

Comprehensive Radiation Monitoring Plan (Provisional translation)

Decided on August 2, 2011

Revised on March 15, 2012

Radiation Monitoring Coordination Meeting

1. Basic Idea

Radiation monitoring has so far been conducted, centering on emergency monitoring in response to a massive release of radioactive substances from Tokyo Electric Power Company's (TEPCO's) Fukushima Dai-ichi Nuclear Power Plant (NPP), but the nuclear reactor conditions have been stabilized for several months, no significant discharge of radioactive substances from nuclear facilities has been detected, air dose rates have decreased considerably, and their changes over time have been small and stable. The Act on Special Measures concerning the Handling of Radioactive Pollution¹ was put into force in January 2012, and the Nuclear Emergency Response Headquarters compiled a document entitled "Basic Ideas and Future Issues to be Discussed concerning the Review of the Designation of Restricted Areas and Areas under Evacuation Order Upon the Completion of Step 2" (December 26, 2011). Deliberations are now underway with the aim of newly setting areas under evacuation order, but at the same time new problems have arisen, such as that gravel from areas showing high dose rates has been on the market.

Under such circumstances, the government has to ascertain changes in the situation and responsibly coordinate with local governments and the nuclear operator and related companies to avoid any omissions in carrying out radiation monitoring, for the purposes of restoring the environment around TEPCO's Fukushima NPPs, conducting more detailed monitoring in response to demands for children's health and people's peace and safety, and providing integrated information in an easy-to-understand manner.

More specifically, from the perspective of assessing the overall effects in the surrounding environment and utilizing the results in reviewing future measures, the major objectives of radiation monitoring should be as follows.

- (i) Understanding of the distribution of radiation doses and radioactive substances mainly in areas and places where people reside on a mid- and long-term basis
- (ii) Estimation of current exposure (external and internal exposure) doses of people living in the affected regions and their potential exposure doses in the future
- (iii) Consideration and planning of measures for reducing exposure doses, such as decontamination, in accordance with various circumstances
- (iv) Consideration and judgment for changing or reviewing the designation of areas under evacuation order through estimating future exposure as realistically as possible
- (v) Acquiring of basic data for managing residents' health and assessing effects on their health
- (vi) Understanding of the dispersion, deposition, and migrations of radioactive substances released in the environment

Through radiation monitoring, data necessary for these purposes will be measured.

It is also important to develop an appropriate system for collecting and accumulating data to be obtained through radiation monitoring over a long period of time so as to utilize them as basic data for managing the health of people living in the affected regions.

Based on such basic idea and under the current system of the government as of March 1, 2012, this plan compiles the revision to the details of the monitoring that is scheduled to be carried out in close collaboration among related ministries and agencies,

¹ Act on Special Measures concerning the Handling of Environment Pollution by Radioactive Materials Discharged by the NPS Accident Associated with the Tohoku District - Off the Pacific Ocean Earthquake that Occurred on March 11, 2011 (Act No. 110 of August 30, 2011)

local governments, and the nuclear operator and related company.

2. Allocation of Roles for Conducting Detailed Monitoring

○Concept for allocation of roles (as of March 1, 2012)

- Under the initiative of the Ministry of Education, Culture, Sports, Science and Technology (MEXT), the government will responsibly coordinate with local governments and the nuclear operator and related company.

MEXT:

Serving as the control tower for total coordination and information aggregation; Carrying out environmental radiation monitoring

Nuclear Safety Commission of Japan:

Giving advice to related ministries and agencies; Comprehensively assessing the measurements and the analysis of measurement results carried out in monitoring conducted by related ministries and agencies

Nuclear Emergency Response Headquarters (Local Nuclear Emergency Response Headquarters and Team in Charge of Assisting the Lives of Disaster Victims):

Carrying out and coordinating radiation monitoring around TEPCO's Fukushima NPPs in cooperation with related ministries and agencies; Offering assistance to monitoring conducted by Fukushima prefecture

Related ministries and agencies:

Aggregating information on monitoring, offering assistance, and conducting analyses in line with administrative objectives

Local governments:

Carrying out community-based monitoring and transmitting information integrally, in collaboration with the government and the nuclear operator and related company

Nuclear operator and related company:

Under the initiative of the government, carrying out monitoring together with local governments and transmitting information integrally with the government

- This plan does not intend to change the system or content of monitoring currently conducted by related ministries and agencies and local governments independently in line with their own administrative objectives, but will give full consideration to ensure the smooth and prompt implementation of such monitoring.
- It is expected that there will be an increasing number of problems that are difficult to be dealt with solely by one organization, such as the offering of support for residents' return to and the recovery of the areas under evacuation order and the implementation of monitoring surveys in the sea areas. Therefore, prior to implementing respective monitoring surveys, relevant organizations are to collaborate as needed, and review meetings or conferences are to be held for individual administrative issues with the participation of related organizations, thereby enhancing collaboration among related parties.
- It should be noted that different types of consideration are required for environmental radiation monitoring and for the monitoring of foodstuffs, etc. in accordance with legislative regulations.

