After receiving the report from the Japanese government's Subcommittee on the Handling of ALPS-Treated Water, TEPCO publicly disclosed preliminary drafts of our deliberations on this matter. Since then, we have leveraged various opportunities to hear the opinions of regional residents and other members of society.

The following is a summary of TEPCO's thinking in regards to the primary issues touched on in these opinions.

TEPCO has not limited its thinking to the opinions already received, but rather continues to seek out various opportunities to hear new voices on this matter.

We will continue to strive to convey information based upon the opinions that we hear from society.

What is the TEPCO Draft Study Responding to the Subcommittee Report on Handling ALPS Treated Water? (Announced on March 24, 2020)

Regarding the two disposal methods (vapor release and discharge into the sea), which were classified as "practical options both of which have precedents in current practice" in the Japanese government's Subcommittee report, TEPCO has compiled the current conceptual study, so that it can serve as a reference for the general public and the parties concerned, including those who plan to participate in the "Sessions for hearing opinions" organized by the government.

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1. Suppressing the amount of contaminated water being generated

Contaminated water continues to be generated, which means that the amount of ALPS-treated water also continues to increase. Is anything being done to reduce the amount of contaminated water being generated?

- Water is being continuously used to keep fuel that melted inside the reactor and then solidified (“fuel debris”) cool, and groundwater and rainwater also continues to flow into buildings, such as the reactor building, etc., where it comes in contact with radioactive substances and becomes contaminated. Therefore, contaminated water is being generated on a daily basis.
- Amidst these circumstances, we have reduced the amount of contaminated water being generated through the implementation of multilayered countermeasures that prevent water from coming in contact with contamination sources, such as the groundwater bypass, the land-side impermeable wall, and subdrains, etc. In addition, increases in the amount of contaminated water being generated when it rains are being lessened by repairing damaged portions of building roofs, and facing (paving) site ground surfaces. Through these efforts, the amount of contaminated water being generated has been reduced from approximately 540m³/day prior to the implementation of these measures (May 2014) to approximately 140m³/day (2020). Going forward we will continue to implement measures aimed at further reducing the amount of contaminated water being generated with the objective of reducing this amount to below 100m³/day during 2025.
- However, even if we are able to suppress the amount of contaminated water being generated, it is impossible to completely eliminate the groundwater and rainwater flowing into buildings, so for the time being contaminated water will continue to be generated, and we will continue to use multi-nuclide removal equipment (hereinafter referred to as, “ALPS”) to purify this water so that the concentration of radioactive substances, with the exception of tritium, falls well below government regulations (hereinafter referred to as, “ALPS-treated water”).

■ In addition to leveraging the groundwater bypass, the land-side impermeable wall, and subdrains, etc., TEPCO will continue to suppress the amount of contaminated water being generated by repairing damaged building roofs and facing the ground surfaces in the vicinity of buildings.

＜Document 3-1 from the 77th Meeting of the Decommissioning/Contaminated Water Countermeasures Team Secretariat (April 30, 2020)＞
https://www.tepco.co.jp/decommission/information/committee/roadmap_progress/pdf/2020/d200430_06-j.pdf

2. Radioactive substances in water stored in tanks

How are the concentrations of radioactive substances in water stored in tanks, and the amount of water being stored, and being kept track of and managed?

■ At current time, information on water being stored in tanks, such as the results of radioactive substance concentration measurements, the amount of water being stored broken down by the sum of the ratios of legally required concentrations, with the exception of tritium (government regulations for discharge into the environment), and the total amount of water being stored, etc., can be found on the Treated Water Portal Site within the TEPCO website. Analysis results for each tank group are also published.

