

Japan prepares for release of tritium from Fukushima plant

April 12 2016, by By Yuri Kageyama



This March 11, 2016 file photo shows the crippled Fukushima Dai-ichi nuclear plant in Okuma town, Fukushima prefecture, northeastern Japan. To dump or not to dump a little-discussed substance is the question brewing in Japan as it grapples with the aftermath of the nuclear catastrophe in Fukushima five years ago. The substance is tritium. (Kyodo News via AP, File)

To dump or not to dump a little-discussed substance is the question brewing in Japan as it grapples with the aftermath of the nuclear

catastrophe in Fukushima five years ago. The substance is tritium.

The radioactive material is nearly impossible to remove from the huge quantities of water used to cool melted-down reactors at the Fukushima Dai-ichi plant, which was wrecked by the massive tsunami in northeastern Japan in March 2011.

The water is still accumulating since 300 tons are needed every day to keep the reactors chilled. Some is leaking into the ocean.

Huge tanks lined up around the plant, at last count 1,000 of them, each hold hundreds of tons of water that have been cleansed of radioactive cesium and strontium but not of tritium.

Ridding water of tritium has been carried out in laboratories. But it's an effort that would be extremely costly at the scale required for the Fukushima plant, which sits on the Pacific coast. Many scientists argue it isn't worth it and say the risks of dumping the tritium-laced water into the sea are minimal.

Their calls to simply release the water into the Pacific Ocean are alarming many in Japan and elsewhere.

Rosa Yang, a nuclear expert at the Electric Power Research Institute, based in Palo Alto, California, who advises Japan on decommissioning reactors, believes the public angst is uncalled for. She says a Japanese government official should simply get up in public and drink water from one of the tanks to convince people it's safe.



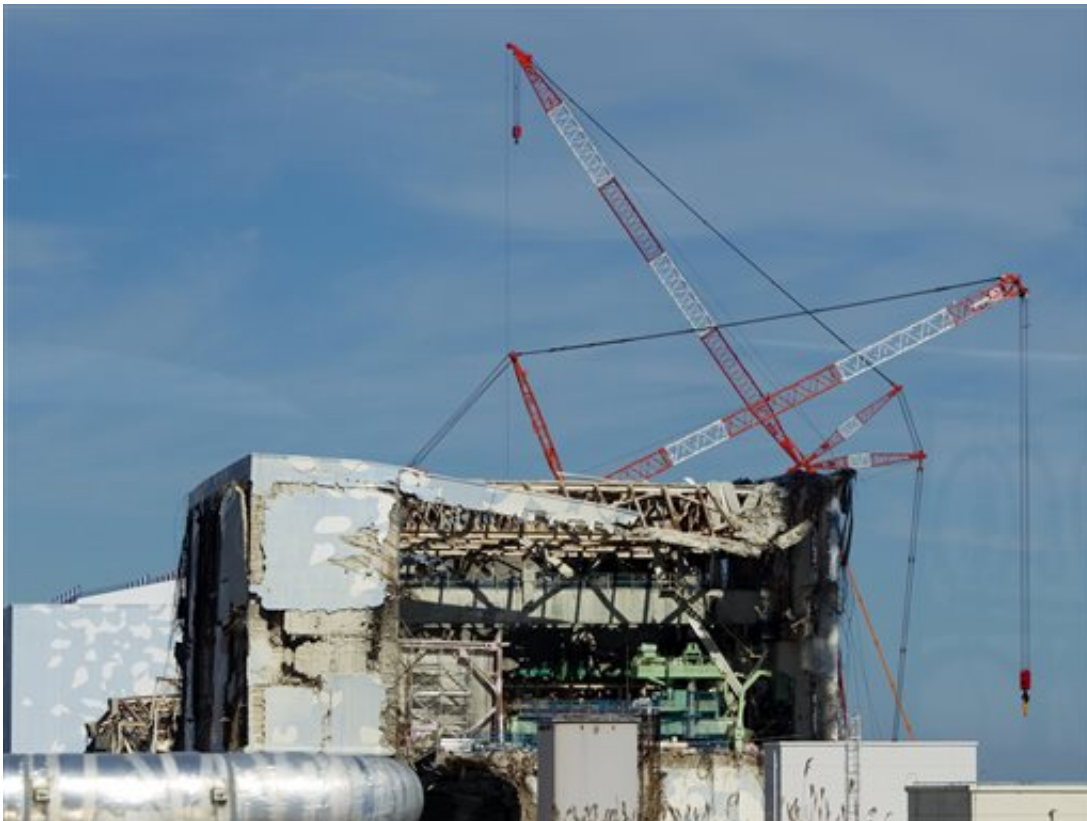
In this Feb. 10, 2016 file photo, a worker, wearing protective suits and masks, takes notes in front of storage tanks for radioactive water at the tsunami-crippled Fukushima Dai-ichi nuclear power plant, operated by Tokyo Electric Power Co. (TEPCO), in Okuma, Fukushima Prefecture, northeastern Japan. To dump or not to dump a little-discussed substance is the question brewing in Japan as it grapples with the aftermath of the nuclear catastrophe in Fukushima five years ago. The substance is tritium. (Toru Hanai/Pool Photo via AP)

