TEPCO Draft Study Responding to the Subcommittee Report on Handling ALPS Treated Water

1. **Disposal Method**
2. **Countermeasures against reputational damages**

March 24, 2020

Tokyo Electric Power Company Holdings, Inc.

Treated Water Stored in the Fukushima Daiichi Nuclear Power Station Premises

TEPCO

Status of treated water stored in the power station premises (As of March 12, 2020)

- Number of tanks 979*1
- Amount of water stored in tanks About 1.19 million m^3 *2
  - Average tritium concentration About 730,000 Bq/ liter
  - Total tritium About 860 trillion Bq [Converted to pure tritium water: About 16 grams]

*1: Total of storage tanks containing ALPS treated water and tanks containing strontium treated water

*2: Stored amount including water from the lower limit measured of the level gauge to the bottom of the tank

1. DISPOSAL METHOD

Responding to Subcommittee Report (Study on disposal method)

- The following is the summary of the Subcommittee report on Handling of ALPS Treated Water:

  - ✓ The disposal of the ALPS treated water must be completed when the decommissioning itself, which aims to complete within 30 to 40 years after December 2011, is completed, and it should be assumed that the continuation of storage will end at the completion of the decommissioning.
  - ✓ The decommissioning and contaminated water management are part of continuous risk reduction efforts, and as such, it is fundamental to proceed with the decommissioning works within the existing site area, as removing radioactive materials and placing them outside of the site area might entail increased risk.
  - ✓ The transfer of radioactive waste to an off-site location for the continuation of storage in tanks, will require proper equipment, a wide range of advanced coordination and an approval process, which will take a considerable amount of time.
  - ✓ In light of these conditions, the only option to continue storage in tanks is to store the treated water on-site. Space for installing additional tanks other than currently planned is limited.
  - ✓ Therefore, to install as many tanks as possible while proceeding with decommissioning activities safely and consistently, the entire existing site area should be used effectively to the maximum extent in consideration of the limits of the site area.
  - ✓ Among the five methods of disposal (geosphere injection, discharge into the sea, vapor release, hydrogen release, and underground burial), the options of geosphere injection, hydrogen release, and underground burial come with too many unresolved issues in consideration of their use with regard to regulations, technology and time. For these reasons, discharge into the sea and vapour release are the practical options, both of which have precedent in current practice.
  - ✓ The radiation impact of both the discharge into the sea and vapor release is notably small, compared to natural radiation exposure.
  - ✓ To complete disposal before the completion of decommissioning, the yearly amount of disposal and the disposal duration are in a trade-off relationship.
  - ✓ Radionuclides other than tritium should be surely reduced by secondary purification. The appropriate methods, such as the timing for the start of the disposal, disposal volume, period for disposal, concentration at the time of disposal, should be determined taking into account the opinions of the parties concerned

➔ **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 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.**

Study on Disposal Details ① (Basic Approach)

- Regardless of the disposal method, TEPCO will not only comply with legal requirements, but will also take initiatives to suppress reputational damage.
  - The annual tritium release rate will be set by referencing those of the existing nuclear facilities and making effective use of the period of 30 to 40 years required for decommissioning, instead of releasing a large amount at once.
  - The amount of radioactive materials other than tritium will be reduced as much as possible. (implementation of secondary treatment)
  - The tritium concentration will be lowered as much as possible.
    - ✓ <u>For vapor release</u>

      TEPCO will study dilution of tritium at a rate equivalent to that for discharge into the sea, as against the regulatory concentration limit of tritium in the atmosphere (5 Bq in 1 liter air).
    - ✓ <u>For discharge into the sea</u>

      TEPCO will study dilution rates of tritium with reference to operational standards for “groundwater bypass” and “subdrains” (1,500 Bq in 1 liter water), which are well below the regulatory concentration limit for tritium in seawater (60,000 Bq in 1 liter water).

      <Ref.> the WHO drinking water guideline (10,000 Bq in 1 liter water).
  - Disposal will be stopped immediately if an abnormality is detected.
  - Monitoring will be enhanced by increase in sampling points and frequency and information will be published promptly.

Study on Disposal Details ② (Basic Concept of Vapor Release)

- **Secondary treatment** will be carried out to satisfy **the regulatory standards for discharge other than tritium.**
- After secondary treatment, the **heating and evaporation treatment** will be conducted **in boiler**, and the vapor will be **diluted with air and released into the atmosphere.**
- Air monitoring will be enhanced. (However, it will take time to obtain results.)

Major items of implementation

Secondary treatment	• In order to reduce the amount of radioactive substances released into the environment as much as possible, treatment will be carried out the regulatory standards for discharge other than tritium before dilution. − As a result, the concentration of radionuclides after dilution is further reduced to about several hundredths.
Sampling	• After the secondary treatment, analysis will be conducted to ensure that the regulatory standards for discharge other than tritium, and to check the tritium concentration.
Dilution and release (including emergency measures)	• Heating and evaporation treatment (from liquid to gas) will be conducted in boiler. • Vapor will be diluted with air in building and then released from the stack. − This will be managed so that the concentration at the site boundary will be less than the regulatory concentration limit (5 Bq in 1 liter air). • If there is an abnormality in the flow rate of the diluting air, etc., there will be an emergency shutdown of the release process.
Air monitoring	• Sampling and analysis will be conducted at the site boundary and outside the site. − Time until results are obtained: One to two weeks (Continuous sampling for about one to two weeks and then analysis for about one day) • Radioactivity measurement results at release will be published from time to time. − Analysis or publication of information by third parties will be studied as well.

Study on Disposal Details ③ (Concept of vapor release Facility)

ALPS treated water is vaporized, sufficiently diluted with air, and then released.