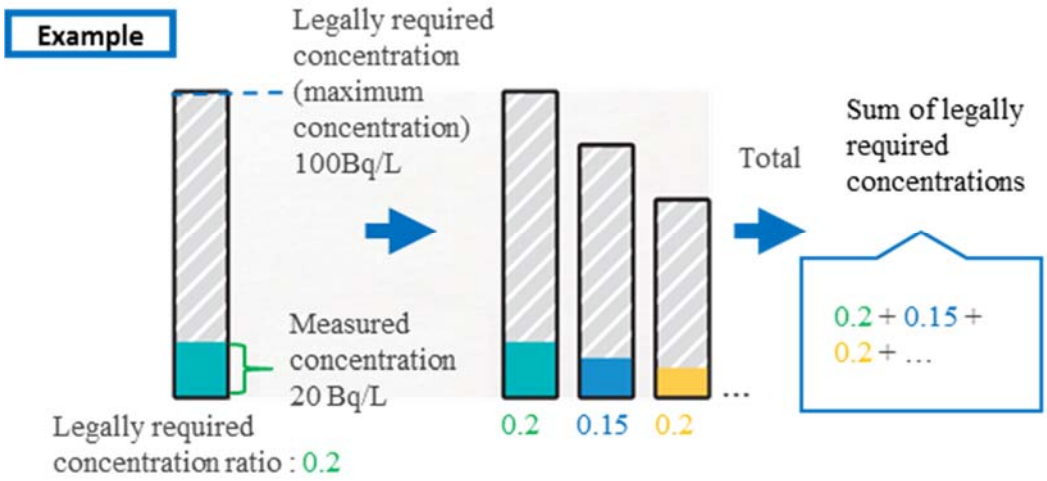
<What is the Treated Water Portal Site?>

The Treated Water Portal Site is a specially created website launched in December 2018 to further understanding throughout society about ALPS-treated water by presenting information in an easy-to-understand manner.
(Treated Water Portal Site:

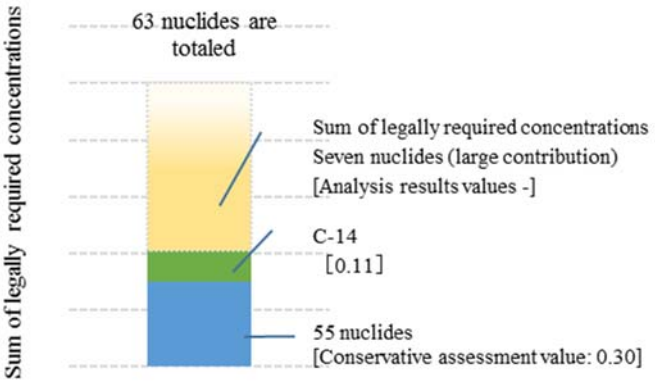
https://www.tepco.co.jp/decommission/progress/watertreatment/)

<Sum of the ratios of legally required concentrations>

Since the legally acceptable concentration of radioactive substances differs depending on the type (nuclide), when discharging multiple radioactive substances into the environment, the ratio of each legally required concentration is calculated and a total value derived. This total is referred to as the "sum of the ratios of legally required concentrations" and must be less than 1.



- Furthermore, since the concentrations of each type of radioactive nuclide contained in water stored in tanks may fluctuate as a result of future contaminated water treatment and secondary treatment (mentioned in detail in 9. Secondary treatment), these concentrations will be analyzed prior to discharge and the results quickly disclosed. In addition, the amount of water discharged will also be disclosed.
- The sum of the ratios of legally required concentrations with the exception of tritium considers the sum of legally required ratios calculated based on the analysis results of the seven nuclides (Cs-134/137,Sr-90,Co60,Sb-125,Ru-106, I-129) that contribute the most to radioactivity concentration out of the 62 nuclides targeted for removal by ALPS, as well as the contribution from the other 56 nuclides (a conservative estimate of the contribution to the legally required ratio from the 55 remaining nuclides plus the contribution from C-14), which is 0.41. Therefore, the contribution of 63 nuclides (62 nuclides that are the target of removal by ALPS plus C-14) are considered.



<Treated Water Portal Site>
https://www.tepco.co.jp/en/decommission/progress/watertreatment/index-e.html

3. Multi-nuclide removal equipment (ALPS) performance

How does ALPS work and perform?

- ALPS can reduce the concentrations of 62 types of radioactive substances to below legally required concentrations by methods of treatment that utilize the chemical and physical attributes [of the radioactive substances], such as adsorption through adsorbents. Purification performance is at levels unequaled anywhere in the world and we can even remove radioactive substances thought to be too difficult to remove, such as strontium.
- When ALPS was first put into service, there were times when we experienced nonconformances with filters, and periods immediately following the accident when priority was given to treating as much contaminated water as possible in order to reduce dose levels at site boundaries caused by rubble and contaminated water. Therefore, there is a tendency for the sum of the ratios of legally required concentrations for the water stored in tanks during these periods to be high, however at all other times ALPS has been able to reduce the concentrations of the 62 nuclides targeted for removal to below legally required concentrations, and none of these 62 nuclides are problematic when it comes to satisfying the legally required concentrations.
- Furthermore, ALPS equipment contains filters that can remove solid objects in the water prior to treatment.
- If ALPS-treated water is to be discharged into the environment, it will be purified to ensure that the sum of the ratios of legally required concentrations, with the exception of tritium, is less than 1 (secondary treatment). Furthermore, at the time of discharge this water will be greatly diluted in conjunction with the dilution of tritium.

