

# Important

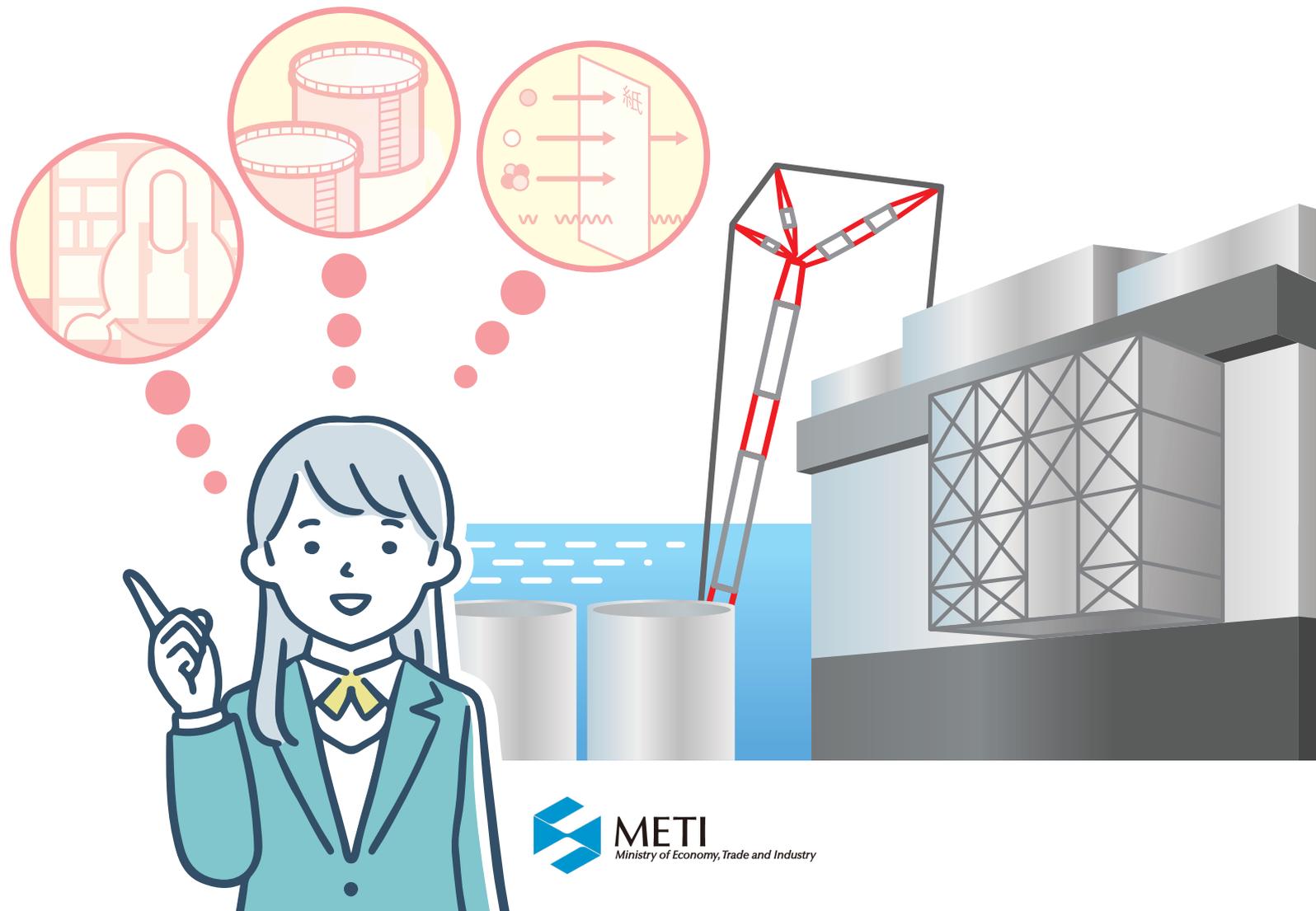
# Stories on

# Decommissioning

Decommissioning of TEPCO's  
Fukushima Daiichi NPS  
and  
the Discharge of ALPS Treated  
Water into the Sea

The things  
to know

about ALPS treated water



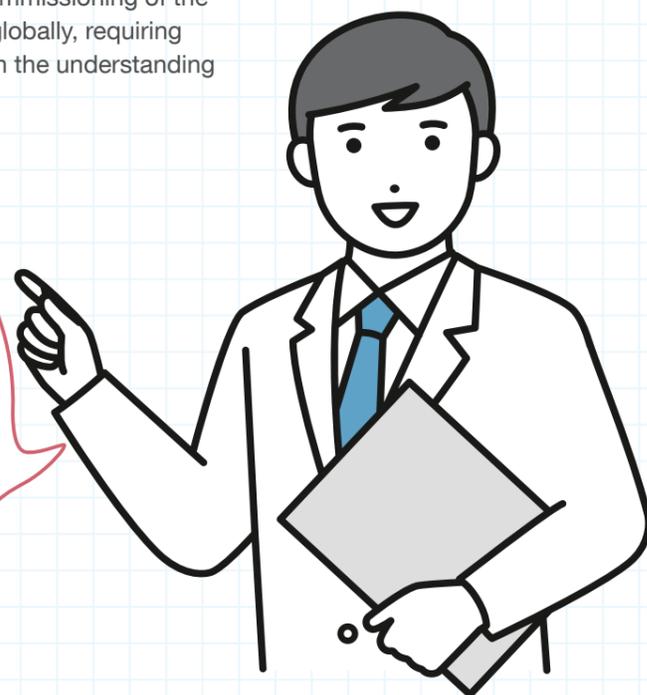
# Introduction



On March 11, 2011, an accident occurred at TEPCO's Fukushima Daiichi Nuclear Power Station (NPS).

Through the daily efforts of the on-site workers, decommissioning work is steadily progressing with safety as the top priority. Meanwhile, the decommissioning of the Fukushima Daiichi NPS presents an unprecedented challenge globally, requiring long-term commitment. Therefore, it is essential to proceed with the understanding and support of the local community and society at large.

In this brochure, we will answer your concerns and questions about the decommissioning in an easy-to-understand manner, and tell you about the present and future of this process, including recent topics.



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Step by step, toward the future of Fukushima / TEPCO Decommissioning Archive Center/Great East Japan Earthquake and Nuclear Disaster Museum

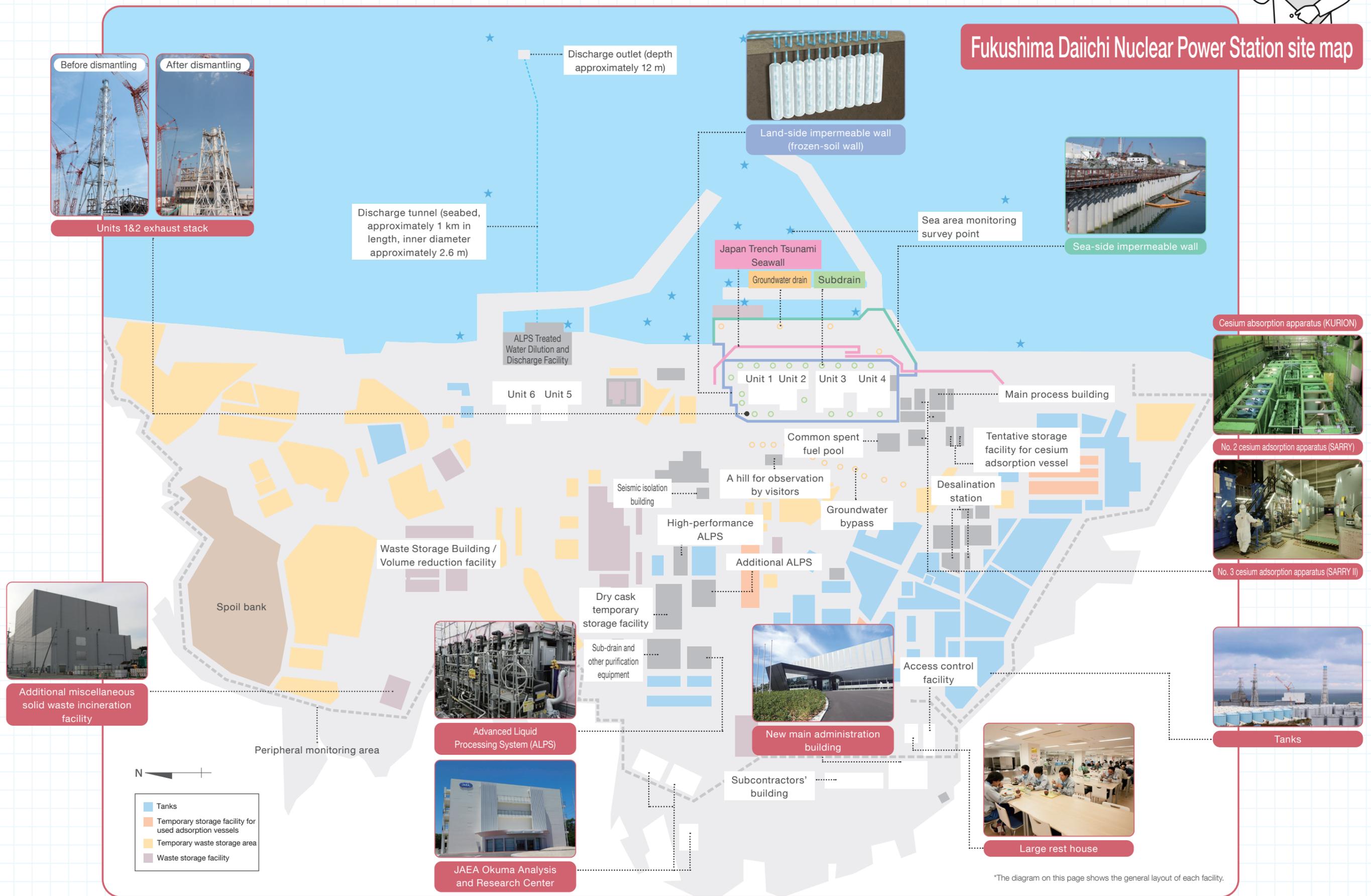


# What is the internal situation at Fukushima Daiichi NPS like?

This is an overall view of the Fukushima Daiichi NPS.

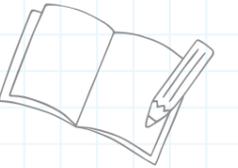


## Fukushima Daiichi Nuclear Power Station site map



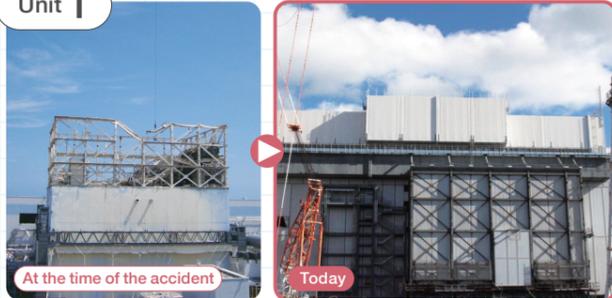
# How far has the decommissioning of the Fukushima Daiichi NPS progressed?

# Fukushima Daiichi NPS progressed?



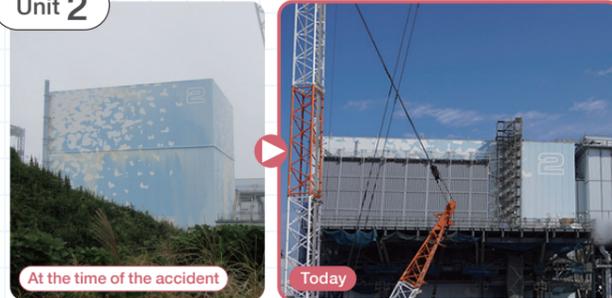
## What is the status of the reactor buildings?

Unit 1



The installation of a large cover that fully encloses the reactor building has been completed in order to prevent radioactive dust scattering brought about by fuel removal.

Unit 2



In preparation for fuel removal, a work platform has been installed on the south side and installation work of fuel handling equipment is being carried out.  
\* Unit 2 did not experience a hydrogen explosion. This is believed to be because a panel on the upper side of the Unit 2 reactor building was opened by the impact of the Unit 1 explosion, allowing hydrogen to be discharged outside.

Unit 3



Removal of the fuel began in 2019 and finished in February 2021, marking the first completion of the task for a reactor left with fuel debris.

Unit 4



Removal of the fuel began in November 2013 and was completed in December 2014.



## What is the work environment like for workers?

Radiation levels on the premises have greatly decreased, and workers can now work in regular work clothes on about 96% of the site.



A cafeteria and a convenience store available at the large rest house



Emergency physicians on duty 24/7



Protective clothes



approx. 96% of the site Simplified working equipment



Regular work clothes



## What is the impact on the surrounding sea areas?

From the efforts that have been made so far, water quality in the surrounding sea area has greatly improved, and it has been confirmed to fully meet the international standards for drinking water quality.