But the line between safe and unsafe radiation is murky, and children are more susceptible to radiation-linked illness. Tritium goes directly into soft tissues and organs of the human body, potentially increasing the risks of cancer and other sicknesses.

"Any exposure to tritium radiation could pose some health risk. This risk increases with prolonged exposure, and health risks include increased occurrence of cancer," said Robert Daguillard, a spokesman for the U.S. Environmental Protection Agency.

The agency is trying to minimize the tritium from U.S. nuclear facilities that escapes into drinking water.

Right after the March 2011 disaster, many in Japan panicked, some even moving overseas although they lived hundreds of miles (kilometers) away from the Fukushima no-go zone. By now, concern has settled to the extent that some worry the lessons from the disaster are being forgotten.



In this Nov. 12, 2011 file photo, the Unit 4 reactor building of the crippled Fukushima Dai-ichi nuclear power station is seen through a bus window in Okuma, Japan, when the media were allowed into Japan's tsunami-damaged nuclear power plant for the first time since the March 11 disaster. To dump or not to dump a little-discussed substance is the question brewing in Japan as it grapples with the aftermath of the nuclear catastrophe in Fukushima five years ago. The substance is tritium. (AP Photo/David Guttenfelder, Pool, File)

Tritium may be the least of Japan's worries. Much hazardous work remains to keep the plant stabilized, and new technology is needed for decommissioning the plant's reactors and containing massive radioactive contamination.

The ranks of Japan's anti-nuclear activists have been growing since the March 2011 accident, and many oppose releasing water with tritium into the sea. They argue that even if tritium's radiation is weaker than strontium or cesium, it should be removed, and that good methods should be devised to do that.

Japan's fisheries organization has repeatedly expressed concerns over the issue. News of a release of the water could devastate local fisheries just as communities in northeastern Japan struggle to recover from the 2011 disasters.

An isotope of hydrogen, or radioactive hydrogen, tritium exists in water form, and so like water can evaporate, although it is not known how much tritium escaped into the atmosphere from Fukushima as gas from explosions.



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The amount of tritium in the contaminated water stored at Fukushima Dai-ichi is estimated at 3.4 peta becquerels, or 34 with a mind-boggling 14 zeros after it.

But theoretically collected in one place, it would amount to just 57 milliliters, or about the amount of liquid in a couple of espresso cups—a minuscule quantity in the overall masses of water.

To illustrate that point, Shunichi Tanaka, chairman of the Nuclear

Regulation Authority, showed reporters a small bottle half-filled with blue water that was the equivalent of 57 milliliters.

Public distrust is running so high after the Fukushima accident that Tokyo Electric Power Co., or TEPCO, the utility that operates the Fukushima plant and oversees its decommissioning, has mostly kept quiet about the tritium, pending a political decision on releasing the water.

Privately, they say it will have to be released, but they can't say that outright.

What will be released from Fukushima will be well below the global standard allowed for tritium in the water, say Tanaka and others favoring its release, which is likely to come gradually later this year, not all at once.

Proponents of releasing the tritium water argue that tritium already is in the natural environment, coming from the sun and from water containing tritium that is routinely released at nuclear plants around the world.

"Tritium is so weak in its radioactivity it won't penetrate plastic wrapping," said Tanaka.

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Citation: Japan prepares for release of tritium from Fukushima plant (2016, April 12) retrieved 25 April 2024 from <https://phys.org/news/2016-04-japan-tritium-fukushima.html>

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