  <An analogy that illustrates ALPS performance>

  By passing contaminated water through ALPS, the concentration of radioactive strontium can be reduced to approximately 1/1 billionth. This is like filling a pool with ink (volume: 2,500 kL) and being able to purify the water to the extent that only approximately 2.5mL (half a teaspoon) of the ink remains.

4. Substances other than radioactive substances

Are the characteristics of ALPS-treated water being analyzed for anything other than radioactive substances?

- In addition to analyzing ALPS-treated water stored in tanks for radioactive substances, several tank groups have been selected for analysis of 46 chemical substances in order to ascertain the chemical nature of the water, and we have confirmed that the concentrations of these chemical substances are within allowable levels (allowable levels stipulated by the Water Pollution Control Act).
- When discharging ALPS-treated water into the environment, we will make sure that the concentrations of radioactive and chemical substances satisfy all legal requirements and regulations.

<Reference document from 12th meeting of the Subcommittee on the Handling of ALPS-Treated Water (December 20, 2018)>
https://www.meti.go.jp/earthquake/nuclear/osensuitaisaku/committtee/takakusyu/pdf/012_04_01.pdf

5. Disposal methods other than steam discharge/ocean discharge

Why aren't there disposal methods other than steam discharge and ocean discharge presented in the preliminary drafts of TEPCO's deliberations?

- Tritiated Water Task Force examined five disposal methods (geosphere injection, discharge into the sea, vapor release, hydrogen release, and underground burial). Regarding the two disposal methods (vapor release and discharge into the sea), which were classified as "practical options both of which have precedents in current practice" in the Japanese government's Subcommittee report, TEPCO has compiled the current conceptual study (as of March 2020), so that it can serve as a reference for the general public and the parties concerned, including those who plan to participate in the "Sessions for hearing opinions" organized by the government.

<Report from the Subcommittee on the Handling of ALPS-Treated Water>
https://www.meti.go.jp/earthquake/nuclear/osensuitaisaku/committtee/takakusyu/pdf/018_00_01.pdf

6. Off-site storage/disposal

Are you deliberating storing and/or disposing of ALPS-treated water outside of the Fukushima Daiichi Nuclear Power Station?

- Completing decommissioning and the implementation of contaminated water countermeasures is the foundation of the decommissioning work currently underway at the Fukushima Daiichi Nuclear Power Station. In order to safely and steadily fulfill our responsibility to complete decommissioning and the implementation of contaminated water countermeasures in accordance with our fundamental principle of "balancing recovery with decommissioning," TEPCO believes it is not desirable to enlarge the scope of existing risk and force a further burden [on the people] by storing and/or disposing of ALPS-treated water off site.
- The report from the Subcommittee on the Handling of ALPS-Treated Water states, "Decommissioning and contaminated water countermeasures are activities for continually reducing risk, and moving radioactive substances that have the potential to be sources of risk off-site would result in increasing risk. Therefore, fundamentally speaking, decommissioning work shall be conducted within the existing site."
- Furthermore, The Subcommittee on Handling of the ALPS Treated Water Report points out as follows.
  "If a new site were to be obtained separate from the Fukushima Daiichi NPS site to store the ALPS-treated water, understanding from the municipalities where storage facilities would be installed would be required. Additionally, as the storage of the ALPS-treated water means the handling of radioactive material, (omitted) installment of new radioactive material storage facilities will require proper equipment, a wide range of advanced coordination and an approval process, which will take a considerable amount of time"
- TEPCO shall employ careful processes to suitably address this matter based on the fundamental policies put forth by the Japanese government.

<Report from the Subcommittee on the Handling of ALPS-Treated Water>
https://www.meti.go.jp/earthquake/nuclear/osensuitaisaku/committtee/takakusyu/pdf/018_00_01.pdf

7. Continual on-site storage

Why can't you continue to store ALPS-treated water on site at the Fukushima Daiichi Nuclear Power Station?