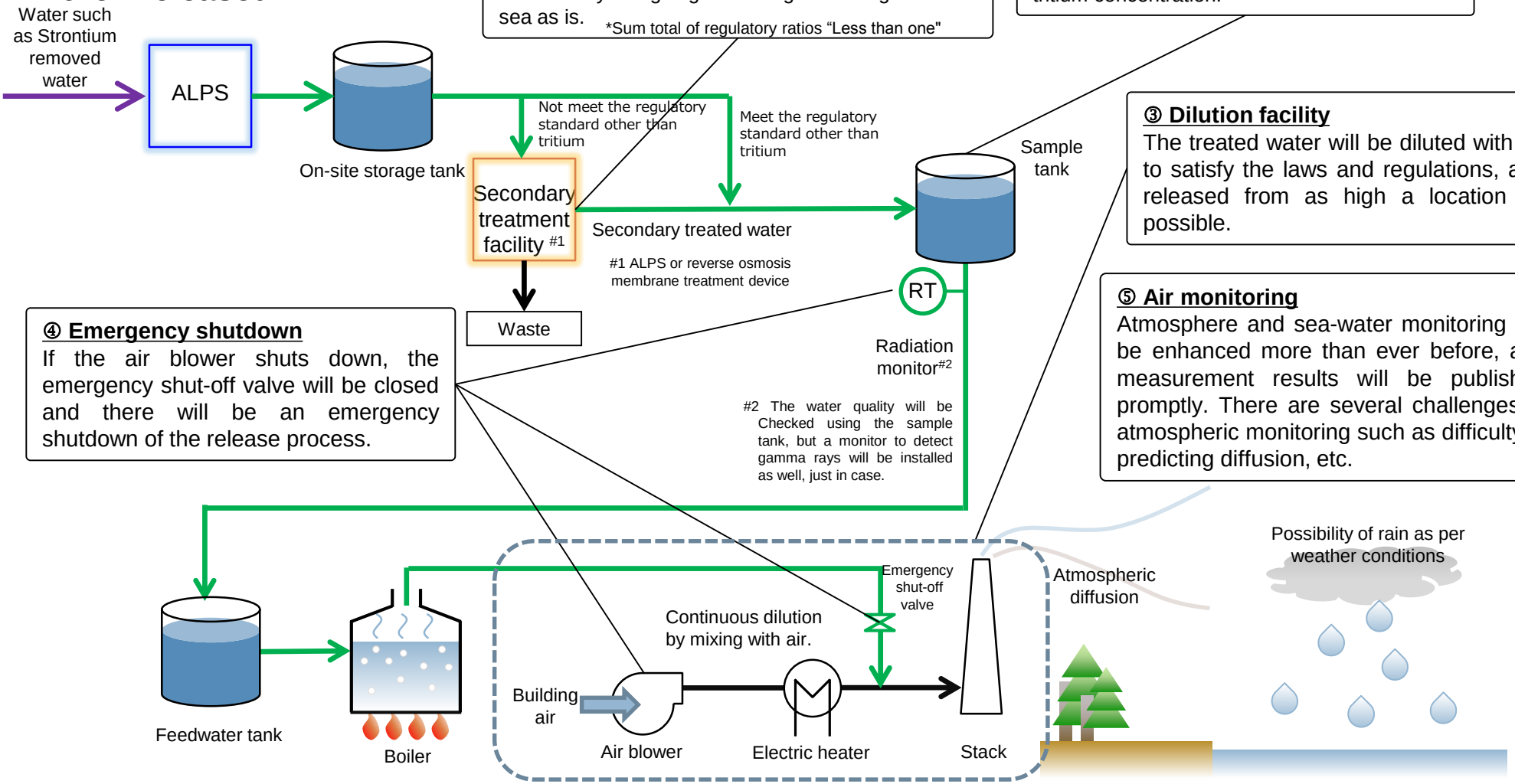
① Secondary treatment facility
Before dilution, nuclides other than tritium will undergo secondary treatment so that their concentration is reduced to a level* that satisfies the regulatory standards for discharge other than tritium, even if they are going to undergo discharge into the sea as is.
*Sum total of regulatory ratios "Less than one"

② Sample tank
A third party analysis will be performed prior to release to ensure that the meet the regulatory standards other than tritium and to check the tritium concentration.

③ Dilution facility
The treated water will be diluted with air to satisfy the laws and regulations, and released from as high a location as possible.

④ Emergency shutdown
If the air blower shuts down, the emergency shut-off valve will be closed and there will be an emergency shutdown of the release process.

⑤ Air monitoring
Atmosphere and sea-water monitoring will be enhanced more than ever before, and measurement results will be published promptly. There are several challenges in atmospheric monitoring such as difficulty in predicting diffusion, etc.



Study on Disposal Details ④ (Basic Concept of discharge into the sea)

- **Secondary treatment** will be carried out to satisfy **the regulatory standards for discharge other than tritium.**
- After secondary treatment, **seawater will be used for diluting the treated water sufficiently and then the water will be released into the sea.**
- **Maritime monitoring will be enhanced.**

Major items of implementation

Secondary treatment	• In order to reduce the amount of radioactive substances released into the environment as much as possible, treatment will be carried out the regulatory standards for discharge other than tritium before dilution. – As a result, the concentration of radionuclides after dilution is further reduced to about several hundredths.
Sampling	• After the secondary treatment, analysis will be conducted to ensure that the regulatory standards for discharge other than tritium, and to check the tritium concentration.
Dilution and release (including emergency measures)	• Treated water will be diluted with seawater to satisfy the laws and regulations and then released. – Diluted up to about the level of the operational standards for groundwater bypass and sub-drains. (less than 1,500 Bq in 1 liter water) • If there is an abnormality in the flow rate of the diluting water, etc., there will be an emergency shutdown of the release process. • Sampling will be conducted in the vicinity of the discharge outlet, and analysis will be carried out. – Time until results are obtained: About one day
Maritime monitoring	• Maritime monitoring of seawater, fishery products will be enhanced. • Radioactivity measurement results at release will be published from time to time. – Analysis or publication of information by third parties will be studied as well.

* The "regulatory standards for discharge" corresponds to the internal exposure dose when water with a certain nuclide concentration is ingested.

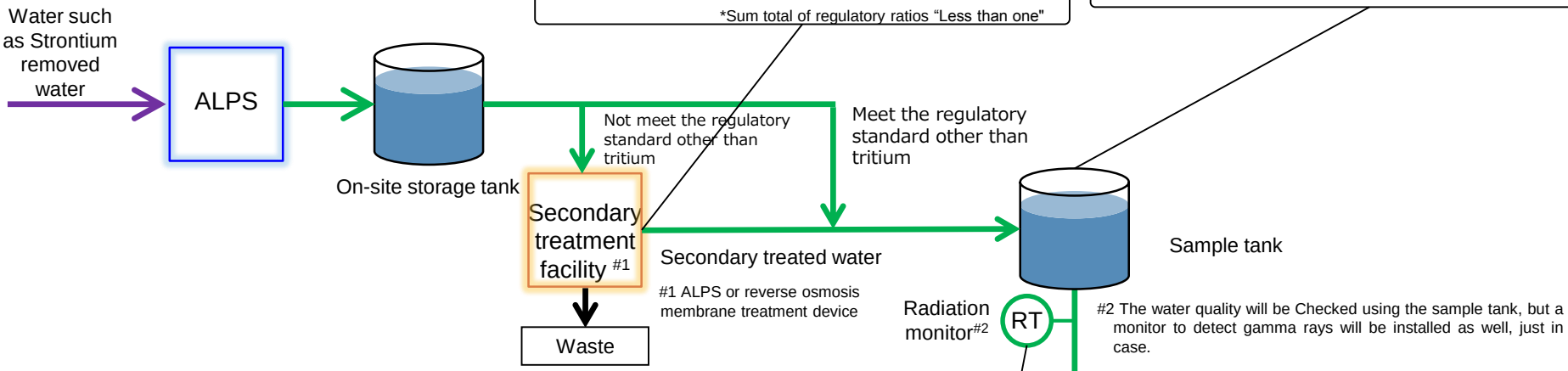
Study on Disposal Details ⑤ (Concept of discharge into the sea Facility)

ALPS treated water is sufficiently diluted with seawater and then released.

① Secondary treatment facility
Before dilution, nuclides other than tritium will undergo secondary treatment so that their concentration will reduce to a level* that satisfies the regulatory standards for discharge other than tritium, even if they are going to undergo discharge into the sea as is.