Effects on the surrounding area

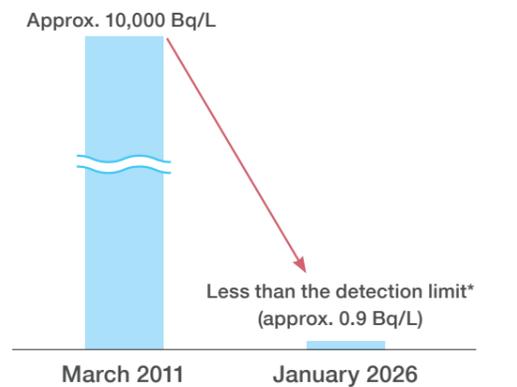


Use of quay for mooring ships resumed in February 2017 (Namie Town)



Matsukawaura fishing port in October 2019

### Concentration of radioactive materials in the waters around Fukushima Daiichi NPS



\* The concentration of radioactive materials in the sea around the site refers to the Cs-137 level near the south discharge channel  
\* The international standard for drinking water quality is 10 Bq/L



## What is the impact on the surrounding regions?

Levels measured at monitoring posts at the site boundary have sufficiently decreased compared to levels immediately after the accident, and levels have reached a stable condition.

The surrounding area

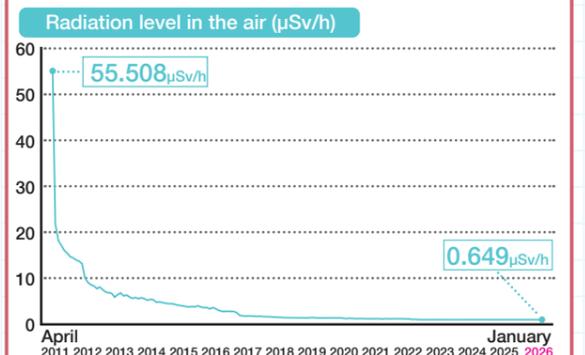


In August 2022, the opening of the new town hall in Futaba Town.



In March 2023, the opening of the CREVA OKUMA.

### Measurements from a monitoring post (West gate) at the site boundary of the Fukushima Daiichi NPS



\* Changes in monthly average levels measured at a monitoring post (MP.5) at the site boundary of the Fukushima Daiichi NPS

Decommissioning work is steadily progressing, and the effects of radioactive materials are greatly improving.



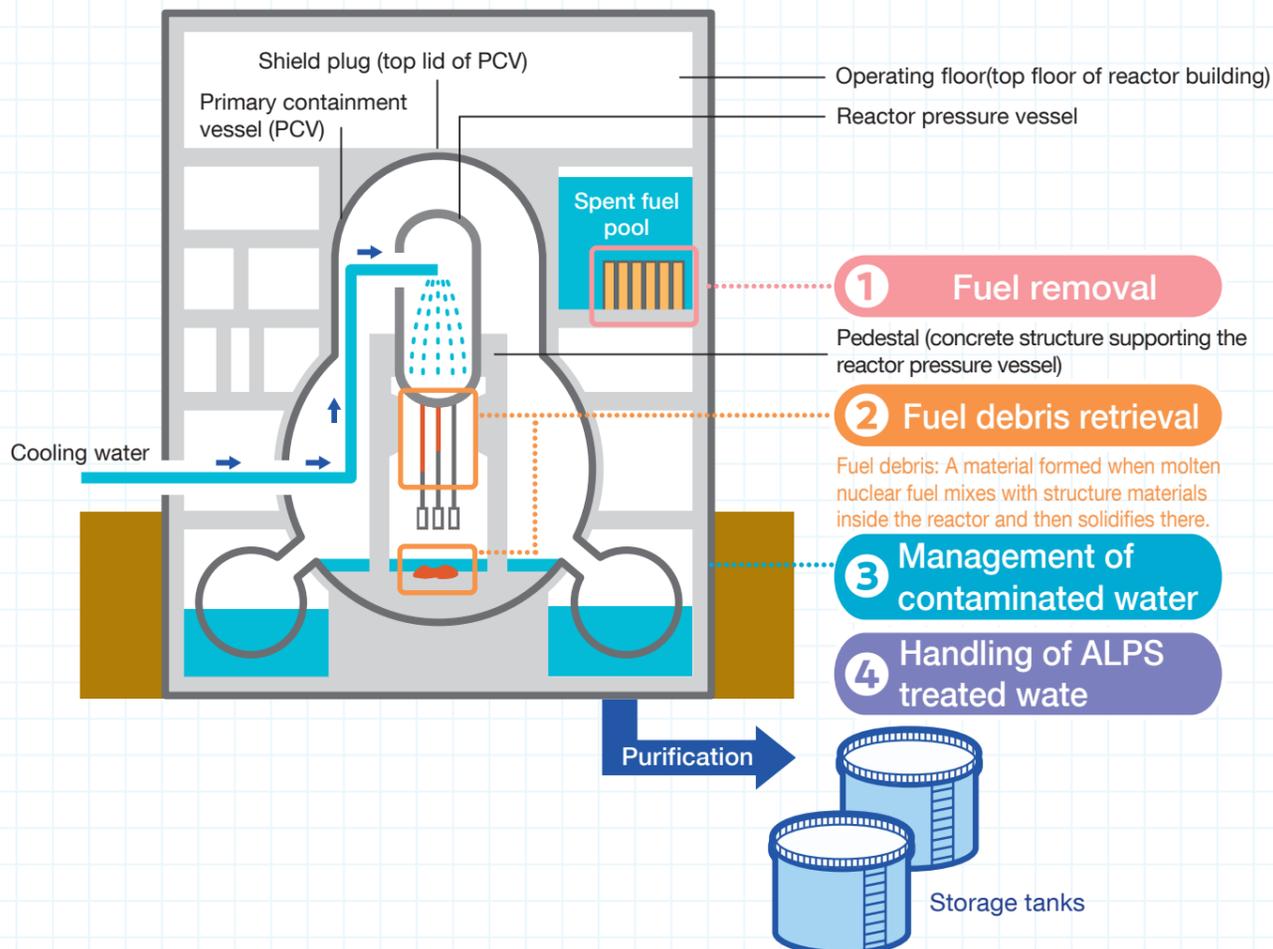
# What kind of tasks and how will they be carried out in the decommissioning of Fukushima Daiichi NPS?



## What are the five main tasks?

- 1 Fuel removal
- 2 Fuel debris retrieval
- 3 Management of contaminated water
- 4 Handling of ALPS treated water
- 5 Waste treatment and disposal / Dismantling of reactor facilities, etc.

## Reactor building (diagram)

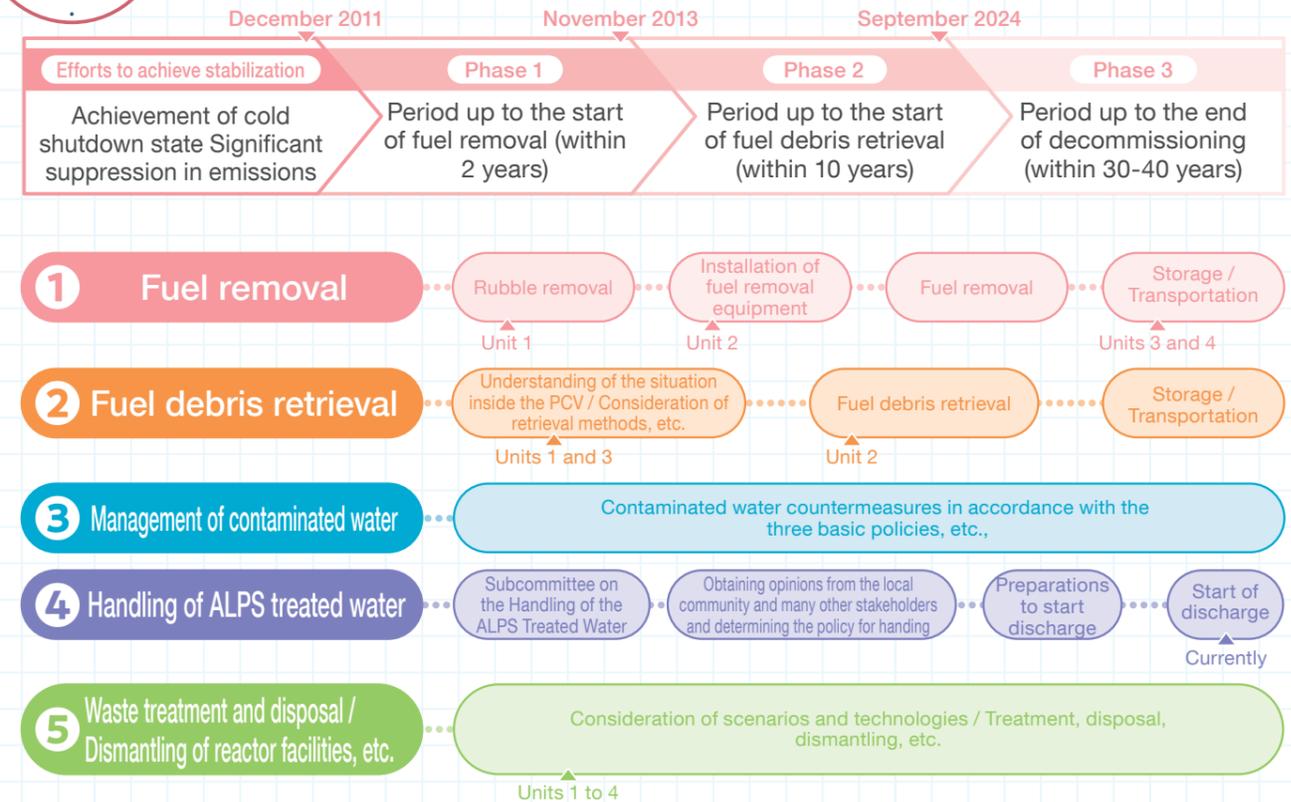


Decommission is work to reduce the risk of radioactive materials to local people and the environment.



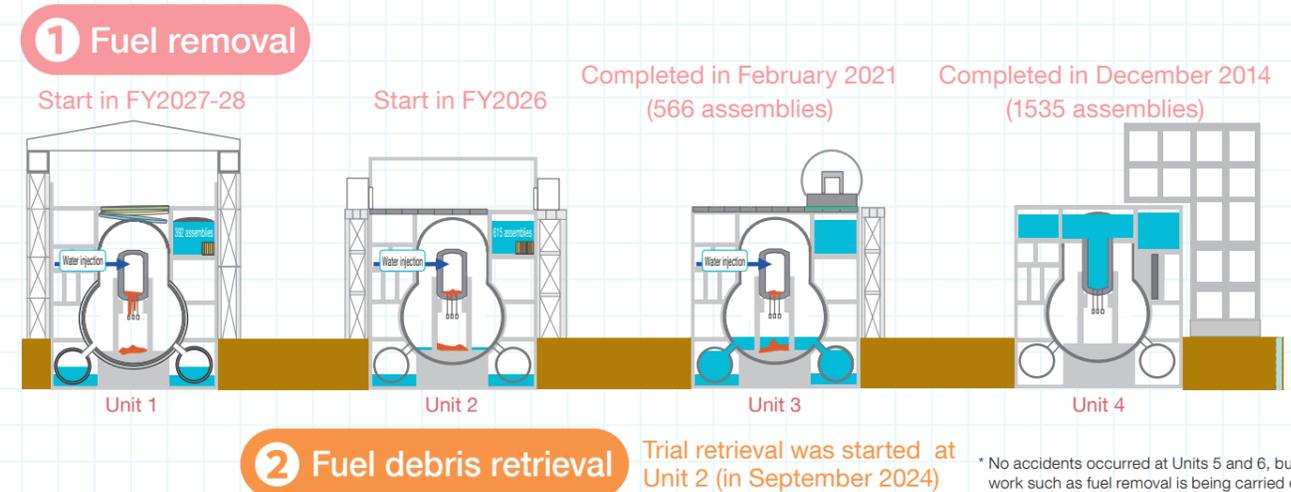
## What is the overall decommissioning process?

Decommissioning will be carried out safely and steadily over 30 to 40 years.



## What is the status of each unit?

Due to differences in each unit's situation, the status and progress of countermeasures vary.