- It's been 10 years since the accident, and at the Fukushima Daiichi Nuclear Power Station we are currently making preparations to retrieve fuel debris. In order to steadily move forward with decommissioning and contaminated water countermeasures, for which completion is expected to take 30~40 years after the accident, we will need [space] to build other facilities required for decommissioning, such as an area for treating and storing waste, a temporary storage facility for spent fuel and fuel debris, and other facilities for which the specifications have yet to be determined.
- In light of this fact, the number of additional tanks that can be constructed on site in excess of our current plan is limited and we must examine ways to effectively utilize the site.

＜Document 4-2 from the 13th Meeting of the Subcommittee on the Handling of ALPS-Treated Water (August 9, 2019)＞
https://www.meti.go.jp/earthquake/nuclear/osensuitaisaku/committtee/takakusyu/pdf/013_04_02.pdf
＜Document 3 from the 14th Meeting of the Subcommittee on the Handling of ALPS-Treated Water (September 27, 2019)＞
https://www.meti.go.jp/earthquake/nuclear/osensuitaisaku/committtee/takakusyu/pdf/014_03_01.pdf

8. Soil at the site

Can you move soil that is only slightly contaminated off-site in order to secure space for storing ALPS-treated water?

- Solid waste stored on site at the Fukushima Daiichi Nuclear Power Station, such as rubble that contains radioactive substances, is regulated in accordance with the Law for the Regulation of Nuclear Source Material, Nuclear Fuel Material and Reactors (hereinafter referred to as, "Nuclear Reactor Regulation Law") and the Regulations for the Security of TEPCO Fukushima Daiichi Nuclear Power Station Facilities and the Protection of Specific Nuclear Fuel Material, and operators must manage this waste in accordance with the aforementioned law and regulations.
- Therefore, soil from the Fukushima Daiichi Nuclear Power Station site differs from the soil generated during the course of decontaminating various locations within Fukushima Prefecture in that it must be stored on site as radioactive waste regardless of the degree of contamination.

＜Document 2 from the 14th Meeting of the Subcommittee on the Handling of ALPS-Treated Water (September 27, 2019)＞
https://www.meti.go.jp/earthquake/nuclear/osensuitaisaku/committtee/takakusyu/pdf/014_02_01.pdf
＜Document 2 from the 15th Meeting of the Subcommittee on the Handling of ALPS-Treated Water (November 18, 2019)＞
https://www.meti.go.jp/earthquake/nuclear/osensuitaisaku/committtee/takakusyu/pdf/015_02_01.pdf

9. Secondary treatment

What are you going to do with water stored in tanks for which the sum of the ratios of legally required concentrations equals or exceeds 1?

- Water stored in tanks for which the sum of the ratios of legally required concentrations for nuclides, with the exception of tritium, equals or exceeds 1 shall be subject to secondary treatment and purified so that the sum of the ratios of legally required concentrations falls well below 1.
- Between September and October 2020, we conducted secondary treatment performance confirmation tests to confirm that treatment with ALPS reduces the sum of the ratios of legally required concentrations of nuclides, with the exception of tritium, to below 1, and also to confirm nuclide analysis procedures and processes.
- Water subjected to secondary treatment during these tests was sampled and of the analysis/assessment of nuclides targeted for removal (62 nuclides), radioactive carbon (C-14) and tritium (H-3) was completed in December 2020. Results proved that secondary treatment with ALPS can reduce the sum of ratios of legally required concentrations of nuclides, with the exception of tritium, to less than 1. Going forward, a third-party agency will analyze samples using TEPCO's analysis procedures and identify problems, if any, with the analysis after which we shall make improvements to nuclide analysis procedures and processes.
- The results of the secondary treatment performance confirmation tests can be found on the Treated Water Portal Site.

<Documents disclosed by TEPCO on September 10, 2020>
https://www.tepco.co.jp/en/decommission/progress/watertreatment/images/200910.pdf
<Treated Water Portal Site>
https://www.tepco.co.jp/en/decommission/progress/watertreatment/index-e.html

10. Steam discharge simulation

Why haven't you created a simulation for steam discharge?