*Sum total of regulatory ratios "Less than one"

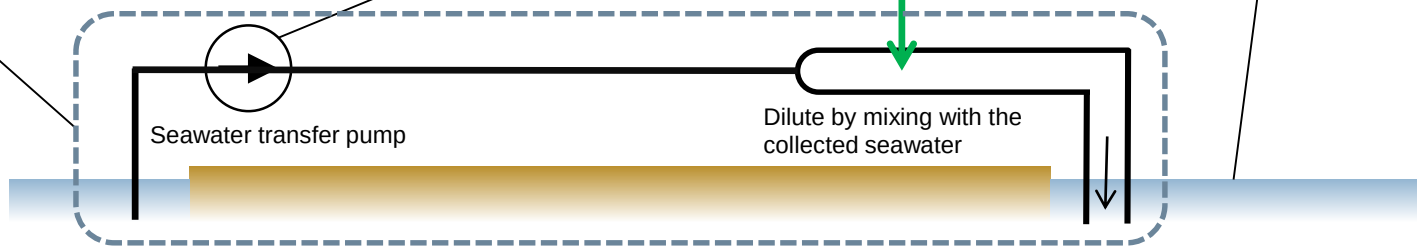
② Sample tank
A third party analysis will be performed prior to release to ensure that the meet the regulatory standards other than tritium and to check the tritium concentration.



③ Dilution facility
The treated water will be diluted with seawater to satisfy the laws and regulations.

④ Emergency shutdown
If the seawater transfer pump shuts down, the emergency shut-off valve will be closed and there will be an emergency shutdown of the release process.

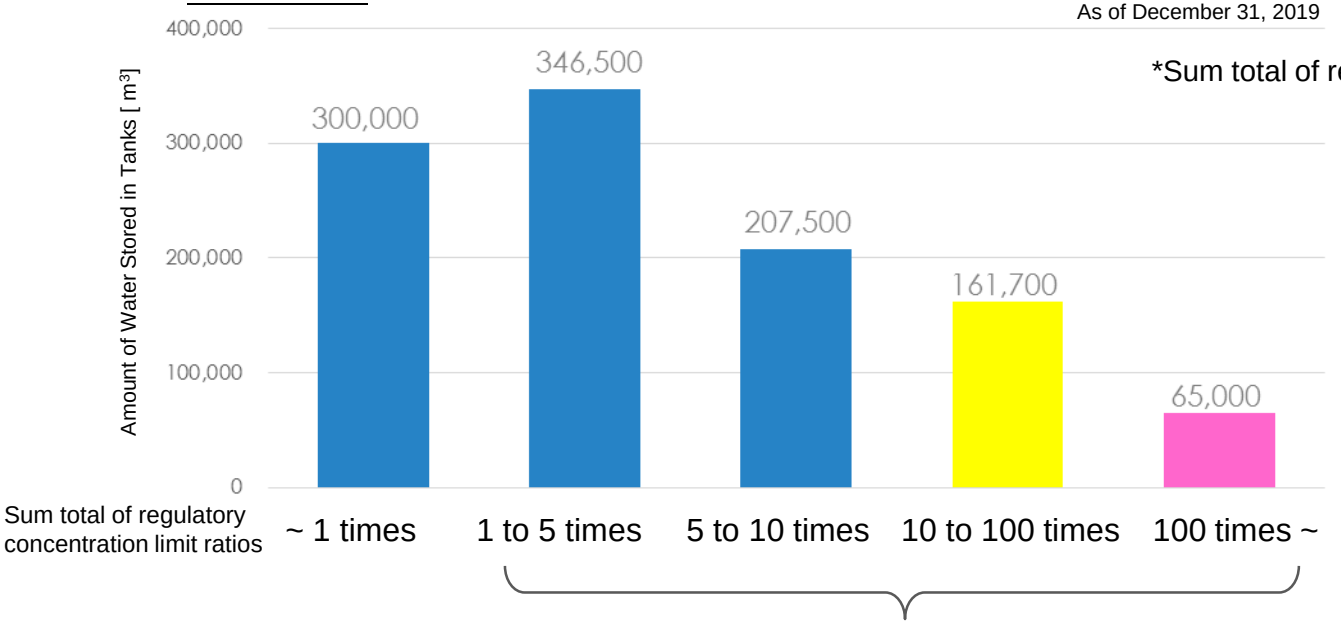
⑤ Maritime monitoring# (See Reference material)
Seawater monitoring will be enhanced more than ever before, and measurement results will be published promptly.



Study on Disposal Details ⑥ (Implementing Secondary Treatment)

- In order to reduce the amount of radioactive materials released into the environment as much as possible, **<u>treated water which exceeds the regulatory standards for discharge * will undergo secondary treatment.</u>**

As of December 31, 2019



*Sum total of regulatory concentration limit ratios "≧1"

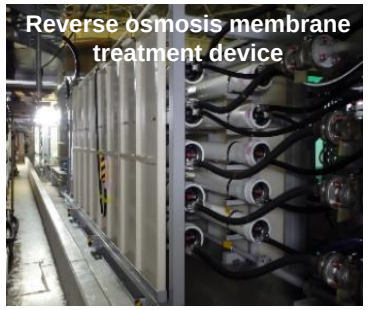
Treated water, etc. at the beginning of facility operation.

Cross-flow filter permeated water#, water obtained after mixing ALPS treated water with residual water of Sr removed water, which has a high radioactive concentration.

Event in which slurry from carbonate precipitation treatment permeated on to the facility outlet due to failure of the existing ALPS cross-flow filter in FY2013.

72% of total

Regulatory concentration limit is a regulatory standard for release of radioactive waste into the environment, specified in a notification based on the Nuclear Reactor Regulation Law. If the radioactive waste contains multiple radioactive substances, the sum total of the ratios of concentration in the radioactive waste to the regulatory concentration limit of each nuclide, must be less than one.



The secondary treatment principally involves the Multi-nuclide Removal Facility reverse osmosis membrane treatment device, considering its features. A treatment method combining both facilities will be studied.

Secondary treatment

(Also removes the sludge already identified in treated water)

Study on Disposal Details ⑦ (Secondary Treatment Implementation Schedule)

- For treated water, secondary treatment will be carried out to reduce the amount of radioactive substances released into the environment as much as possible.

  – Studies required for secondary treatment, including addition to the regular contaminated water treatment plan and preparation of tanks that will receive the secondary treated, have already started.

  – After the ALPS treatment of the strontium-removed water, which has a higher risk as compared to other treated water stored, the absorbents will be replaced, and a secondary treatment using ALPS will be conducted on a trial basis (in FY2020).
    - About 2,000 m^3 of water with high-concentration (regulatory concentration limit ratio of 100 times or above) will be treated, and the secondary treatment performance will be verified.
    - Thereafter, further secondary treatment will be continued while preparing for regular contaminated water treatment and installing receiving tanks.

  – Further secondary treatment prior to the start of disposal requires careful study of securing empty tanks, making arrangements for laying pipes and worker exposure and leakage risks involved in decontamination of receiving tanks for re-use.

2. COUNTERMEASURES FOR REPUTATIONAL DAMAGE

Responding to Subcommittee Report (Countermeasures for reputational damage)

- The following was outlined in the Subcommittee report on Handling ALPS Treated Water:

✓ When the disposal is conducted, thorough countermeasures for reputational damage should also be conducted, with a will that additional reputational damage should not be caused, so that the industries in Fukushima and its neighbouring prefectures can continue their businesses without anxiety.