# What does “removing the fuel” mean?

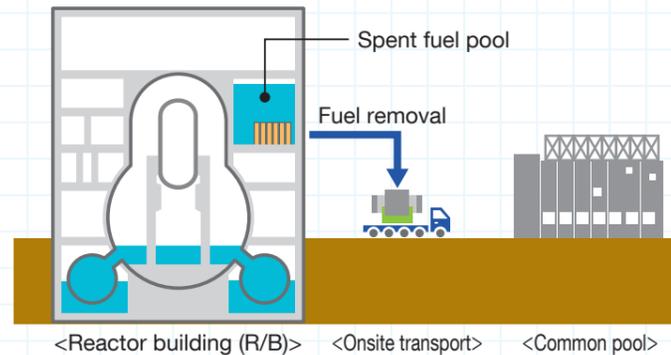
Removing the fuel from the spent fuel pool located in the reactor buildings. The fuel removal from Units 3 and 4 has been fully completed.



## How is the fuel removed?

There are fuel assemblies remaining in the reactor buildings. Removal consists of a series of operations in which spent fuel is collected from the spent fuel pool using handling equipment and transported to the common pool on the premises of the nuclear power station.

Because the internal situation of the reactor buildings differs for each unit, we are proceeding with fuel removal using the optimal process for each unit.



## What is the progress of the work?

Aiming to finish removal in about 2 years

Aiming to finish removal in about 2 years

**Unit 1** Fuel removal to start in FY2027-2028.

**Unit 2** Fuel removal to start in FY2026



**Unit 3** Removal completed in February 2021

**Unit 4** Removal completed in December 2014

**Units 5 and 6** Removal is to be carried out as soon as ready while considering the progress at Units 1 and 2

## Schedule

- Efforts will continue to be made to complete the removal of fuel from all units by the end of 2031.
- The removed fuel will be stored on-site for the time being while conducting long-term integrity assessments and considering optimal processing and storage methods.

# What does “fuel debris retrieval” mean?

Fuel debris is a material formed when molten nuclear fuel mixes with structural materials inside a reactor and then solidifies. Retrieval efforts are being carried out using remote-controlled equipment.



## What makes it difficult?

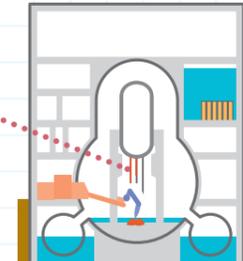
The interior of the primary containment vessel (PCV) where the fuel debris exists has extremely high radiation levels, making it impossible for people to enter, and there are many things that remain unknown. Therefore, investigations are being conducted using remotely operated robots and similar devices.

## Examples of remote-controlled robots



At Unit 1, an investigation using a small drone was conducted from February to March 2024 and obtained images inside of the primary containment vessel (PCV).

The effectiveness of small drones for investigations in narrow and dark locations was confirmed, and further investigations are under consideration.



Photographs:IRID

TEPCO Fuel Debris Portal Site



## What is the current status of retrieval?

The trial retrieval of the fuel debris was conducted with the aim of obtaining various insights. At Unit 2 of the Fukushima Daiichi NPS, TEPCO successfully conducted a first trial retrieval using a telescopic device in November 2024. In April 2025, TEPCO successfully conducted a second trial retrieval from a different point used for the first retrieval. The amount of trial retrieval of the fuel debris collected in a single retrieval was planned to be up to several grams, and a total of approximately 0.9 grams was ultimately obtained. The knowledge gained from the analysis of these collected fuel debris samples will contribute to the consideration of future methods for fuel debris retrieval. Similarly, when the asteroid probe “Hayabusa2” collected samples from the asteroid “Ryugu,” the target amount was set at 0.1 grams, which was considered sufficient for initial analysis. In the end, approximately 5.4 grams were collected, and various analyses have been conducted.



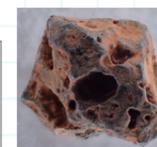
Retrieval of fuel debris (November 2024)

<Fuel debris (first time)>



Weight: 0.693g  
Radiation dose:  
β ray approx. 18 mSv/h \*1  
γ ray approx. 8mSv/h \*2

<Fuel debris (second time)>



Weight: 0.187g  
Radiation dose:  
β ray approx. 4.5 mSv/h \*1  
γ ray approx. 0.3mSv/h \*2

\*1 Measured in the glove box at a distance of about 20 cm from the surface of the transport box

\*2 The samples stored in a polypropylene container was measured by an ionization chamber (distance of 1-2 cm from the samples).



Robot arm test

In the future, the robot arm will be used to conduct further internal investigations and it is planned to carry out a third trial retrieval of fuel debris.

# What are the future plans for fuel debris retrieval?

The retrieval of fuel debris is planned to start on a small scale and gradually expand the scale, based on the new knowledge gained from the inside conditions of the primary containment vessel (PCV) and the experience of the operations.



## What will the results of fuel debris analysis be used for?

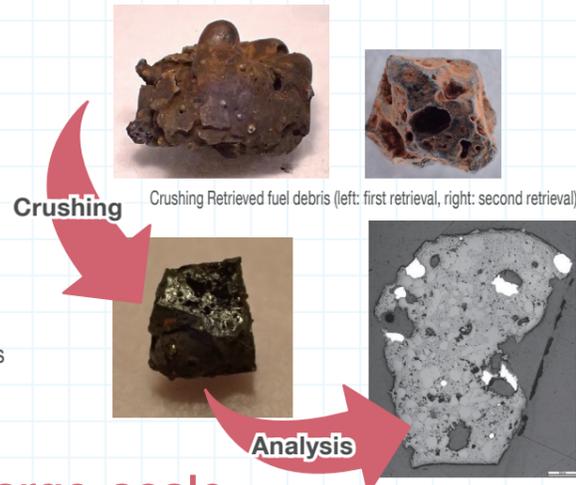
The collected fuel debris is being analyzed by analytical institutions such as the Japan Atomic Energy Agency (JAEA).

The first fuel debris samples have the following characteristics:

- They are not a single, uniform material, but rather a mixture of various substances and also contain internal voids, which make them easy to crush.
- The over heating and melting of the fuel during the accident is likely to have resulted in the volatilization of cesium.

The main elements of the second fuel debris samples were the same as those of the first one, but differences that appear to be due to the creation process and location were also confirmed (analysis is ongoing).

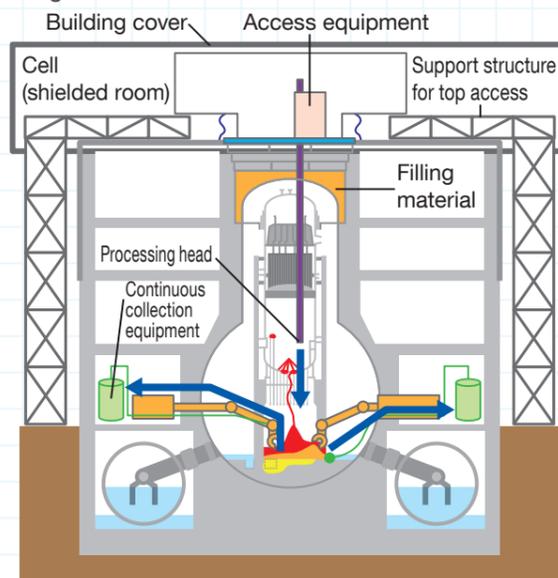
These valuable knowledge will be used to select jig to be used in future fuel debris retrieval and to consider safe storage methods.



## What is the method for large-scale fuel debris retrieval?

In response to recommendations from the expert committee of the Nuclear Damage Compensation and Decommissioning Facilitation Corporation (NDF), TEPCO are advancing studies on engineering methods for large-scale fuel debris retrieval targeting Unit 3.

The following results were indicated from the studies conducted so far in July 2025:



- The method of the fuel debris retrieval is a combination of top access and side access.
- Preparatory construction is projected to require approximately 12 to 15 years under certain assumptions.
- Over the next 1 to 2 years, TEPCO will conduct on-site investigations and other work to further refine the process.

# What about research & development and human resources development?

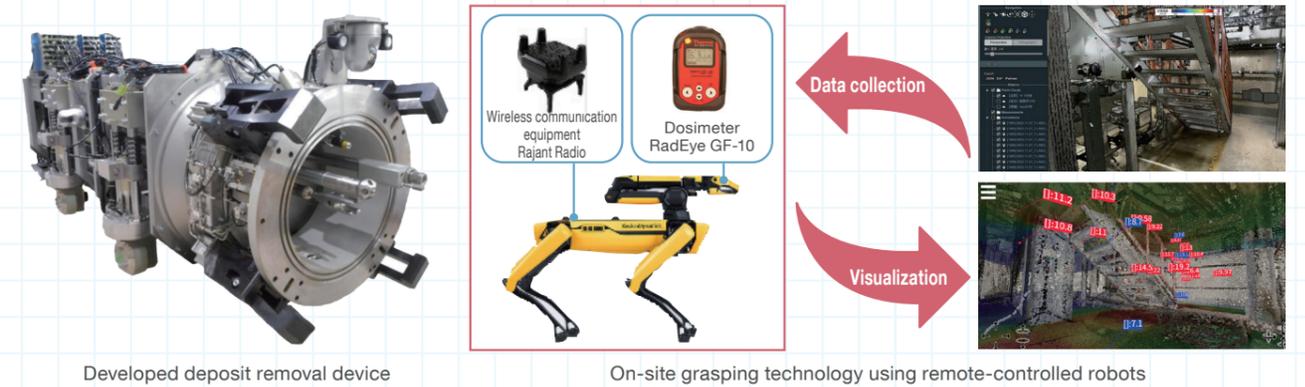
The decommissioning of Fukushima Daiichi NPS is an unprecedentedly challenging undertaking worldwide, and the national government is also taking the lead in addressing the decommissioning.



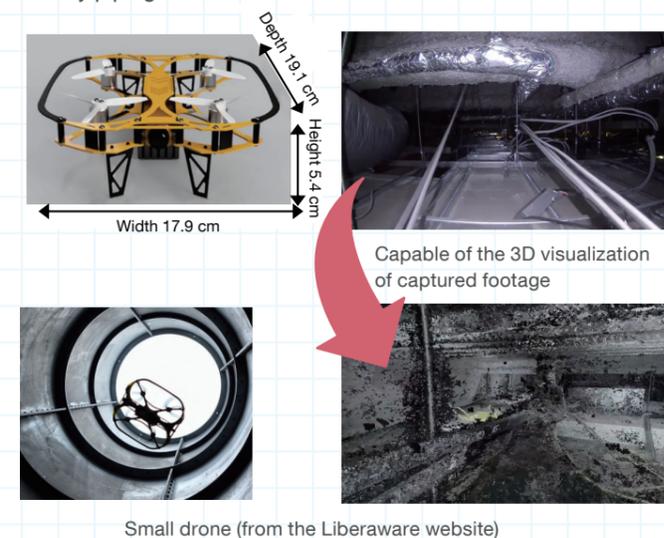
## What is the national government working on?

The government provides support for research & development so as to resolve technically challenges.

In the research & development conducted so far, we have developed a high-pressure water device for removing deposits inside penetration pipes connected to the primary containment vessel (PCV), as well as a system that uses remote-controlled robots to patrol and grasp on-site conditions in high-radiation areas that are difficult for people to access, from the perspective of preventing worker exposure.



There are examples where projects supported by this research & development have been applied in other fields. Small drone technology, which was developed assuming internal investigations in narrow spaces at decommissioning sites, has been utilized for inspection tasks in narrow spaces such as inside factory piping.



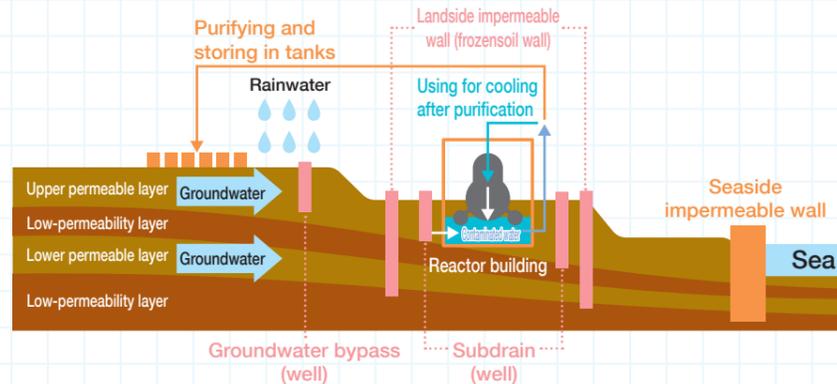
As part of the Ministry of Education, Culture, Sports, Science and Technology's (MEXT) "Decommissioning Research and Human Resource Development Enhancement Program," the "Creative Robot Contest for Decommissioning" has been held annually since FY2016. The purpose is to encourage students to become interested in decommissioning through the process of building robots, to foster creativity, and to develop not only problem-solving abilities but also problem-identification abilities.