- A steam diffusion simulation is not something that can be evaluated simply because one must consider changes in the state of steam, such as condensation or the formation of droplets, resulting from weather conditions, such as humidity and temperature, groundwater and river movement after the steam falls to the Earth's surface, evaporation from ground and water surfaces, and also the impact of transpiration by plant life.
- A simulation that looks at the short term and does not consider state changes or re-release, such as the noble gas and iodine simulation that was created after the accident, is possible, but it would not replicate actual conditions because it does not consider changes in the state of steam, such as condensation or the formation of droplets, resulting from weather conditions such as humidity and temperature, groundwater and river movement after the steam falls to the Earth's surface, evaporation from ground and water surfaces, and also re-release as a result of transpiration by plant life.

11. Ocean discharge simulation

How was the ocean discharge simulation created?

- The ocean simulation used weather conditions from 2014 and considered the annual impact of tides, ocean currents, wind, precipitation, and flowing rivers. The objective of the simulation was to ascertain the impact on wide area dispersion throughout the ocean in accordance with the amount of tritium discharged annually using continued discharge over one year as the annual average distribution. Therefore, the scope of the area impacted was indicated as an annual average. Colors were used to indicate different levels of concentration with light blue indicating less than 1Bq/liter, blue indicating concentrations of 1Bq/liter~less than 10Bq/liter, and green indicating 10Bq/liter or higher. When assessing the impact on marine products, it is important to first ascertain the annual average because the concentration and continual [exposure] time is important.
- Simulation results showed that areas in which [concentrations] exceed background levels (0.1~1Bq/L) are limited to the vicinity of the power station, and are quite small when compared to the WHO's standards for drinking water (10,000Bq/L).
- A model based on the Regional Ocean Modeling System (ROMS) model developed by Rutgers University in the United States was used for the simulation. The model, which was published as a thesis, takes a 1km² section of ocean extending in all four directions and divides the depth into 30 sections with the layers becoming thicker as depth increases. In this thesis, the concentration of radioactive cesium in the vicinity of the Fukushima Daiichi Nuclear Power Station was evaluated using the simulation model and the obtained results match the results of actual measurements despite some insufficiencies with measurements taken in the direction of depth, which will be addressed in the future.
- Since this model can be applied to tritium water (HTO), which behaves the same way as regular water (H2O), as it has been applied to radioactive cesium, which is water-soluble, the model was used for this simulation to calculate [concentrations] assuming that ALPS-treated water is discharged into a virtual ocean box approximately 7m deep and extending 1km in the north-south direction and 1km in the east-west from the power station. Since it is assumed that discharge is continual and the annual average is indicated, we don't believe there will be any problems even if the initial discharge area is large. Furthermore, the ocean contains a mixed surface layer that is said to be 10m to 20m in depth during the summer and over 100m in depth during the winter. Off the coast of Fukushima, this mixed surface

layer can be defined as being at least approximately 10m in depth during the summer, and since the ocean area in front of the Fukushima Daiichi Nuclear Power Station is approximately 7m deep, we believe that initial conditions that have discharged water immediately mixed to a depth of 7m is suitable. There is a large degree of uncertainty in the simulation in regards to concentration distribution in the vicinity of the power station, but it is physically impossible for the concentration to exceed concentration at the time of discharge.

- The dispersion of tritium that is actually discharged will be confirmed through monitoring.

<Impacts of direct release and river discharge on oceanic 137Cs derived from the Fukushima Dai-ichi Nuclear Power Plant accident>
https://www.sciencedirect.com/science/article/pii/S0265931X19308239
< What is the mixed surface layer? Japan Meteorological Agency >
https://www.data.jma.go.jp/gmd/kaiyou/data/db/kaikyo/knowledge/mixedlayer.html

12. Measuring concentration levels during discharge into the environment

When you measure the concentration of radioactive substances prior to discharging ALPS-treated water?

- When discharging ALPS-treated water, or water that has undergone secondary treatment, for which the sum of the ratios of legally required concentrations is less than 1, the water will be sampled and analyzed again prior to dilution and discharged by TEPCO and third parties to confirm that the sum of the ratios of legally required concentrations of nuclides, with the exception of tritium, is less than 1, and also to measure tritium concentrations.
- As with all other measurement results, these results will be publicly disclosed on the TEPCO website.

13. Monitoring plans

How are you going to strengthen monitoring?

- We shall deliberate detailed ways for strengthening monitoring (plans) in light of the government's basic plan and based on simulation results while consulting with related agencies, and such strengthening will include increasing the number of sampling points, increasing the frequency of sampling/analysis, and increasing the variety of analyses, etc. based on monitoring currently underway.

