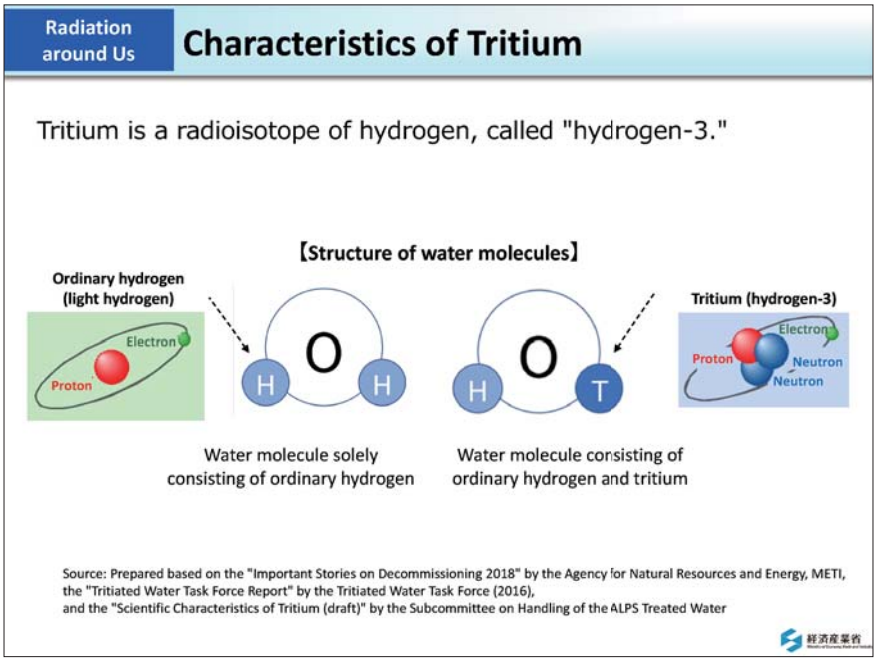

Even after repeated treatment of contaminated water with a multi-nuclide removal equipment, or a so-called Advanced Liquid Processing System (ALPS) or other equipment, at Tokyo Electric Power Company (TEPCO)'s Fukushima Daiichi NPS, the processed water still contains tritium, which is a radioactive material.

Tritium is a radioisotope of hydrogen, called "hydrogen-3." Tritium, which combines with oxygen and comprises water molecules in the same manner as ordinary hydrogen, often exists around us while being contained in water molecules. Tritium is also contained in water vapor in the air, rainwater, seawater, and tap water. As tritium exists as part of a water molecule, removal thereof with ALPS and other equipment is rather difficult. Tritium is created in nature by cosmic rays in addition to be artificially created through the operation of a nuclear power plant.

Tritium emits β-particles, one type of radiation, but β-particles emitted from tritium only have weak energy and can be shielded with a piece of paper. Therefore, external exposure to tritium is unlikely to exert any influence on the human body. A biological half-life for water containing tritium is ten days, and even if it is ingested, it will be eliminated from the body promptly and will not accumulate in any specific organs (p.31 of Vol. 1, "Radioactive Materials Derived from Nuclear Accidents"). The committed effective dose coefficient when orally ingesting tritium is 0.000018 μSv/Bq, a smaller value compared with other radionuclides (p.57 of Vol. 1, "Conversion Factors to Effective Doses").

Regarding handling of ALPS treated water, comprehensive deliberations are being made while also taking into account social influence, such as rumors, not only from the technical point of view.

[Reference materials]
Basic knowledge on tritium:
・Contaminated water management in Fukushima: Top priority on safety and security; Measure (ii) What is "tritium"?
https://www.enecho.meti.go.jp/about/special/johoteikyo/osensuitaisaku02.html (in Japanese)
・Top priority on safety and security; Measure (iii) Explanation of tritium and radiation exposure
https://www.enecho.meti.go.jp/about/special/johoteikyo/osensuitaisaku03.html (in Japanese)
Portal Site for Decommissioning and Countermeasures for Contaminated Water:
・ALPS Treated Water
https://www.meti.go.jp/english/earthquake/nuclear/decommissioning/atw.html

Included in this reference material on March 31, 2019
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