# How are measures taken against contaminated water?



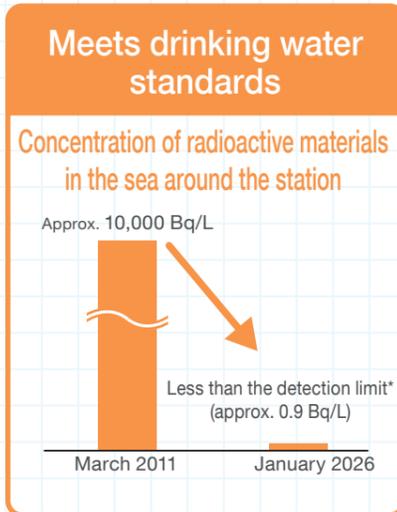
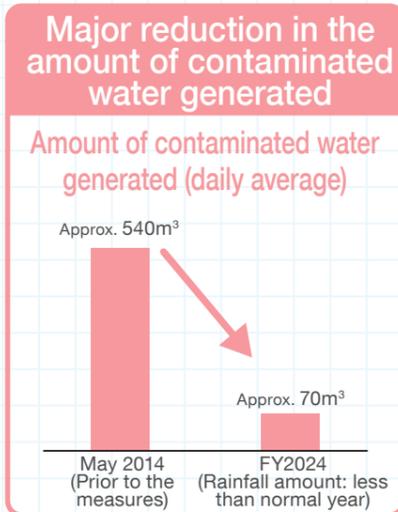
## What is the mechanism of contaminated water generation?

Water used to cool the fuel debris comes into contact with them and therefore becomes contaminated with radioactive materials. When this water mixes with groundwater and rain water that flows into the buildings, so-called "contaminated water" is generated.



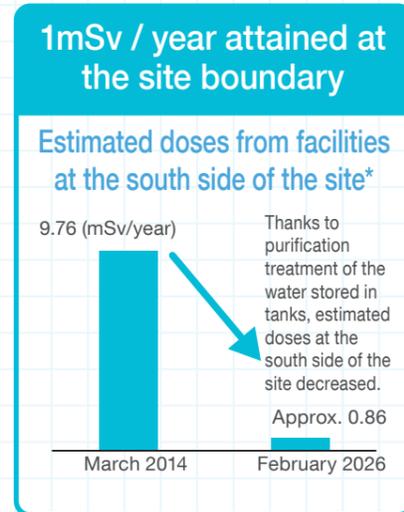
## What are the three basic policies and how effective have the countermeasures been so far?

**1 STOP**  
Redirecting groundwater from contamination sources



\* The concentration of radioactive materials in the sea around the station refers to the Cs137 level near the south discharge channel  
\* The international standard for drinking water quality is 10 Bq/L

**3**  
Removing contamination sources



\* Storage tank area

Various measures have been implemented based on three basic policies. As a result, the risk of radiation from contaminated water has been greatly reduced.



## What are major examples of countermeasures based on the three basic policies?

**2**  
Preventing leakage of contaminated water

Replacement from flanged tanks to welded tanks

**3**  
Removing contamination sources

Purifying water by removing most of the radionuclides except tritium (hydrogen-3)

**2**  
Preventing leakage of contaminated water

Installation of sea-side steel impermeable wall

The groundwater level around the building is kept higher than the contaminated water level to prevent the contaminated water from leaking out of the building.

**1 STOP**  
Redirecting groundwater from contamination sources

Land-side impermeable wall (frozen-soil wall)

\* Conceptual drawing

### Plans

#### Efforts to further reduce the risk of radiation from contaminated water

Through continued efforts in rainwater management and other measures, we will further reduce the amount of contaminated water generated.

We aim to reduce the amount of contaminated water generated to approximately 50-70 m<sup>3</sup> per day by fiscal year 2028, when evaluated with average rainfall amounts.

# The things to know about ALPS treated water

## 1 The handling of ALPS treated water is an essential task for the decommissioning of Fukushima Daiichi NPS and the reconstruction of Fukushima.



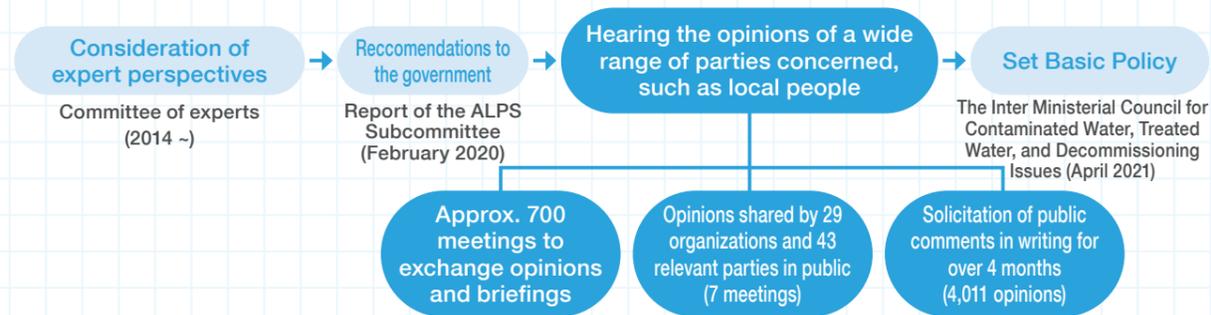
Examples of facilities required for decommissioning

- Storage facilities for spent fuel
- Maintenance and training facilities for fuel debris retrieval
- Storage and analysis facilities for fuel debris and radioactive waste

The number of large storage tanks has already exceeded 1,000, and there is a risk that this may compress the space needed to construct equipment and facilities required for future decommissioning work. In addition, the opinions exist that there is a risk of collapse in the event of a disaster, and that the presence of the large tanks itself is a cause of adverse impacts on reputation. Thus, handling of ALPS treated water and reducing the number of tanks are essential tasks for decommissioning and reconstruction.

## 2 After thorough and prolonged deliberation, the decision to adopt discharge into the sea as the handling method has been finalized.

Handling of ALPS treated water had been discussed with experts for over 6 years. As a result, it was evaluated that discharge into the sea is the most reliable method, taking into account that there are precedents in Japan and abroad and the monitoring is easy. After hearing opinions in public and soliciting public comments in writing, the Government of Japan (GoJ) set the policy of discharging ALPS treated water into the sea.

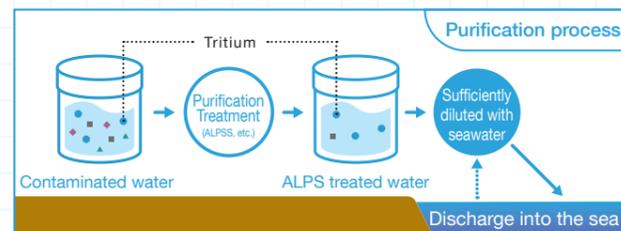


## 3 ALPS treated water is formerly contaminated water from which most of the radioactive materials have been removed.

ALPS treated water is the water that was previously “contaminated”, and which, has been purified to the extent that it meets safety standards for radioactive materials other than tritium. In order to meet safety standards, tritium is significantly diluted with seawater before discharging. The discharge of ALPS treated water into the sea is unlikely to have an impact on the human body or the environment.

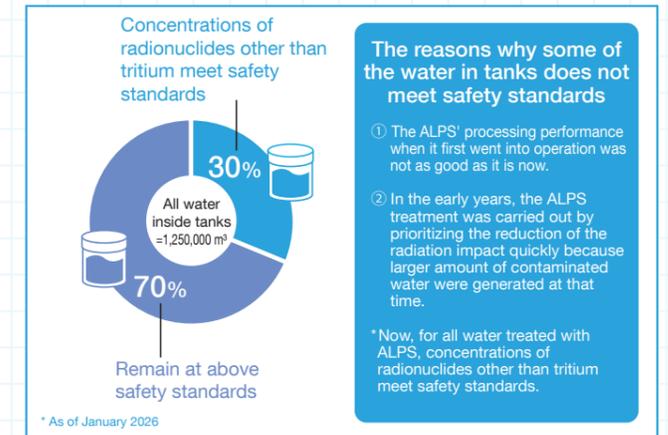


Advanced Liquid Processing System (ALPS)



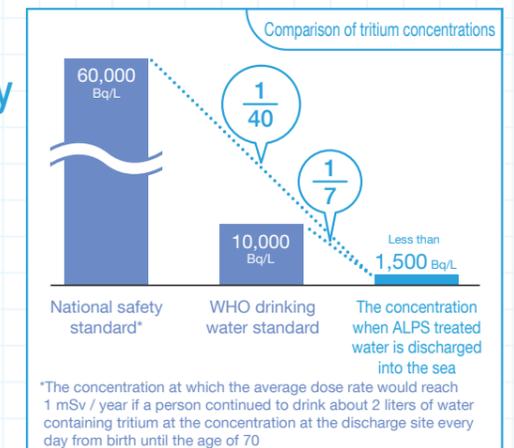
## 4 Water in tanks containing radioactive materials that exceed the regulatory standards other than tritium will be repurified.

Some of the water stored in tanks contains some radioactive materials other than tritium in concentrations exceeding safety standards. However, it has been confirmed that these radioactive substances can be removed by further purification treatment (secondary treatment).



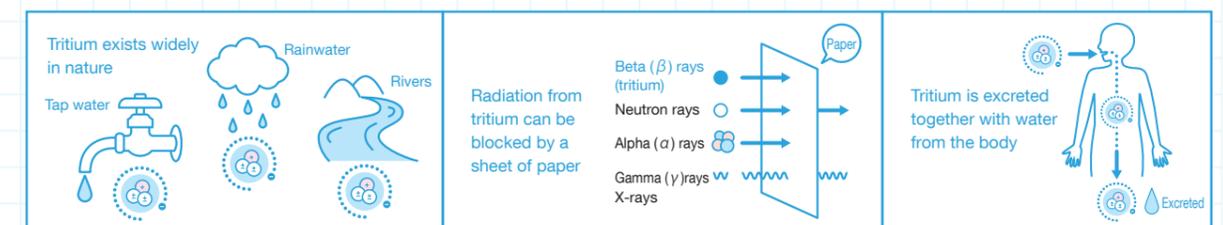
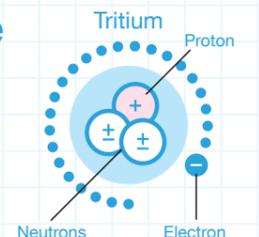
## 5 The tritium concentration in the ALPS treated water discharged into the sea fully meets the safety standards of national and international organizations (WHO).

When discharged ALPS treated water into the sea, the tritium concentration is set to be below 1,500 becquerels per liter. This level is 1/40 of Japan’s regulatory safety standards (which are based on internationally accepted standards) and approximately 1/7 of the drinking water guideline value set by the World Health Organization (WHO).



## 6 Tritium is a type of hydrogen and is a radioactive material that is widely found in nature.

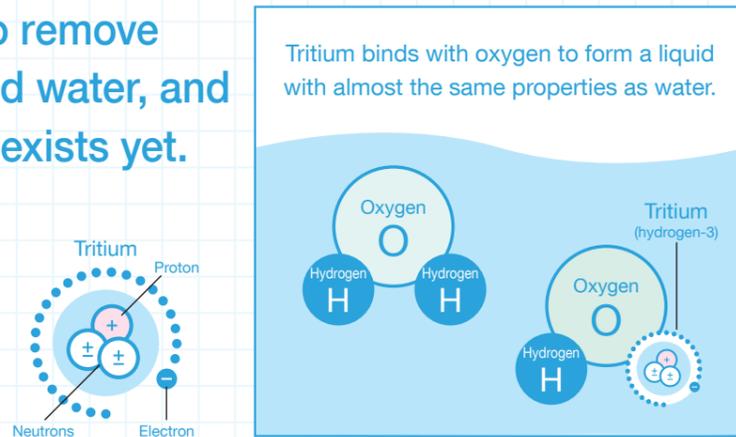
Tritium is a hydrogen isotope that is widely present in the human body and in the natural environment. Its radiation energy is extremely weak and can be shielded by a single sheet of paper. Even if it enters the body, it does not accumulate and is excreted from the body together with water.



# The things to know about ALPS treated water

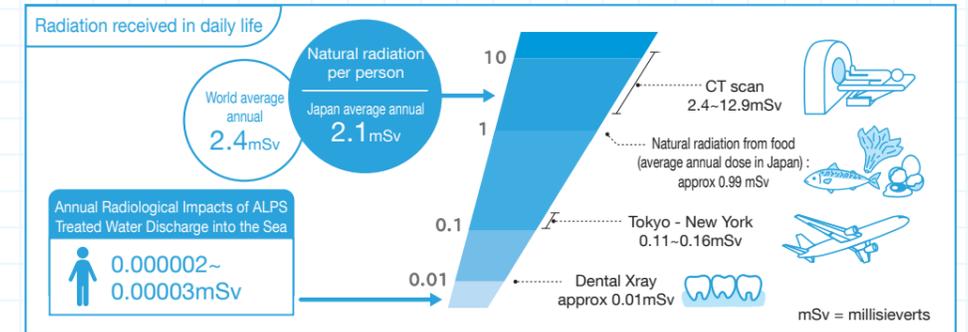
## 7 It is extremely difficult to remove tritium from ALPS treated water, and no practical technology exists yet.