14. Tritium analysis

Why can't you immediately release tritium analysis results?

- When analyzing seawater, samples must first be distilled and then left to stand for approximately one day after which they are measured, which takes several hours.
- Furthermore, when analyzing fish and marine plants, samples must first be subjected to pretreatment, such as lyophilization, and analysis could take anywhere from 2 to 4 weeks depending on the conditions of tritium in the sample.
- And, since the concentration of tritium in fish and marine plants is approximately the same as the concentration of seawater at the sampling point, performing a seawater analysis can enable us to quickly detect any impact on fish and marine plants.

15. Tritium discharge regulations

What are the standards for discharging tritium?

- In regards to the effective dose limits for the general public from radiation originating at nuclear facilities, the International Commission on Radiological Protection (hereinafter referred to as, "ICRP") recommends that the annual total of both external and internal exposure, excluding natural background radiation and medical or therapeutic exposure, not exceed 1mSv.
- There are no regulations in Japan for the amount of tritium in food or drinking water, but based on ICRP recommendations, the legally required concentration for tritium during discharge has been set at 60,000Bq/L (Nuclear Reactor Regulation Law). The lifetime exposure from tritium water containing this legally required concentration if a person were to drink approximately 2L of this water every day for 70 years since birth would be 1mSv/year.

16. Discharge equipment

How are you designing discharge equipment in consideration of the concentration of ALPS-treated water to be discharged?

- As mentioned in the preliminary drafts of TEPCO deliberations announced in March 2020, if discharging into the ocean, ALPS-treated water will be subjected to secondary treatment to ensure that the sum of the ratios of legally required concentrations for nuclides, with the exception of tritium, is less than 1, and after secondary treatment, the water will be further diluted with seawater prior to discharge. Furthermore, we shall deliberate the concentration of tritium during ocean discharge while referring to the operating standards for the groundwater bypass and subdrains (1,500Bq per liter of water).
- We will provide more information as we make progress with detailed equipment designs in light of the government's basic plan.

  ※Legal requirements

  Law for the Regulations of Nuclear Source Material, Nuclear Fuel Material and Reactors Article 43.3.22 Paragraph 1, Regulations for the Security of TEPCO Fukushima Daiichi Nuclear Power Station Facilities and the Protection of Specific Nuclear Fuel Material Article 16.6.A and Article 16.7, and Public Notification Stipulating Requirements for the Security of TEPCO Fukushima Daiichi Nuclear Power Station Facilities and the Protection of Specific Nuclear Fuel Material Article 8.

＜Nuclear Regulation Authority Status of Initiatives at the Fukushima Daiichi Nuclear Power Station and compliance with the Nuclear Reactor Regulation Law＞

https://www.nsr.go.jp/activity/earthquake/kisei/index.html

17. TEPCO's obligations

As the party responsible for the accident, shouldn't TEPCO take more of a role in handling ALPS-treated water issues in order to help the disaster region recovery?

■ As we move forward with more difficult steps in the decommissioning process, such as the removal of fuel from the Unit 1 and Unit 2 spent fuel pools, and fuel debris retrieval, etc., we must effectively leverage the space at the power station site in order to engage in these tasks safely and steadily. For that reason, we must ensure that tanks used to store ALPS-treated water do not significantly impact decommissioning work. In light of this situation, TEPCO will continue to convey information that is easily understood in order to further understanding amongst stakeholders, promote the distribution of food products and eliminate harmful rumors, and dispose of treated water safely and steadily.

＜Document 3-1 from the 77th Meeting of the Decommissioning/Contaminated Water Countermeasures Team Secretariat (April 30, 2020)＞
https://www.tepco.co.jp/decommission/information/committee/roadmap_progress/pdf/2020/d200430_06-j.pdf

18. Countermeasures for harmful rumors

The report from the Subcommittee on the Handling of ALPS-Treated Water states that, “Thorough measures should be implemented to eliminate damage caused by harmful rumors.” What kind of measures are you implementing?

