

Japan to dump Fukushima radioactive water into Pacific Ocean

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Japan plans to proceed with the discharging of 1.3 million tonnes of radioactive water accumulated after the 2011 Fukushima nuclear disaster into the Pacific Ocean after the International Atomic Energy Agency (IAEA) gave its stamp of approval last week. The decision has provoked opposition and protests in Japan itself, as well as in neighbouring countries including China and South Korea, over the potential impact on the environment and human health.

What happened at the Fukushima Daiichi Nuclear Power Plant in March 2011 was the worst nuclear disaster since Chernobyl in 1986. A major magnitude 9.1 earthquake hit the region in northern Japan, triggering a huge tsunami reaching as high as 16.7 metres. It struck the inadequately protected plant, knocking out electrical and cooling systems, leading to partial meltdowns of three of its six reactors.

Out of concern for its investment, the plant operator, Tokyo Electric Power Company (TEPCO), compounded the problems and dangers by failing to rapidly respond by pumping sea water through the damaged reactors to cool them.

More than a decade on, the task of de-commissioning and cleaning up the site is likely to continue for decades. TEPCO has accumulated massive quantities of radioactive water—irradiated groundwater and reactor coolant—that has been treated using the Advanced Liquid Processing System (ALPS) to remove most but not all radioactive isotopes. The water still contains tritium—an isotope of hydrogen—that has a half-life of 12.5 years (the time for the radioactive level to halve).

The water is currently stored in 1,000 huge steel tanks, but TEPCO claims it is running out of space and can build no more. The company, backed by the Japanese government, has been pressing for years for permission to dump the water into the Pacific Ocean,

claiming there is no alternative.

Under the plan, the radioactive water would be diluted using sea water to levels of tritium within international standards then discharged over several decades through a kilometre-long pipe into the sea. Such has been the opposition in Japan and from neighbouring countries, however, that Tokyo called on the IAEA to conduct a study of the proposed release.

IAEA chief Rafael Grossi was in Tokyo last Tuesday to present the findings of the UN body's two-year safety review to Japanese Prime Minister Fumio Kishida. In the report's foreword, Grossi declared that the IAEA concluded that TEPCO's plan was consistent with relevant international safety standards. Moreover, TEPCO's "gradual discharges of the treated water to the sea... would have a negligible radiological impact on people and the environment."

In an interview with Reuters, Grossi conceded that there had been no unanimity among the IAEA scientists drawn from 11 countries, including China, on the findings of the safety review. He acknowledged that one or two "may have expressed concerns" but did not elaborate, while insisting that the published report was "scientifically impeccable."

Grossi was met with protests when he arrived in South Korea on Saturday for talks with the government and opposition parties. Hundreds of demonstrators marched through the commercial district of Seoul with placards declaring: "We denounce the sea disposal of Fukushima's nuclear wastewater!" and "We oppose with our lives the sea discharge."

While the right-wing administration of President Yoon Suk-yeol has agreed to the water discharge, the opposition Democratic Party and Korean Confederation of Trade Unions (KCTU) have sought to capitalise on widespread public concern and opposition. According

to a recent joint survey by South Korea's *Hankook Ilbo* newspaper and Japan's *Yomiuri Shimbun*, 84 percent of South Koreans disapproved of the release.

Many of the protesters were union members. In comments to the media, KCTU spokesman Han Sang-jin denounced the water-dumping plan as "like an international crime." He said: "Other than discharging the water into the sea, there is an option to store the water on their land, and there are other options being suggested."

China has been critical of the plan. As cited by China's state-run *Global Times*, Liu Senlin, a Chinese expert in the IAEA's technical working group, described the UN body's report as "hasty," adding that the input of experts had been limited and only used for reference.

China also announced a ban on food imports from 10 of Japan's prefectures over "safety concerns" and said stringent radiation tests would take place for food from the rest of the country. The Chinese customs agency said Japan "still has many problems in the legitimacy of sea discharge, the reliability of purification equipment and the perfection of monitoring programs."

Opposition is also widespread in Japan where an *Asahi Shimbun* survey in March found just 51 percent in favour of the radioactive water release and 41 percent opposed. Even though the IAEA does some monitoring of the water discharges, there is widespread public distrust in TEPCO, which colluded with Japanese governments to cover up safety breaches at the Daiichi Nuclear Power Plant. After the disaster, it was revealed that TEPCO had at least 200 proven instances of safety inspection falsifications.

The fishing industry near Fukushima was devastated by the nuclear disaster. It destroyed the reputation of the region's seafood. Fishing cooperatives in three prefectures have collected 33,000 signatures on a petition expressing opposition to the water discharge.

Haruo Ono, a fisherman to the north of the stricken nuclear plant, told the *Guardian*: "We here in Fukushima have done absolutely nothing wrong, so why do they have to mess up our ocean? The ocean doesn't belong to only us humans—and it isn't a rubbish tip."

The small island nations of the southwest Pacific, which rely heavily on fishing, are also concerned about the potential impact on their ocean waters. In a

comment published in January in the *Guardian*, Pacific Islands Forum secretary general Henry Puna expressed the fear that "the region will once again be headed towards a major nuclear contamination disaster at the hands of others." He made the point that the decision to release the radioactive water "should not only be a domestic matter for Japan, but a global and transnational issue."

A group of international scientists working with the Pacific Islands Forum has been critical of TEPCO, the IAEA, the Japanese government and the planned discharge. One of the scientists, Robert Richmond, director of the Kewalo Marine Laboratory at the University of Hawaii, told CNN the plan was "ill-advised" and premature.

Richmond explained that he was particularly concerned about the danger of bioaccumulation—that is, pollutants like tritium can become more concentrated as they pass up through the various levels of the food chain. Thus the relatively low levels of radioactive tritium in the discharged water are not necessarily an accurate reflection of the levels to be found in seafood in the future.

Richmond was also scathing of the argument used by the TEPCO, the IAEA and the Japanese government that the release of wastewater with tritium from atomic power plants was common practice around the world, including in China and South Korea. "Other people's bad behaviour" was not an excuse for continuing to release radioactive water into the ocean.

The expert group proposed an alternative to discharging the water into the ocean, namely using it to make concrete structures and thus encasing the tritium. The Japanese government rejected the proposal out of hand, citing dubious technical and legal reasons. The real reason, however, as one of the group, Ferenc Dalnoki-Veress from the Middlebury Institute of International Relations at Monterey, explained was that it was "choosing the easiest, cheapest, status quo way of simply dumping the contaminated water into the sea."



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