

Chapter 7 Response Specific to the Nuclear Disaster

Section 1 Environmental Revitalization Efforts: Handling Anxiety Toward Radiation and Ensuring the Safety of Food, Etc.

1. Environmental revitalization efforts

(1) Decontamination measures, etc.

In the Act on Special Measures Concerning the Handling of Environmental Contamination by Radioactive Substances Discharged from the Accident at a Nuclear Power Station Caused by the Tohoku-Pacific Ocean Earthquake that Occurred on March 11, 2011 (Act No. 110, dated August 30, 2011; hereinafter referred to as the “Act on Special Measures Concerning Radioactive Contamination”), “special decontamination areas” designated as areas in which decontamination work would proceed according to the decontamination plan formulated by the national government, were established, together with “intensive contamination survey areas” in the municipalities with areas where the radiation level was at least 0.23 μ Sv/h, designated partly on the basis of opinion within the municipalities involved.

1) Special decontamination areas and the intensive contamination survey area

a. Overview

In August 2011, Act on Special Measures Concerning Radioactive Contamination was enacted, following which the Ministry of the Environment, in December of the same year, designated 11 municipalities in Fukushima Prefecture as special decontamination areas in which decontamination would be implemented directly by the national government, and in the same month and again in February 2012, designated 104 municipalities in 8 prefectures, including Fukushima Prefecture, as “intensive contamination survey areas” in which decontamination was to be implemented by the municipalities.

In accordance with the decontamination plan formulated on the basis of the Act on Special Measures Concerning Radioactive Contamination, decontamination measures, etc., were implemented in each municipality, beginning in January 2012.

Decontamination was completed in special decontamination areas with the exception of the difficult-to-return zone by March 2017 and in all parts of the intensive contamination survey areas by March 2018.

Since the completion of the decontamination, ex-post monitoring has been performed to check whether the decontamination effect has been maintained. In cases where maintenance of the decontamination effect has not been confirmed, follow-up decontamination has been implemented after assessing the rationality and feasibility of doing so.

b. Decontamination measures in special decontamination areas

On January 26, 2012, “Policy on Decontamination in the Special Decontamination Areas (Decontamination Roadmap)” was announced by the Ministry of the Environment, setting forth the

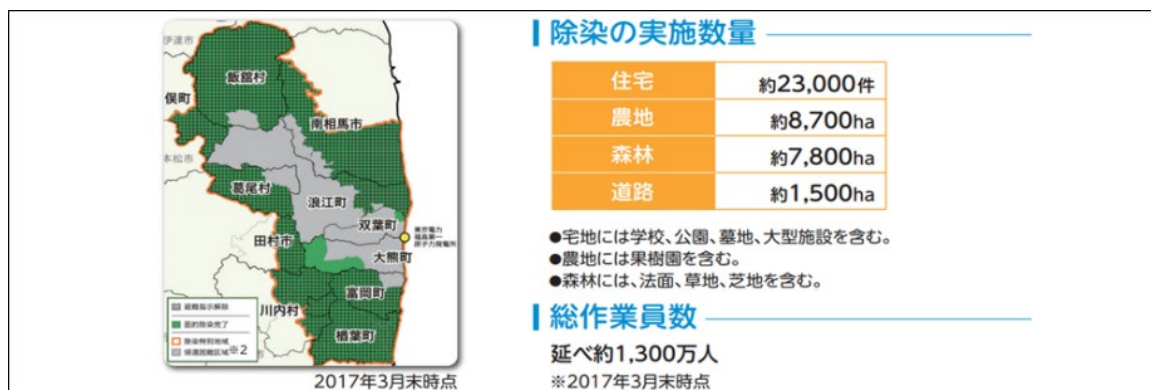
process and schedule to be followed in decontamination of special decontamination areas in each of the areas under evacuation orders. Based on the Decontamination Roadmap, the Ministry of the Environment formulated decontamination plans for Tamura City, Town of Naraha, Village of Kawauchi, and Minamisoma City by April 2012, and decontamination began in Tamura City, Town of Naraha, and Village of Kawauchi in July of the same year. Decontamination began in each of the other municipalities in the special decontamination areas after decontamination plans had been formulated for them.

A total of approximately 13 million persons were involved in the decontamination work, and decontamination was completed in all of the special decontamination areas with the exception of the difficult-to-return zone by the end of March 2017.

As a result, it was possible to lift evacuation orders in approximately 780 km² (approx. 70%) of the approximately 1,150 km² within the special decontamination areas that had been under evacuation orders, and it was confirmed that the annual additional exposure dose of residents who returned to decontaminated areas was generally about 1 mSv (at most, about 5 mSv).

In addition, the special decontamination area designation was lifted for the first time in Tamura City in March of 2022.

Figure 7-3-1 Actual results of decontamination projects in special decontamination areas



Source) Ministry of the Environment, "Progress of Decontamination," p. 7

http://josen.env.go.jp/archive/decontamination_project_report/pdf/ayumi_full.pdf (browsed November 15, 2022)

c. Decontamination measures in intensive contamination survey area

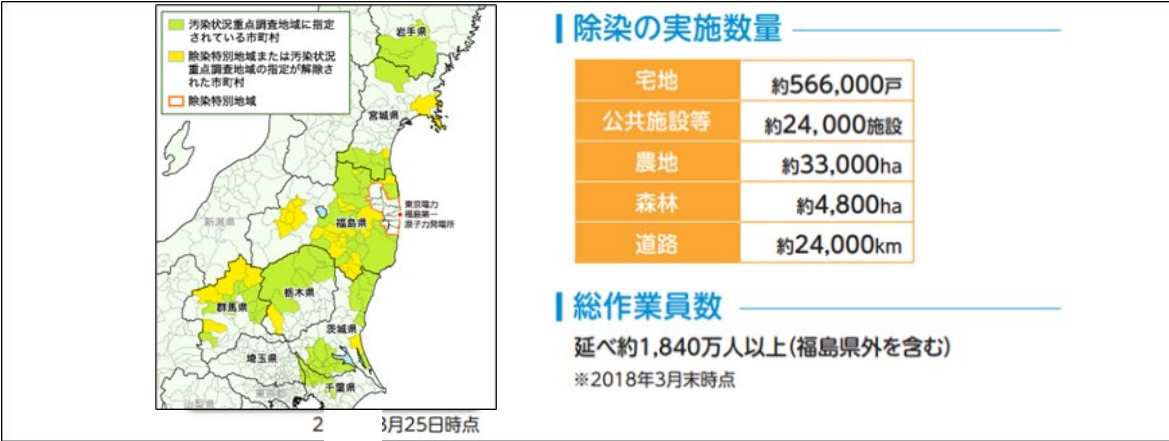
Spurred on by the voluntary decontamination begun by residents around April of 2011, municipalities that had received requests from residents began decontamination at schools, kindergartens, nursery schools, and parks, etc. Later, with the enactment of the Act on Special Measures Concerning Radioactive Contamination, each of the municipalities that had been designated intensive contamination survey areas prepared decontamination plans, and decontamination work ordered by the municipalities began to be performed by building contractors in January 2012, based on the decontamination plans.

An enormous number of workers (over 17 million) were involved in the decontamination work, and decontamination of all 100 municipalities in 8 prefectures was completed by the end of March 2018.

As a result, it was confirmed that the annual additional exposure dose of residents residing within the intensive contamination survey area in 2016 was generally 1 mSv or less, and with this, the long-term goal specified in the basic policy set forth in the Act on Special Measures Concerning Radioactive Contamination had been generally achieved.

Moreover, in the 30 municipalities within the intensive contamination survey area in which it was confirmed that the local radiation level was less than 0.23μSv/h as of the end of September 2022, the intensive contamination survey area designation was lifted.

Figure 7-3-2 Actual results of decontamination work in the intensive contamination survey area

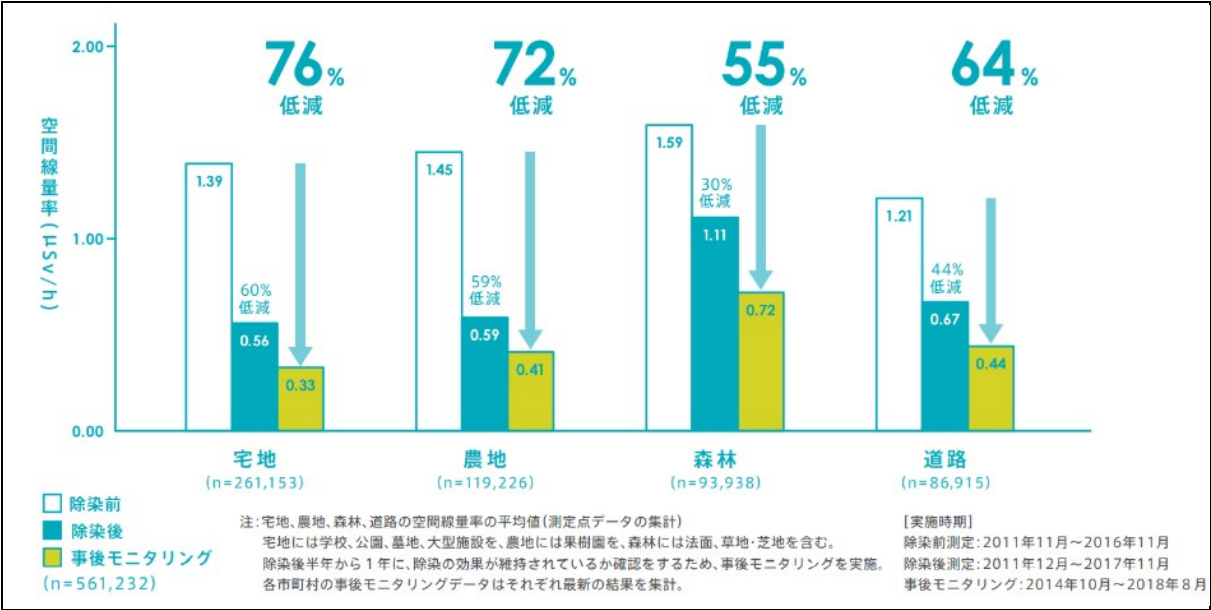


Source) Ministry of the Environment, “Decontamination Information Site” <http://josen.env.go.jp/zone/> (browsed July 26, 2023)
Ministry of the Environment, “Progress of Decontamination,” p. 7
http://josen.env.go.jp/archive/decontamination_project_report/pdf/ayumi_full.pdf
(browsed July 26, 2023)

2) Reduction in air dose rate

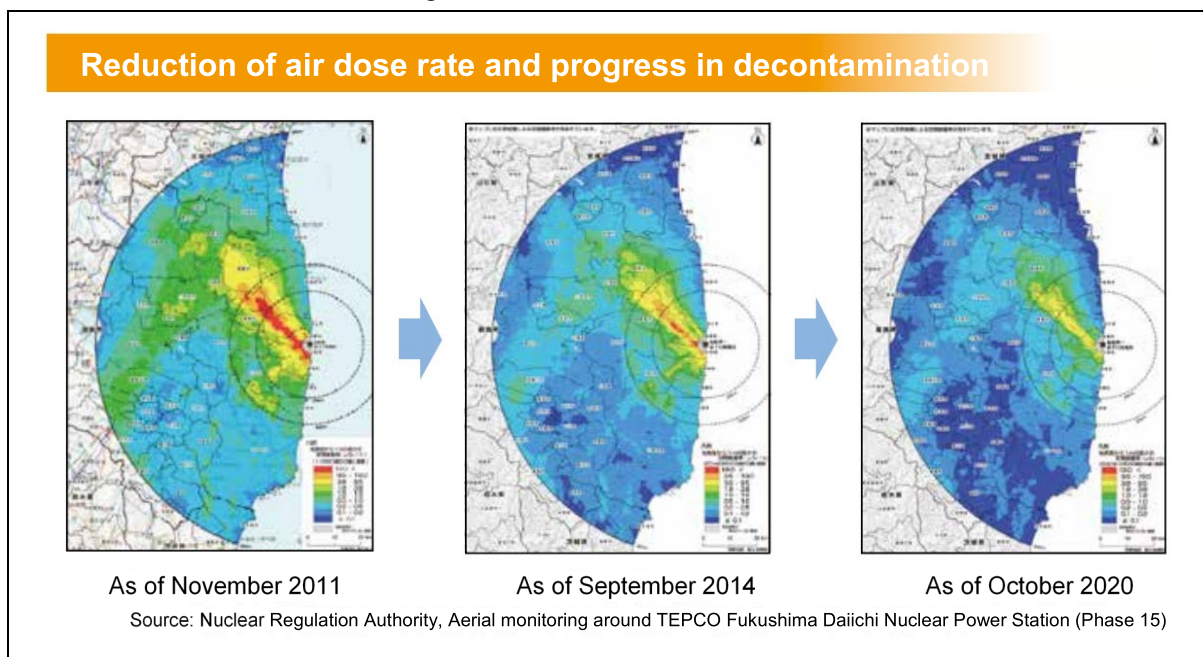
It has been confirmed that the effects of decontamination have been maintained; for example, in residential areas, radiation levels have been reduced by 60% by decontamination, and ex-post monitoring has shown a 76% reduction. What is more, the mean air dose rate (value at a height of 1 m from ground level) within an 80-km radius of the TEPCO Fukushima Daiichi Nuclear Power Station (hereinafter referred to as “TEPCO Fukushima Daiichi NPS”) had decreased approximately 80% from the November 2011 level by October 2020.

