

An Overview of Japan's Plans for Discharging Treated Water from Fukushima Daiichi NPS

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This presentation draws on publicly available information. No confidential
information is provided.

What is the problem?

Since the 2011 accident, TEPCO has been collecting and treating contaminated ground water, including water collected in the reactor buildings. Treated water is stored in ~1000 tanks totaling ~1.4 million cubic meters. The presence of so many tanks is hampering other important decontamination activities at the Fukushima Daiichi Nuclear Power Station (FDNPS).



How is the contaminated water treated?

- TEPCO has installed a variety of water filtration technologies including coprecipitation, adsorption, selective ion exchange, reverse osmosis, etc. to remove radionuclides from the collected water. These components are collectively referred to as the Advanced Liquid Processing System (ALPS).
- After modifications along the way, TEPCO is now able to produce filtered water that meets Japan's regulatory discharge limits for all radionuclides except tritium.

From June 2023 IAEA Comprehensive Report

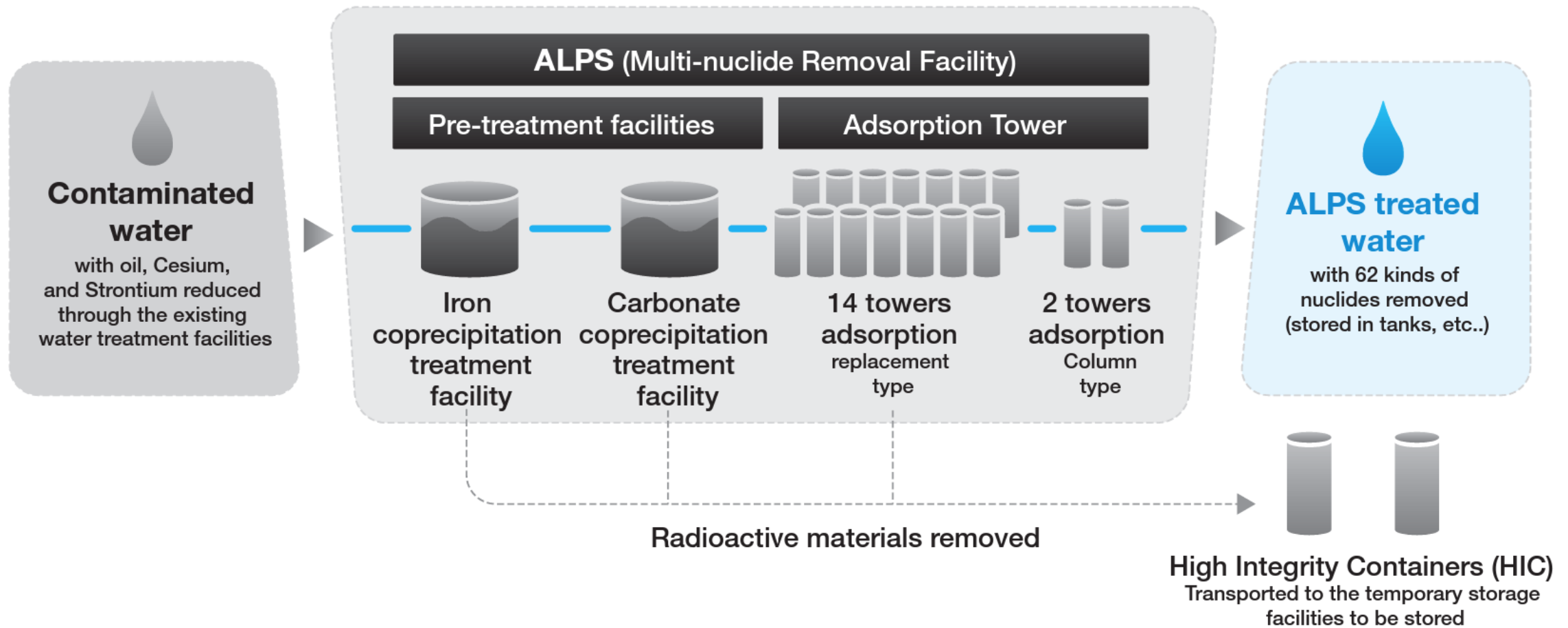
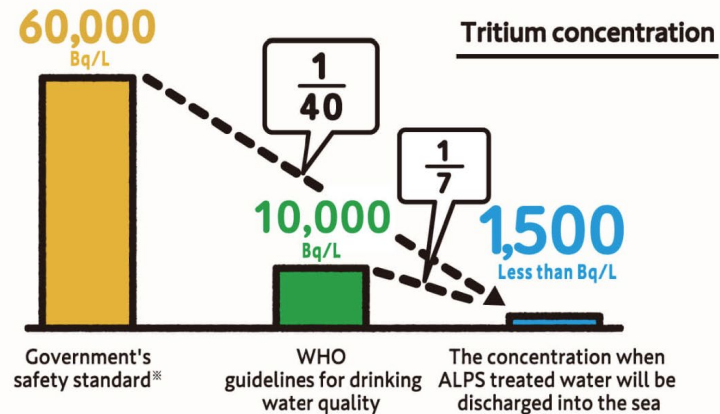


Figure 1.4. Details of ALPS treatment process to remove radionuclides

How much tritium will be discharged?