Removing only tritium from water is very difficult and there is no tritium separation technology applicable to ALPS treated water at this time. The International Atomic Energy Agency (IAEA) has made the same acknowledgment.



## 10 The radiological impact from the discharge into the sea is negligible on people and the environment.

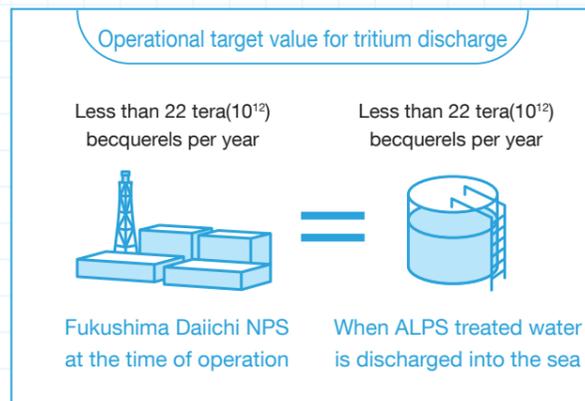
When the ALPS treated water is discharged into the sea, the radiation effect for one year is extremely small and is much smaller than the effect from the natural world.



Source: Prepared by the Agency for Natural Resources and Energy based on data from the National Institute of Radiological Sciences, National Institutes for Quantum and Radiological Science and Technology, and Chapter 2 "Radiation Exposure" in the Ministry of the Environment's "Comprehensive Basic Data on Health Effects of Radiation (2022 Edition)"

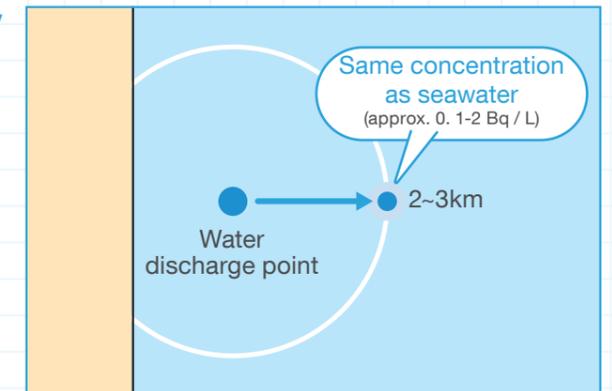
## 8 The total amount of tritium to be discharged is below the operational target value during the regular operation of Fukushima Daiichi NPS (pre-accident).

We appropriately manage it so that the tritium to be discharged remains below the operational target value (pre-accident) during operation. In addition, we formulate a discharge plan at the end of each fiscal year to minimize the annual tritium discharge amount as much as possible.



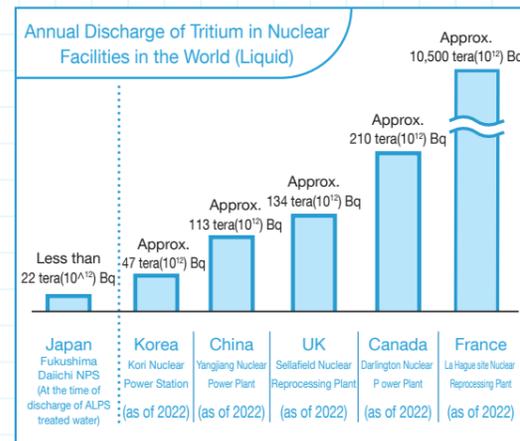
## 11 When the water is sufficiently diluted with seawater in prior to the discharge.

After the concentration of radioactive materials has been confirmed, the ALPS treated water is mixed with a large amount of seawater in a dilution facility and diluted more than 100 times. The diluted ALPS treated water is discharged at a point about one kilometer away from the coastline of the Fukushima Daiichi NPS. It is evaluated that the concentration of tritium will be the same as that of the surrounding seawater at a distance of two to three kilometers from the discharge point.



## 9 At nuclear facilities around the world, tritium is discharged in compliance with safety standards.

Nuclear facilities around the world handle tritium in compliance with safety standards. No effects attribute to tritium have been found around these facilities. The amount of discharge of tritium from Fukushima Daiichi NPS is at a low level even when compared to many nuclear facilities in Japan and abroad.



## 12 The International Atomic Energy Agency (IAEA) has also been reviewing thoroughly.

Before the start of the discharge of ALPS treated water into the sea, the IAEA published a comprehensive report incorporating conclusions stating that the discharge of ALPS treated water "is consistent with relevant international safety standards" and "will have a negligible radiological impact on people and the environment". The IAEA will continue its safety review of the discharge of ALPS treated water into the sea not only before but also during and after the discharge for long term.



IAEA Director General Grossi Presented a Comprehensive Report to Prime Minister Kishida



IAEA Onsite Visits

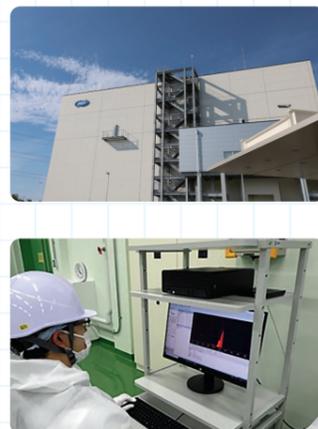
# The things to know about ALPS treated water

## 13 To enhance objectivity and transparency, ALPS-treated water is analyzed with the involvement of third-party organizations.

In addition to TEPCO, a third-party organization, the JAEA, also conducts analysis of ALPS-treated water before discharge. The analysis results by the JAEA are reported to Japan's national government (METI) and are also published on the JAEA website. In addition, TEPCO's precise and accurate analytical capabilities are confirmed by participating in inter-laboratory comparisons conducted by the IAEA.



JAEA Third-party Analysis of ALPS-treated Water



## 14 Thorough sea area monitoring has been and will continue to be conducted before and after the discharge and the measurement results are published online.

Sea area monitoring thoroughly confirms whether any significant changes occur in the concentrations of radioactive substances in the ocean before and after discharge, ensuring transparency by involving third-party organizations such as the IAEA in the monitoring. Measurements and analyses of radioactive substance concentrations in seawater, fish, and other samples are conducted not only by TEPCO but also by the national government and Fukushima Prefecture. From the monitoring results to date, it has been confirmed that the discharge is proceeding as planned and that the discharge of ALPS-treated water is safe.



TEPCO Sea area monitoring results



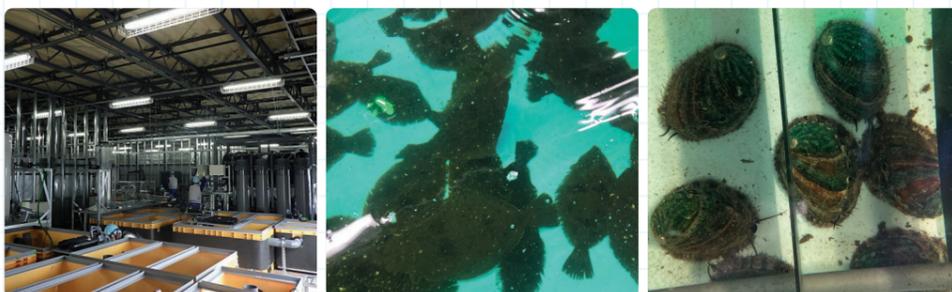
Japan's Ministry of the Environment Sea area monitoring information for ALPS-treated water



Seawater sampling

## 15 Through rearing tests on flounder and other marine organisms in water containing ALPS-treated water, it is confirmed that tritium does not accumulate in their bodies.

Rearing tests on flounder, abalone, and seaweed using seawater containing ALPS-treated water were conducted. Consistent with findings obtained both domestically and internationally, the results confirmed that tritium does not concentrate in the bodies of these organisms and that there was no difference in growth compared to rearing in normal seawater. The results of the rearing tests are available online.



TEPCO rearing tests for sea organisms archive

## 16 Various information is disseminated at the local, national, and international levels to prevent further adverse impact on reputation.

We disseminate information on the safety and necessity of discharging ALPS-treated water through various methods, including via television commercials, newspaper advertisements, web advertisements, and social media. In addition, we also provide outreach lectures to high schools throughout Japan.



Visit to Fukushima Daiichi NPS



Side event at IAEA General Conference



Local events



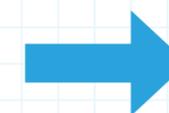
Outreach lectures

## 17 Dismantling of the tanks that is no longer used due to the discharge of ALPS-treated water is proceeding and the vacated land is planned to be used for the construction of facilities necessary for decommissioning.

In February 2025, dismantling of the tanks that is no longer used due to the discharge of ALPS-treated water began. On the vacated land due to the dismantling, the facilities related to fuel debris retrieval and others are planned to be constructed.



Before dismantling of the J9-area tanks began



After dismantling of the J9-area tanks is completed

Past discharge history, tank base, etc. Please scan here for the latest data.



TEPCO Treated water Portal Site



# How is the waste managed?

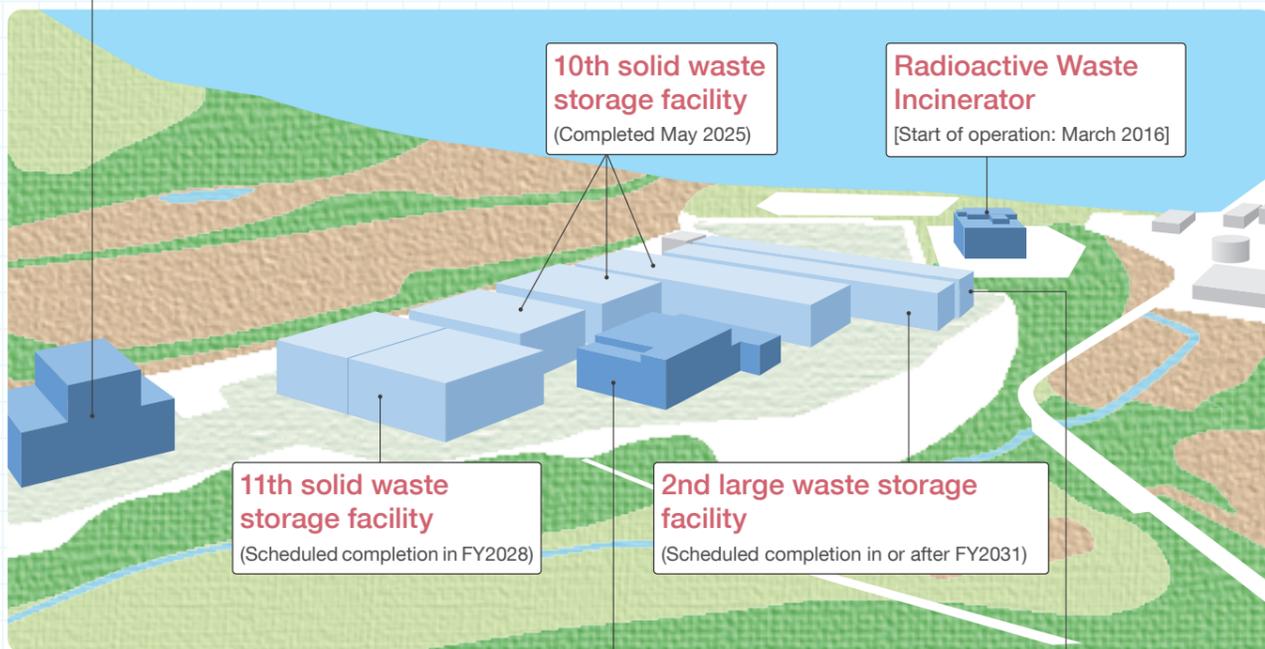


## How is the waste stored and managed?

Radioactive waste such as rubble from the Fukushima Daiichi NPS is currently stored in storage facilities and outdoor temporary storage facilities, depending on the radiation dose rate. We will reduce the volume of such waste as much as possible and consolidate it in the buildings for the purpose of shielding it and suppressing its dispersal. We are eliminating the temporary storage area by around fiscal 2028.



**Additional radioactive waste incinerator**  
[Completed: May 2022]



**Volume reduction treatment facility**  
[Completed February 2024]



**1st large waste storage facility**  
(Scheduled operation in FY2026)

Currently, efforts are underway to store all waste in the building by minimizing its volume as much as possible, aiming to further reduce risk.