Figure 7-3-3 Comparison of air dose rate before and after decontamination at each location



Source) Ministry of the Environment, “Progress in Fukushima’s Environmental Revitalization” (October 2022 Edition), p. 11
https://kankyosaisai.env.go.jp/jigyo/download/pdf/ten-years_history_2205.pdf (browsed February 7, 2023)

Figure 7-3-4 Reduction in air dose rate



(Source) Reconstruction Agency, “Status of Reconstruction from the Great East Japan Earthquake, and Associated Efforts” (December 2021), p. 16
https://www.reconstruction.go.jp/topics/main-cat7/sub-cat7-2-1/latest/202112_pamphlet_fukko-jokyo-torikumi_02.pdf (browsed November 15, 2022)

3) Establishment of temporary storage sites; storage and liquidation, etc.

a. Overview of efforts

When implementing decontamination measures, it was necessary to have temporary storage sites where removed soil, etc. could be stored temporarily. The cooperation of the towns and administrative districts in gaining the understanding of the landowners and local residents was important in securing temporary storage sites, and candidate sites were selected in units of administrative districts.

In particular, it was difficult to secure large-scale temporary storage sites in areas outside of Fukushima Prefecture and in urban areas within Fukushima Prefecture, and owing to the need to start decontamination as soon as possible, many municipalities did not set up temporary storage sites, but instead stored the materials on-site in the yards of decontaminated houses and in parks, etc.

In addition, in order to reduce the amount of removed soil, etc. being carried into the temporary storage sites, efforts were made to reduce the volume of decontamination waste as much as possible by cutting, crushing, compressing, or burning.

The facility requirements and management requirements for temporary storage sites are described in “Guidelines for Decontamination (2nd Edition, May 2013), Part 4: Guidelines for Storage of Removed Soil.”

b. Results thus far

Appropriate management of removed soil, etc. is being implemented at temporary storage sites at 29 locations in the special decontamination areas (as of the end of December 2022) and at 48 locations in the intensive contamination survey area (as of the end of September 2022 in Fukushima Prefecture and as of the end of March in other prefectures). In Fukushima Prefecture, moving of removed soil out of

temporary storage sites has been completed at 1,338 of 1,372 sites, and restoration of the original condition has been completed at 1,064 temporary storage sites (as of the end of December 2022 for special decontamination areas and as of the end of September of the same year for the intensive contamination survey area).

Most of the removed soil outside of Fukushima Prefecture is still being stored, partly because a disposal policy has not been decided upon. “Meetings of the Working Group on Disposal of Removed Soil” have been held since FY 2017 to formulate the disposal policy, and technical studies on safe landfill disposal are being conducted by experts. To confirm the safety of landfill disposal, a landfill disposal demonstration project has been underway since FY 2018 (Village of Tokai, ongoing since FY 2018; Town of Nasu, from FY 2018 to FY 2019; Town of Marumori, ongoing since FY 2021).

4) Efforts to manage the safety and health of workers engaged in decontamination work

As health and safety measures for decontamination workers, the Ordinance on Prevention of Ionizing Radiation Hazards in Projects to Decontaminate Soil and Waste Contaminated by Radioactive Materials Resulting from the Great East Japan Earthquake and Related Works (Ordinance on Ionizing Radiation in Decontamination Projects) and related guidelines have been established, and guidance is being given to operators. In addition, as a private-sector effort, a system to centrally manage the exposure dose records for workers engaged in these projects is in operation.

(2) Development of interim storage facilities and efforts toward the final disposal of removed soil, etc.

1) Development of interim storage facilities

a. Overview

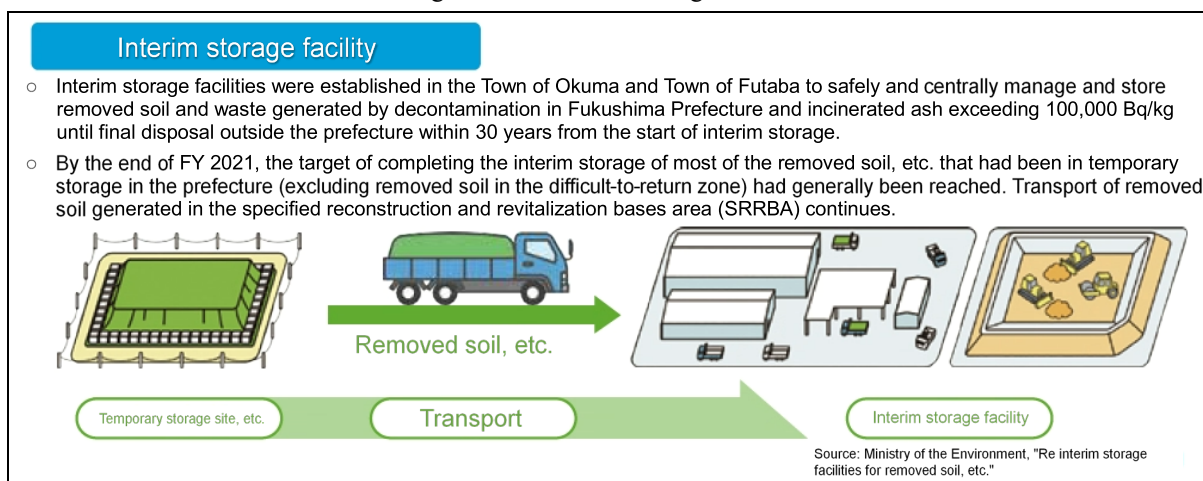
Based on the Act on Special Measures Concerning Radioactive Contamination, a decision was made to develop interim storage facilities for the safe, centralized management and storage of the removed soil containing radioactive materials that was generated as a result of decontamination in Fukushima Prefecture, as well as the specified waste with radiation levels exceeding 100,000 Bq/kg that is being stored in Fukushima Prefecture, until final disposal.

At present, progress is being made on land acquisition, facility improvement, and transportation of removed soil, etc.

The interim storage facility project, including the construction of interim storage facilities and the transportation of removed soil, etc., is being implemented with the understanding of the local people, under the principle of “safety first.”

Details of the project history are available on the Interim Storage Facility Information Website.

Figure 7-3-5 Interim storage facilities



Source) Reconstruction Agency, “Status of Reconstruction from the Great East Japan Earthquake, and Associated Efforts” (December 2022), p. 14
https://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/202212_pamphlet_fukko-jokyo-torikumi.pdf (browsed February 7, 2023)

Figure 7-3-6 Aerial photograph of the interim storage facility area



Source) Ministry of the Environment, “2021 Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan, Part 1. Report on Comprehensive Policies, Chapter 4. Reconstruction and Environmental Revitalization Efforts in the Disaster-affected Areas Ten Years after the Great East Japan Earthquake,” p. 103
https://www.env.go.jp/policy/hakusyo/r03/pdf/1_4.pdf (browsed November 15, 2022)

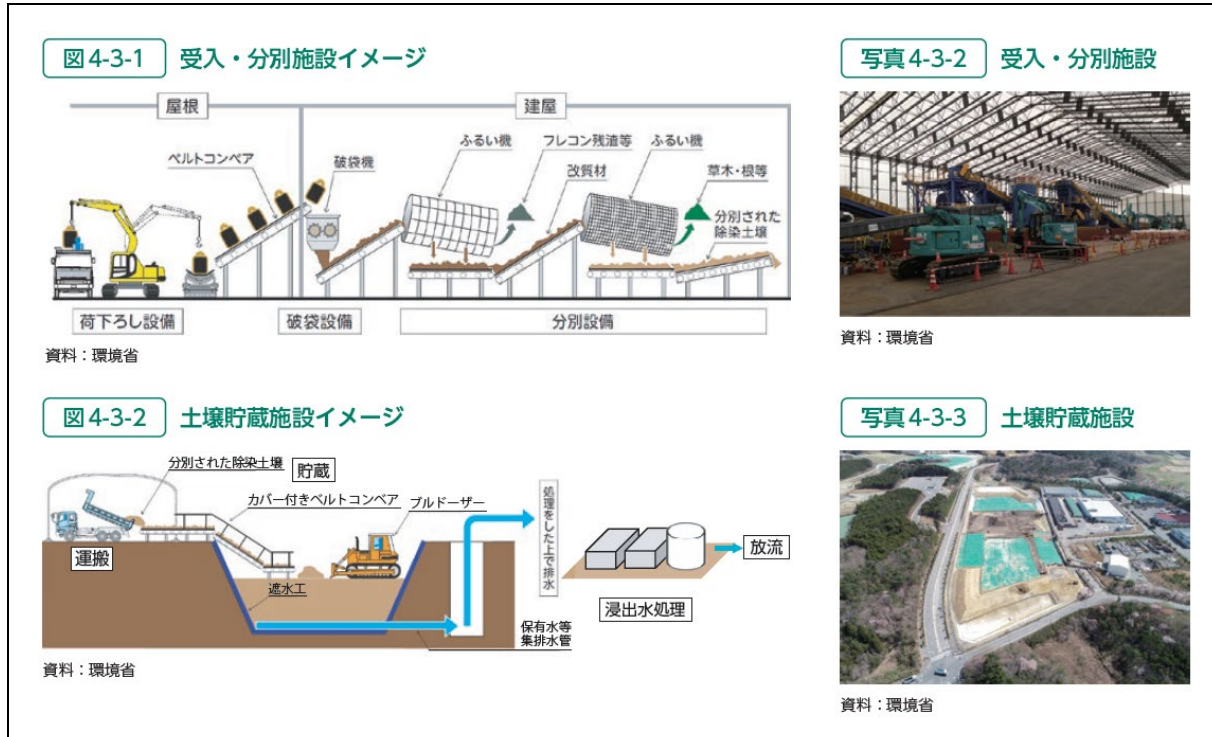
b. Development of interim storage facilities and transportation of removed soil, etc.

The Ministry of the Environment is proceeding with the development of interim storage facilities and the continuous transportation of removed soil. Before removed soil is transported to interim storage facilities, efforts are made to reduce the volume of combustibles such as plants and trees as much as possible through incineration, but the volume of transported materials (excluding materials in the difficult-to-return zone) is still estimated to be approximately 14 million m³.

Approximately 1,600 ha of land are expected to be required for the construction of the interim storage facilities, and the registration records of the land slated for use name 2,360 landowners (By the end of December 2022, contact information had been ascertained for the owners of approximately 1,590 hectares (approximately 2,100 registered owners)). By the end of December 2022, contracts had been concluded for approximately 1,280 hectares (80% of the total area). Private land accounted for about 1,186 hectares, or about 93% of the total of about 1,270 hectares, and contracts have been signed with 1,258 people (about 76% of the total). The government believes that maintaining a relationship of trust with landowners and gaining their understanding of the interim storage facility project are the most important factors in the acquisition of land, and the government is continuing to provide thorough explanations to landowners while proceeding with the negotiations.

In addition, work on the construction of receiving and sorting facilities as well as soil storage facilities has been proceeding since November 2016. At the receiving and sorting facilities, removed soil from temporary storage sites in various parts of Fukushima Prefecture to be transported to interim storage facilities is received and unloaded from vehicles, containers are broken open, and the contents are sorted into combustibles and incombustibles. At the soil storage facility, the soil sorted at the receiving and sorting facility is safely stored according to radioactivity concentration and other characteristics. Sorting of removed soil began in June 2017, and the storage of the sorted soil in a soil storage facilities began in October 2017. In March 2020, all treatment and storage processes for removed soil and waste became operational at the interim storage facilities.