✓ Taking best practice of counter measures for reputational damage implemented so far, **Risk communication measures to convey information accurately** as well as **Countermeasures to prevent the reputational damage** should be enlarged and strengthened.

Risk communication measures to convey information accurately	Countermeasures to prevent the reputational damage
◎ The following measures should be implemented before disposal begins. ・**Dissemination of information on the disposal method, scientific knowledge on tritium, etc. in an easy-to-understand manner** ・**Use of mass media, social media** ・**Outreach to various layers** ・**Improving overseas transmission of information**	◎ Accelerate initiatives to dispel rumours by referring to effective examples among existing countermeasures against reputational damage ・ Developing an analysis system that combines environmental monitoring and food sample measurement ・ Ensuring the trust of consumers and actual users utilizing third-party certification such as GAP ・**Constant availability of prefectural products by opening up new sales channels**

➔ Based on this report, TEPCO has compiled the **"Communication initiatives"** and **"Initiatives to dispel rumours and to facilitate distribution of local products"** carried out so far.

➔ In the future, further studies will be conducted based on the opinions of the parties concerned.

Communication Initiatives to Convey Information Accurately

Current status

- Information on treated water (properties, storage status, etc.) is disseminated from time to time via press releases or via the "Treated Water Portal Site" opened on the web.
- For overseas communication, meeting has been held to diplomatic missions in Tokyo (about 30 times), and embassy officials have visited Fukushima Daiichi (about 80 people in all, overseas visits: about 20 people in all).

<ALPS Subcommittee report>

Risk communication initiatives to convey information accurately

◎The following measures should be implemented before disposal begins

① Dissemination of information on the disposal method, scientific knowledge, etc. in an easy-to-understand manner

② Use of mass media, social media

③ Outreach to various layers

④ Improving overseas transmission of information

Future communication initiatives

① Further improvement of "Treated Water Portal Site"
Creation of explanatory materials on "tritium", "treated water", and so on.

~ Information on disposal methods, inspection systems, measurement results, monitoring results, etc. will be conveyed in an easy-to-understand format and in a highly transparent manner.

② Encouraging media coverage (Information about the site)
Dissemination of information via social media and Internet media

~ Efforts will be made to transmit information effectively according to the characteristics of the medium

③ Two-way communication with parties concerned

~ Interaction through various opportunities such as visits and events.

④ Providing accurate information overseas

~ Information will also be transmitted using social media (English, Chinese)

Initiatives to dispel rumours and facilitate distribution of local products ① (Examples of main initiatives)

- Even now, TEPCO is developing and undertaking activities to dispel rumours and facilitate the distribution of agricultural, forestry, and fishery products of the Fukushima Prefecture, which has been hit hard by reputational damage.

Holding sales promotion events

Acquisition of standard shops

Subscribers to LINE “Fukushima Cheering Team”

As of April 2018 to March 8, 2020

Initiatives to dispel rumours and facilitate distribution of local products ② (Examples of product-wise initiatives)

- Starting with rice produced in Fukushima, TEPCO has expanded the range of products based on the opinions of parties concerned.

	Overview of initiatives
Rice	• Development of “Walk-in Sales" targeting department stores and supermarkets. • In the beginning, TEPCO struggled to even have their story heard, but through persistence, there was greater understanding of the good quality, and the number of retail stores that agreed to cooperate in the effort for dispelling reputational damage gradually increased. • Aware of brand building, the target product has gradually been expanded to brands such as Aizu Koshihikari, after having achieved a breakthrough with the premium-grade brand "Tenei rice". **330 in-store food sampling events (total of 816 days) were held, and the product is now a standard choice in 79 shops.**
Beef, etc.	• Development of proposal activities for handling "Fukushima beef" at retail stores and restaurants. • Through in-store food sampling events at retail stores, and the “Fukushima Beef Gourmet Fair” at restaurants, etc., **182 events (total of 3,425 days) have been held, and it is now a standard choice in 108 shops.** • Along with the proposal activities, TEPCO used magazines, WEB news, videos, LINE, etc. to improve the visibility of "Fukushima beef", and promoted the taste and efforts of producers widely to general consumers.
Peach	• **In-store food sampling events were held** in retail stores **30 times (total of 94 days)** during the season (July to August), **selling about nine tons of peaches**. • With the full cooperation of retail stores, in-store food sampling events for rice, beef, etc. have been held at the same time, which sometimes led to composite events together with other products.
Fish	• Starting with the "Joban Mono" in-store food sampling events held at retail stores in Tokyo in November 2019, **seven (total of 35 days) in-store food sampling events were held in four months**. • Recipes were distributed and cooking methods introduced along with in-store food sampling. • The consumers did not avoid the fish at in-store food sampling, and repeat customers were also acquired for "Paw-paw grilled sanma (local saury dishes of Fukushima)".

Initiatives to dispel rumours and facilitate distribution of local products ③ (Future countermeasures for reputational damage)

TEPCO

■ Expansion of sales of agricultural, forestry and fishery products will be promoted

- Based on the results of past initiatives, the **available measure will be utilized fully** and initiatives focusing on expanding the sales of agricultural, forestry and fishery products will be actively promoted to tackle avoidance of tourism and agricultural, forestry and fishery products, and to dispel reputational damage.

⇨ In order to ensure that producers can produce agricultural, forestry and fishery products with peace of mind, along with **appealing for food safety**, TEPCO will connect producers with distribution channels in the Tokyo area, which is a large consumption area, and secure quantitative sales channels. **Countermeasures will be studied for each stage of production, distribution and consumption.**

■ Future countermeasures for reputational damage (Policy)

- After the Government's basic policy on the handling of treated water has been determined, TEPCO would like to reiterate our specific policies on countermeasures for reputational damage.
- During the time period from the determination to implementation of the policy by the Government, TEPCO will work on the specification of details of the initiatives and will constantly improve and expand each initiative while obtaining the opinions and cooperation of national and local government officials.
- The **internal systems will be enhanced** and **necessary personnel and budget will be secured** in line with specification of details of initiatives.
- If there are reputational damage even when these initiatives are repeated, **appropriate compensation will be provided.**

