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Nuclear radiation seeps into Japanese groundwater

Leakage below Fukushima Daiichi power plant exceeds safety limits but experts say drinking supplies should be safe

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Radiation exceeding Japanese government safety limits has seeped into groundwater under the Fukushima Daiichi nuclear power plant, according to the operator, but experts say it is unlikely to contaminate drinking supplies.

The leak is, however, a concern and an indicator of how far the Tokyo Electric Power Company (Tepco) is from stabilising dangerously overheating reactors after cooling systems were knocked out in the 11 March earthquake and tsunami.

Tepco has asked for international help, most recently ordering giant pumps from the US that were due to arrive later this month to spray water on the reactors.

The groundwater contamination was found in concentrations 10,000 times higher than the government standard for the plant. The iodine-131, a radioactive substance that decays quickly, was nearly 15 metres (50ft) below one of the reactors, according to Tepco spokesman Naoyuki Matsumo.

Seiki Kawagoe, an environmental science professor at Tohoku University, said the radioactive substances were unlikely to affect drinking water, noting that radiation tends to dissipate quickly in the ground, as it does in the ocean.

But there are two ways the iodine could eventually affect drinking water if concentrations are high enough. One is if it seeped into wells in the area. For now, a 20km (12-mile) radius around the plant has been cleared, though residents are growing increasingly frustrated with evacuation orders and have been returning to check on their homes.

The other concern is that contaminated water could seep into underground waterways and eventually into rivers used for drinking water. Tomohiro Mogamiya, an official with the Ministry of Health, Labour and Welfare's water supply division, said that was "extremely unlikely" since groundwater would flow toward the ocean, and the plant is right on the coast.

There are two filtration plants for drinking water nearby, both of which have been shut down because they are just inside the exclusion zone. One takes water from the Kido river to the south and another takes it from groundwater below Odaka to the north. Both are several kilometres from the coast, and therefore on higher ground.

"When people return to the area we will test the water to make sure it is safe," said Masato Ishikawa, an official with the Fukushima prefecture's food and sanitation division.

Radiation concerns have rattled the Japanese public, already struggling to return to normal life after the tsunami devastated hundreds of kilometres of the north-eastern

coast. Three weeks after the disaster 260,000 households still do not have running water and 170,000 have no electricity.

In the latest report of food becoming tainted, the government said on Friday that a cow slaughtered for beef had slightly elevated levels of cesium, another radioactive particle. Officials stressed that the meat was not put on the market.

Radioactive cesium can build up in the body and high levels are thought to be a risk for various cancers. It is still found in wild boar in Germany 25 years after the Chernobyl nuclear disaster, making the pigs off-limits for eating in many cases.

Contamination has affected work at the plant itself, where radioactive water has been pooling, often thwarting the vital work of powering up the complex's cooling systems.

Despite the leaks, Tepco hasn't had enough dosimeters to provide one for each employee since many were destroyed in the earthquake. Under normal circumstances, the gauges, which measure radiation, would be worn at all times.

Officials said on Friday that more meters had arrived and there were now enough for everyone.

"We must ensure safety and health of the workers, but we also face a pressing need to get the work done as quickly as possible," said nuclear safety agency spokesman Hidehiko Nishiyama. Until now, sharing meters "has been an unavoidable choice".

Tepco has repeatedly relaxed safety standards during the crisis in order to prevent frequent violations. That is not uncommon during emergencies.

The company has acknowledged it was initially slow to ask for help in dealing with the crisis, but experts from around the world are flooding in. The French nuclear giant Areva, which supplied fuel to the plant, is helping to figure out how to dispose of contaminated water, while US nuclear experts are working with their Japanese counterparts on a panel to address the disaster.

Japan has ordered two giant pumps, typically used for spraying concrete, from the US. They are being retrofitted to spray water first, according to Kelly Blicke, a spokeswoman at Putzmeister America in Wisconsin. At least one similar pump is already in operation at the plant.