○Specific measures for radiation monitoring

- Under the initiative of MEXT, related ministries and agencies, local governments, and nuclear operator and related company will aggregate information on monitoring, offer assistance to local activities, and conduct analyses as follows.

Monitoring target	Information aggregation (Arrangement for survey and	Carrying out measurement or offering assistance	Conducting analysis (Organizations that can conduct
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	analysis concerning the implementation of monitoring, and the publication thereof, as well as compilation of the planning)	(Measurement of radiation doses, collection of samples, transportation, and outsourcing of measurement to the private sector, etc.) *○ shows responsible entities.	radionuclide analysis)
General environmental samples (soil, water, and airborne, etc.), aircraft monitoring, sea areas, monitoring at schools, and around monitoring public facilities, etc.	MEXT	<p>Response to regions around TEPCO's Fukushima NPPs</p> <ul style="list-style-type: none"> ○Nuclear Emergency Response Headquarters (With participation of related ministries and agencies, local governments, and nuclear operator and related company) <p>Response to regions other than the above</p> <ul style="list-style-type: none"> ○MEXT ○Ministry of the Environment (MOE) ○Ministry of Economy, Trade and Industry (METI) ○Fisheries Agency <Sea areas> ○Japan Coast Guard <Sea areas> ○Meteorological Research Institute/Japan Meteorological Agency <Sea areas> ○Local governments Ministry of Defense¹⁾ <Air space and sea areas> Reconstruction Agency²⁾ Nuclear operator and related company 	<ul style="list-style-type: none"> ▪ Independent administrative institution of MEXT ▪ Japan Coast Guard ▪ Meteorological Research Institute/Japan Meteorological Agency ▪ Technical Research and Development Institute of the Ministry of Defense ▪ Local governments ▪ Nuclear operator and related company ▪ Public testing institutions ▪ Private testing institutions
Ports, airports, parks, and sewerage, etc.	MEXT (Aggregating information including that from the Ministry of Land, Infrastructure, Transport and Tourism (MLIT))	<p>Response to regions around TEPCO's Fukushima NPPs</p> <ul style="list-style-type: none"> ○Nuclear Emergency Response Headquarters (With participation of related ministries and agencies, local governments, and nuclear operator and related company) <p>Response to regions other than the above</p> <ul style="list-style-type: none"> ○Local governments MLIT 	<ul style="list-style-type: none"> ▪ Independent administrative institution of MEXT ▪ Local governments ▪ Nuclear operator and related company ▪ Public testing institutions ▪ Private testing institutions
Water environment (Rivers, lakes and water resources, ground water), natural parks, etc. (spring water, wild fauna and flora), and waste	MOE	<p>Response to regions around TEPCO's Fukushima NPPs</p> <ul style="list-style-type: none"> ○Nuclear Emergency Response Headquarters (With participation of related ministries and agencies, local governments, and nuclear operator and related company) <p>Response to regions other than the above</p> <ul style="list-style-type: none"> ○MOE ○Local governments Nuclear operator and related company, <p style="text-align: right;">etc.</p>	<ul style="list-style-type: none"> ▪ Independent administrative institution of MEXT ▪ Independent administrative institution of MOE ▪ Local governments ▪ Nuclear operator and related company ▪ Public testing institutions ▪ Private testing institutions

Cultivated soil, forests, and pasture grass, etc.	Ministry of Agriculture, Forestry and Fisheries (MAFF)	Response to regions around TEPCO's Fukushima NPPs ○Nuclear Emergency Response Headquarters (With participation of related ministries and agencies, local governments, and nuclear operator and related company)	<ul style="list-style-type: none"> ▪ Independent administrative institution of MAFF ▪ Independent administrative institution of MEXT ▪ Local governments ▪ Nuclear operator and related company ▪ Public testing institutions ▪ Private testing institutions
		Response to regions other than the above ○MAFF ○Local governments	
Foodstuffs (Agricultural products, forestry products, livestock products, and fishery products, etc.)	Ministry of Health, Labour and Welfare (MHLW)	Response to regions around TEPCO's Fukushima NPPs ○Nuclear Emergency Response Headquarters (With participation of related ministries and agencies, local governments, and nuclear operator and related company)	<ul style="list-style-type: none"> ▪ Independent administrative institution of MHLW ▪ Independent administrative institution of MAFF ▪ Local governments ▪ Public testing institutions, etc.
		Response to regions other than the above ○MAFF ○Local governments, National Tax Agency ³⁾ , etc.	
Tap water	MHLW	Response to regions around TEPCO's Fukushima NPPs ○Nuclear Emergency Response Headquarters (With participation of related ministries and agencies, local governments, and nuclear operator and related company)	<ul style="list-style-type: none"> ▪ Local governments ▪ Water supply utilities ▪ Public testing institutions, etc.
		Response to regions other than the above ○Local governments ○Water supply utilities, etc.	

