

New Definition of ALPS Treated Water and the Amount of Tritium in Water being stored in Tanks



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1. The definition of “ALPS treated water”

In light of the basic policy of the government and TEPCO Holding’s action in response to the government’s policy, the term “ALPS treated water” will be defined as, “water treated with multi-nuclide removal equipment (ALPS) so that the concentrations of radioactive materials other than tritium sufficiently satisfy regulatory standards for safety.” All other water will be defined as follows.

Concentrations of tritium in water stored in tanks have been carefully measured recently, so those measurements have been included in this material.

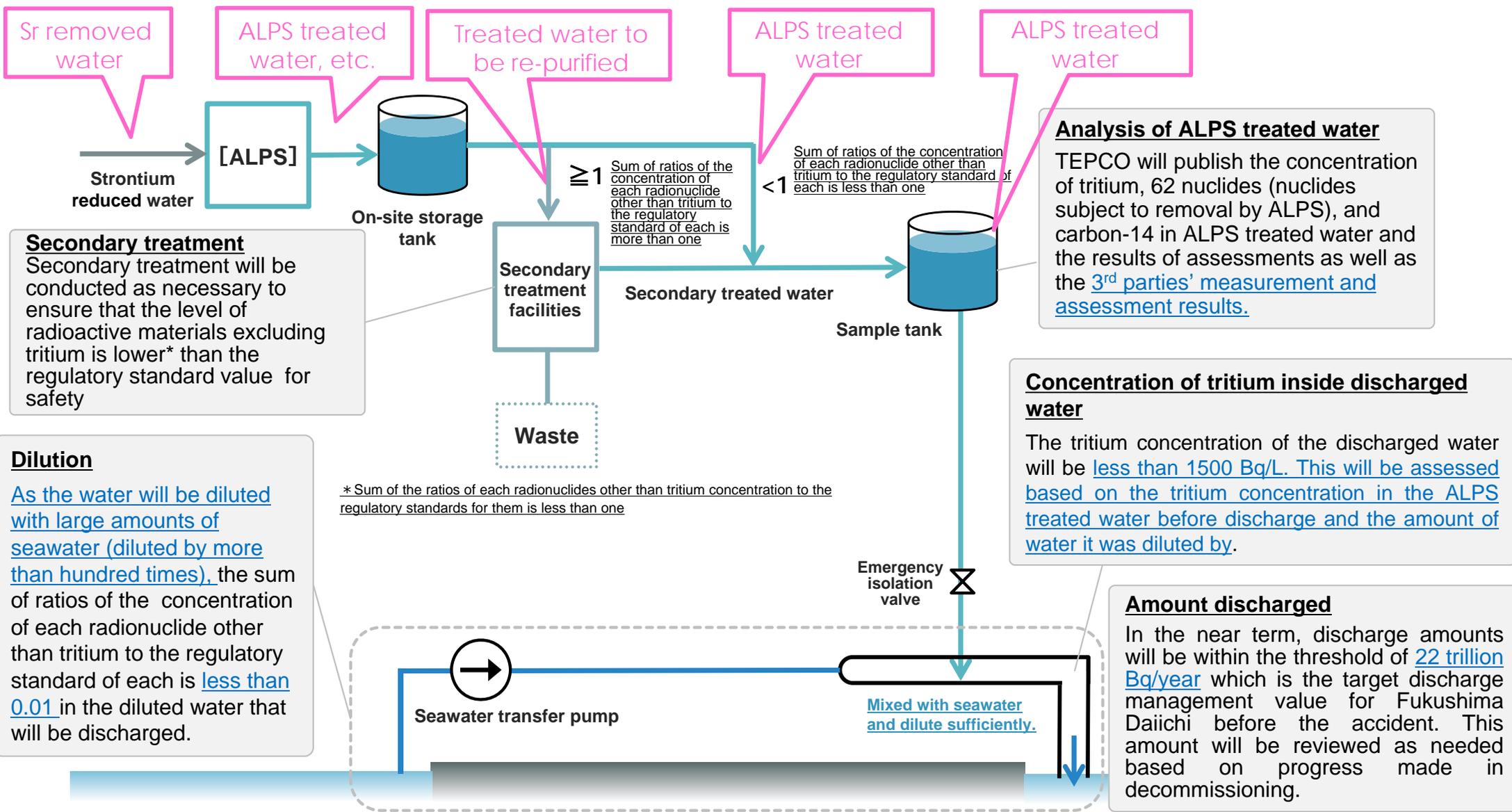
ALPS treated water, etc.				Sr removed water
ALPS treated water	Treated water to be re-purified			
Sum of ratios of legally required concentrations is less than 1 (Estimate by 7 nuclides in water sampled from outlet) ※	Sum of ratios of legally required concentrations is 1 or higher (Estimate by 7 nuclides in water sampled from outlet)	Repurposed tanks	Sum of ratios of legally required concentrations has yet to be evaluated	
323,900m ³ (2020/12/31)	805,100m ³ (2020/12/31)	27,800m ³ (2020/12/31)	-	
1,156,800m ³ (2020/12/31)				
1,235,550m ³ (2021/4/15)				20,221m ³ (2021/4/15)
1,255,771m ³ (2021/4/15)				

※ : The concentration of 62 nuclides + C-14 in the water in sample tanks will be measured prior to discharge. If the concentration of these nuclides does not meet the definition of ALPS treated water, the water will be subject to secondary purification treatment.