- It is our understanding that the government has decided on a basic policy for handling ALPS-treated water after listening to the opinions of a wide variety of stakeholders. Based on this policy, TEPCO will formulate a detailed plan.
- Furthermore, in light of the fact that products made in Fukushima Prefecture continue to be damaged by harmful rumors due to a lack of accurate information, TEPCO, as the party responsible for the accident, announced its Action Plan for Combating Damage Caused by Harmful Rumors at the end of January 2018 through which we aim to take even more independent and responsible action to eradicate damage caused by harmful rumors. And, in February of the same year, we established the Fukushima Distribution Promotion Office as a department dedicated to engaging in activities that promote the distribution of products from Fukushima Prefecture.
- Since the establishment of this office, we have continued to hold sales promotional events and fairs in cooperation with retailers and restaurants in the Tokyo Metropolitan area that focus primarily on rice and meat, two products for which the people of Fukushima Prefecture have devoted particular attention to eradicating harmful rumors. We have gradually increased the scope of these events and are currently focusing on peaches and fish.
- As a result of these initiatives, the number of restaurants in the Tokyo Metropolitan area that are using Fukushima Prefecture products is increasing, and we believe that the activities engaged in by TEPCO are contributing little by little.
- In regards to marine products, TEPCO is doing what it can by getting employees interested in group purchasing, using these products in employee cafeterias, and continually purchasing processed marine products and fish from Fukushima Prefecture for sale at food stands within company buildings. In addition, in November 2019 we started promoting the sale of fish at these food stands after consulting with stakeholders, such as retailers.
- We continue to implement measures to eradicate harmful rumors, and if there is damage caused by harmful rumors in conjunction with the disposal of ALPS-treated water in the future, we will investigate the extent of actual damage and provide suitable compensation.

19. Conveying information

Are you engaging in initiatives to convey accurate information in order to eliminate concerns?

- TEPCO has reflected upon how information has been disclosed to this point and we've learned lessons, such as the need to quickly provide accurate information, learn about the concerns and worries of regional communities and society by listening to their opinions, and engage in corporate communications that focuses on not just conveying information, but conveying information that is easily understood. Based on these lessons we now disclose all radiation data, hold regular press conferences for media outlets, and utilize media coverage to disseminate information. Furthermore, in order to increase understanding and interest by society, we are taking innovative steps to develop the contents of TEPCO's website (creation of decommissioning history and virtual tours, and using movies to explain various issues, etc.), publishing newsletters, providing power station tours that fit the needs of the visitors, and explaining various issues to visitors to the Decommissioning Archive Center.
  However, during the earthquake that occurred off the coast of Fukushima Prefecture on February 13, 2021, some water storage tanks were jolted out of position, and pipe joints were displaced. No tanks were toppled, and there were no leaks that will impact the external environment, but the content of the information that was conveyed about equipment inspection progress, and the timing of the disclosure of this information, were insufficient thereby causing concern amongst society. In preparation for future natural disasters, we are implementing safety measures for water storage tanks, and striving to improve how we convey information while looking from the perspectives of regional residents.
- We've established a Treated Water Portal Site within the TEPCO website for providing more information on ALPS treated water. Figures and other visual aids are used as we strive to convey information about treated water in an easy-to-understand manner.
- TEPCO will continue to develop the content of these websites in order to carefully and accurately convey information that is based on science, and we will strive to disclose appropriate information at appropriate times on disposal methods, inspections and measurement results, and monitoring results, etc.

20. Effective dose at site boundaries

Why doesn't effective dose data for site boundaries include actual measurements for monitoring posts?