The discharge method

The tritium concentration in **the water to be discharged into the sea** fully meets **the government's safety standard.**

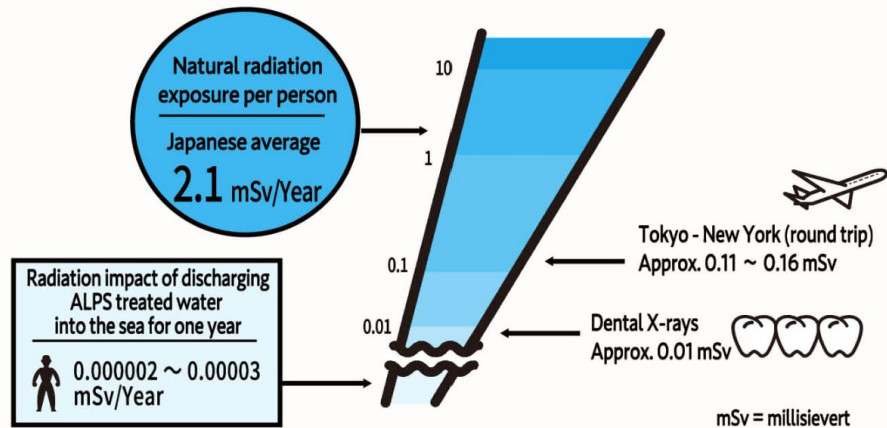


※It is set from the concentration that would result in an annual exposure of 1 mSv if approx. 2L of water from the discharge outlet were drunk at that concentration every day from the born to 70 ages.

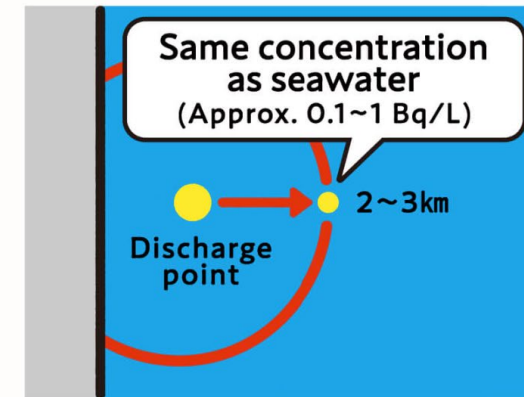
- The Government of Japan decided that the discharge concentration limit for tritium will be 1500 Bq/L and the annual discharge limit will be 22 TBq. Discharges are expected to continue for ~30 years.
- Seawater is mixed with processed tank water before discharge to achieve 1500 Bq/L.
- 22 TBq is similar to the authorized annual tritium discharge limit when FDNPS was an operating power plant.
- Note that WHO's drinking water limit is 10,000 Bq/L (1 mSv annual dose target) whereas EPA's drinking water MCL is ~740 Bq/L (40 micro-Sv annual target); different assumptions and dosimetry. Of course, people do not drink sea water!

Public information from TEPCO

The effect of the discharge of ALPS treated water into the sea on the public is **minimal**, well below that of radiation exposure from dental x-rays.



Tritium concentration is evaluated to be **the same** as that of the surrounding seawater, 2-3 km away from the discharge point.



What is the role of IAEA?

- The Government of Japan requested that the IAEA undertake an independent safety review of Japan's implementation of its policy to discharge ALPS treated water into the sea against the IAEA international safety standards.
- An ALPS Task Force was formed in 2021 comprised of IAEA staff and 11 international experts* to carry out this task. In addition to supporting missions, there were 5 major missions to Japan prior to IAEA's issuing its final comprehensive report - two with TEPCO and the Ministry of Economy, Trade and Industry (METI) and three with the Nuclear Regulation Authority (NRA). The final comprehensive report was presented to the Government of Japan by DG Grossi on July 4, 2023.

* Independent experts selected from Argentina, Australia, Canada, China, France, the Marshall Islands, the Republic of Korea, the Russian Federation, the United Kingdom, the United States and Viet Nam.