* The Meteorological Research Institute serves as an analytical body, collaborating with related ministries and agencies.

Note 1: The Ministry of Defense will offer assistance using aircraft or ships in collaboration with related ministries and agencies as necessary.

Note 2: The Reconstruction Agency will collaborate with related ministries and agencies in making general adjustments for the restoration of infrastructure in areas under evacuation order and other areas, and the offering of support for residents' return to their homes.

Note 3: The National Tax Agency has jurisdiction over affairs for ensuring the safety of liquor and therefore will collaborate with related ministries and agencies with regard to the monitoring of food stuffs relating to liquor.

3. Implementation Plan

1) Plan for the radiation monitoring of general environmental samples (soil, water, and airborne, etc.), aircraft monitoring, sea areas monitoring, monitoring at schools, and around monitoring public facilities, etc.

○Nationwide monitoring

<Monitoring by 47 prefectures using monitoring posts, etc.>

- Measurement of air dose rates through the monitoring of environmental radioactivity levels (measurement using monitoring posts) by prefectures will be continued. More specifically, monitoring posts, one of which is now placed in each prefecture, should be increased by around 250 units nationwide, and a website will be open to make available these measurement results already equipped and those to be newly equipped so that data can be updated on a real-time basis via the Internet. At the same time, estimated air dose rates at a height of 1m above the ground near the existing monitoring posts will be calculated based on past data and will be released every day, in principle (measurement of air dose rates will be carried out separately once a month for the purpose of verifying those calculated estimates). [To be conducted regularly] (MEXT and respective prefectures)
- Analysis of monitoring results of environmental radioactivity levels (tap water and fallout) will be further refined to a standard equivalent to that prior to the occurrence of the accident, and measurement will be carried out once a month for fallout and once every three months for tap water, and the results thereof will be released. Additionally, measurement with the current analysis accuracy will be continued for Fukushima prefecture for the time being. [To be conducted regularly] (MEXT and respective prefectures)
- In order to help respective prefectures carry out radiation monitoring in a more appropriate and effective manner, training on the analysis of environmental radiation will be continued for responsible local government staff. [To be conducted regularly] (MEXT)

<Wide-area monitoring using aircraft>

- In order to confirm that deposition amounts of radioactive substances are smaller in Hokkaido and in the western part of Japan compared with East Japan, airborne monitoring will be conducted in these areas. [To be conducted by around the spring of 2012] (MEXT)
- In order to ascertain the diffusion of radioactive substances in areas in prefectures neighboring Fukushima prefecture, where relatively high levels of radioactive substances have been detected, airborne monitoring will be conducted continuously, following that conducted in the summer of 2011. [To be conducted in certain intervals from February, 2012] (MEXT)

○Monitoring of the land area mainly around TEPCO's Fukushima NPPs

[Wide-area monitoring covering the entire Fukushima prefecture]

<Ascertaining air dose rates and accumulated doses>

- In addition to monitoring posts already equipped entire Fukushima prefecture, movable monitoring posts will be installed in stages in all 59 local governments in Fukushima (545 units in total) and in Fukushima neighboring prefectures (Miyagi, Yamagata, Ibaraki, Tochigi, Gunma, and Niigata prefectures; 130 units in total) within FY2011, and the measurement results will be released, together with those obtained at monitoring posts nationwide, on the website on a real-time basis via the Internet. In light of the installation of new monitoring posts, the measuring points, etc. will be revised sequentially with regard to regular measurement using monitoring vehicles and survey meters. Furthermore, with the aim of obtaining wide-area data in more detail, the introduction of the vehicle-borne survey system will be promoted. [To be conducted regularly] (MEXT, Fukushima prefecture, and neighboring prefectures)
- In the vicinity of TEPCO's Fukushima Dai-ichi NPP, continuous measurement will be conducted using movable

monitoring posts or integrating dosimeters to ascertain changes in air dose rates and accumulated doses, and the measurement results will be released on the aforementioned website on a real-time. In light of the installation of new monitoring posts, measurement of accumulated doses using simple integrated dosimeters will be reviewed. [To be conducted regularly] (MEXT, Nuclear Emergency Response Headquarters, and Fukushima prefecture)

- At public facilities areas, etc. in Fukushima prefecture, air dose rates will be measured using survey meters. Furthermore, detailed monitoring will be conducted mainly at residential houses, etc. where relatively high air dose rates have been detected. [To be conducted as needed] (Fukushima prefecture)

<Dust>

- Regarding dust in the air (air dust), monitoring will be conducted at a higher accuracy than that at the time of responding to the latest emergency, focusing on measurement of people's living environment. After arranging necessary equipment, more highly-accurate monitoring will be commenced in April. [To be conducted regularly] (MEXT, Nuclear Emergency Response Headquarters, and Fukushima prefecture)

