

Contaminated water leaks into sea from Japan's crippled nuclear plant

Peter Symonds
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Larger quantities of radioactive groundwater from Japan's crippled nuclear plant at Fukushima are threatening to leak into the sea in what an official from the country's Nuclear Regulation Authority (NRA) described yesterday as "an emergency."

Three of the six reactors at the Fukushima Dai-ichi plant suffered meltdowns and a fourth was badly damaged after the March 2011 earthquake and tsunami cut power supplies and emergency back-up systems failed. More than two years after the disaster, work has barely started on decommissioning the reactors, which are still reliant on makeshift cooling systems to maintain them in a state of cold shutdown.

Despite a long record of safety breaches and cover-ups by the plant's operator, Tokyo Electric Power Company (TEPCO), the government has left it in charge of the clean-up and decommissioning. TEPCO only acknowledged last month that contaminated groundwater had been leaking into the ocean. It attempted to stem the flow by injecting chemicals to harden the soil and act as a barrier.

Shinji Kinjo, head of the NRA's newly established taskforce on Fukushima, explained yesterday that radioactive groundwater had already risen above the barrier and was likely to be leaking into the sea. He criticised the plant operator, saying: "TEPCO's sense of crisis is weak. This is why you can't just leave it up to TEPCO alone to grapple with the ongoing disaster. Right now, we have an emergency."

Kinjo warned that if the contaminated groundwater rises to the surface, which could occur within three weeks, "it would flow extremely fast" into the sea.

The full extent of the crisis is unclear. TEPCO is forced to pump around 400 tonnes of water a day into the damaged reactors in order to cool their cores, leading to a build-up of huge quantities of highly

radioactive water. In addition, an estimated 400 tonnes of groundwater is flowing into the plant area from surrounding hills, and becomes contaminated through contact with reactor leakages and radioactive debris.

TEPCO estimated last Friday that a cumulative total of 20 trillion to 40 trillion becquerels of radioactive tritium had leaked into the sea from the plant since the 2011 disaster. While the company claimed that the figure was within legal limits, the amount is far in excess of the volume emitted from the plant under normal operations. TEPCO has yet to make any estimate of the amounts of radioactive cesium and strontium released into the sea. These isotopes are more dangerous to health than tritium.

Given its past record, TEPCO's figures are likely to be gross underestimates. On Monday, TEPCO announced a spike in radioactivity in one of its wells for monitoring groundwater. The level jumped to 56,000 becquerels a litre—a 47-fold increase in just five days. The highest figure recorded at the site was 900,000 becquerels a litre in early July, at a different well. The company has no explanation for these sudden spikes, as the full extent of the damage to the plant and its reactors, including cracks and water leakages, is unknown.

TEPCO announced that it will reinforce its chemical "barrier" to prevent contaminated groundwater leaking into the sea. It also proposes to pump 100 tonnes of groundwater a day into storage tanks. As the NRA chairman Shunichi Tanaka declared last week, however, these water control measures are "merely a temporary solution."

Nevertheless, the nuclear regulatory body has no immediate plans to take over management of the Fukushima site and has offered no solution to what it has proclaimed "an emergency." Its taskforce only met

with TEPCO for the first time last Friday. NRA chief Tanaka suggested last week that TEPCO should admit it will never be able to contain the water and release it into the sea—with the meaningless caveat that the amount was within allowable limits.

The NRA was established last September in a bid to stem public outrage over the collusion of its predecessors—the Nuclear and Industrial Safety Agency (NISA) and the Nuclear Safety Commission (NSC)—with major power corporations, including TEPCO, to cover up safety breaches. A major report released in July last year concluded that the Fukushima disaster was “man-made” and used the term “regulatory capture” to describe the relationship between the nuclear power industry and its regulators.

The NRA, however, was formed through an amalgamation of the previous regulatory agencies. Its efforts to posture as a more independent body coincide with the government’s efforts to overcome deep-seated public opposition to the restarting of the country’s nuclear power plants, all but two of which remain closed. Last month, four power companies asked the NRA to assess safety at 10 reactors under its new guidelines in preparation to restart operations.

A clear majority of people remain opposed to the reopening of nuclear reactors, even though electricity prices have risen due to mounting fuel bills for the alternative power sources. A Kyodo News poll in May found that 54.3 percent of respondents opposed any restart of reactors, even if they passed the NRA’s safety check, as opposed to 37.2 percent in favour.

The Fukushima plant and the surrounding 20-kilometre area remain a disaster zone. More than 100,000 people have been forced to leave their homes, businesses and farms to become “nuclear refugees.” The government has allocated \$11 billion to decontaminate the area, but experts from the National Institute of Advanced Science and Technology estimated last month that at least \$50 billion would be needed. TEPCO is yet to pay full compensation to those who were forced to leave their homes and businesses.

The money does not cover the cost of decommissioning the four damaged reactors at TEPCO’s Dai-ichi plant—a complex process that is estimated to last up to 40 years and cost at least \$100 billion. Workers will have to remove more than 11,000

new and used nuclear fuel assemblies from badly damaged storage pools, before even beginning the process of extracting melted fuel from inside the reactors. At this stage, no one knows how to remove the melted fuel, and the procedure is not scheduled to start until 2021.

Workers at the Dai-ichi site confront serious radiation hazards, with continuing high levels of radioactivity inside the reactor buildings. The World Health Organisation warned in March that one third of the plant’s workers faced an increased risk of developing thyroid cancer, leukaemia and all solid cancers during their lifetimes. While the reactors have been stabilised at present, earthquakes and other natural disasters have the potential to produce a new crisis.



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