Figure 7-3-7 Status of development of interim storage facilities

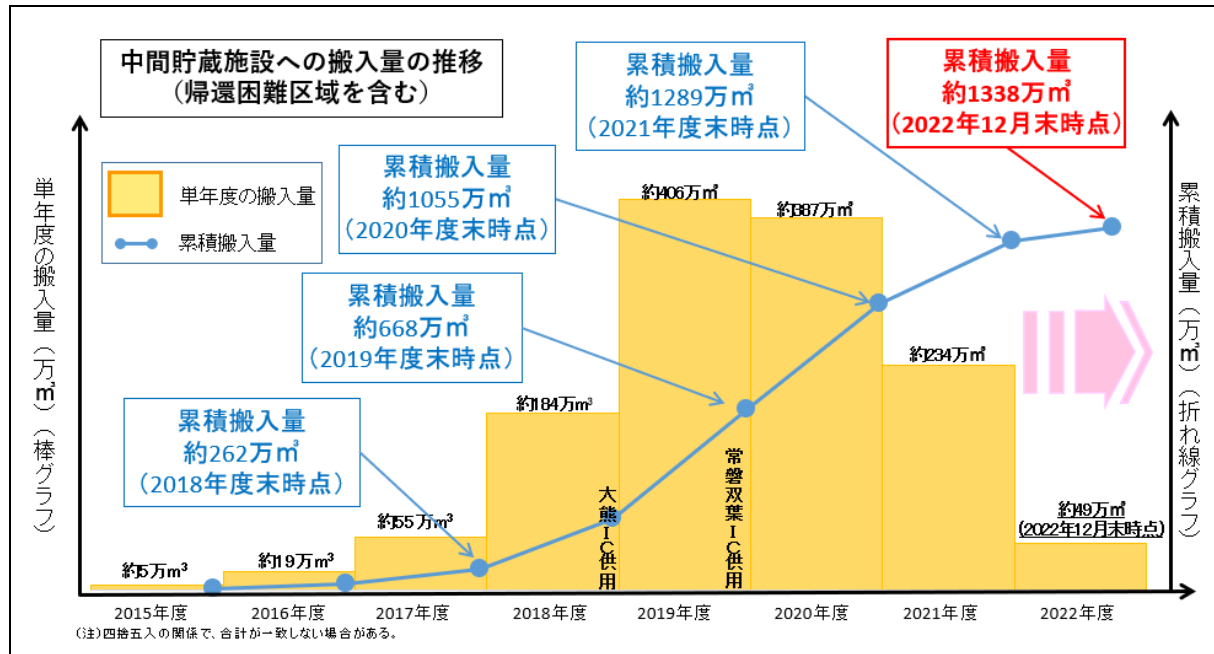


Source) Ministry of the Environment, “2022 Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan, Part 2. Reports on Policies in Various Fields, Chapter 3. Formation of a Sound Material-Cycle Society,” p. 169
https://www.env.go.jp/policy/hakusyo/r04/pdf/2_3.pdf (browsed February 7, 2023)

By the end of December 2022, a total of approximately 13.38 million m³ of removed soil, etc. (including soil from the difficult-to-return zone) had been transported to interim storage facilities.

Various road traffic measures have been taken to make for safer and stabler transport, such as building construction roads from Okuma Interchange and Joban Futaba Interchange along with waiting areas and transport vehicle stand-by areas, as well as traffic safety measures such as driver training and efforts to smooth passage and avoid traffic congestion at specific times of year or day by staggering departure times, etc.

Figure 7-3-8 Status of transport to interim storage facilities



Source) Ministry of the Environment, View Fukushima Revitalization by Data, “Status of Progress in Transportation of Removed Soil to Interim Storage Facilities (January 11, 2023)”
http://josen.env.go.jp/plaza/info/data/pdf/data_2301_05.pdf (browsed February 7, 2023)

c. Fiscal 2022 Policy on the Interim Storage Facility Project

In January 2022, the “Fiscal 2022 Policy on the Interim Storage Facility Project” was announced. This policy was based on the general idea of putting safety first and implementing the project with the understanding of the local community, and it established the following goals:

- (1) Promote the transport of removed soil, etc., generated in the specified reconstruction and revitalization bases area (SRRBA)
- (2) Acquire the necessary land area according to the progress of facility development and the status of soil removal, etc.
- (3) Operate each part of the interim storage facilities safely, and steadily maintain and manage soil storage facilities where soil storage has been completed
- (4) Promote nationwide activities to develop technologies for recycling, concretize plans for recycling sites, and foster understanding of the necessity and safety of volume reduction and recycling; further develop and verify volume reduction and stabilization technologies with the goal of final disposal outside the prefecture

At the same time, a figure showing the status of facility development at the time was published.

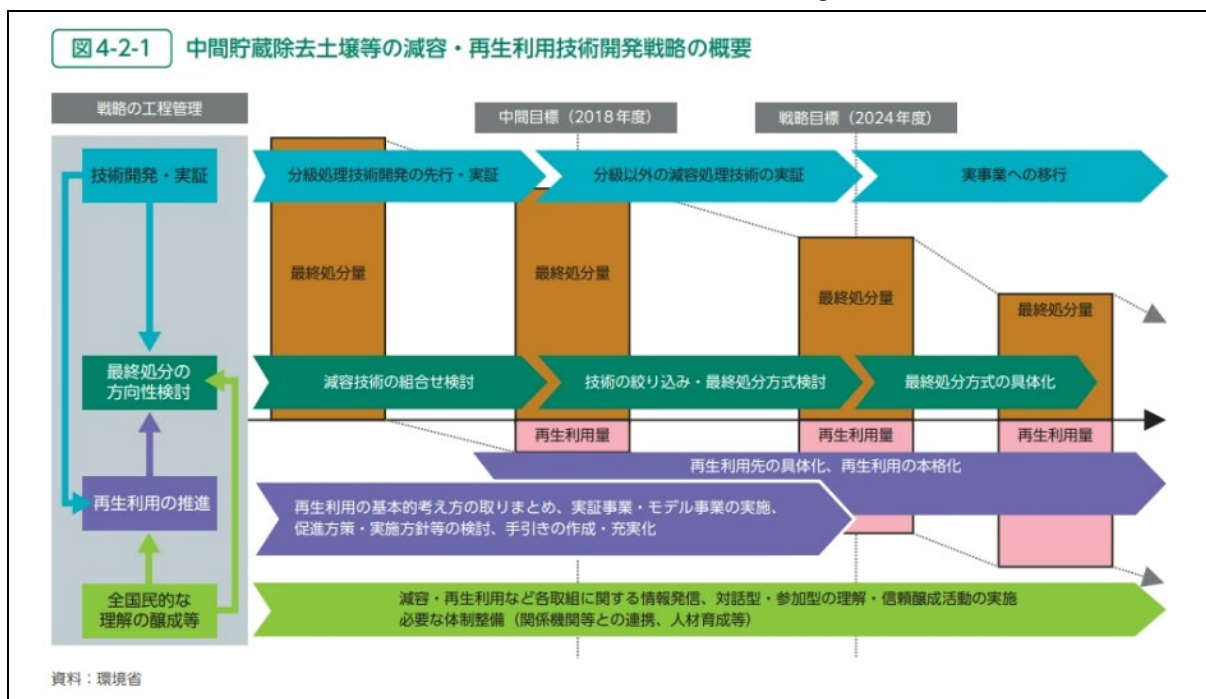
2) Efforts toward final disposal outside the prefecture for soil removed from Fukushima Prefecture

A decision was made to take the necessary measures to complete the final disposal of removed soil and other waste generated in Fukushima Prefecture outside the prefecture within 30 years after the start of interim storage, and the Ministry of the Environment compiled “Development Strategy for Technology for Volume Reduction and Recycling of Removed Soil, Etc., Under Interim Storage” and a related “Work Schedule” in April 2016 as its mid- to long-term policy on efforts to develop technology for the final disposal outside the prefecture.

In accordance with the above, technical demonstrations, etc. were carried out, and when demonstration projects were implemented in Minamisoma City and the Village of Iitate in Fukushima Prefecture to confirm the safety of recycling removed soil, no large variation in the air dose rate, etc., was observed, and the radioactivity concentration in the seepage water of the embankment was generally below the detection limit.

In addition, the ideal form and method of communication are being studied with a view to fostering a nationwide understanding of the recycling of removed soil, etc.

Figure 7-3-9 Overview of Development Strategy for Technology for Volume Reduction and Recycling of Removed Soil, Etc., Under Interim Storage



Source) Ministry of the Environment, “2022 Annual Report on the Environment, the Sound Material-Cycle Society and Biodiversity in Japan, Part I. Report on Comprehensive Policies: Efforts Toward Reconstruction and Revitalization From the Nuclear Power Station Accident”

https://www.env.go.jp/policy/hakusyo/r04/pdf/1_4.pdf (browsed February 7, 2023)

a. Development of interim storage facilities and efforts toward the final disposal of removed soil, etc.

In the transport of removed soil to the interim storage facilities, 13.38 million m³ was transported by the end of December 2022 (including soil from the difficult-to-return zone), and by the end of FY 2021, the goal of transferring the soil, etc. that had been in temporary storage in Fukushima Prefecture to

interim storage was for the most part completed (excluding soil, etc. from the difficult-to-return zone). In FY 2022, the transport of removed soil generated in the specified reconstruction and revitalization bases area (SRRBA) was promoted. In order to ensure safe, smooth, and reliable transport, efforts are continuing to be made to implement traffic safety measures such as driver training and the necessary road traffic measures in collaboration with related organizations and municipalities, while gaining the understanding of the local communities.

With regard to the final disposal of removed soil, etc., the Japan Environmental Storage & Safety Corporation Act (2003 Act No. 44), enforced in December 2014, stipulates the responsibility of the government toward interim storage as follows: “The national government shall take the necessary measures to complete the final disposal outside Fukushima Prefecture within 30 years after the start of interim storage.”

In order to realize final disposal outside the prefecture, it will be important to reduce the final disposal amount by increasing the amount that can be recycled as much as possible through the development and utilization of volume reduction technology for removed soil, etc. In accordance with the “Development Strategy for Technology for Volume Reduction and Recycling of Removed Soil, Etc., Under Interim Storage” and the “Work Schedule” announced in April 2016, efforts toward final disposal outside the prefecture have steadily made progress.

In June 2016, “Basic Concept for the Safe Use of Recycled Removed Soil” was compiled as a guideline for the step-by-step promotion of the recycling of removed soil. In the demonstration project for the recycling of removed soil in Minamisoma City, which was carried out from April 2017 to September 2021, safety was confirmed based on the monitoring results for air dose rates.

In the Village of Iitate, a demonstration project for the reuse of removed soil temporarily stored in the village is underway, and experiments on the cultivation of food crops were conducted from 2020 to 2021. As a result, the radioactive cesium concentration was found to be 0.1 to 2.5 Bq/kg, which was much lower than the standard limit of 100 Bq/kg for foods in general, whether or not there was additional soil covering. After the establishment of a recycling plant, work on farmland development commenced in April 2021.

Moreover, activities were conducted nationwide to foster understanding of the necessity and safety of volume reduction and recycling in order to realize final disposal outside the prefecture. This took the concrete form of dialogue forums held throughout the country, lectures and seminars held in cooperation with universities nationwide, and tours of environmental revitalization projects.

Figure 7-3-10 Efforts toward final disposal of removed soil outside the prefecture

Efforts toward final disposal outside the prefecture

○ The necessary measures will be taken so that final disposal of soil removed from Fukushima Prefecture can be completed outside the prefecture within 30 years after the start of interim storage. It will be important to reduce the amount of material requiring final disposal, and efforts such as recycling removed soil are being promoted in accordance with the technology development strategy and schedule drawn up in 2016.

- Experiments on cultivating flowers and vegetables using recycled soil from villages were conducted.
- As a result, the radioactive cesium concentration in vegetables was found to be 0.1 to 2.5 Bq/kg, which was much lower than the standard limit of 100 Bq/kg for foods in general.



◀ Scene from cultivation experiment in embankment demonstration yard in Nagadoro District, Village of Iitate



◀ Scene from the 6th Dialogue Forum in Takamatsu City (October 29, 2022)

- To promote progress toward the realization of final disposal outside the prefecture, the government has fundamentally intensified its efforts since FY 2021 to foster understanding of the necessity and safety of volume reduction and recycling by holding dialogue meetings nationwide.

Source) Reconstruction Agency, “Status of Reconstruction from the Great East Japan Earthquake, and Associated Efforts” (December 2022), p. 14
https://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/202212_pamphlet_fukko-jokyo-torikumi.pdf
 (browsed February 7, 2023)

(3) Disposal of waste contaminated with radioactive materials

The Act on Special Measures Concerning Radioactive Contamination stipulates that the government shall take responsibility for disposing of waste in contaminated waste countermeasure areas and other specified waste in an appropriate manner as specified waste.

Waste in contaminated waste countermeasure area refers to waste in the contaminated waste countermeasure area (area designated by the Minister of the Environment as requiring the collection, transport, storage, and disposal of waste) (excluding waste associated with business activities after the lifting of evacuation orders). Currently, an area straddling 10 municipalities in Fukushima Prefecture is designated as the contaminated waste countermeasure area (the entire area of the Town of Naraha, Town of Tomioka, Town of Okuma, Town of Futaba, Town of Namie, Village of Katsurao, and Village of Iitate, and the areas of Minamisoma City, Town of Kawamata, and Village of Kawauchi that were designated as part of the no-entry zone and planned evacuation zone at the time. Corresponds to the special decontamination area. On March 31, 2022, the designation of Tamura City as a contaminated waste countermeasure area was lifted).