<Environmental soil survey>

- In order to understand the overall picture of the accident, the scope and content of the first soil survey on the radioactivity distribution, which was conducted last June, will be expanded to ascertain the distribution of air dose rates and the deposition of various types of radioactive substances on the ground surface. At the same time, a survey on the migration of radioactive substances in diversified environments in the land area will be conducted continuously and the preparation of air dose rate maps and soil concentration maps, as well as the survey for figuring out the migration of radioactive substances in diversified environments will be continued. [Once between December 2011 and May 2012, and once in FY2012] (MEXT, Fukushima prefecture, Nuclear Emergency Response Headquarters, and universities, etc.)
- Based on the results of the aforementioned soil survey, the concentration of radioactive substances in soil in Fukushima prefecture will be measured continuously. [To be conducted as needed] (MEXT, Nuclear Emergency Response Headquarters, and Fukushima prefecture)

<Indicator plants>

- Indicator plants that are available throughout the year irrespective of seasons (such as pine needles) will be designated and their radioactivity concentrations will be measured continuously. [To be conducted regularly] (MEXT, Nuclear Emergency Response Headquarters, and Fukushima prefecture)

<Airborne monitoring>

- In order to ascertain changes in radioactive substances caused by the natural environment in areas within 80km from TEPCO's Fukushima Dai-ichi NPP, airborne monitoring will be conducted regularly in the relevant areas. [To be conducted in each season from April] (MEXT)

<Detailed monitoring targeting areas under evacuation order>

- In order to regularly ascertain detailed results of air dose rates in targeting the restricted areas (evacuation areas) and planned evacuation areas, and to contribute to promoting decontamination and other measures in these areas, the following types of monitoring will be conducted sequentially. Additional monitoring will also be conducted as needed [(i) will be conducted regularly, and the others will be conducted appropriately when necessary] (Nuclear Emergency Response Headquarters, Reconstruction Agency, related ministries and agencies, and the nuclear operator and related

company)

- (i) Area-wide detailed monitoring of air dose rates utilizing a vehicle-borne survey
 - (ii) In the uninhabitable areas, measurement of air dose rates for the purpose of checking whether estimated annual accumulated doses are below 20mSv
 - (iii) Detailed monitoring for promoting recovery work of wide-area infrastructure
- In order to offer support for people's return to and the recovery of the areas for which an evacuation order was lifted and the areas for which an evacuation order is expected to be lifted while considering the restoration of infrastructure, the following monitoring will be conducted sequentially based on the needs of the local communities. When conducting the monitoring, a system will be formulated, under which the Nuclear Emergency Response Headquarters and MEXT, which is in charge of making comprehensive coordination, will take the initiative and related ministries and agencies, Fukushima prefecture, and the nuclear operator and related companies will collaborate with each other in accordance with respective local needs. [To be conducted as needed] (Nuclear Emergency Response Headquarters, MEXT, Reconstruction Agency, Ministry of the Environment, related ministries and agencies, Fukushima prefecture, and the nuclear operator and related company)
 - (i) Detailed monitoring for supporting residents' return and recovery
 - Monitoring of air dose rates at major points in kindergartens, elementary schools, junior high schools, high schools, nurseries, hospitals, libraries, children's centers, facilities for children with disabilities, and after-school children's clubs located in the targeted areas
 - Wide-area monitoring of air dose rates utilizing a vehicle-borne survey in the living areas, mainly around the facilities mentioned in (i) above (including school zones)
 - Monitoring in response to requests from respective local governments (ex. Ground water, including well water, that is likely to be supplied as drinking water)
 - (ii) Measurement of air dose rates based on the progress of decontamination
 - The monitoring for supporting restoration of the former emergency evacuation preparation areas will continue to be conducted in collaboration among related organizations in line with the "Radiation Monitoring Action Plan for Supporting Restoration of the Former Emergency Evacuation Preparation Areas (Minami Soma City, Tamura City, Kawauchi Village, Hirono Town, and Naraha Town)" (dated October 3, 2011; Team in Charge of Assisting the Lives of Disaster Victims, Cabinet Office; Emergency Operation Center, MEXT; and Ministry of the Environment). Additional monitoring will also be conducted as needed. [To be conducted appropriately when necessary] (Nuclear Emergency Response Headquarters, MEXT, Ministry of the Environment, related ministries and agencies, Fukushima prefecture, and the nuclear operator and related company)
 - Monitoring will be conducted regularly at points designated as specific spots recommended for evacuation and the surrounding areas. [To be conducted as needed] (Nuclear Emergency Response Headquarters, MEXT, and Fukushima prefecture)