## Status of waste storage



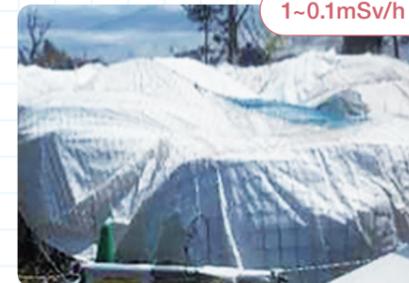
Solid waste storage

More than 30mSv/h



Soil-covered temporary storage facilities, etc.

30~1mSv/h



Sheet curing

1~0.1mSv/h



Open storage

Less than 0.1mSv/h



Branches and leaves: Temporary storage bunker  
Roots and trunks: Open storage

Felled trees

## Waste generation prediction for about 10 years in the future

In order to systematically manage and store waste, TEPCO predicts the amount of waste generated for approximately the next ten years and revises its Storage Management Plan annually. According to a forecast as of February 2026, it is projected that approximately 800,000 m<sup>3</sup> of waste will be generated by March 2037, including waste already generated. However, by utilizing the existing waste incineration and volume reduction facilities, it is anticipated that the volume of waste can be reduced by one-third of the projected amount.

### Prediction of Waste Generation and Storage Volume in Approximately 10 Years



# Tell me more about decommissioning



Isn't there a possibility of another accident?

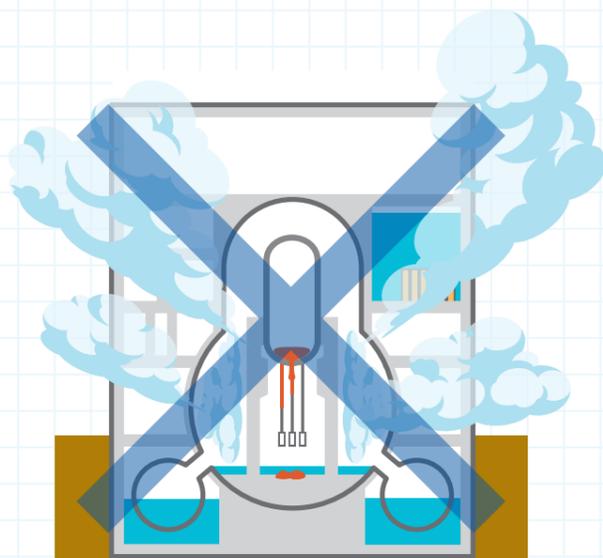
Since a stable state is maintained, the possibility that an accident occurs again is extremely low.



Currently, units 1 to 3 are being continuously injected with water. As a result, the heat from the fuel debris has been **greatly reduced** since the accident, and a stable state has been maintained.

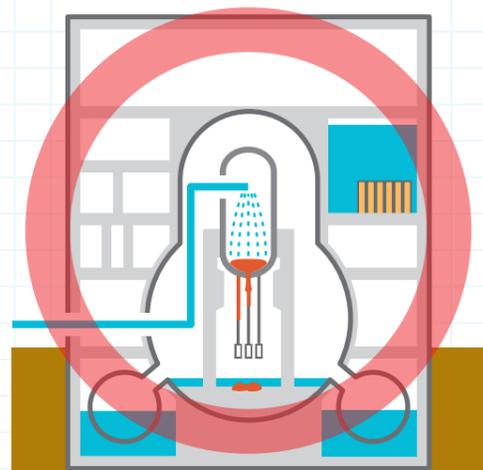
At present, the temperature in the nuclear reactor is maintained at about 15 to 35°C. Even if water injection is stopped, it is expected to take about two weeks to reach the TEPCO's operational control limit temperature (80°C), and thus it is possible to cope with the situation with a time margin.

Further, monitoring is constantly performed in order to detect "recriticality" in which "criticality" in the uranium contained in the fuel undergoes nuclear fission in a chain reaction again. By any chance, even if re-criticality occurs, facilities are in place to suppress nuclear fission.



At the time of the accident

The inability to inject water into the reactor caused the fuel to overheat, resulting in a hydrogen explosion.



Today

Reactors are kept stable.



How are you prepared for disasters such as earthquakes and tsunamis?

We are taking various measures in both hard and soft aspects. We will continue to expand the facilities to make the measures more complete.



## Earthquake

Computer analysis has confirmed that even if an earthquake of the magnitude of the Great East Japan Earthquake occurs, important buildings will not collapse.

The facility for taking out the fuel from the spent fuel pool is also designed to be earthquake-resistant, and the influence on the decommissioning work can be suppressed.

On the basis of the lessons learned from the earthquakes that occurred off the coast of Fukushima Prefecture in February, 2021, we will continuously try to secure safety and thoroughly transmit information quickly and with high transparency.

## Tsunami

In addition to a Chishima Trench Tsunami seawall in September 2020, against a tsunami considered highly imminent, a new seawall was implemented in March 2024 against Japan Trench Tsunami.

Work has also been completed to build doors to block openings in each building to prevent water from entering.

Measures against inundation by tsunami



Japan Trench Tsunami Seawall



Installation of watertight Doors



## Equipment and drills

Fire engines, power supply vehicles, and other equipment needed in the event of a disaster are always available on high ground, where a tsunami cannot reach, so that a quick response is possible.

Drills that assume various situations, such as the station blackout, in the event of a disaster, are being conducted continuously.

Ensuring the cooling function in an emergency



Water injection drill



Power supply vehicle



Fire engines



## Who is involved in decommissioning?

In addition to bringing together the wisdom of people in Japan and overseas, the decommissioning process is proceeding with the cooperation of local people.

The decommissioning of Fukushima Daiichi NPS, which caused a severe accident, is an unprecedented effort in the world. In addition to the national government and TEPCO, various universities, R&D institutes, and overseas companies are working together to bring together the wisdom of Japan and overseas.



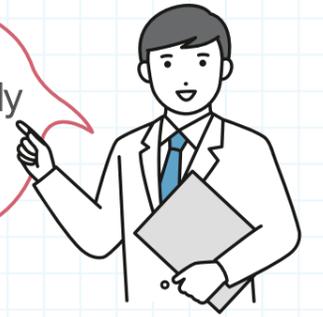
## What happens after the decommissioning?

The appearance after decommissioning will continue to be examined in the future while firmly inquiring about the opinions of everyone in the local area.

At present, the situation in the nuclear reactor, the handling of waste, and the like, are often uncertain. Therefore, it has not yet been possible to present a concrete picture of the situation after decommissioning.

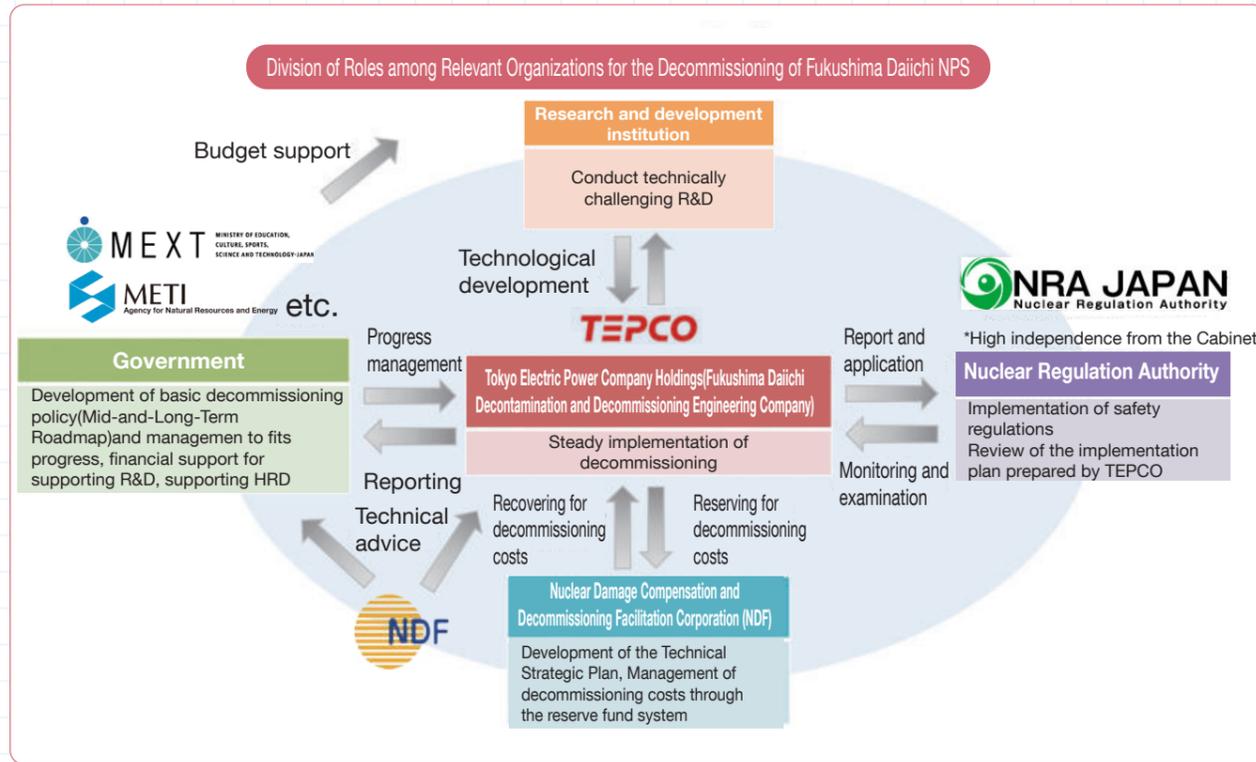
The appearance after decommissioning is an important study subject, which is also related to the future view of the region.

The GoJ will continue to study the issue while communicating with local residents.



## I want to know the situation inside the Fukushima Daiichi NPS

The environment on the premises has greatly improved, and observations by residents and groups are also being accepted. In addition, we have prepared a virtual tour to show the decommissioning site to many people.



The safe and steady decommissioning work, which is a major premise for the reconstruction of Fukushima, will continue for 30 to 40 years. Therefore, it is important to involve local residents in various ways, including local industries such as accommodations and restaurants and site workers, and engineers.

The decommissioning of the Fukushima Daiichi NPS is proceeding with the cooperation of the local people, including local companies. Based on the technological capabilities that have developed in this way, we aim to further revitalize this area and advance the reconstruction of Fukushima and the decommissioning of Fukushima Daiichi NPS in tandem.

Through independent and objective reviews by the International Atomic Energy Agency (IAEA) and other opportunities, we have been using global knowledge and experience in the decommissioning of nuclear facilities as well as disseminating information on the decommissioning of the Fukushima Daiichi NPS to the international community. The IAEA has provided evaluation and advice regarding decommissioning work on five occasions. (As of January 2026)



Collaborative Laboratories for Advanced Decommissioning Science (Tomioka Town)



Okuma Analysis and Research Center (Okuma Town)



Naraha Center for Remote Control Technology Development (Naraha Town)



beABLE Co., Ltd. (Dismantle the exhaust stack for Units 1 and 2)



Canyonworks, Ltd. (Produces the protective clothes used at the Fukushima Daiichi NPS)



Residents observing the site

Since November 2018, residents and other visitors have been able to visit the elevated area overlooking Units 1 to 4 wearing their daily attire. Residents of Fukushima Prefecture or those who lived there at the time of the accident are invited to visit and inquire about future decommissioning work.

Scan here to take a virtual tour of the decommissioning site



INSIDE Fukushima Daiichi

<https://www.tepco.co.jp/en/insidefukushimadaichi/index-e.html>

# How has decommissioning been carried out so far?

Let me tell you about the progress of decommissioning so far.