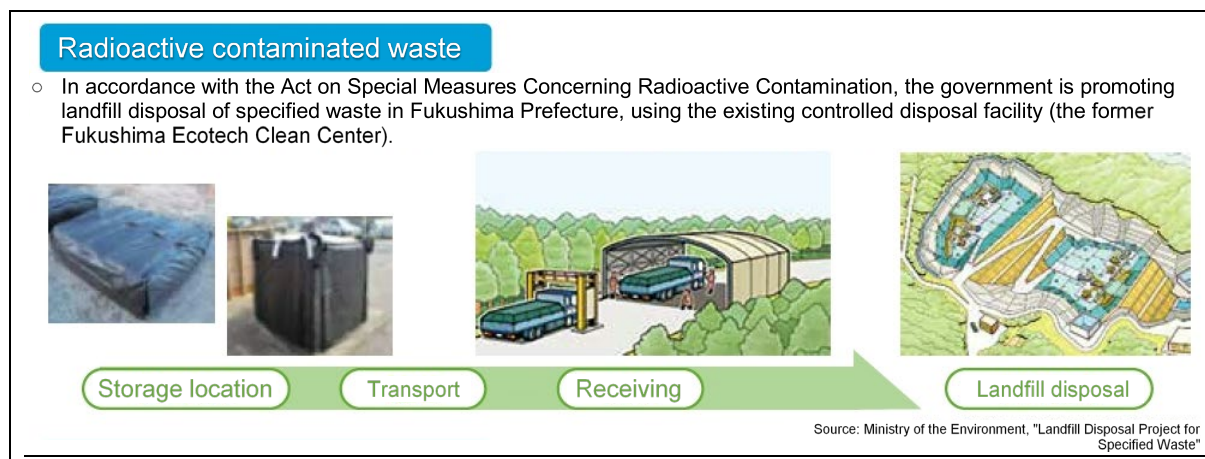
Specified waste has a radioactive concentration exceeding 8,000 Bq/kg and is specified by the Minister of the Environment. As of the end of September 2022, a total of approximately 410,000 tons of waste, including incineration ash, sewage sludge, and agriculture and forestry waste (rice straw, compost, etc.), had been designated “specified waste” by the Minister of the Environment in 10 prefectures. According to Basic Policy based on the Act on Special Measures Concerning Radioactive Contamination (November 2011 Cabinet Decision), the disposal of specified waste is to be carried out within the prefectures where the specified waste is discharged.

Until it is handed over to the national government, specified waste is temporarily stored in waste incinerators, sewage treatment facilities, agricultural lands, etc. in each prefecture, and appropriate storage measures are taken by the manager of each facility, etc., in accordance with the standards of the Act on Special Measures Concerning Radioactive Contamination, such as carefully covering the waste with water-impermeable sheets, etc., to prevent dispersion and runoff, and measuring the air dose rate to confirm that there is no effect on the surrounding area.

For specified waste with radiation level reduced to 8,000 Bq/kg or less, it is possible to lift the specified waste designation in accordance with the provisions of Article 14-2 of the Ordinance for Enforcement of the Act on Special Measures Concerning Radioactive Contamination. In addition to technical support, the national government provides financial support to cover the necessary costs of waste disposal after the designation has been lifted.

1) Disposal of waste from within the contaminated waste countermeasure area and specified waste from within Fukushima Prefecture

Figure 7-3-11 Disposal of specified waste from inside Fukushima Prefecture and waste from within the contaminated waste countermeasure area



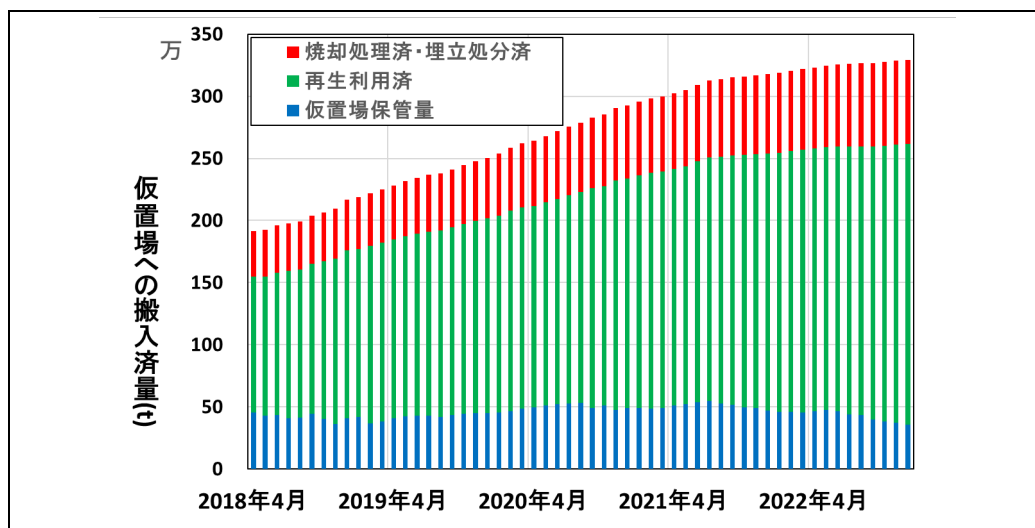
Source) Reconstruction Agency, "Status of Reconstruction from the Great East Japan Earthquake, and Associated Efforts" (December 2022), p. 15
https://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/202212_pamphlet_fukko-jokyo-torikumi.pdf
 (browsed February 7, 2023)

For waste in the contaminated waste countermeasure area with the exception of the difficult-to-return zone and for the specified waste in Fukushima Prefecture, it was decided that the volume of waste would be reduced as much as possible, following which waste with a radioactive concentration of 100,000 Bq/kg or less would be disposed of at a specified waste landfill disposal facility (the former Fukushima Ecotech Clean Center), and waste with a radioactive concentration exceeding 100,000 Bq/kg would be stored at interim storage facilities.

The waste in the contaminated waste countermeasure area consists mainly of cleanup waste including debris left by the tsunami and demolition of houses, etc., and initially, from the standpoint of actively promoting the smooth return of evacuees, the priority target was to promptly remove the waste that would hinder their return in the areas under preparation for lifting evacuation orders and the restricted residential areas, and carry it to the temporary storage sites. As a result of these efforts, by the end of FY 2015, waste that would hinder return had been transported to temporary storage sites everywhere except for in the difficult-to-return zone, and as of the end of December 2022, the transport, intermediate treatment, and final disposal of waste from the contaminated waste countermeasure area, excluding the difficult-to-return zone, was largely completed.

By the end of December 2022, approximately 3.3 million tons of waste from the contaminated waste countermeasure area had been transported to the temporary storage sites, including waste from the difficult-to-return zone (Of this total, approximately 570,000 tons have been incinerated and approximately 2.25 million tons have been recycled) (Figure 7-3-12).

Figure 7-3-12 Amount of disaster waste that has already been delivered to temporary storage sites in the contaminated waste countermeasure area



Source) Ministry of the Environment, “Status of Disaster Waste Disposal in Fukushima Prefecture under the Direct Control of the National Government”
http://shiteihaiki.env.go.jp/initiatives_fukushima/waste_disposal/pdf/progress_230131.pdf (browsed February 7, 2023)

Among the waste brought to the temporary storage sites from the contaminated waste countermeasures area, including the difficult-to-return zone, combustibles are being reduced in volume at temporary incineration facilities set up in each municipality, and as of the end of December 2022, volume reduction was completed in 8 of the 12 municipalities.

At the temporary incineration facilities where the work is being performed, the radioactivity concentration in exhaust gas and the air dose rate in and around the site are monitored to confirm that volume reduction is being performed safely, and the results are being published.

As of September 2022, the total weight of specified waste in Fukushima Prefecture had come to 190,000 tons according to applications from businesses and local governments, and among this, combustible specified waste such as agriculture and forestry waste and sewage sludge had been incinerated in volume reduction projects carried out with the cooperation and understanding of local communities to reduce the amount of waste and stabilize its properties, with all of the waste that had been designated specified waste at the end of December 2021 subjected to volume reduction through wide-area processing by the end of February 2022.

Approval for the use of landfill disposal facilities to dispose of specified waste was obtained from Fukushima Prefecture, the Town of Tomioka, and the Town of Naraha in December 2015, and these facilities were nationalized in April 2016. In June of the same year, the national government, the prefecture and the two towns concluded a safety agreement, and after the necessary preparatory work had been carried out, transport of waste to the facilities began in November 2017, with about 260,000 bags, or about 90% of the planned amount, having been moved in as of the end of December 2022. Specified waste landfill information facility Reprun Fukushima opened in August 2018 and had welcomed approximately 70,000 visitors by December 2022. While using this information center as a base to disseminate information, the Reconstruction Agency will continue to do its utmost to ensure safety and security.

2) Disposal of specified waste outside Fukushima Prefecture

According to Basic Policy based on the Act on Special Measures Concerning Radioactive Contamination, specified waste was to be disposed of within the prefecture where it was generated.

While upholding the principle of utilizing existing waste treatment facilities as much as possible when promoting the treatment of specified waste, the government, in March 2012, announced a policy to ensure that the necessary treatment facilities could be secured by the national government in prefectures where a large amount of specified waste is generated and storage capacity is limited.

The Ministry of the Environment held a meeting of experts in science and technology to examine measures for properly ensuring the safety of long-term management facilities that consolidate and process specified waste, as well as the procedure for selecting candidate sites, and in October 2013, the Ministry compiled a draft to serve as the basis for selection of candidate sites for long-term management facilities in each prefecture where the aim was to secure long-term management facilities (Miyagi, Tochigi, Chiba, Ibaraki, and Gunma prefectures). Subsequently, as a result of efforts to build a common understanding on the safety of long-term management facilities and the selection method for candidate sites through the holding of meetings of municipal mayors in each prefecture, selection methods reflecting the actual situation of each prefecture were decided upon in Miyagi, Tochigi and Chiba prefectures.

Based on these selection methods, the Ministry of the Environment announced three candidate sites for detailed survey in Miyagi Prefecture in January 2014, one site in Tochigi Prefecture in July of the same year, and one site in Chiba Prefecture in April 2015. Since the announcement of the candidate sites for detailed surveys, efforts have been made in each prefecture to gain the understanding of the local community, but detailed surveys have not yet been conducted in any of the prefectures.

At the same time, the Ministry of the Environment is taking steps to deal with issues as they arise in each prefecture.

In Miyagi Prefecture, each city and town is to make efforts to process contaminated waste with radiation levels of 8,000 Bq/kg or less under the leadership of the prefecture, and the Ministry of the Environment is to provide financial and technical support for these efforts. As part of these efforts, test incineration of contaminated waste was begun in 4 districts (Ishinomaki, Kurokawa, Sennan, and Osaki) in March 2018 and completed by July 2019. As of the end of December 2021, treatment of contaminated waste had been completed in the Kurokawa district, incineration had been completed in the Ishinomaki district, and incineration was being carried out in the Osaki district and Sennan district.

In order to reduce the burden on farmers who store specified waste, Tochigi Prefecture held a meeting in November 2018 with the heads of cities and towns where farmers temporarily store specified waste, and agreement was reached on a provisional policy proposal by the national government that called for Tochigi Prefecture and the municipalities that store specified waste to implement waste volume reduction and consolidation in city or town units. In addition, in June 2020, when compiling its views on the selection of temporary storage sites, the Ministry of the Environment confirmed that it would make efforts to select the temporary storage sites as soon as possible in cooperation with the prefecture and each city and town. Currently, the Ministry of the Environment is coordinating with the prefecture and the cities and towns that store waste to implement consolidation based on this policy, and efforts are proceeding in the cities and towns involved, including the commencement of the transfer of specified waste from temporary storage on farmland to the consolidation site in Nasushiobara City in October 2021.

In July 2016, Chiba Prefecture became the first prefecture in Japan where the specified waste

designation was lifted for waste whose radiation level had been reduced to 8,000 Bq/kg or less.

A policy of “continued on-site storage and phased disposal” was adopted in Ibaraki Prefecture in February 2016 and in Gunma Prefecture in December of the same year. Based on this policy, maintenance and reinforcement of storage sites are being carried out as necessary, and for waste whose radiation level has decreased to 8,000 Bq/kg or less, the aim is treatment in stages at existing disposal sites, etc.

By the end of September 2022, the specified waste designation had been lifted from approximately 3,462 tons of specified waste under the system for lifting of the specified waste designation, which was established in April 2016.