○Sea area monitoring

- The sea area monitoring in March 2012 will be conducted in collaboration among related organizations under the initiative of MEXT, and the radioactivity concentrations in seawater, marine soil, and fishery products will be measured steadily in the sea area close to TEPCO's Fukushima Dai-ichi NPP, the coastal area, off-shore area, and outer sea area. [To be conducted as needed] (MEXT, Fisheries Agency, Japan Coast Guard, Meteorological Research Institute/Japan Meteorological Agency, MOE, Fukushima prefecture, and the nuclear operator and related company)
- The sea area monitoring in April 2012 onward will be conducted in collaboration among related organizations, such as MOE and the Fisheries Agency, under the initiative of MEXT, and from the perspective of ascertaining the

radioactivity concentrations mainly for cesium in seawater by enhancing the analysis accuracy, ascertaining the chronological and spatial distribution of radioactive substances in marine soil and characteristics of marine soil, and ascertaining the chronological changes in radioactivity concentrations in fishery products with regard to marine organisms, the radioactive concentrations will be measured respectively, while making proper reviews as needed. Furthermore, the monitoring content will be enhanced and strengthened by taking into account not only the routes of radioactive substances discharged into the sea from TEPCO's Fukushima Dai-ichi NPP but also those of radioactive materials flowing into the sea from the land area via rivers. When conducting the sea area monitoring, attention will also be paid to the viewpoints of helping the understanding of the incorporation of radioactive substances in the environment into marine organisms and the bioconcentration process.

Specifically, monitoring of (i) seawater, (ii) marine soil, and (iii) marine organisms will be conducted by dividing the targeted sea zone into the following five sea areas:

- (1) Sea area close to TEPCO's Fukushima Dai-ichi NPP
 - (2) Coastal area (Within around 30km from the coastline of Aomori (only partially), Iwate to Miyagi, Fukushima, Ibaraki, and Chiba (only partially) prefectures)
 - (3) Off-shore area (Within around 30 to 90km from the coastline)
 - (4) Outer sea area (Within around 90 to 280km and 280km or farther from the coastline)
 - (5) Tokyo Bay, which is the closed sea area where radioactive substances are highly likely to flow in from rivers and be deposited in particular
- (i) The monitoring of seawater will be conducted at the aforementioned five sea areas, while taking into account the knowledge on the locations of major river outlets from Miyagi to Ibaraki prefectures, and ports and marine fishing grounds in Fukushima prefecture, the sea water density, and ocean currents, as well as the diffusion simulation results, by collecting water samples in collaboration with related local governments. The analysis will be carried out at the same accuracy level as those for the monitoring of environmental radioactivity levels prior to the occurrence of the accident. In conducting the monitoring at the sea area close to TEPCO's Fukushima Dai-ichi NPP, it will be noted that any leakage of radioactive substances should also be monitored. [To be conducted regularly, and the monitoring in the area 280km or farther from the coastline will be conducted as needed] (MEXT, Japan Coast Guard, MOE, Meteorological Research Institute/Japan Meteorological Agency, Fisheries Agency (offering cooperation only for sampling), Fukushima prefecture, and the nuclear operator and related company)
- (ii) The monitoring of marine soil will be conducted in sea areas excluding the outer sea area ((1) to (3) and (5) above), while taking into account similar matters as in the case of the monitoring of seawater, and the radioactive concentrations in marine soil will be measured in collaboration with related local governments. In addition, information concerning the characteristics of marine soil will be collected. [To be conducted regularly] (MEXT, Japan Coast Guard, MOE, Fukushima prefecture, and the nuclear operator and related company)
- (iii) As the monitoring of marine organisms, the radioactive concentrations in fishery products will be measured steadily, while considering fishery operations mainly in the coastal area of the Pacific Ocean and past monitoring results, and the monitoring will also be conducted with regard to marine organisms that will function as environmental indices, mainly in Fukushima prefecture. Food organisms will also be monitored in the course of research concerning the incorporation of radioactivity concentrations into fishery products and the bioconcentration process. [To be conducted as needed] (The monitoring of fishery products will be conducted in collaboration among the Fisheries Agency, related local governments and Fisheries Cooperative, and the other monitoring will be conducted by the Fisheries Agency (food organisms), MOE (marine organisms other than fishery products as environmental indices), and the nuclear operator and related company (fishery products and

food organisms in the sea area close to TEPCO's Fukushima Dai-ichi NPP.)

- In order to continue the monitoring of the distribution of radioactive materials and their long-term movement in the sea around Japan, the radioactive concentrations in seawater and marine soil will be measured [To be conducted regularly] (MEXT and Japan Coast Guard)

○Monitoring at schools, etc. (Schools and nurseries, etc.)