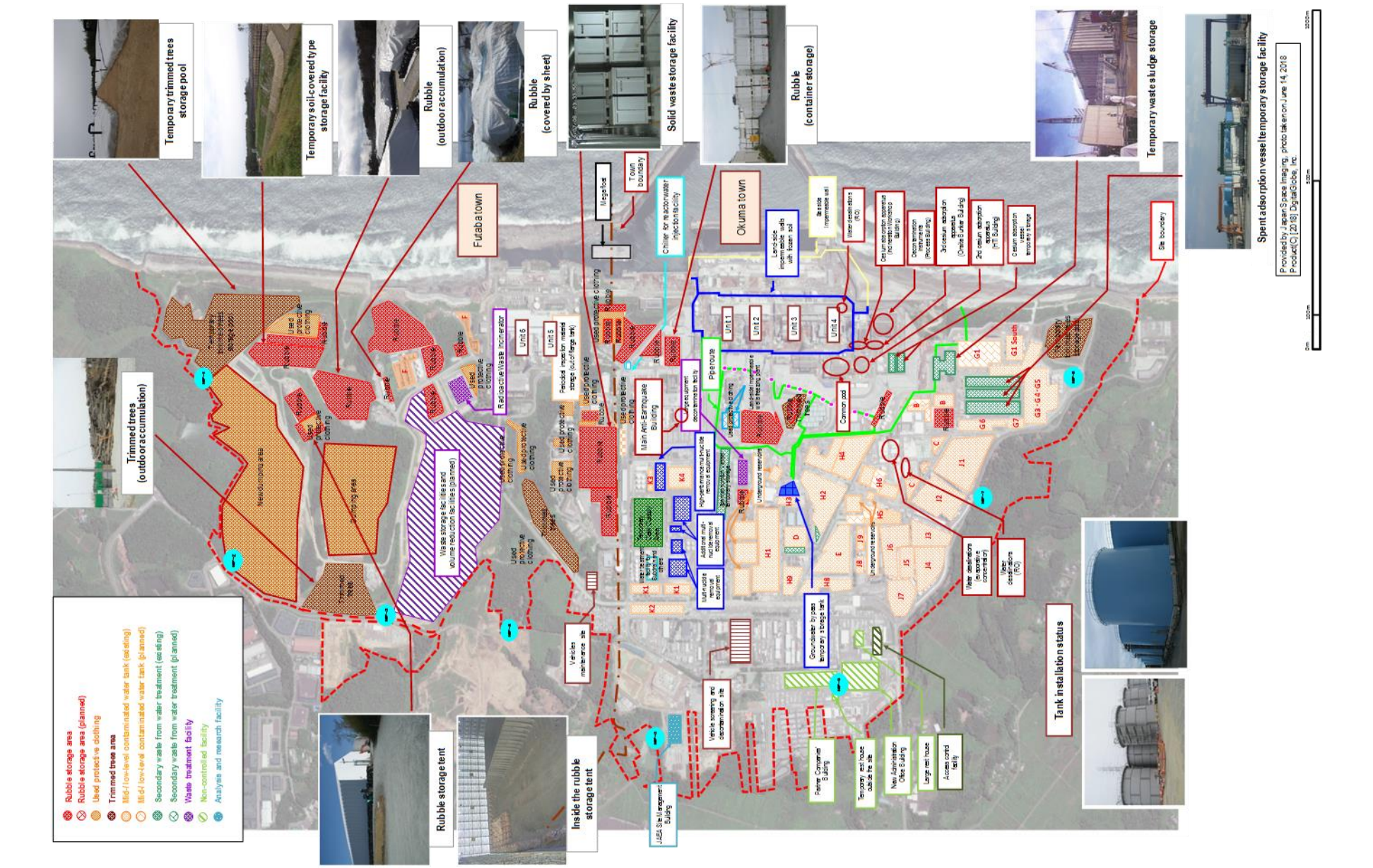
[REFERENCE]

a. Schematic Layout of Fukushima Daiichi Nuclear Power Station

b. Simulation of Diffusion of vapor release and discharge into the sea

c. About Tritium

a. Schematic Layout of Fukushima Daiichi Nuclear Power Station



b. Vapor Release: Simulation of Diffusion

- There is no diffusion simulation model available for general vapor.

[Difficulty in simulation of vapor diffusion]

i. Simple evaluation is difficult

✓ The simulation of vapor diffusion requires consideration of morphological changes in vapor such as condensation and formation of droplets due to weather conditions like humidity and temperature, advection caused by groundwater or rivers after falling to the ground surface, re-release such as due to evaporation from the ground and water surfaces, and transpiration from plants, etc. thus making simple evaluation difficult.

<Weather conditions that must be considered>

- Data on the standard wind direction, wind speed, and atmospheric stability, as well as temperature, humidity, and atmospheric pressure throughout the year
- Setting of diffusion and deposition ratio depending on weather conditions such as change from vapor to water droplets
- Morphological changes in vapor due to topography and local environment
- Consideration of the effects of groundwater and rivers, re-releases such as transpiration from the ground surface and plants, etc.

ii. Knowledge of continuous simulation is not available

✓ There are simulations of short-term released nuclides (noble gases and iodine) during accidents, but vapor diffusion is not taken into account.

- For marine diffusion, findings from continuous simulation such as thermal discharge from power plants, are available.

b. Discharge into the Sea: Simulation of Diffusion [1/2]

- Simulation conditions (Model verified with measured data for cesium-137)
  - Target sea area: About 500 km north-south and about 600 km offshore focusing on Fukushima Prefecture
  - Resolution: 1 km mesh in horizontal direction, 30 layers in vertical direction with respect to water depth (up to depth of 1 km)
  - Weather conditions, etc.: Uses wind speed, air pressure, temperature, humidity, and precipitation from January to December 2014

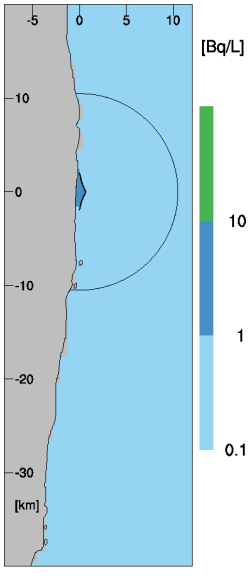
(Including flow conditions off Fukushima Prefecture (Kuroshio current / Mid-range eddies))

- Enlargement of the areas offshore Fukushima prefecture

<Legend>
Black line: 1 Bq/L range of tritium(concentration level of tap water in Fukushima prefecture before the earthquake)
Semi circle: Area of 10 km from the Fukushima Daiichi Nuclear Power Station
BG level: 0.1 to 1 Bq/L (Concentration levels off Fukushima prefecture after the earthquake)
(Bq: Becquerel)

Release rate: 22 trillion Bq/year

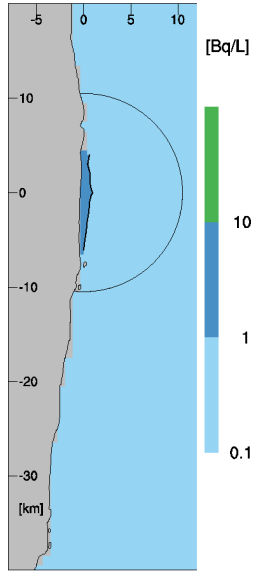
Release control target values at Fukushima Daiichi before the accident



1 Bq/L range

- About 1.5 km to the north (Northern end of area where joint fishing rights are not set)
- About 1.5 km to the south (Southern end of area where joint fishing rights are not set)
- About 0.7 km offshore

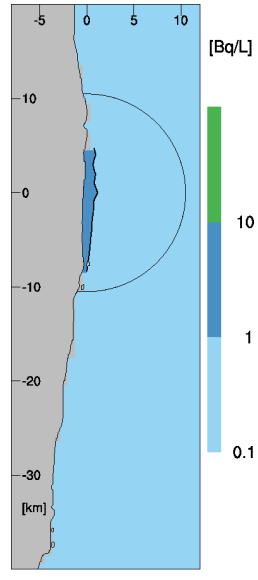
Release rate: 40 trillion Bq/year



1 Bq/L range

- About 6.5 km to the north; In the vicinity of Ukedo, Namie town
- About 8 km to the south; In the vicinity of Oragahama, Tomioka town
- About 1 km offshore