In the future, while continuing efforts to gain the understanding of local communities for the implementation of detailed surveys, the government will take measures to resolve specific issues in each prefecture, such as consolidating storage locations and using the mechanism for lifting the specific waste designation when appropriate during disposal, based on the situation in each prefecture.

(4) Efforts toward reconstruction and revitalization in the difficult-to-return zone

Based on the Act on Special Measures for the Reconstruction and Revitalization of Fukushima, which was amended in May 2017, the Ministry of the Environment began decontamination work and demolition of houses, etc., in the difficult-to-return zone in December 2017 along the lines of the reconstruction and revitalization plans for the specified reconstruction and revitalization bases area (SRRBA) in each town and village, with the goal of lifting the evacuation orders between 2022 and 2023. The progress rate of decontamination in the SRRBA has exceeded 90% (as of the end of February 2022), and the progress rate of house demolition (compared to the number of applications received) is approximately 85% (as of the end of December 2022). Based on such efforts, evacuation orders for the SRRBA were lifted in the Village of Katsurao and the Town of Okuma in June 2022 and in the Town of Futaba in August of the same year. In the remaining three towns and villages (Town of Namie, Town of Tomioka, and Village of Iitate), decontamination and other projects are being carried out with the aim of lifting the evacuation orders in the SRRBA around spring 2023.

Among the waste generated in the course of the development project to make the SRRBA habitable again, waste that had a radioactive concentration of 100,000 Bq/kg or less after maximal volume reduction was to be disposed of as landfill at a controlled disposal site operated by the Futaba Area Association (Clean Center Futaba) according to an agreement reached by the Association, Fukushima Prefecture, and the Ministry of the Environment.

(5) Future-Oriented Efforts Toward a New Stage of Reconstruction

In August 2018, in response to the needs of Fukushima Prefecture, the Ministry of the Environment launched “Fukushima Revitalization: Future-Oriented Project,” a project that not only includes efforts toward environmental revitalization but also aims to create and rediscover regional strengths from an environmental perspective, such as decarbonization, resource recycling, and coexistence with nature.

This project will effectively combine industry creation utilizing environmental technologies such as recycling through public-private partnerships with the utilization of natural resources such as natural

parks and decarbonized community development, and will promote cutting-edge efforts in cooperation with Fukushima Prefecture and related local governments. The project will be sensitive to the radiation-related health concerns of the local community and maintain a close connection through risk communication, public relations activities, and information dissemination. In addition, in August 2020, the Ministry of the Environment concluded the “Partnership and Cooperation Agreement for the Promotion of Future-Oriented Environmental Measures for the Reconstruction of Fukushima” with Fukushima Prefecture, and is promoting new future-oriented environmental measures in collaboration with Fukushima Prefecture.

As an effort to utilize environmental technology in industry creation, an incombustibles recycling project was adopted and supported through public-private partnership in order to promote waste treatment and industry creation in the difficult-to-return zone, and a facility for recycling incombustible waste was completed in the Town of Okuma in October 2020. This facility is expected to accelerate reconstruction and create new jobs.

As an effort to utilize natural resources such as natural parks, the “Fukushima Green Reconstruction Concept” was jointly established with Fukushima Prefecture in April 2019, and the “Fukushima Green Reconstruction Promotion Council” was established in November 2020 by Fukushima Prefecture, the Ministry of the Environment, municipalities, and related organizations to promote this effort. The “Fukushima Green Reconstruction Concept” is taking concrete form in various ways through the reopening of the Ozenuma Visitor Center after renovation in July 2021, the incorporation of Tadami Yanaizu Prefectural Natural Park into Echigo Sanzan-Tadami Quasi-National Park in October 2021, and the establishment of the “Bandai-Asahi National Park Enjoyment Project Bandai-Azuma/Inawashiro Area Step-up Program 2025” in March 2022.

In efforts related to decarbonized community development, a feasibility study aimed at establishing new industries in the fields of environment, energy, and recycling has been conducted continuously since FY 2018, and efforts are being made to promote the introduction of renewable energy through projects such as “Decarbonization × Reconstruction Community Development”, which has provided focused support for the introduction of independent and distributed energy systems in Fukushima since FY 2021.

Efforts to publicize and disseminate information about Fukushima include (a) holding the Fukushima Revitalization and Future-Oriented Symposium and the “To the Future Environment of Fukushima” Symposium in order to encourage active participation of a wide range of people, including Fukushima residents and local municipalities, (b) establishing award systems such as “Thinking Together About the Future Environment of Fukushima Challenge Awards,” which was created as way of passing on memories of Fukushima and environmental revitalization and preventing them from fading while also prompting the young people who will support the future to think about the future of Fukushima together with their elders, and “FUKUSHIMA NEXT,” which aims to portray Fukushima taking on the challenges of the future in order to dispel rumors about Fukushima and rebrand it as an environmentally advanced place, and (c) publicizing the efforts of the award winners. In addition, a book entitled “Fukushima Environmental Restoration Recollections of 100 Persons,” which was published on March 11, 2021, contains the stories of people who were involved in environmental revitalization in various capacities and those who have been engaged in local reconstruction, so that the memories of the experiences, thoughts, and lessons of the Great East Japan Earthquake, the accident at TEPCO Fukushima Daiichi Nuclear Power Station, and environmental revitalization can be passed on to children and the next generation without fading away.

Figure 7-3-13 Efforts toward full-scale reconstruction and revitalization of Fukushima Prefecture


Fukushima Revitalization: The Future-Oriented Project

○ In addition to environmental revitalization efforts, the government is responding to regional needs by promoting efforts to advance Fukushima reconstruction to a new stage by creating and rediscovering regional strengths from the perspective of the environment through decarbonization, resource recycling, and harmonious coexistence with nature.

Decarbonization × Reconstructive Urban Development

■ Project to Promote "Decarbonization × Reconstructive Urban Development"

The project provides focused support for each stage of the introduction of an independent and distributed energy system in Fukushima: "research," "planning," and "development."



◀ 大塚町役場庁舎への太陽光発電システムの導入

Rebranding as an environmentally advanced country

■ Efforts under the Fukushima Green Reconstruction Concept

In November 2020, Fukushima Prefecture, the Ministry of the Environment, municipalities, and related organizations joined together to establish the Fukushima Green Reconstruction Promotion Council and promote efforts to improve the attractiveness of national and quasi-national parks.




▲ 国立・国定公園でのワーケーションイメージ図

Passing on the Memories of Fukushima and Environmental Revitalization

■ Fukushima Environmental Restoration Recollections of 100 Persons

It contains the stories of a total of 100 people (groups), including people who have been involved in environmental revitalization in various capacities and people who have been involved in local reconstruction.



▲ 福島環境再生100人の記憶

Source) Reconstruction Agency, "Status of Reconstruction from the Great East Japan Earthquake, and Associated Efforts" (December 2022), p. 15
https://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/202212_pamphlet_fukko-jokyo-torikumi.pdf (browsed July 26, 2023)

2. Response to anxiety about radioactive materials

(1) Radiation monitoring

Since the nuclear power station accident, radiation levels in soil, water, air, wild animals and plants as well as farmland and food have been monitored based on the Comprehensive Radiation Monitoring Plan (adopted on August 2, 2011, last revised on March 30, 2022) created jointly by the national government and Fukushima Prefecture.

Air dose rates are measured at 4,383 locations nationwide (3,626 locations in Fukushima Prefecture) (as of September 2020) using portable monitoring posts and real-time dosimetry systems, and the measurement results are published in real time every 10 minutes on the “Radiation Monitoring Information” website (Nuclear Regulation Authority).

Based on the Comprehensive Radiation Monitoring Plan, the relevant ministries and agencies, local governments, nuclear operators, etc., are cooperating to continue environmental radiation monitoring. Each monitoring organization accumulates and organizes the results of its own monitoring on an ongoing basis, publishes them on its website, and updates them as needed in order to contribute to the utilization of the results. The Nuclear Regulation Authority operates a website that compiles monitoring information, consolidates and accumulates monitoring results and various incidental information necessary for utilization of the results, and constructs and publishes a reliable database.

Figure 7-3-14 Monitoring Coordination Committee

放射線モニタリングの実施状況	
令和4年3月時点	
モニタリング調整会議（平成23年7月4日設置） 国民の健康や安全・安心に応える「きめ細かなモニタリング」の実施と一体的で解りやすい情報提供のため、放射線モニタリングを確実かつ計画的に実施することを目的として関係府省、自治体及び事業者が行っている放射線モニタリングの調整等を行う。 「総合モニタリング計画」を平成23年8月2日に決定（令和4年3月30日最終改定）。 議長：環境大臣、副議長：環境大臣政務官、事務局長：原子力規制委員会原子力規制庁長官官房核物質・放射線総括審議官及び環境省水・大気環境局長	
関係府省等（構成員）：内閣府政策統括官（原子力防災担当）、内閣府原子力災害対策本部原子力被災者生活支援チーム事務局長補佐、内閣府原子力災害対策本部廃炉・汚染水・処理水対策チーム事務局長補佐、警察庁警備局長、文部科学省初等中等教育局長、厚生労働省大臣官房危機管理・医療技術総括審議官、農林水産省農林水産技術会議事務局長、水産庁次長、資源エネルギー庁廃炉・汚染水・処理水特別対策監、国土交通省大臣官房危機管理・運輸安全政策審議官、気象庁次長、海上保安庁次長、防衛省統合幕僚監部総括官、福島県、東京電力ホールディングス株式会社、その他議長が必要と認めた者	
総合モニタリング計画（令和4年3月30日改定）に沿った主要なモニタリング ※総合モニタリング計画に沿った各省等のモニタリング実施体制	
福島県全域の環境一般のモニタリング （原子力規制委員会、原災本部、福島県、原子力事業者等） ・福島県及び福島近隣県に設置した可搬型モニタリングポスト等の測定結果をインターネットを通じて公開 ・原子力発電所周辺の空間線量率、大気浮遊じん（ダスト）等の継続的測定 ・空間線量率の分布、地表面への様々な放射性物質の沈着状況を確認 ・原子力発電所50km圏内における航空機モニタリングを定期的に実施 ・避難指示区域等における詳細モニタリングの実施	学校、保育所等のモニタリング （原子力規制委員会、文科省、福島県、地方公共団体等） ・福島県内の学校等における空間線量率の測定結果をインターネットを通じて公開 ・屋外プールの水の放射性物質の濃度の測定 ・学校等の給食について、放射性物質を測定するための検査を実施
水環境 （環境省、福島県） ・福島県並びに近隣県の河川、湖沼・水源地、地下水、沿岸等における水質、底質、環境試料の放射性物質の濃度及び空間線量率の測定	港湾、公園、下水道等のモニタリング （国土交通省、福島県、地方公共団体等） ・下水汚泥中の放射性物質の濃度の測定 ・港湾、都市公園等の空間線量率の測定
海域モニタリング （原子力規制委員会、水産庁、国土交通省、環境省、福島県、東京電力等） ・東京電力ホールディングス株式会社福島第一原子力発電所の周辺の(1)近傍海域、(2)沿岸海域、(3)沖合海域、(4)外洋海域及び(5)東京湾について、海水、海底土及び海洋生物の放射性物質の濃度を測定	野生動物植物、廃棄物、除去土壌等のモニタリング （環境省、福島県、地方公共団体、事業者等） ・自然生態系への放射線影響の把握に資するために、野生動物植物の採取・分析を実施 ・放射性物質汚染対策法に基づき、廃棄物処理施設等の放流水中の放射性物質濃度、敷地境界における空間線量率等の測定を実施
全国的な環境一般のモニタリング （原子力規制委員会、地方公共団体等） ・各都道府県におけるモニタリングポストによる空間線量率の測定結果をインターネットを通じて公開 ・月間降下物（雨やほこり等）は月に1回、上水（蛇口）は年に1回の頻度で測定し、放射性物質の濃度を測定 ・福島県隣県の比較的放射性物質の沈着量の高い地域について、航空機モニタリングを実施。	農地土壌、林野、牧草等のモニタリング （農水省、林野庁、福島県、地方公共団体） ・福島県等において、農地土壌の放射性物質の濃度の推移の把握や移行特性の解明を行う ・福島県において、森林土壌、枝、葉、樹皮及び木材中の放射性物質の濃度及び空間線量率を測定 ・関係県の牧草等について放射性物質の濃度を測定 ・福島県内において、ため池等の放射性物質の濃度を測定
※上記の各種モニタリングの結果は、原子力規制委員会のウェブサイト（設置したポータルサイト）を通じて一元的に情報発信。	水道のモニタリング （厚労省、原災本部、地方公共団体等） ・関係都県毎に、浄水場の浄水及び取水地域の原水に関して、また、福島県内については、水源地に水道水における放射性物質の濃度を測定
	食品のモニタリング （厚労省、原災本部、農水省、水産庁、福島県、関係地方公共団体等） ・食品に含まれる放射性物質の濃度を測定・食品摂取を通じた実際の被ばく量の推計調査を実施

Source: Nuclear Regulation Authority (NRA) website, “Status of Implementation of Radiation Monitoring”
https://radioactivity.nra.go.jp/ja/contents/17000/16438/27/204_03_20220330.pdf (browsed July 26, 2023)

(2) Fukushima Health Management Survey (FHMS)

1) Overview

In Fukushima Prefecture, using the Fukushima Prefecture Health Management Fund, the “Fukushima Health Management Survey(FHMS)” has been conducted since June 2011 to assess the exposure dose of the residents and to manage their health. In its summary of the results of thyroid tests, the Thyroid Test Evaluation Subcommittee established under the FHMS Prefectural Oversight Committee stated, “At present, no association has been found between thyroid cancer detected in the full battery of thyroid tests (second examination) and radiation exposure,” and this report was approved by the Review Committee.