	2011	2012	2013	2014	2015	2016
Measures against contaminated and treated water		<ul style="list-style-type: none"> <li>The construction of the sea-side impermeable wall was started (April). Total length: Approx. 800m Piles: Approx. 600</li> </ul>	<ul style="list-style-type: none"> <li>Multi-nuclide removal system (ALPS) started the test flow (From March)</li> <li>Large leakage of contaminated water from flanged tank (Approx. 300 tons) (August)</li> <li>Determine three basic policies of countermeasures against contaminated water "Redirecting" "Preventing" and "Removing"(December)</li> </ul>	<ul style="list-style-type: none"> <li>Groundwater bypass pumping and drainage started (April)</li> <li>Full-scale construction of frozen soil type land-side impermeable wall started (June) Total length: approx. 1500m Freezing pipes: 1568, Depth: Approx. 30m</li> </ul>	<ul style="list-style-type: none"> <li>Sub-drain pumping and drainage started (September)</li> <li>Construction of the sea-side impermeable wall completed (October)</li> </ul>	<ul style="list-style-type: none"> <li>Frozen soil type land-side impermeable wall started to freeze (March)</li> <li>Completed wide-area site paving (facing) (March)</li> </ul>
Removal of fuel from the spent fuel pool		<ul style="list-style-type: none"> <li>Unit 4: Removal of rubble from the reactor building completed (October)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 4: Removal of fuel from the spent fuel pool started / Transferred to the common pool (November)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 4: Removal of fuel from the spent fuel pool completed / 1535 assemblies (December)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 3: Completed removal of large scale rubble (fuel exchangers) from the spent fuel pool (August)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 1: Completed removal of building cover wall panels</li> </ul>
Fuel debris retrieval		<ul style="list-style-type: none"> <li>Unit 1: Video of reactor containment vessel confirmed with an endoscope (October)</li> <li>Unit 2: Video of reactor containment vessel confirmed with an endoscope for the first time (January)</li> </ul>			<ul style="list-style-type: none"> <li>Unit 1: Fuel debris location survey using muons (cosmic rays) No fuel found in reactor core (February)</li> <li>Unit 1: Robot probe of the first floor of the reactor containment vessel (April)</li> <li>Unit 3: Video of reactor containment vessel confirmed (October)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 2: Conducted a fuel debris location survey using muons (cosmic rays) Most of the fuel debris was located at the bottom of the reactor pressure vessel (March)</li> </ul>
Waste treatment						<ul style="list-style-type: none"> <li>Started operation of the miscellaneous solid waste incineration facility (March)</li> </ul>
Other activities/ working environment, etc.			<ul style="list-style-type: none"> <li>Masks may be omitted from all areas except around Units 1 to 4, the tank area, and the rubble storage area (May)</li> <li>Regular work clothes allowed up to Fukushima Daiichi NPS (June)</li> </ul>	<ul style="list-style-type: none"> <li>New administrative building started operation (Started work on the 1st floor; before that, worked in the back office on the 2nd floor) (October)</li> </ul>	<ul style="list-style-type: none"> <li>Started providing hot meals at cafeteria (April)</li> <li>Started operation of a large rest house (capable of handling 1200 people) (May)</li> <li>The non-wearing area of the full-face mask was enlarged to 90% (65% in the past) (May)</li> </ul>	<ul style="list-style-type: none"> <li>Opened a convenience store in a large rest house (March)</li> <li>Expanded areas where coveralls are not required due to the progress of measures to reduce environmental radiation dose (March)</li> <li>Achieved 1 mSv / year at site boundary (March)</li> <li>Started operation of new administrative building (October)</li> </ul>
Reconstruction		<ul style="list-style-type: none"> <li>Started fishing for sale off the coast of Fukushima for the first time since the earthquake</li> </ul>	<ul style="list-style-type: none"> <li>Non-experimental rice farming resumes for the first time in the former restricted zone (Tamura City)</li> </ul>	<ul style="list-style-type: none"> <li>The evacuation order was lifted for the first time in the area where the evacuation order was issued by the government (Tamura City)</li> </ul>	<ul style="list-style-type: none"> <li>The entire Joban Expressway has opened</li> </ul>	<ul style="list-style-type: none"> <li>Started operation of Fukushima Robot Test Field (gradually opened, fully opened in 2020)</li> </ul>

**2011**  
 ● Earthquake (March)  
 ● Cold shutdown achieved (December)

**2012**

**2013**

**2014**

**2015**

**2016**

		2017	2018	2019	2020	2021
Measures against contaminated and treated water	<ul style="list-style-type: none"> <li>Unit 1: Removal of stagnant water in the turbine building completed (March)</li> </ul>	<ul style="list-style-type: none"> <li>Construction of frozen soil-type land-side impermeable wall completed Created a water level difference of 5 to 6 meters The amount of contaminated water generated was reduced to 1/3 of the initial level by various measures (Before the measures: Approx. 540m<sup>3</sup>/day → Approx. 170m<sup>3</sup>/day)</li> </ul>	<ul style="list-style-type: none"> <li>Completed transfer of treated water by the multinuclide removal system from flange tanks to welded tanks (March)</li> </ul>	<ul style="list-style-type: none"> <li>A subcommittee report on handling of the ALPS treated water was issued.</li> <li>Achieved the following targets set forth in the Mid-and-Long-Term Roadmap •Removal/treatment of stagnant water in buildings* completed.* •The amount of contaminated water generated per day is suppressed to 150m<sup>3</sup> or less (Approx. 140m<sup>3</sup>/day on average in 2020) *Reactor buildings of Unit 1-3, process main buildings, and high-temperature incineration buildings are excluded.</li> </ul>	<ul style="list-style-type: none"> <li>Basic policy on the handling of ALPS treated water was announced (April)</li> <li>Interim measures for the handling of ALPS treated water (August) was announce</li> <li>Action plan for the continuous implementation of the basic policy on the handling of ALPS treated water (December)</li> </ul>	
Removal of fuel from the spent fuel pool		<ul style="list-style-type: none"> <li>Unit 1: Removal of rubble on the north side of the reactor building started (January)</li> <li>Unit 2 : Examination of the upper part of the reactor building, removal of the rubble started (July)</li> <li>Unit 3: Installation of fuel removal cover completed (March)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 3: Started removing fuel from the spent fuel pool (April)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 3: Removal of all 566 fuel assemblies completed (February)</li> </ul>		
Fuel debris retrieval	<ul style="list-style-type: none"> <li>Unit 1: Surveyed the first basement floor of the reactor containment vessel using a self-propelled robot (March)</li> <li>Unit 2: The lower part of the reactor pressure vessel was examined by a self-propelled robot (February)</li> <li>Unit 3: No fuel debris was found in the reactor core as a result of a debris location survey using muons (cosmic rays) (May)</li> <li>Unit 3: Investigated the lower part of the reactor pressure vessel (July)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 2: The lower part of the reactor pressure vessel was inspected (January)</li> </ul>	<ul style="list-style-type: none"> <li>Unit 2: A deposit considered to be fuel debris was grasped for the first time (February)</li> <li>Decided to start retrieving fuel debris (Started from Unit 2 in 2021) (December)</li> </ul>	<ul style="list-style-type: none"> <li>Robot arm for trial retrieval from the United Kingdom arrived in Japan, and performance verification tests and other activities began (July)</li> </ul>		
Waste treatment		<ul style="list-style-type: none"> <li>Started operation of No. 9 solid waste storage facility (February)</li> <li>Started operation of large-scale equipment decontamination facilities (May)</li> </ul>		<ul style="list-style-type: none"> <li>Started preparatory work for volume reduction treatment facility (September)</li> </ul>		
Other activities/ working environment, etc.	<ul style="list-style-type: none"> <li>G-Zone area (general clothing area) expanded to 95% of the site area due to improvement of work environment (March)</li> </ul>	<ul style="list-style-type: none"> <li>Self-driving EV buses started operating (April)</li> <li>The G-zone area expanded to 96% of the site area due to improvements in the work environment (May)</li> </ul>	<ul style="list-style-type: none"> <li>Units 1 and 2: Started dismantling of exhaust stack (completed in May 2020) (August)</li> </ul>			
Reconstruction		<ul style="list-style-type: none"> <li>Resumed operation of J village (resumed except for some facilities; fully opened in 2019)</li> </ul>	<ul style="list-style-type: none"> <li>The evacuation order was lifted in a part of Okuma Town, and the work started at the new town hall office.</li> <li>Opened Fukushima Hydrogen Energy Research Field (March)</li> </ul>	<ul style="list-style-type: none"> <li>Evacuation orders were lifted in parts of the towns of Futaba, Okuma, and Tomioka (in all areas except for difficult-to-return zones) in March</li> <li>Operation of entire JR Joban Line resumed (March)</li> <li>The Great East Japan Earthquake and Nuclear Disaster Memorial Museum opened (September)</li> </ul>		



# The things to know more about the types, effects, and sources of radiation



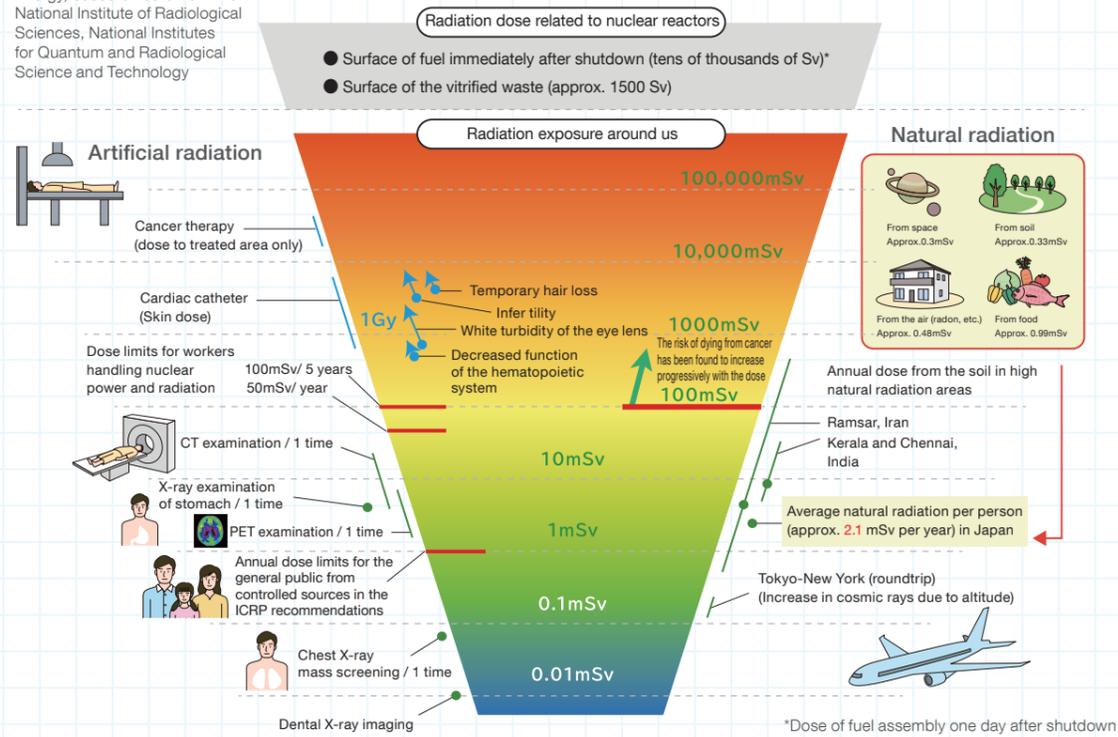
## How much radiation is present in our everyday surroundings?

In our daily lives, we are exposed to various types of radiation. It originally exists in nature, and radiation exists not only in specific places such as nuclear power stations and hospitals. The health effects of radiation depend not on the existence of radiation itself but on the amount of radiation, we are exposed to.



## Radiation exposure chart

Source: Amended by the Agency for Natural Resources and Energy, based on data from the National Institute of Radiological Sciences, National Institutes for Quantum and Radiological Science and Technology



What is the difference between radioactive substances, radioactivity, and radiation? What are becquerels and sieverts?

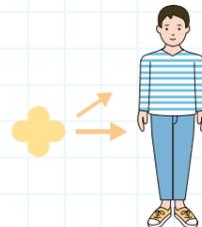
### Becquerel (Bq)

is a unit that shows the amount of radioactivity, which is the ability to emit radiation.



### Sievert (Sv)

is a unit that represents the degree to which radiation affects the human body. Since the influence differs depending on the nuclear species even if it is the same Becquerel, it is important to judge by Sievert (effective dose) when comparing the health effects.

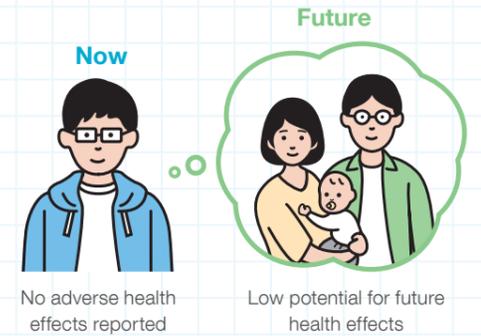


# The things to know the current situation in Fukushima



## Are there any health effects?

The United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) noted in its 2020 report that there have been no reports of adverse health effects that could be directly attributed to radiation exposure from the Fukushima Daiichi NPS accident, and that health effects are unlikely to be seen in the future as well.



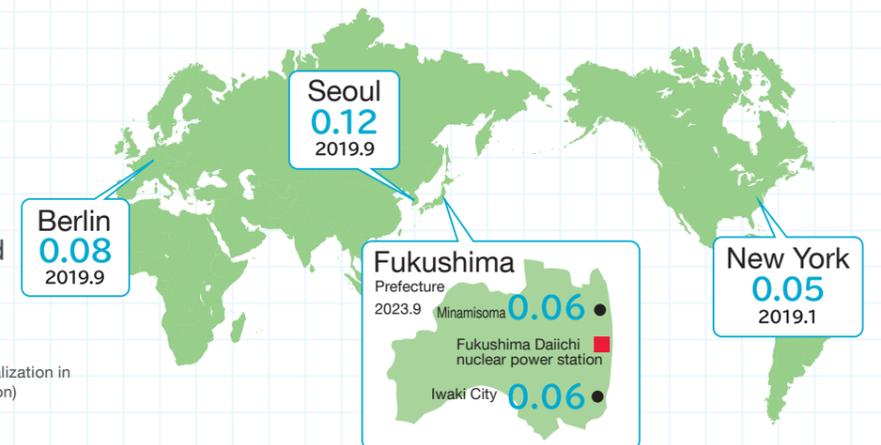
## Is food produced in Fukushima Prefecture safe?