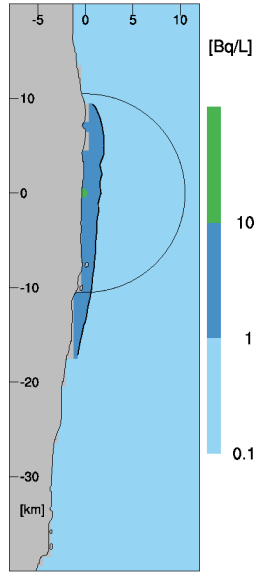
Release rate: 50 trillion Bq/year



1 Bq/L range

- About 7 km to the north (In the vicinity of Ukedo, Namie town)
- About 10 km to the south (In the vicinity of Kobama, Tomioka town)
- About 1.5 km offshore

Release rate: 100 trillion Bq/year



1 Bq/L range

- About 10 km to the north (In the vicinity of the boundary between Minamisoma city and Namie town)
- About 20 km to the south (In the vicinity of the Iwasawa swimming area, Naraha town)
- About 2 km offshore

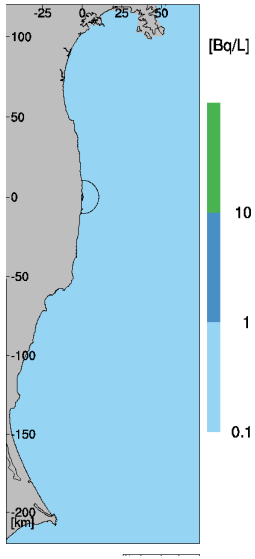
b. Discharge into the Sea: Simulation of Diffusion [2/2]

- Southern Tohoku to Northern Kanto

(Bq : Becquerel)

Release rate: 22 trillion Bq/year

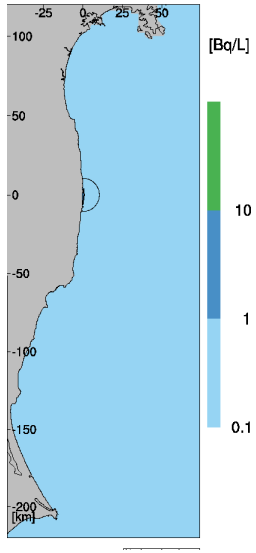
Release control target values at Fukushima Daiichi before the accident



1 Bq/L range

- About 1.5 km to the north (Northern end of area where joint fishing rights are not set)
- About 1.5 km to the south (Southern end of area where joint fishing rights are not set)
- About 0.7 km offshore

Release rate: 40 trillion Bq/year



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- About 6.5 km to the north In the vicinity of Ukedo, Namie town
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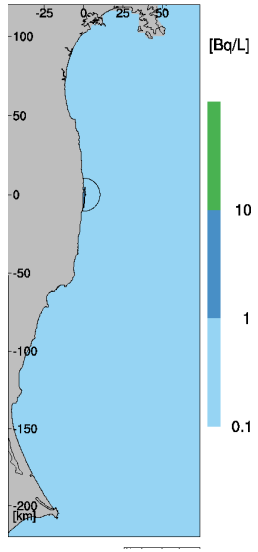

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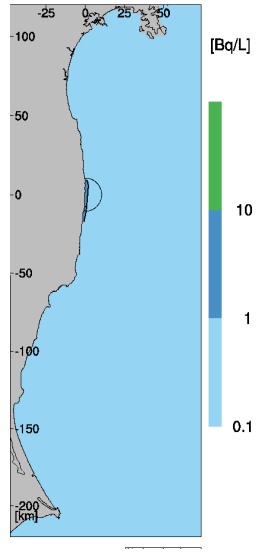


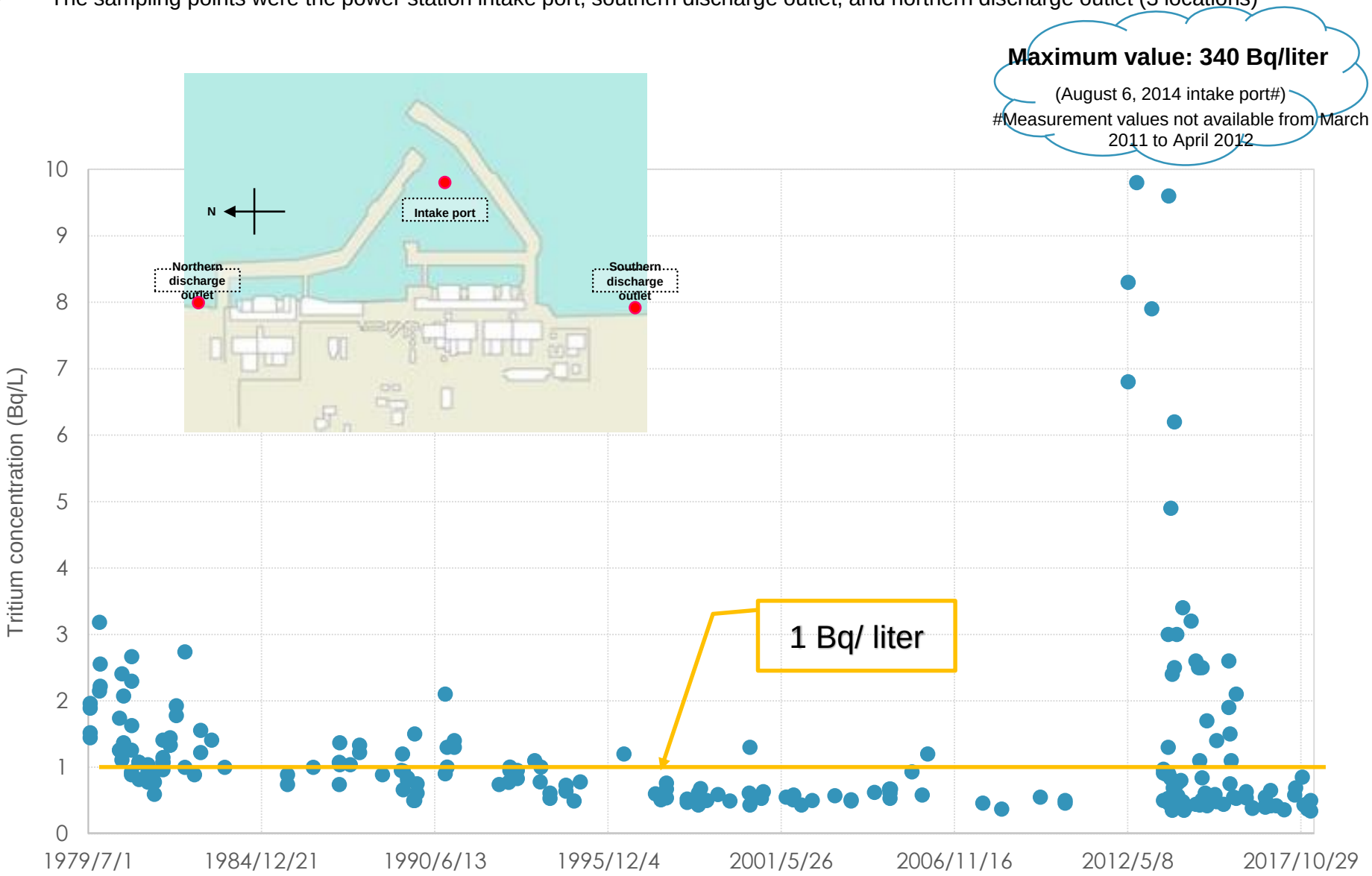
1 Bq/L range

- About 10 km to the north (In the vicinity of the boundary between Minamisoma city and Namie town)
- About 20 km to the south (In the vicinity of the Iwasawa swimming area, Naraha town)
- About 2 km offshore