2) Background, etc.

Following the accident at TEPCO Fukushima Daiichi NPS, the importance of grasping the exposure dose of residents in the surrounding areas was pointed out, along with the need to manage their health in consideration of the health effects of radiation. The national government made a grant (78.2 billion yen) to the Fukushima Health Management Fund, which was established by Fukushima Prefecture, to make it possible to manage the health of the residents of Fukushima over the medium and long term. In addition, a budget was allocated for the construction and improvement of the “Radiation Medical Science Center” at Fukushima Medical University (FY 2012 budget: 6 billion yen).

In Fukushima Prefecture, the “Fukushima Health Management Survey (FHMS)” has been conducted since June 2011, using the Fukushima Prefecture Health Management Fund. The purpose of this survey is to assess the exposure dose of the residents of the prefecture in light of the diffusion of radioactive materials caused by the accident at TEPCO Fukushima Daiichi NPS and the subsequent evacuation, etc., and to grasp the health status of the residents so as to promote the prevention, early detection, and early treatment of diseases and maintain and improve the health of the residents in the future. A basic survey based on a behavior survey is conducted to ascertain external exposure doses for all residents of the prefecture (found to be less than 5 mSv for 99.8% as of March 31, 2021), and for all residents of the prefecture who were approximately 18 years old or younger at the time of the accident (including children born by April 1, 2012; approximately 380,000 people), thyroid examinations are being conducted (now in the 5th round of testing since FY 2020).

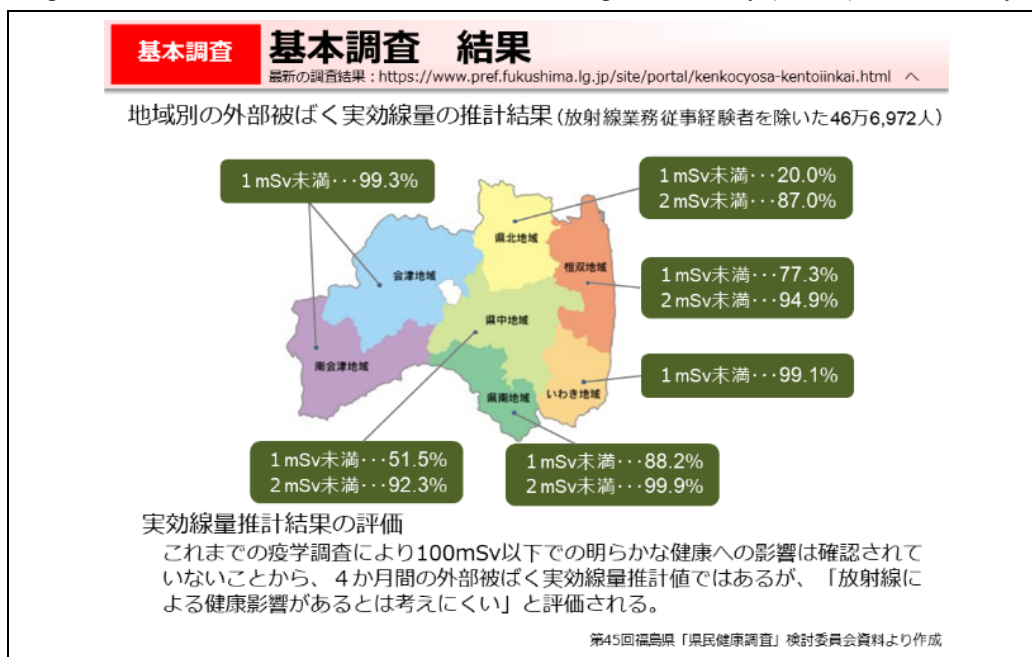
In the Fukushima Health Management Survey, the FHMS Prefectural Oversight Committee has been established to obtain advice from a wide range of professional viewpoints.

In addition, in order to ensure the long-term availability of examiners for the thyroid examination component of the Fukushima Health Management Survey (FHMS), which requires advanced knowledge and skills, seminars and training on examination techniques are being held for doctors and technicians in Fukushima Prefecture, along with seminars that aim to expand the range of institutions that perform the examinations and promote understanding of the examinations outside of Fukushima Prefecture.

3) Evaluation

The results of the FHMS are appropriately evaluated by the FHMS Prefectural Oversight Committee and the Thyroid Examination Evaluation Subcommittee established under it. The summary of the results of thyroid tests stated that “At present, no association has been found between thyroid cancer detected in the full battery of thyroid tests (second examination) and radiation exposure,” and this report was approved by the Prefectural Oversight Committee.

Figure 7-3-15 Results of the Fukushima Health Management Survey (FHMS) “Basic Survey”



Source) Ministry of the Environment, “Unified Basic Material on Radiation Health Effects (2022 Edition),” Chapter 10. Health Management
<https://www.env.go.jp/chemi/rhm/r4kisoshiryo/r4kisoshiryohtml.html> (browsed August 16, 2023)

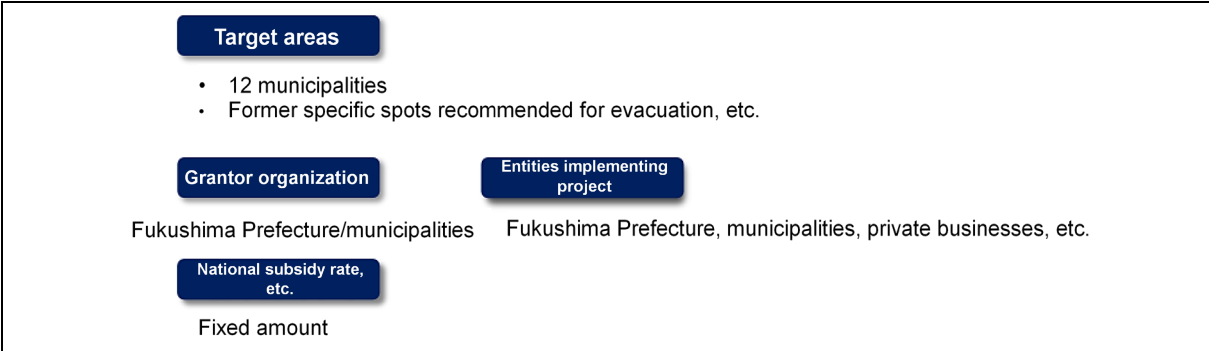
(3) Development of consultation system with radiation counselors

1) Fukushima Revitalization Acceleration Grants (Preparation of the Environment for Return, Migration, Etc.) Projects for the Training and Deployment of Counselors

Based on the “Basic Concept on Safety and Security Measures for Return” compiled by the Nuclear Regulation Authority in November 2013, Cabinet decision “Toward Accelerating the Reconstruction of Fukushima from the Nuclear Disaster” was adopted in December of the same year, specifying that radiation protection measures and health measures should be taken for residents who choose to return home or have already returned home, and that “counselors” should be assigned to them to dispel various anxieties about resuming life in Fukushima after their return.

Based on this Cabinet decision, the government is supporting the assignment of “counselors” to municipalities through the Fukushima Revitalization Acceleration Grants (Preparation of the Environment for Return and Migration, Etc.) to handle consultations from residents regarding anxieties about radiation and about resuming life in Fukushima, and to plan and implement efforts to reduce residents’ anxiety (advice on radiation protection, study sessions, interregional exchanges, etc.).

Figure 7-3-16 Assignment of Counselors



Source) Reconstruction Agency “Overview of Fukushima Revitalization Acceleration Grants (Preparation of the Environment for Return, Migration, Etc.) core projects” (April 1, 2021)
https://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-17/sub-cat1-17-1/210401_fukushimaisaieikasoku_kikanijyukankyo_48gaiyou.pdf (browsed November 16, 2022)

2) Radiation Risk Communication Counselor Support Center Project

Since the accident at TEPCO Fukushima Daiichi NPS, appropriately providing residents with information on the health effects of radiation has become an extremely important issue.

The Fukushima Revitalization Acceleration Grants support the deployment of counselors in municipalities, and the “Radiation Risk Communication Counselor Support Center” established by the Ministry of the Environment in Iwaki City of Fukushima Prefecture in FY 2014 also contributes to the establishment of an appropriate counseling system for radiation anxiety by providing training on the basics of radiation and health effects to radiation counselors, livelihood support counselors, and local government employees who have many points of contact with local residents and may be consulted by them about radiation anxiety, providing these counselors with advice on how to handle consultations, and dispatching experts mainly to the 12 municipalities where evacuation orders were issued at the time of the accident, as well as by holding joint workshops for counselors from multiple municipalities. In addition, small group discussion sessions are held for residents to discuss concerns and questions about

radiation, and radiation education support is provided for children, students, and teachers through seminars for residents.

Figure 7-3-17 Radiation Risk Communication Counselor Support Center



(Source) Ministry of the Environment, "Radiation Risk Communication Counselor Support Center"
<https://www.env.go.jp/chemi/rhm/shiencenter/> (browsed November 18, 2022)

3. Ensuring food safety

(1) Standard limits for food, etc.

In March 2011, shortly after the accident at the TEPCO Fukushima Daiichi NPS, the Ministry of Health, Labour and Welfare set “provisional regulatory limits” for radioactive materials in food. Among these regulatory limits, the allowable concentration of radioactive cesium in vegetables, cereals, meat, eggs, fish and other foods was set at 500 Bq/kg. The provisional regulatory limit of 500 Bq/kg was also applied to major special forest products such as mushrooms, which are categorized as “vegetables.”

1) Standard limits for radioactive materials contained in food

In April 2012, the Ministry of Health, Labour and Welfare set new “standard limits” for radioactive materials in food to further ensure the safety and security of food. In the new standard limits, the standard limit for “general foods” was set at 100 Bq/kg.

2) Trends in standard limits for radioactive materials (rice)

On August 3, 2011, Japan’s Ministry of Agriculture, Forestry and Fisheries announced its “Basic Approach to Testing for Radioactive Materials in Rice.” Considering the fact that rice, which is the staple food of the Japanese people, is grown by an extremely large number of farmers and is distributed in various ways, it was decided that testing of rice for radioactive materials should be conducted in two stages: “preliminary testing” at the pre-harvest stage and the “main inspection” at the post-harvest stage. However, after radioactive cesium exceeding the provisional regulatory limit was detected in rice that had completed the main inspection in some areas of Fukushima Prefecture, the Prefecture decided to conduct emergency testing for radioactive materials in rice at all farms that shipped rice in the areas where radioactive cesium was detected. As a result, radioactive cesium exceeding the provisional regulatory limit was detected in rice from 38 of about 23,000 farms.

For this reason, the Director-General of the Nuclear Emergency Response Headquarters (the Prime Minister) instructed the Governor of Fukushima Prefecture to prevent producers from shipping rice produced in 2011 in the areas concerned for the time being, and restrictions were placed on shipping.

On December 27, 2011, the Ministry of Agriculture, Forestry and Fisheries announced that, based on the proposed new standard limit for radioactive materials in food (100 Bq/kg), it would seek to dispel consumer’s anxieties and stabilize producers’ businesses by removing from market distribution not only 2011-crop rice in which detected radioactive cesium exceeded the provisional regulatory limit (500 Bq/kg) but also rice that exceeded the new standard limit, and accordingly it implemented “special quarantine measures for rice exceeding 100 Bq/kg” to quarantine ① rice from areas where a value of more than 500 Bq/kg was detected and shipping restrictions had been imposed, and ② rice from producers where a value of more than 100 Bq/kg had been detected.

Subsequently, based on requests from Fukushima Prefecture, producer groups, etc., and as a result of coordination with related municipalities, a decision was made to extend the quarantine to all rice produced by producers in areas where radioactivity levels exceeding 100 Bq/kg and up to 500 Bq/kg had been detected rice in either the main inspection or emergency testing, in the same way that the quarantine had already been applied to regions where radioactivity levels in excess of 500 Bq/kg had been detected in rice.