- Updated once every three months (Treated water Portal Site)
- Updated once a week (Storage status of accumulated water, etc.)

[Reference] The relationship between the definition of ALPS treated water and equipment for sea discharge

Conceptual diagram of facilities for releasing ALPS treated water into the sea



2. Current amounts of tritiated water being stored in tanks on site at the power station

Current amounts of tritiated water being stored in tanks on site at the power station (as of April 1, 2021)

- Number of tanks: 1,047 *1
- Amount of water being stored in tanks: Approx. 1.25 million m³ *2
 - Average tritium concentration: Approx. 620,000Bq/L
 - Total amount of tritium: Approx. 780trillion Bq [Conversion to pure tritiated water : Approx. 15g]



*1 : Total of ALPS treated water, etc. and Sr removed water

*2 : Includes water at the bottom of tanks that is below the lowest point that can be measured by water level gauges

3. Assessment of the total amount of tritium in tanks

- The chart below shows the total amount of tritium in tanks at the Fukushima Daiichi Nuclear Power Station used to store ALPS treated water, etc. and Sr removed water as of [April 1, 2021](#).
- The actual measurement for ALPS treated water, etc. tanks indicates actual radioactivity concentration measurements taken for tank groups that were completely full as of the [end of December 2020](#) and considers the amount of tritium that has decayed as of [April 1, 2021](#).
- The estimate for ALPS treated water, etc. tanks and Sr removed water tanks was calculated using the [tritium concentration](#) for tanks other than those mentioned above [measured at the inlet to desalination equipment in January 2021 \(approx. 450,000 Bq/liter\)](#)

Tanks	Actual or Estimate	Storage amount* ¹	Amount of tritium* ¹
ALPS treated water, etc. tanks (Actual measurement)	Actual	Approx. 1.16 million m ³	Approx. 737 trillion Bq
ALPS treated water, etc. tanks and Sr removed water tanks (Estimate)* ²	Estimate	Approx. 100,000 m ³	Approx. 43 trillion Bq* ³
Total		Approx. 1.25 million m ³	Approx. 780 trillion Bq

*1: Totals may not add up exactly since decimals have been rounded.

*2: Includes ALPS treated water, etc. tanks and Sr removed water tanks that have not been measured or to which water is being transferred.

*3: This is only an estimate and the value may be corrected in the future in accordance with actual measurements

【Reference】 Differences from past assessments of the total amount of tritium in tanks

- Compared to 2019, progress with the treatment of Sr removed water has enabled more ALPS treated water, etc. tanks to be measured, so the estimate for the storage amount dropped from approximately 340,000m³ to approximately 100,000m³. Furthermore, compared to the concentration used when calculating estimates (approximately 1.05 million Bq/liter), the actual concentration was lower thereby resulting in a decrease in the calculated amount of tritium.

Differences	Current	15 th Subcommittee meeting (Nov. 18, 2019)
Decay assessment date	2021/4/1	October 31, 2019
Alps treated water, etc. tank storage amount (actual measurement)	Approximately 1.16 million m ³ (full as of December 2020)	Approximately 830,000 m ³ (full as of June 2019)
Concentration in ALPS treated water, etc. tanks and Sr removed water tanks (Estimate) ^{*1}	Approximately 450,000 Bq/L (January 2021)	Approximately 1.05 million Bq/meter (Average from September~April 2019)
ALPS treated water, etc. tanks and Sr removed water tanks storage amount (actual measurement) ^{*1}	Approximately 100,000 m ³ (total-actual measurement)	Approximately 340,000 m ³ (total-actual measurement)
Total storage amount	Approximately 1.25 million m ³ (as of April 1, 2021)	Approximately 1.17 million m ³ (as of October 31, 2019)

*1: Includes ALPS treated water, etc. tanks and Sr removed water tanks that have not been measured or to which water is being transferred.

【Reference】 Past assessment of the total amount of tritium in tanks

15th Subcommittee meeting documents (November 18, 2019), reprinted

Total amount of tritium contained in treated water

- The chart below shows the total amount of tritium in tanks at the Fukushima Daiichi Nuclear Power Station being used for the storage of water treated with multi-nuclide removal equipment (hereinafter referred to as, "ALPS treated water") as of October 31, 2019.
 - The actual measurement for ALPS treated water tanks indicates actual radioactivity concentration measurements taken for tank groups that were completely full as of June of this year and considers the amount of tritium that has decayed as of October 31.
 - The estimate for ALPS-treated water tanks, etc. was calculated using the average tritium concentration for tanks other than those mentioned above measured at the outlet of treatment equipment between April and September 2019 (Approx. 1.05 million Bq/L)

Tank water level	Actual or Estimate	Storage Amount	Amount of Tritium
ALPS-treated water tanks (Actual measurement)	Actual	Approx. 830,000 m ³	Approx. 5.06 million Bq
ALPS-treated water tanks, etc. *1 (Estimate)	Estimate	Approx. 340,000 m ³	Approx. 3.5 trillion Bq*2
Total		Approx. 1.17 million m ³	Approx. 8.56 million Bq

*1: Includes ALPS-treated water tanks and Sr-treated water tanks that have not been measured or to which water is being transferred.

*2: This is only an estimate and the value may be corrected in the future in accordance with actual measurements

- For the following estimate of the time axis for storage/disposal, the aforementioned total has been rounded to approximately 860 trillion Bq.

Note: ALPS treated water in the reprinted document refers to the previous definition of the term ("water treated with multi-nuclide removal equipment (ALPS)")