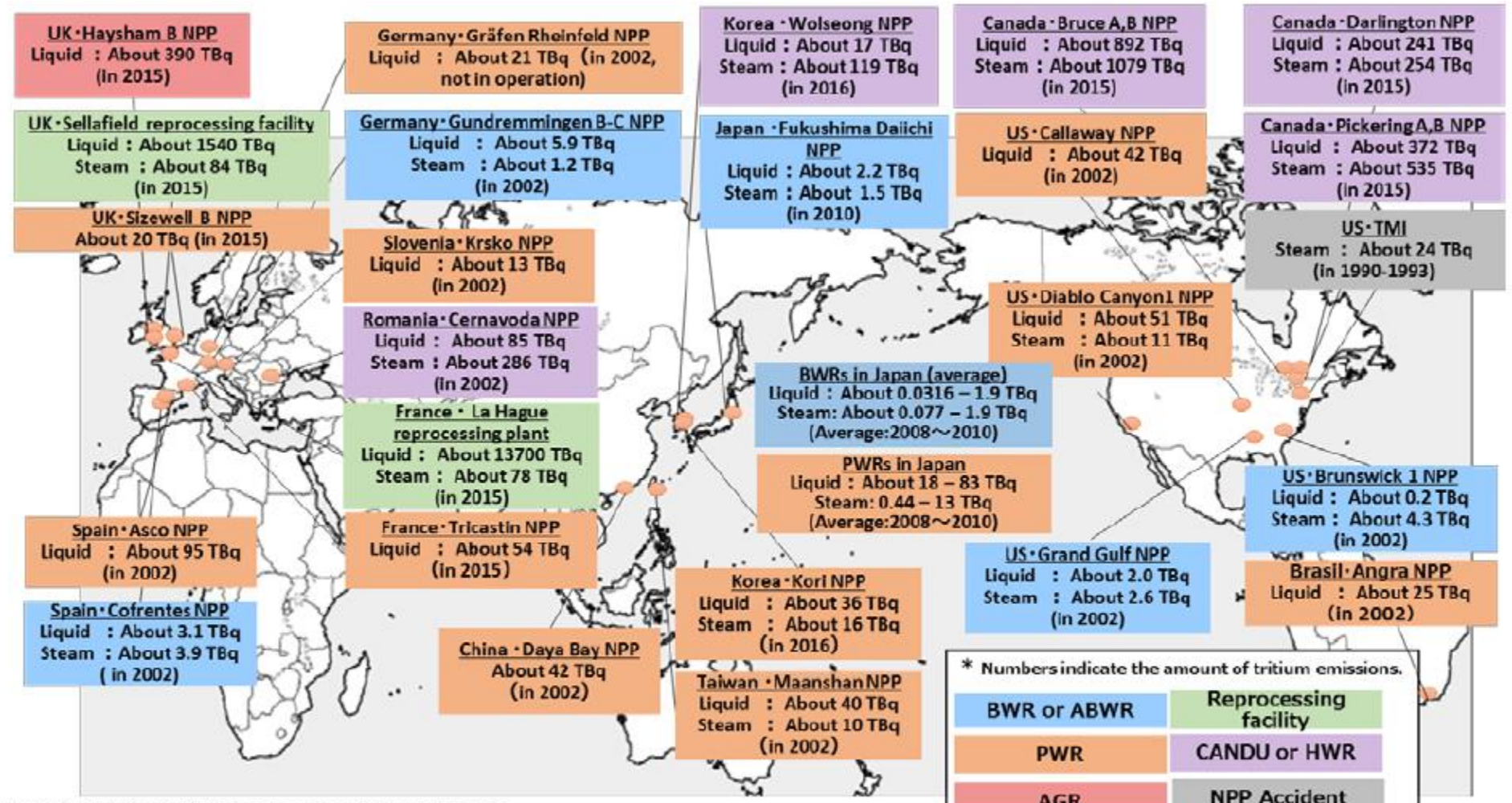
– The areas exceeding the background level of tritium(0.1 to 1 Bq/liter) are limited to the vicinity of the power station, which is sufficiently smaller than the WHO drinking water guideline (10,000 Bq/liter)

b. Tritium concentration in the vicinity of Fukushima Daiichi Nuclear Power Station (Before and after the accident)

- The sampling points were the power station intake port, southern discharge outlet, and northern discharge outlet (3 locations)



b. Annual Tritium Release from Nuclear Facilities



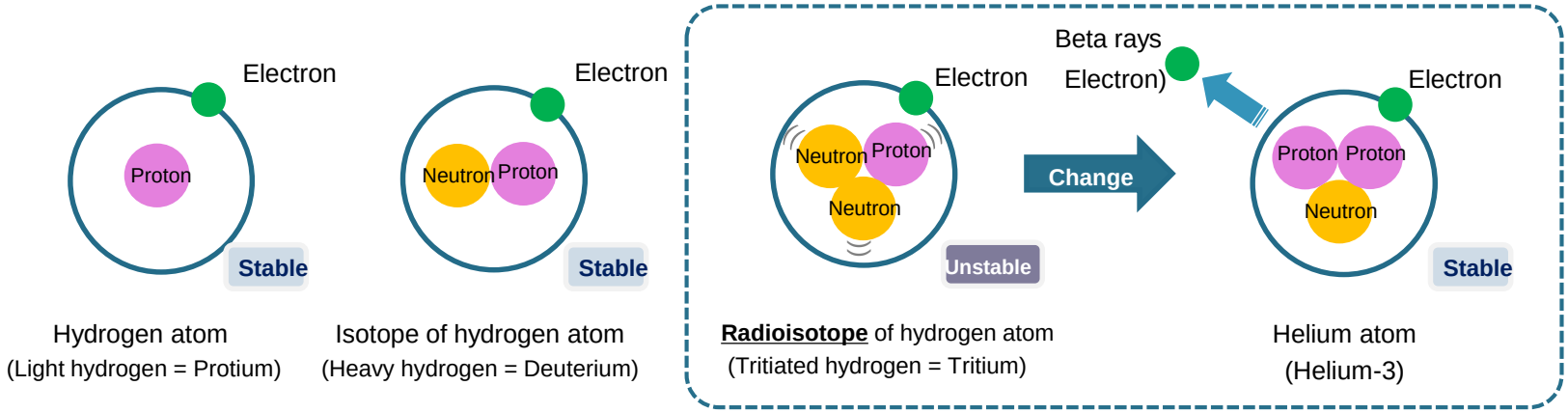
Source : UK : Radioactivity in Food and the Environment, 2015
Canada : Canadian National Report for the Convention on Nuclear Safety, Seventh Report
France : Tritium White paper 2016
Korea : FY2016 Survey on environmental radioactivity around the nuclear power plant and evaluation report, KHNP
Other countries : UNSCEAR「2008 Annual report」 Japan : Fukushima Pref. and TEPCO report 2010 (data period from April 1, 2010 to March 11, 2011)