It was also decided that the rice subject to quarantine would be isolated in warehouses within the

production area so that it would not be distributed to the market, and that the government, local public bodies, and relevant organizations would work together to destroy and dispose of the quarantined rice, while the Association for the Promotion of Special Quarantine Measures for Rice, the main implementer of the measures, would pay an amount equivalent to the delivery price (offset by compensation from TEPCO) to the producers of the quarantined rice.

3) Temporary allowable limits for production materials, etc.

For production materials such as fertilizers, soil improvement materials, and culture soil, a temporary allowable radioactive cesium concentration of 400 Bq/kg was set in order to prevent farmland soil contamination from spreading through the dispersal of contaminated materials over farmland. (“Establishment of Temporary Allowable Limits for Fertilizers, Soil Improvement Materials, Culture Soil, and Feed Containing Radioactive Cesium” (2011 FSCAB Notification No. 2444, 2011 APB Notification No. 3442, 2011 FPWID Notification No. 99, and 2011 REPD Notification No. 418, by the Director-General of the Food Safety and Consumer Affairs Bureau, Director-General of the Agricultural Production Bureau, Director-General of the Forestry Agency, and Director-General of the Fisheries Agency of the Ministry of Agriculture, Forestry and Fisheries, dated August 1, 2011)).

Producers were instructed to voluntarily refrain from applying, producing, or distributing compost that could contain high concentrations of radioactive cesium. (2011 FSCAB Notification No. 2331, 2011 APB Notification No. 3227, and 2011 LIB Notification No. 929 by the Director of the Plants Products Safety Division of the Food Safety and Consumer Affairs Bureau; Director of the Food Distribution Promotion Division of the Agricultural Production Bureau; Director of the Environment Policy Office of the Agricultural Production Bureau; Director of the Livestock Industry Policy Planning Division, Livestock Industry Department of Agricultural Production Bureau; and Director of the Livestock Production and Feed Division, Livestock Industry Department of the Agricultural Production Bureau of the Ministry of Agriculture, Forestry and Fisheries, dated July 25, 2011. Abolished August 1, 2011)).

Figure 7-3-18 Establishment of temporary permissible limits for fertilizers, soil improvement materials, culture soil, and feed containing radioactive cesium

肥料・土壌改良資材・培土及び飼料の暫定許容値		
		暫定許容値
肥料		400 Bq/kg (製品重量)
土壌改良資材		400 Bq/kg (製品重量)
培土		400 Bq/kg (製品重量)
家畜用敷料		400 Bq/kg (製品重量)
飼料	牛	100 Bq/kg (粗飼料は水分含量8割ベース、その他飼料は製品重量)
	豚	80 Bq/kg (製品重量、ただし粗飼料は水分含量8割ベース)
	家きん	160 Bq/kg (製品重量、ただし粗飼料は水分含量8割ベース)
	馬	100 Bq/kg (粗飼料は水分含量8割ベース、その他飼料は製品重量)
	養殖魚	40 Bq/kg (製品重量)

Source: Ministry of Agriculture, Forestry and Fisheries, “Establishment of Temporary Permissible Limits for Fertilizers, Soil Improvement Materials, Culture Soil, and Feed Containing Radioactive Cesium”
<https://www.maff.go.jp/j/syouan/soumu/saigai/supply.html> (browsed November 16, 2022)

In October 2011, the government set 150 Bq/kg as the “provisional index value” for radioactive cesium concentration in mushroom logs and mushroom bed media and requested prefectures and

industry groups not to use, produce, or distribute mushroom logs and mushroom bed media with concentrations exceeding the index value.

In April 2012, based on the results of a new survey on mushroom logs and the establishment of new “standard limits” for radioactive materials in food, the “provisional index values” for mushroom logs and mushroom bed media were revised.

The new “provisional index values” were 50 Bq/kg for mushroom logs and bed logs and 200 Bq/kg for mushroom bed media and mushroom beds.

(2) Shipping restrictions

In accordance with the inspection plan guidelines set forth by the Nuclear Emergency Response Headquarters, monitoring inspections are conducted by the relevant local governments, and if the inspection results exceed the standard limits and regional spread is confirmed, the Nuclear Emergency Response Headquarters sets shipping restrictions for specific items or areas.

The Nuclear Emergency Response Headquarters will issue an instruction to lift the restriction on shipments upon application by the municipality involved if all of the results of inspections of the item(s) subject to shipping restrictions within the past month meet requirements such as below the standard limit at least three locations per municipality.

Shipping restrictions can be lifted when it is confirmed that the results of tests for radioactive materials are stable and below the standard limit in accordance with the “Approach Toward Inspection Plan and the Setting and Lifting of Shipping Restrictions by Item or Area” established by the Nuclear Emergency Response Headquarters.

1) Examples of items subject to shipping restrictions (re the lifting of shipping restrictions on raw milk)

- Shipping restrictions
Ibaraki Prefecture, March 23, 2011
Fukushima Prefecture, March 21, 2011
- Lifting of shipping restrictions
Ibaraki Prefecture, April 10, 2011
Fukushima Prefecture, April 8, 16, and 21; May 1, June 8, October 7, 2011
December 26, 2016
March 16, 2018

2) Examples of support for shipment and related efforts

Technical guidance on restrictions on the shipment of raw milk is being implemented as follows.

- Issuance of notifications containing recommendations on quick drying and technical notes to reduce the burden on dairy farmers who are forced to discard raw milk they have produced (March 20, 2011 [Technical Notes] and March 24, 2011 [Recommendations on Quick Drying])
- Press release on shipping restrictions due to the nuclear power plant accident. Q&A to present information on the future direction of raw milk production management (reduction of amount of concentrated feed provided, recommendation of quick drying) and disposal methods for raw milk

(March 28, 2011) (Same contents as press release of March 25, 2011 [Burial on own land, disposal at waste disposal sites]) (*Partially updated on April 5 and April 13, 2011)

- Based on the “Approach Toward Inspection Plan and the Setting and Lifting of Shipping Restrictions by Item or Area” set forth by the Nuclear Emergency Response Headquarters, advice on inspection items and frequency of inspection was provided by the Ministry of Agriculture, Forestry and Fisheries in cooperation with the Ministry of Health, Labour and Welfare when prefectures formulated plans for testing the concentration of radioactive materials in agriculture and livestock products.

3) Shipping restrictions on special forest products

In order to ensure the safety of the log-grown mushrooms, the Ministry of Agriculture, Forestry and Fisheries has continued to test mushroom logs for radioactive materials and has been working on the establishment of cultivation management methods that reduce radioactive materials.

In 2013, with a view to resuming the production of log-grown mushrooms, the government formulated the “Guidelines for Managing the Cultivation of Log-Grown Mushrooms to Reduce Radioactive Materials” and disseminated the Guidelines to prefectures throughout Japan.

According to the Guidelines, specific methods of managing log-grown mushroom production so that radioactivity concentrations do not exceed the standard limit for food include essential steps such as using logs that are within the standard limit and conducting radioactivity testing of the mushrooms produced, as well as cleaning of logs and bed logs, depending on the situation.

In areas where shipping restrictions have been specified, bed logs can be shipped in units of lots even if the regional shipping restrictions remain in place if it has been determined that the implementation of cultivation management according to the Guidelines is sufficient to ensure that no mushrooms exceeding the standard limit are produced.

As of March 8, 2023, ninety-three (93) municipalities in 6 prefectures have been ordered to place restrictions on the shipment of log-grown shiitake mushrooms, but production has resumed, with 66 municipalities in 6 prefectures having been permitted to ship the mushrooms in units of lots.

Regarding special forest products such as wild mushrooms and edible wild plants, as of March 8, 2023, shipping restrictions have been imposed on 18 items, including wild mushrooms, bamboo shoots, ostrich fern, *Acanthopanax sciadophylloides*, *Petasites japonicus*, and flowering fern.

4) Shipping restrictions on fishery products (Project to Promote the Investigation of the Effects of Radioactive Materials)

The safety of fishery products distributed to the market is ensured through the collaboration of the national government with the prefectures involved and fishing industry groups to take measures to prevent the distribution of fishery products in which radioactive cesium exceeding the standard limit has been detected in monitoring for radioactive materials.

Shipping restrictions were subsequently lifted for species whose test results fell below the standard limit due to a decrease in the concentration of radioactive materials over time, and at the end of February 2020, the restrictions were lifted for all marine species. However, in January 2022, radioactive cesium exceeding the standard limit was detected in one sample of black rockfish off the coast of Fukushima Prefecture, and on February 8 of the same year, shipping restrictions were reimposed.

As for freshwater species, as of December 2022, a total of 13 species in some rivers, lakes and marshes in 6 prefectures (Miyagi Prefecture, Fukushima Prefecture, Tochigi Prefecture, Gunma

Prefecture, Ibaraki Prefecture, and Chiba Prefecture) were subject to shipping restrictions or self-restraint measures imposed by municipalities.

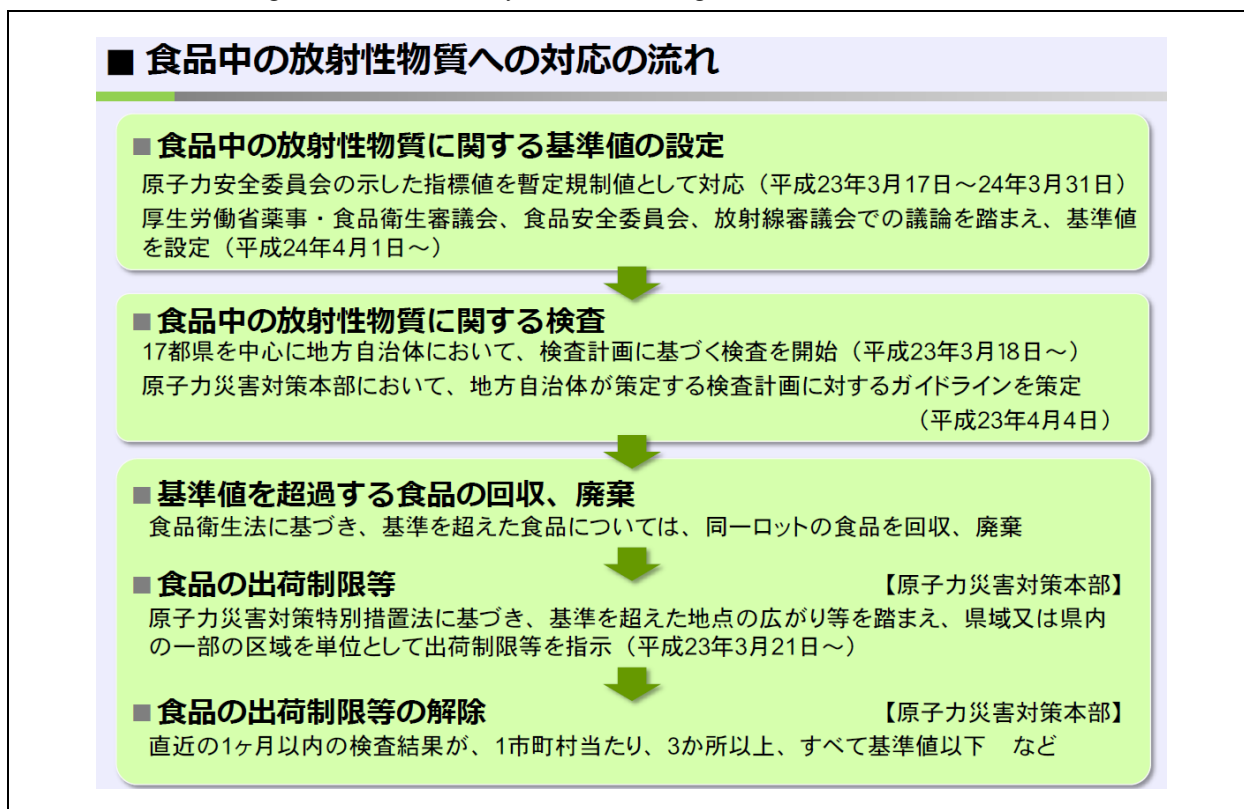
(3) Monitoring tests

1) Radiation monitoring for food (agriculture, forestry, livestock, and fishery products, etc.)

The items and regions subject to testing are decided upon based on the inspection plan guidelines of the Nuclear Emergency Response Headquarters, and food is monitored by conducting inspections systematically in the relevant municipalities.