<Measurement of air dose rates at schoolyards, etc.>

- Air dose rates outdoors at kindergartens, elementary schools, junior high schools, high schools, nurseries (including unauthorized facilities), parks, etc. and other public facilities where people (children in particular) gather in Fukushima prefecture are being measured by around 2,700 units of installation-type small dosimeters with a data transfer function that have been equipped at schools, etc. Obtained data will be delivered through the automated data delivery system (real-time radiation dose measurement system) and will be updated via the Internet on a real-time basis on the aforementioned website on which measurement results at monitoring posts nationwide are available. [To be conducted regularly] (MEXT)
- Air dose rates will be measured at schoolyards once every several months, targeting kindergartens, elementary schools, junior high schools, high schools, and nurseries (including unauthorized facilities), etc. in Fukushima prefecture. Appropriate frequency of measurement should be reviewed in the future, in accordance with the progress of the introduction of the aforementioned real-time radiation monitoring system at schools, etc. [To be conducted regularly] (Fukushima prefecture)
- Air dose rates will be measured at child welfare facilities in Fukushima prefecture. [To be conducted as needed] (Fukushima prefecture)

<Measurement of accumulated doses of school staff who represent the behavior of students>

- At kindergartens, elementary schools, junior high schools, and high schools, in Fukushima prefecture, accumulated doses in school life will be ascertained through measurement using integrating dosimeters delivered by MEXT and worn by school staff. It was confirmed that at all schools, etc. where monitoring had been conducted so far, radiation doses received by students had been maintained stably low. Based on this, and considering the operation of the aforementioned real-time radiation monitoring system at schools, etc., the compilation of measurement results by the government will be terminated as of the end of March 2012. Schools, etc. will endeavor to timely provide guardians with detailed information such as by releasing the results of measurements by the national or local governments or themselves on their website or school reports, etc. [To be conducted (compilation of measurement results) up to the end of 2012] (MEXT)

<Measurement of the radioactivity concentrations in water in outdoor swimming pools>

- The radioactivity concentrations in water in outdoor swimming pools will be surveyed at schools, etc. in Fukushima prefecture. [To be conducted regularly from June to September] (Fukushima prefecture)

<Measurement of the radioactivity concentrations in school lunches>

- From FY2012, examination of school lunches will be conducted continuously after providing them to students to ascertain the radioactivity concentrations. The government will grant financial support² for examinations conducted by municipalities in Fukushima prefecture and by local governments in other prefectures that have filed applications.

² Additionally, the national government will grant financial support for installing examination equipment for Fukushima prefecture and other 15 prefectures in East Japan that had filed applications, under the supplementary budget for FY2011.

[To be conducted regularly (support will be granted as needed)] (Municipalities in Fukushima prefecture, other prefectures, and MEXT)

○Others

<Measurement at construction sites where gravel that is likely to have been contaminated was used>

- With regard to the gravel shipped from the quarry that dealt with stones used for buildings showing higher air dose rates than outdoors in Nihonmatsu city, Fukushima prefecture, efforts will be made to identify construction sites where said gravel was used and to measure air dose rates at such sites, aiming to finish the measurement by the end of March 2012 where the residents have given their consent. [To be conducted within FY2011] (Nuclear Emergency Response Headquarters, Ministry of Economy, Trade and Industry, MLIT, and local governments)

<Monitoring for responding to newly arising problems>

- From the perspective of reducing residents' exposure levels, if any kind of monitoring becomes urgently necessary to be conducted on an ongoing basis or upon the occurrence of an emergency, administrative agencies having jurisdiction over the related industry or schools, etc. will collaborate with each other to promote necessary measures. [To be conducted as needed] (Competent administrative agencies, and Nuclear Emergency Response Headquarters)

2) Plan for the monitoring of ports, airports, parks, and sewage, etc.

<Measurement of sewage sludge>

- The radioactivity concentrations in sewage sludge in related local governments will be measured and ascertained. [To be conducted as needed] (MLIT (compilation of the results) and local governments)

<Monitoring of the atmosphere and seawater at ports and passages>

- At ports in the Tohoku(Fukushima, Miyagi, Iwate and Aomori prefectures) and Kanto regions(Tokyo, Kanagawa, Ibaraki and Chiba prefectures), air dose rates in the atmosphere and the radioactivity concentrations in seawater will be measured. The radioactivity concentrations in seawater will also be measured around Uruga Channel in Tokyo Bay. [To be conducted as needed] (MLIT (compilation of the results and implementation of part of the measurement) and local governments, etc.)

<Measurement at airports>

- Air dose rates will be measured at measuring points near major airports. [To be conducted as needed] (MLIT (compilation of the results) and airport management company, etc.)

<Measurement at city parks, etc.>

- Air dose rates will be measured at city parks across Fukushima prefecture. [To be conducted as needed] (Fukushima prefecture)

<Measurement at tourist spots>

- Air dose rates will be measured at tourist spots (tourist facilities, mountainous districts, natural scenic spots, and roadside stations) in Fukushima. [To be conducted as needed] (Fukushima prefecture)

3) Plan for the monitoring of water environment (rivers, lakes and water resources, and ground water), natural parks, and waste