<Ref.> 1×10^{12}Bq≒ about0.019g (Tritiated water)

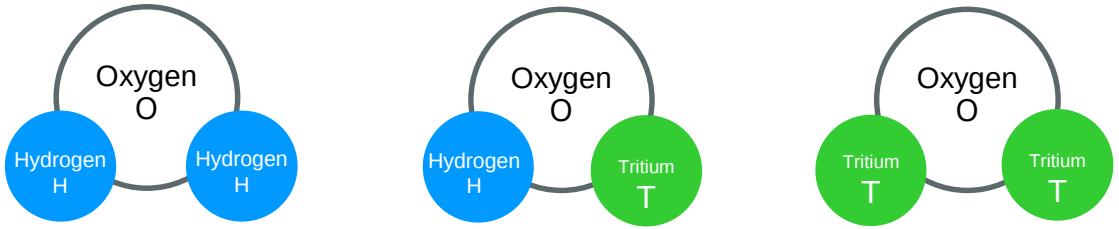
From the Report of the Subcommittee on Handling ALPS Treated Water

c. About Tritium: Properties of Tritium

- Member of hydrogen group called tritium (Radioisotope)
  - The radiation released (beta rays) is weak



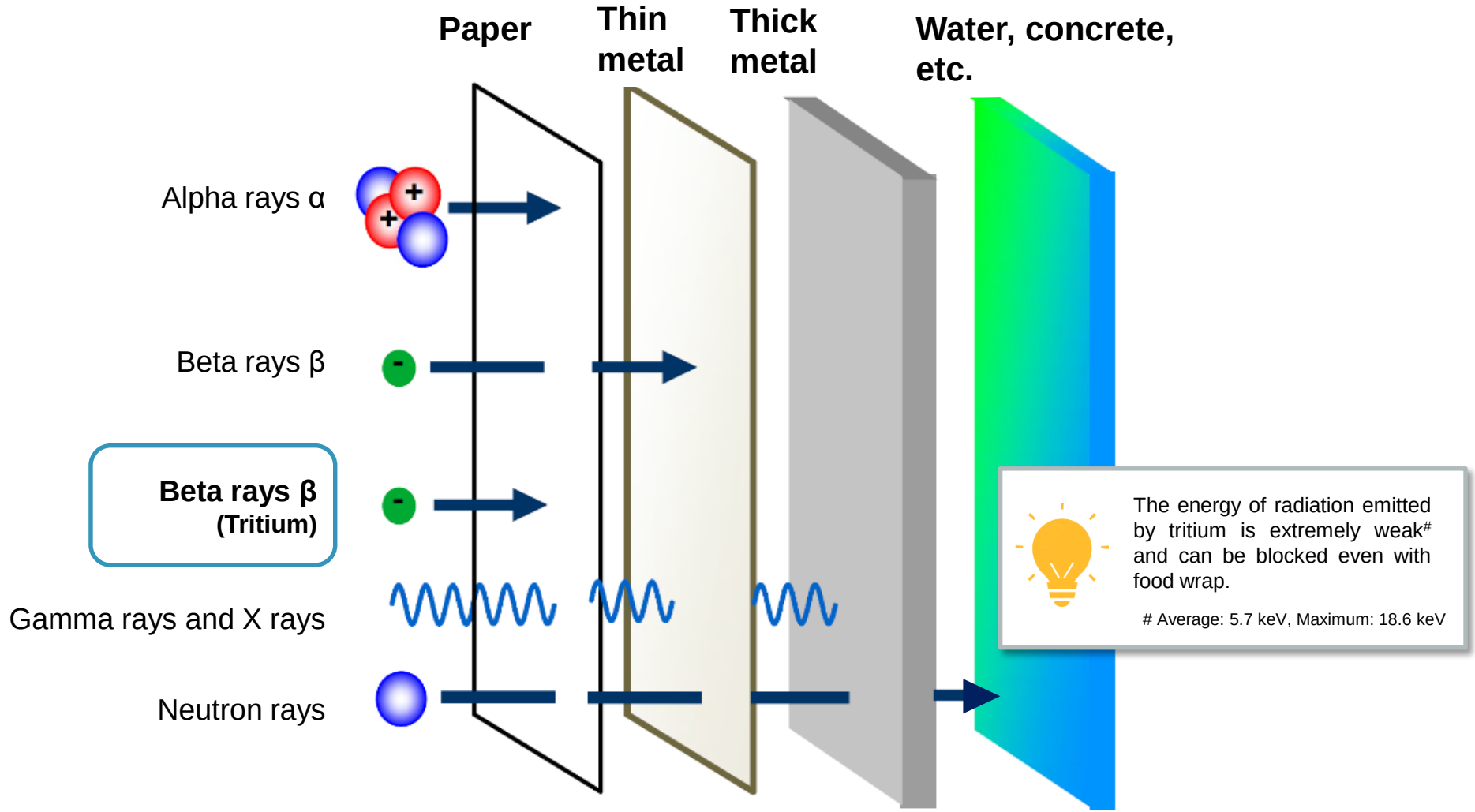
- Mostly exists as hydrogen in water molecules and is also found in atmospheric vapor, rainwater, seawater, and tap water.



It is difficult to separate water molecules containing tritium from water containing these water molecules

c. About Tritium: Types and Permeability of Radiation

- Radiation has the property of penetrating objects, and the substances that can block it differ depending on the type of radiation



Source: Created based on special contents from METI

c. About Tritium: Tritium in Our Daily Lives

- Amount of tritium present in nature: About 1 quintillion to 1.3 quintillion* Bq
  - Atmospheric water vapor, precipitation, groundwater, river water, lake water, seawater, drinking water, and widely distributed in bodies of living organisms

* 1 quintillion = 1,000 quadrillion
And
1 quadrillion = 1,000 trillion

By drinking water, dozens of Becquerel of tritium are introduced into the human body.

- Concentration of tritium in water such as seawater and drinking water: 0.1 to 1 Bq/liter
  - In Japan, there are no regulatory standards for tritium in food and drinking water, but regulations are set to control the concentration of released tritium#.
  - According to the WHO “Guidelines for Drinking-water Quality (4th edition) ”, the indicator (guidance level) of tritium in drinking water is 10,000 Bq/liter

#Regulatory concentration limit in water:
Calculated and derived assuming that the average dose rate reaches the legal effective dose limit (1 Millisievert / Year), if one continues drinking about two liters of water with concentration found at the discharge outlet, every day from birth until 70 years of age.
Tritium concentration limit is **60,000 Bq/liter**

A two liter PET bottle contains 0.2 to 2 Bq of tritium