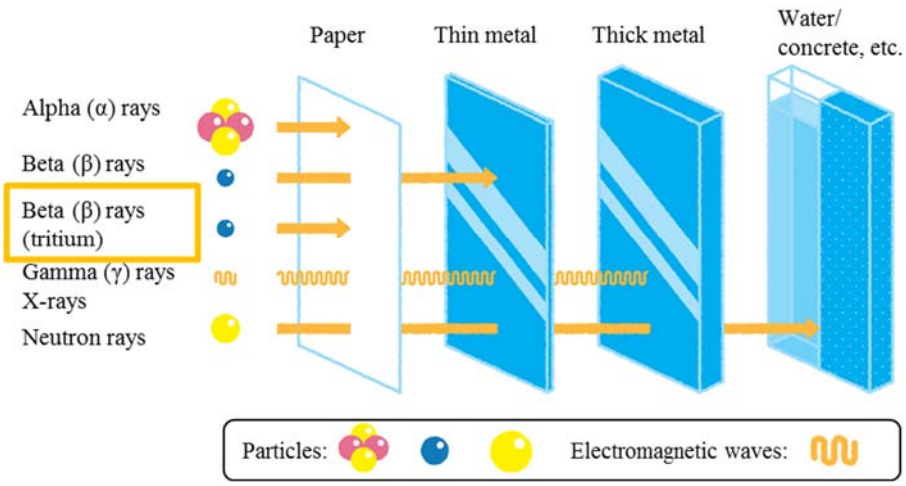
- The Fukushima Daiichi Nuclear Power Station has been designated a specific nuclear facility in accordance with the Nuclear Reactor Regulation Law and the Nuclear Regulation Authority has stipulated that "the effective dose at site boundaries from rubble and contaminated water, in particular, generated since the accident and stored on-site (effective dose assessment value that includes the additional discharge of radioactive substances from the entire facility) should be reduced to below 1mSv/year by March 2013 as a "measure that should be implemented." As such, the impact from radioactive substances discharged after the disaster (fallout) is not included in this assessment. Air dose rates measurements from monitoring posts include the impact of radioactive substances discharged after the accident (fallout) as background radiation.
- Actual measurements from monitoring posts at the Fukushima Daiichi Nuclear Power Station are between 0.361~1.216 microsieverts/hour (February 24, 2021~March 23, 2021), which corresponds to approximately 10mSv per year. This falls below the annual rate of 20mSv that is required to lift evacuation orders.

<Radiation Dose measured at Monitoring Post of Fukushima Daiichi Nuclear Power Station>
https://www.tepco.co.jp/en/hd/decommission/data/monitoring/monitoring_post/index-e.html
<Mid/Long-Term Roadmap Progress Status (summary) March 2021>
https://www.tepco.co.jp/decommission/information/committee/roadmap_progress/pdf/2021/d210325_05-j.pdf

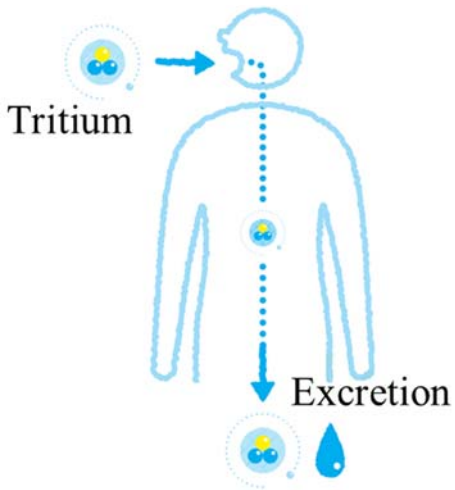
21. The impact of tritium on the human body and the environment

How does tritium affect the human body if ingested?

- The beta radiation emitted by tritium is extremely weak and can only travel approximately 5mm through the air. It can be shielded by a single piece of paper and has very little effect on the human body



- There are two types of exposure, “external exposure” in which the body is exposed to radiation from radioactive substances outside the body, such as on the ground or in the air, and “internal exposure” in which the body is exposed to radiation from radioactive substances that have been ingested through the mouth or nose. In the case of tritium, the radiation emitted is so weak that it cannot penetrate the skin and there is almost no danger of external exposure, so only internal exposure is considered.
- If water containing tritium is ingested, the tritium is not absorbed by any specific living organisms or organs because it has the same attributes as normal water. The concentration factor of tritium inside a living organism (indicates the degree of ease by which tritium concentrates) has been assessed by the US Nuclear Regulatory Commission and the International Atomic Energy Association (IAEA) to be approximately the same as seawater.



■ If tritium is ingested, approximately half the radiation will be excreted in about 10 days. Some tritium may bond with organic substances, such as proteins (organically bound tritium), before being ingested. Most of this tritium is excreted in about 40 days.

22. The origins of tritium

How is tritium formed?

■ Tritium is formed daily by cosmic radiation from space and exists primarily as water in the natural environment.

■ Tritium is also formed inside nuclear reactors that are in operation. There are several ways by which tritium is formed, such as from the ternary fission of fuel (reaction by which uranium fragments into three parts by nuclear fission), the neutron irradiation of Boron-10 contained in control rods, and the activation of reactor water (tritium is generated when heavy water or impurities such as lithium are irradiated by neutrons).

■ The origins of tritium contained in ALPS-treated water from the Fukushima Daiichi Nuclear Power Station are the same as normal nuclear power stations.