○Monitoring of water environment

<Monitoring of rivers, lakes and water resources>

- At environmental reference points at rivers, lakes and water resources, as well as the coastal area in Fukushima prefecture and neighboring prefectures, measurement will be carried out with regard to air dose rates and the radioactivity concentrations in water, bottom soil, and environmental samples (soil and aquatic organisms (measurement for aquatic organisms will be carried out mainly in Fukushima prefecture)). In particular, in Fukushima prefecture, regarding water and bottom soil of rivers, lakes and water resources, as well as the coastal area, measurement of air dose rates at bathing resorts in the coastal area or at lakes, and the radioactivity concentrations in seawater, etc. will be intensively carried out. (Monitoring at the coastal area has been mentioned above.) [To be conducted regularly, but monitoring at bathing resorts in the coastal area or at lakes in Fukushima prefecture will be conducted every month from June to August] (MOE and Fukushima prefecture)

<Monitoring of ground water (including well water)>

- Measurement will be carried out with regard to the radioactivity concentrations of ground water in Fukushima prefecture and neighboring prefectures. In particular, in Fukushima prefecture, the radioactivity concentrations in ground water will be measured intensively, and those in well water for drinking will also be measured. [To be conducted regularly] (MOE and Fukushima prefecture)

○Monitoring at natural parks etc. (spring water, wild fauna and flora)

<Monitoring at natural parks>

- At natural parks within around 100km from TEPCO's Fukushima Dai-ichi NPP, measurement of the radioactive concentrations will be conducted for (i) spring water alongside trails that climbers and tourists may drink, and (ii) mountain water or mountain stream water used in parking lots or fields and that climbers and tourists may drink. [To be conducted regularly] (MOE)

<Monitoring of wild fauna and flora>

- Samples of wild fauna and flora (to be selected by referring to Reference Animals and Plants (International Commission on Radiological Protection (ICRP)), such as annual gramineae weeds, pine trees, or *Apodemus speciosus*, will be collected within the 20km-range from TEPCO's Fukushima Dai-ichi NPP and the surrounding areas, and analysis will be conducted in collaboration with related organizations. [To be conducted as needed] (MOE)
- In Fukushima prefecture and neighboring prefectures, the radioactive concentrations will be measured with regard to major game animals that are often supplied for human consumption. [To be conducted as needed] (Fukushima prefecture and neighboring prefectures)

○Monitoring of waste

- Based on the Act on Special Measures concerning the Handling of Radioactive Pollution, a survey will be conducted on waste at water supply plants, and measurement will be carried out with regard to the radioactive concentrations in emission gas and sewer water from waste incineration facilities, as well as in ground waste and water discharged from final disposal sites. Air dose rates will also be measured at borders of the premises of incineration facilities and final disposal sites. [To be conducted regularly] (MOE, municipalities, and related company)

4) Plan for the monitoring of cultivated soil, forests, and pasture grass

<Monitoring of cultivated soil>

- In FY2011, for the purpose of ascertaining the distribution of radioactivity concentrations over a wide area of cultivated soil, distribution maps of concentration of radioactive substances, covering Fukushima prefecture and neighboring prefectures, were prepared in August. In FY2012, the maps will be refined by significantly increasing measuring points, and it is scheduled to go on to ascertain changes in concentrations and figure out characteristics of the movement of radioactive substances in cultivated soil. [To be conducted as needed] (MAFF)

<Monitoring of forests and pasture grass, etc.>

- At the test site established in the forest areas in Fukushima prefecture, the radioactivity concentrations in forest soil, effluent water from forests, as well as in branches, leaves, tree bark, and timber will be measured. [To be conducted as needed] (Forestry Agency)
- The radioactivity concentrations will be measured with regard to pasture grass, etc. in various parts of affected prefectures. [To be conducted as needed] (MAFF (compilation of the results) and respective prefectures)
- In Fukushima prefecture, the radioactivity concentrations will be measured at irrigation ponds. [To be conducted as needed] (MAFF)

5) Plan for the monitoring of foodstuffs (agricultural products, forestry products, livestock products, and fishery products, etc.)

<Monitoring of foodstuffs in respective prefectures>

- Monitoring will be planned and conducted regularly in accordance with the status of production and shipments of each item. Continuing from FY2011, the government will grant subsidies for installing equipment for inspecting agricultural, livestock, and fishery products and other foodstuffs, or will lend relevant equipment to requesting prefectures³. [To be conducted regularly (granting of subsidies and lending of equipment will be conducted as needed)] (MHLW (establishment of the inspection policy, compilation of the results, and granting of subsidies), MAFF (granting of subsidies and lending of equipment), and respective prefectures, etc.)

<Monitoring at local governments that have experienced shipment restrictions>

- At local governments subject to the Prime Minister's instructions, and neighboring local governments,⁴ as well as local governments to be subject to instructions separately in accordance with the detection of radioactive materials, inspections will be conducted continuously for items from which radioactive materials exceeding the government's provisional standard value were detected, as well as for major agricultural products, considering their production status based on the estimated intake of the general public. Items that are shipped only during a limited period of time should be inspected at an early stage on or after three days prior to the commencement of shipments, and other items should be monitored regularly as in the same manner as before. If any items show radiation levels over or very close to the provisional standard value, inspections should be strengthened.⁵ (Monitoring of fishery products has been mentioned

³ The Consumer Agency, jointly with the National Consumer Affairs Center of Japan, lends inspection equipment to local governments that intend to check radioactive substances in foodstuffs consumed by their residents independently, separately from the monitoring of foodstuffs under the Food Sanitation Act, thereby helping the development of radiation inspection systems for foodstuffs from the standpoint of consumers.