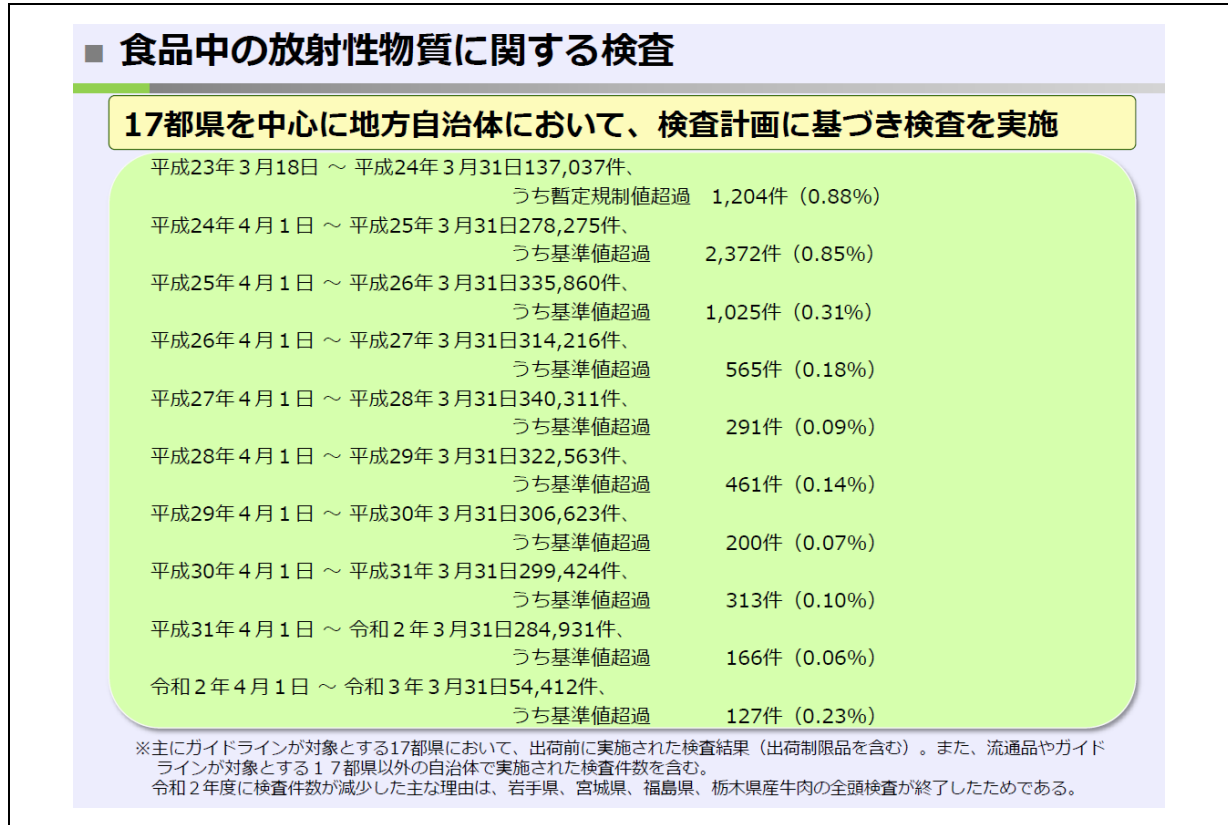
The Ministry of Health, Labour and Welfare also conducts market basket surveys of food on the market to measure how much radiation people receive from food in a year. As a result of the investigation from February to March 2022, the actual dose was found to be less than 0.1% of 1 mSv per year, which was the basis for setting the standard limit.

Figure 7-3-19 Flow of system for handling radioactive materials in food



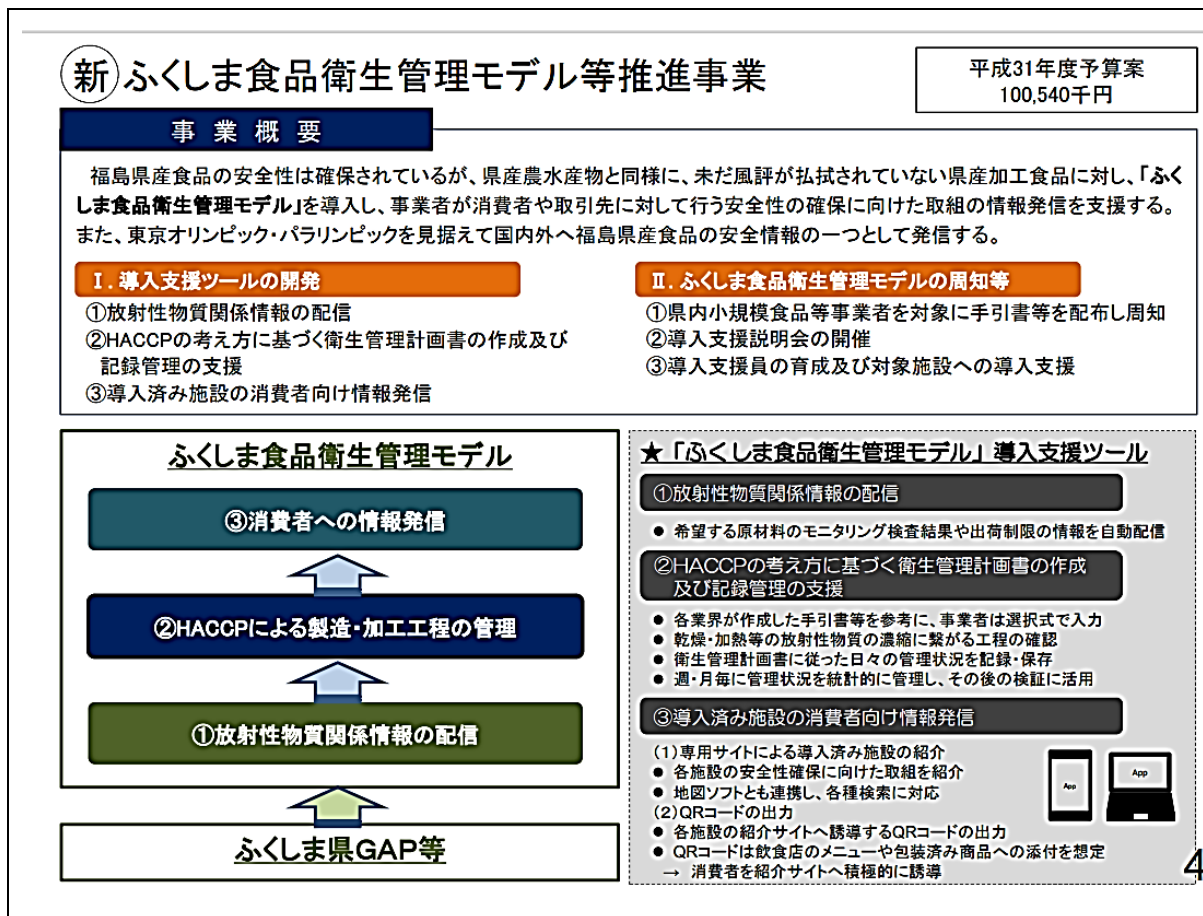
Source) Pharmaceutical Safety and Environmental Health Bureau of the Ministry of Health, Labour and Welfare, "Current Status of Radioactive Materials in Food and Associated Countermeasures," p. 3
<https://www.mhlw.go.jp/content/000982235.pdf> (browsed July 26, 2023)

Figure 7-3-20 Testing for radioactive materials in food



Source) Pharmaceutical Safety and Environmental Health Bureau of the Ministry of Health, Labour and Welfare, “Current Status of Radioactive Materials in Food and Associated Countermeasures,” p. 22
<https://www.mhlw.go.jp/content/000982235.pdf> (browsed July 26, 2023)

Figure 7-3-21 Fukushima Food Sanitation Management Model Promotion Project



5) Radioactivity monitoring of fishery products

Since the accident at TEPCO Fukushima Daiichi NPS, the national government, the prefectures involved, and fishery-related organizations have been collaborating to conduct systematic monitoring of fishery products for radioactive materials in order to ensure the safety of fishery products delivered to consumers, based on the “Approach Toward Inspection Plan and the Setting and Lifting of Shipping Restrictions by Item or Area.” Monitoring of fishery products targets the main fish species in each area, fish species for which radioactive cesium at concentrations of 50 Bq/kg or more was detected in the previous year, and species subject to shipment restrictions. Habitat areas, fishing seasons, and monitoring results in neighboring prefectures are also taken into consideration. The results of the monitoring are made public, and any species exceeding the standard limit of 100 Bq/kg are subject to voluntary shipping restraints or shipping restriction orders.

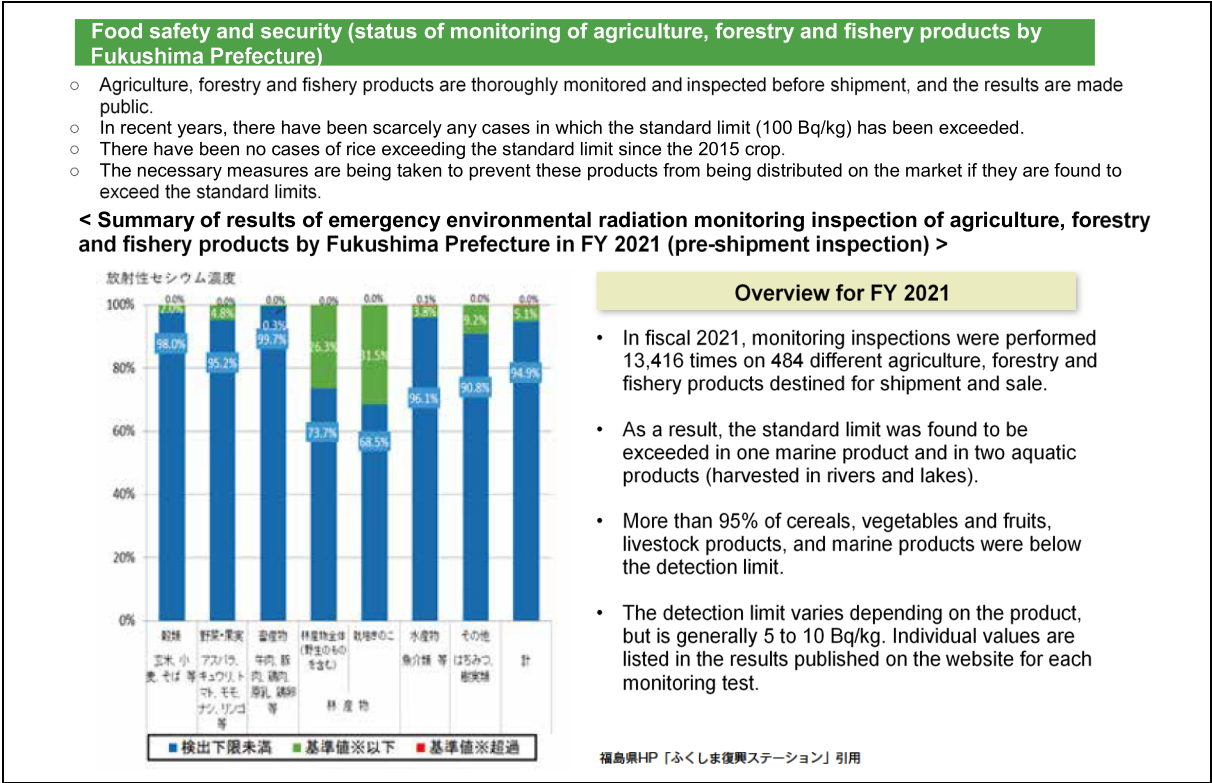
As of the end of March 2021, a total of 161,451 samples of fishery products have been inspected in Fukushima Prefecture and neighboring prefectures since the accident at TEPCO Fukushima Daiichi NPS. The number of samples in which radioactive cesium exceeding the standard limit (100 Bq/kg) was detected (hereinafter referred to as “samples exceeding the standard limit”) has tended to decrease with time. In FY 2020, only one sample of a marine species and no samples of freshwater species exceeded the standard limit in Fukushima Prefecture. Outside of Fukushima Prefecture, there have been no samples of marine species exceeding the standard limit since September 2014, but one sample of a freshwater species exceeded the standard limit in FY 2020.

In addition, 91.0% of the samples of fishery products tested in FY 2020 were below the detection limit.

6) Inspection of agriculture, forest and fishery products for radioactive materials

Testing and research institutes and quarantine stations complement the testing that local governments are required to conduct by accepting testing requests from local governments that find it difficult to carry out monitoring tests. In addition, amounts of radioactive materials contained in food on the market have been surveyed, and the results are published on the websites of the Ministry of Health, Labour and Welfare and the National Institute of Public Health, along with the results of inspections by local governments.

Figure 7-3-22 Monitoring of agriculture, forest, and fishery products



Source) Reconstruction Agency, “Status of Reconstruction from the Great East Japan Earthquake, and Associated Efforts” (December 2022), p. 22
https://www.reconstruction.go.jp/topics/main-cat1/sub-cat1-1/202212_pamphlet_fukko-jokyo-torikumi.pdf
(browsed July 26, 2023)