Inspections for radioactive substances in food and drinking water from Fukushima Prefecture are conducted under the strictest standards in the world to ensure safety. All prefectural products on the market meet the standards. Although 55 countries and regions imposed import restrictions after the accident, 50 countries and regions have completely lifted them (as of February 2026).



## What is the air dose rate in Fukushima?

The air dose rate in Fukushima Prefecture is almost at the same level as that of major cities and representative tourist spots in Japan and overseas.



\*Dose rates is  $\mu\text{Sv}/\text{hour}$   
Source: Steps for Revitalization in Fukushima (30.2th edition)

# The things to know more about the glossary used

## 1. Operating floor

The uppermost floor of the reactor building, where tasks such as fuel exchange are carried out using the fuel handling machine during periodic inspections.

## 2. Dry cask storage

A container for storing spent fuel and other materials. It plays a role in storing spent fuel removed from the common pool on high ground.

## 3. Air dose rate

The radiation dose present in a certain space is converted to a value per unit of time. This includes more than radiation derived from the accident. It is also affected by radioactive materials derived from nature. Therefore, due to geological differences, there are rate gaps among regions, and weather conditions also influence the air dose rate.

## 4. Reactor pressure vessel(RPV)

A metal vessel housing fuel, control rods, and other components. This vessel is installed in the primary containment vessel. In the operating power station, heat is produced in this vessel due to the nuclear fission reaction.

## 5. Primary containment vessel(PCV)

A steel vessel housing the reactor and associated cooling system equipment, etc. Its function is to prevent the diffusion of radioactive material to the surrounding area in case of fuel damage.

## 6. Volume reduction treatment facility

A facility for reducing the volume of metal and concrete waste among radioactive solid waste generated after the accident by crushing or cutting them into small pieces for their efficient storing.

## 7. Sub-drain

Wells installed near the reactor buildings manage the groundwater level around the buildings, suppress the inflow of groundwater into the buildings, and at the same time prevent contaminated water from flowing out of the buildings. Groundwater pumped up from the sub-drain is purified and discharged after checking that the operational targets are met.

## 8. Spent fuel

Nuclear fuel which has been used in a nuclear reactor and whose fission ability has weakened. At the Fukushima Daiichi NPS, retrieval of fuel from spent fuel pools in reactor buildings has been proceeding in order to reduce future risk. (Retrieval from Units 3 and 4 has been finished.)

## 9. Shield plug

The top lid of the primary containment vessel. It has been found that the underside of the lid is highly contaminated. Although this is not considered to affect the decommissioning work directly, future decommissioning activities will be flexibly reviewed based on such findings.

## 10. Turbine building

A building housing the turbine generator. At Fukushima Daiichi NPS, the turbine building is located on the sea side of the reactor building.

## 11. Groundwater bypass

One of the measures for “redirecting” groundwater from contaminated sources. The facility pumps up groundwater flowing from the mountain-side to the sea-side through wells set apart from reactor buildings and other facilities and checks that the discharge standards are met before discharging the water into the sea.

## 12. Tritium(T)

Tritium, a type of hydrogen (hydrogen-3), is naturally present in our environment every day. It can be found in tap water, rainwater, and even in our bodies. Tritium is considered a radioactive substance that exists widely in nature. The radiation emitted by tritium is weak and can be stopped by a single sheet of paper.

## 13. Fuel debris

A material formed when molten nuclear fuel mixes with structural materials inside the reactor and then solidifies there.

## 14. Blowout panel

Equipment that prevents building damage by automatically failing and releasing pressure when the pressure in the reactor building has increased.

## 15. Main process building

A common facility for radioactive waste treatment and storage for all reactors. Since the accident, it has been used as temporary storage for stagnant water that has been transferred from the reactor buildings before being treated.

## 16. Pedestal.

A concrete structure supporting the reactor pressure vessel.

## 17. Radioactive cesium (Cs-134, Cs-137)

This is produced during the fission of uranium fuel. It was one of the primary radioactive materials emitted into the environment due to the accident at the Fukushima Daiichi NPS. The half-life of Cs-134 is 2.1 years, and Cs-137 is 30 years. Food safety is measured using radioactive cesium as a standard. (The standard for general foods in Japan is 100 Bq/kg.)

## 18. Monitoring post

A system for continuously measuring the radiation dose in the atmosphere. These posts are mainly located on the site of the nuclear power station and surrounding municipalities. Real-time measurement data is publicly released on a website.

For more information on the Fukushima Prefecture Radiation Monitoring Office



## 19. Weld-joint tanks

Tanks storing purified water. Their joints are welded to reduce the risk of the stored water leaking out. Flanged tanks built from steel materials connected together with bolts were once used for storage, but they have been replaced with weld-joint tanks to lower the risk of leakage.

## 20. Land-side impermeable wall (frozen soil wall)

One of the measures for “redirecting” groundwater from contamination sources. It is built around the reactor buildings and turbine buildings for Units 1 to 4 and blocks the groundwater flowing from the mountainside to the seaside.

## 21. Criticality

A state in which nuclear fission continues in a chain reaction. In a nuclear power station, power is generated while maintaining this chain reaction at a constant level (output) in the reactor.

## 22. Cold shutdown state

In a state where the temperature at the bottom of the RPV is roughly 100°C or less, the emission of radioactive materials is controlled, and the medium-term safety of the cooling system can be ensured.

## 23. IAEA

An autonomous organization that the United Nations established in 1957 under its auspices with the aim of promoting the peaceful uses of nuclear energy, it sends inspectors to countries around the world to verify that nuclear energy is not being diverted for military purposes and promotes technical cooperation in the atomic field. In addition, it creates international standards for nuclear safety. Its headquarters is in Vienna.

## 24. JAEA

The abbreviation for the Japan Atomic Energy Agency. Its activities include analyses and studies on the treatment and disposal of fuel debris and other radioactive materials and the provision of opportunities for the development and demonstration of remote-control equipment for that purpose.

## 25. NDF

The abbreviation for the Nuclear Damage Compensation and Decommissioning Facilitation Corporation. The organization was founded in September 2011 as the Nuclear Damage Compensation Facilitation Corporation to assume responsibilities such as granting compensation funds to nuclear operators. It was reorganized into the Nuclear Damage Compensation and Decommissioning Facilitation Corporation in August 2014. With the additional objective of ensuring appropriate and steady implementation of decommissioning and other activities, the NDF conducts research and development of technologies needed for decommissioning and offers associated advice, guidance, and recommendations.

## 26. WHO Guidelines for Drinking-water Quality

Guidelines prescribing numerical targets and measures to be taken to ensure the safety of drinking water, set forth by the WHO (World Health Organization).

# The things to know more about decommissioning

## Step by step, toward the future of Fukushima

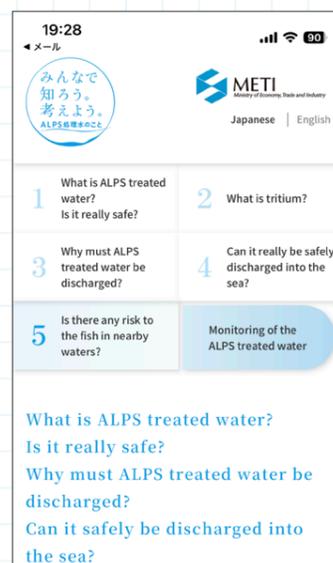
We are creating a website that compiles information about the decommissioning process and ALPS treated water.

Portal site for measures against decommissioning and contaminated / treated water

Decommissioning portal

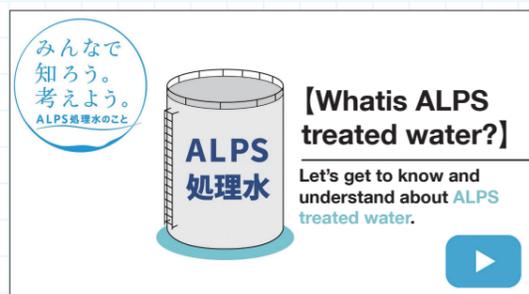


Let's get to know and understand about ALPS treated water.



### Related content (videos, brochures, etc.)

Content introducing the safety and necessity of handling of ALPS treated water



[What is ALPS treated water?] Let's get to know and understand about ALPS treated water.

You can access it here.



### INSIDE Fukushima Daiichi (TEPCO)

Virtual tour of the decommissioning site



For the safety and reassurance of marine products. (Leaflet)

You can learn more about these topics in various ways.



## TEPCO Decommissioning Archive Center



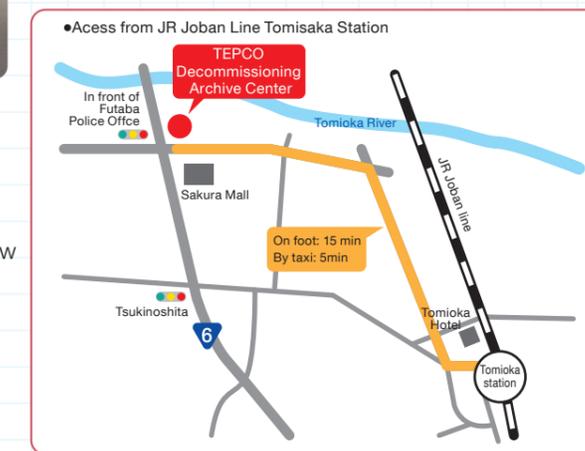
Here, people from areas around the nuclear power station, Fukushima Prefecture, and the general public can check relevant information, such as the facts about the accident at the Fukushima Daiichi NPS as well as the current state of decommissioning work.

**Address:** 3-58 Chuo, Tomioka-machi, Futaba-gun, Fukushima Prefecture (Former address: 378 Chuo, Oaza Kobama, Tomioka-cho, Futaba-gun, Fukushima Prefecture)

**Opening Hours:** 9:30 AM to 4:30 PM  
(Closed: Every 3rd Sunday of the month and New Year's holidays)

**Admission:** Free (Parking Admission: is also free)

**Contact:** 0120-502-957



## Great East Japan Earthquake and Nuclear Disaster Museum

In addition to exhibits that convey the actual situation of the complex disasters caused by the earthquake, tsunami, and TEPCO's Fukushima Daiichi NPS accident in Fukushima, as well as the progress toward reconstruction, lessons for disaster prevention and mitigation are also disseminated to both domestic and international audiences through research and investigation. Furthermore, participants can deepen their understanding by attending regularly scheduled storytelling sessions held four times a day and by taking part in optional training programs.

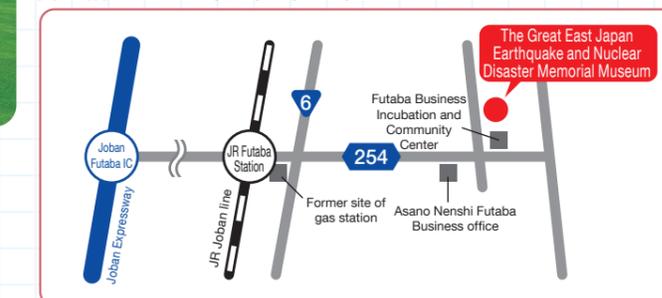


**Address:** 39 Takada, Nakano, Futaba Town, Futaba-gun, Fukushima Prefecture 979-1401

**Opening Hours:** 9:00 a.m. - 5:00 p.m. (last admission: 4:30 p.m.)  
(Closed: Tuesdays (the following weekday if Tuesday is a holiday) and year-end and New Year holidays)

**Admission:** [Individual]  
Adult: 600 yen Elementary, junior high and high school: 300 yen Preschoolers: Free

**Contact:** 0240-23-4402



# Important Stories on Decommissioning

Decommissioning of TEPCO's  
Fukushima Daiichi NPS  
and  
the Discharge of ALPS Treated  
Water into the Sea

The things  
to know

about ALPS treated water



**Nuclear Accident Response Office  
Electricity and Gas Industry Department**

Agency for Natural Resources and Energy  
Ministry of Economy, Trade and Industry  
TEL:03-3501-1511

**Intergovernmental Liaison Office for  
Contaminated Water, Treated Water and Decommissioning issues**

Nuclear Emergency Response Headquarters, Cabinet Office