards, in order to strengthen nuclear safety throughout the world," said IAEA Director General Yukiya Amano.

Edano, the government spokesman, issued a plea to families from the 12-mile evacuation zone around the plant to stay away until it is safer. Many people fled shortly after the March 11 earthquake and tsunami with only the clothes they were wearing. Some have returned to their homes in recent days to gather their belongings.

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