IAEA DG Grossi and Japan PM Fumio Kishida

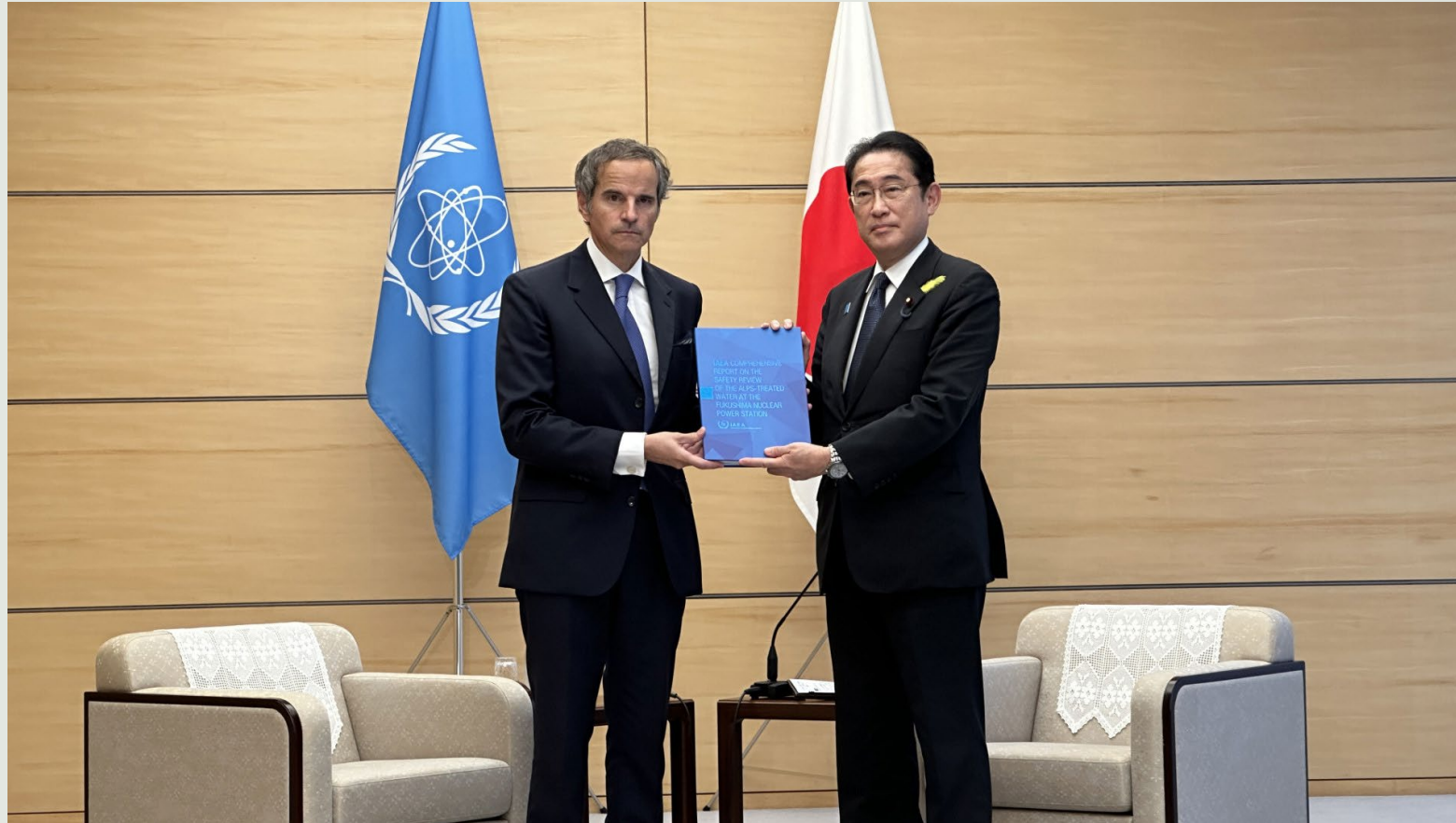


Photo from IAEA July 4, 2023, press release.

What did the IAEA conclude?

In the Forward to the 2023 Comprehensive Report, IAEA Director General Grossi states, *“Based on its comprehensive assessment, the IAEA has concluded that the approach and activities to the discharge of ALPS treated water taken by Japan are consistent with relevant international safety standards. Furthermore, the IAEA notes the controlled, gradual discharges of the treated water to the sea, as currently planned and assessed by TEPCO, would have a negligible radiological impact on people and the environment.”*

https://www.iaea.org/sites/default/files/iaea_comprehensive_alps_report.pdf

Discharge of ALPS treated water

- Discharge of the first batch of ALPS treated water commenced August 24, 2023.
- As of November 2023, three batches have been discharged.
- IAEA has provided corroborative measurements for each discharge batch and finds that tritium concentrations in the diluted ALPS water have been far below Japan's operational limits.
- In October 2023, IAEA began extensive sampling of the marine environment near FDNPS to corroborate Japan's environmental monitoring. IAEA will continue to provide corroborative monitoring throughout the discharge period.

For more information:

- IAEA Fukushima Daiichi ALPS treated water discharge home page:
<https://www.iaea.org/topics/response/fukushima-daiichi-nuclear-accident/fukushima-daiichi-alps-treated-water-discharge>
- IAEA website showing TEPCO data from Fukushima Daiichi ALPS treated water discharge (site active during discharges):
<https://www.iaea.org/topics/response/fukushima-daiichi-nuclear-accident/fukushima-daiichi-alps-treated-water-discharge/tepcodata>