⁴ As of August 4, 2011, instructions of the Nuclear Emergency Response Headquarters were issued to 17 prefectures (Fukushima, Ibaraki, Tochigi, Gunma, Chiba, Kanagawa, Miyagi, Yamagata, Niigata, Nagano, Saitama, Tokyo, Yamanashi, Shizuoka, Iwate, Aomori, and Akita).

⁵ The inspection guideline was revised on March 12, 2012. In April onward, inspection will be conducted in line with the new guideline.

above.) [To be conducted regularly] (The inspection policy will be established by MHLW in collaboration with MAFF, and inspection results will be compiled by MHLW. Inspections will be conducted by respective prefectures and the monitoring of fishery products will be conducted jointly by the Fisheries Agency, relevant local governments, and fishery unions.)

<Ascertaining of actual exposure doses through ingestion of food>

- Fukushima prefecture will conduct detailed monitoring in the prefecture with the cooperation of related organizations, possibly for several years. The government will continue monitoring actual exposure doses through ingestion of food in respective areas including Fukushima prefecture. [To be conducted as needed] (Fukushima prefecture (with the cooperation of related organizations) and MHLW)

6) Plan for the monitoring of tap water

- Regarding purified water at water treatment plant and raw water at intake areas, water samples collected at selected locations of water source for water supply utility will be inspected using germanium semiconductor detectors, in principle. In Fukushima prefecture, the radioactivity concentrations will be measured for tap water by source of water. [To be conducted as needed for the time being] (MHLW (establishment of the inspection policy and compilation of the results), Nuclear Emergency Response Headquarters, and respective prefectures)

7) Crosscutting matters

- MEXT will continue operating a portal site on radiation monitoring by compiling information on monitoring being conducted by related ministries and agencies in line with their own administrative objectives, and will update the site as needed. [To be conducted as needed] (MEXT)
- Related organizations will continuously compile and accumulate the results of the monitoring they have conducted and will release them on their website and update data as needed, so as to facilitate the utilization thereof. [To be conducted as needed] (Related organizations)
- MEXT will update the “Website to Enlarge Distribution Maps of Radiation Doses, etc.,” which was developed in October 2011, so that people can confirm the results of diversified monitoring surveys in more detail. [To be conducted as needed] (MEXT)
- In order to accumulate highly reliable fundamental monitoring data concerning the effects of the accident at TEPCO’s Fukushima Dai-ichi NPP and make them available for residents of related municipalities, administrative agencies, and researchers, the Japan Atomic Energy Agency will take the initiative in creating and releasing a reliable database by compiling and aggregating the results of highly accurate monitoring conducted by MEXT and other organizations along with various assorted information necessary for utilizing the former (detailed measurement conditions, detection limits for respective analyses, and weather conditions, etc.). When the database is completed, data will be updated continuously, while responding to new needs of users. Furthermore, in collaboration with the International Atomic Energy Agency (IAEA), efforts will be made to make data widely available internationally. [To be conducted as needed] (MEXT)

8) Matters to be noted

- Now in many areas air dose rates have remained relatively stable with no significant changes over time, and

radioactive substances detected in environmental monitoring samples have become smaller in general. If radioactive substances have not been detected continuously through the measurement, or if air dose rates have shown only minor fluctuations, related organizations should consider lowering detection limits or reducing the frequency of measurement, or review the scope of the measurement, as needed, based on the objectives of the monitoring and the needs of the local community.

- Related organizations should try to standardize measurement by commonizing measurement and collection methods, and calibrating equipment in accordance with the objectives. The need for cross checking among analytical bodies should be reviewed for each monitoring, and whether to carry out cross checking should be considered as needed.
- When releasing monitoring results to residents, related organizations should employ risk communication by carefully explaining and describing how to read monitoring results and what can be found therefrom so that residents can understand the meaning of monitoring results correctly. Furthermore, related organizations should continuously make improvements to their methods of risk communication, and conduct research and development on risk communication techniques. They should also make efforts to deepen collaboration with other organizations that are in charge of duties other than monitoring, such as decontamination, health examination, and food safety.
- When designing a monitoring plan, implementing monitoring, analyzing and verifying monitoring results, and releasing data, related organizations should further utilize experts' knowledge. In doing so, they should make use of experts in multiple fields, as needed, based on the objectives and the targets of the monitoring so that they can conduct monitoring more properly, and utilize and release the results thereof more adequately.
- Related organizations should promote efficient and effective use of analytical instruments by making them available for a wider range of environmental monitoring in response to the latest accident at TEPCO's Fukushima NPPs.