

~ For employers ~

~ The Revised Ionizing Radiation Ordinance became effective on 1 July 2013. ~
The scope of regulation covered by the Ordinance was extended in order to protect workers engaged in the disposal of accident-derived wastes and others from radiation hazards.

The "Ordinance on Prevention of Ionizing Radiation Hazards" (hereinafter referred to as the "Ionizing Radiation Ordinance") came into effect by issuance of the Ministry of Health, Labour and Welfare to minimize radiation exposures received by workers. The Ionizing Radiation Ordinance was revised to extend the scope of regulation and became effective on 1 July 2013. The revised Ordinance specifies measures for preventing radiation hazards for workers engaged in works related to disposal of wastes and others contaminated by radioactive materials discharged by the nuclear power station accident (hereinafter referred to as "radioactive materials discharged by the accident").

Employers are required to take measures to protect their workers from radiation hazards in accordance with the revised Ordinance.

* Please refer to the Labour Standards Bureau Notification No. 0412-2: "Guidelines on Prevention of Radiation Hazards for Workers Engaged in (Nuclear) Accident-derived Waste Disposal" (issued on 12 April 2013) for details.
http://www.mhlw.go.jp/english/topics/2011eq/workers/ri/pr/pr_130412.html

Overview of the revised Ionizing Radiation Ordinance

The revised Ionizing Radiation Ordinance applies to employers who operate businesses for the disposal of accident-derived wastes and others, and their workers.

● The accident-derived wastes and others are defined as follows:

1 Removed soil	Soil generated by decontamination work, etc. with radioactivity concentration exceeding 10,000 Bq/kg
2 Contaminated wastes	Wastes contaminated by radioactive materials discharged by the accident* with radioactivity concentration exceeding 10,000 Bq/kg
3 Other materials contaminated by radioactive materials discharged by the accident	Materials with the quantity and concentration of radioactive isotopes other than radiocesium isotopes exceeding those specified in Paragraph 2 of Article 2 of the Ionizing Radiation Ordinance

* Radioactive Materials Discharged by the Nuclear Power Station Accident Associated with the Tohoku District off the Pacific Ocean Earthquake That Occurred on 11 March 2011

● Disposal includes the following works:

- 1 Final disposal (landfill) and interim storage
- 2 Intermediate processing (classifying, crushing, compressing, condensing, incineration etc.)
- 3 Maintenance and inspection of related facilities and equipment

● The revised Ionizing Radiation Ordinance additionally stipulates the following:

- 1 Requirements to be met by facilities for disposal of accident-derived wastes and others
- 2 Measures to prevent the spread of contamination
- 3 Management of works, etc.
- 4 Special education
- 5 Exemptions applied when installing a disposal facility in a special decontamination area



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Ministry of Health, Labour and Welfare/ Prefectural
Labour Bureau/ Labour Standards Inspection Office

1 Basic principles for prevention of ionizing radiation hazards

The exposure dose limits shown in 2 ② below are not set to indicate that any value within the limits is acceptable, and employers should make every effort to minimize the exposure dose received by workers who are engaged in works for disposal of accident-derived wastes and others.

2 Establishment of controlled areas, and dose limits and measurement

① Indication of controlled areas, etc. (Article 3)

Employers shall demarcate a radiation controlled area by signs, and shall not allow persons other than those with purpose to enter the controlled area.

- A controlled area is defined as any of the following areas:
 - a. any area in which the total of the effective dose due to external radiation and radioactive materials in the air may exceed 1.3 mSv per three months;
 - b. any area in which the surface density of radioactive materials may exceed one tenth (4 Bq/cm²) of the surface concentration limit.

② Exposure dose limit for workers engaged in works for disposal of accident-derived wastes and others (Article 4)

Employers shall take necessary measures so that the effective dose*¹ and equivalent dose*² received by workers engaged in works related to disposal of accident-derived wastes and others shall not exceed the following values.

	Effective Dose	Equivalent Dose
Men or women who were diagnosed with no possibility of pregnancy	100 mSv in 5 years and 50 mSv in a year	150 mSv for (lens of the eye) and 500 mSv (for the skin) in a year
Women (except those who were diagnosed with no possibility of pregnancy)‡	5 mSv in 3 months	
Pregnant women	1 mSv	2 mSv (at the surface of the abdomen) in addition to the above

*1 The total of exposure doses received during radiation work at a nuclear power plant, etc., decontamination work, works under a designated dose rate and works related to disposal of accident-derived wastes and others should not exceed the exposure dose limit.

*2 Exposure dose per human tissue or organ.

③ Methods of exposure dose measurement (Article 8)

Employers shall measure exposure doses of workers engaged in works related to disposal of accident-derived wastes and others by using the prescribed methods.

a. Measurement of external exposure doses

External exposure doses must be measured using electronic dosimeters (APDs, PDs), glass badges, or luxel badges. They shall be worn on the chest for male workers and non-pregnant female workers and on the abdomen for pregnant female workers.

A measurement device that is capable of measuring 1 cm dose equivalent*¹, *² must be used.

*1 In addition to the above provision, wear measurement devices that are capable of measuring 70 μm dose equivalent (e.g., ring badges) at places where highest exposure may occur, such as fingers, when significant exposure due to β-rays is anticipated, for example, the treatment of waste liquids and others that are generated during removal of radiocesium from accident-derived wastes and others.

*2 Measurement devices to be used by workers who may receive external doses exceeding 1 mSv per day must be capable of measuring the daily exposure dose, such as electronic dosimeters.

Bq, becquerel; mSv, millisievert

b. Measurement of internal exposure doses

Internal exposure doses shall be measured with a whole body counter (WBC), etc. The measurement frequency is shown in the table below. Measurement shall be done immediately after accidental ingestion of radioactive materials.

Cases where workers are likely to inhale or ingest radioactive materials	Once per 3 months
Female workers who are likely to receive effective dose of 1.7 mSv or more, or pregnant workers	Once within a month

④ Records, etc. of measured exposure doses (Article 9)

Employers are required to record measured exposure doses at the specified intervals and store them for 30 years. However, after keeping the records for 5 years, the records may be transferred to the organization (Radiation Effects Association) designated by the Minister of Health, Labour and Welfare.

When assigning temporary or dispatched workers for works of less than 3 months related to disposal of accident-derived wastes and others, employers are required to record their exposure doses on a monthly basis.

	Effective Dose	Equivalent Dose
Men or women who were diagnosed with no possibility of pregnancy	Total of effective doses in every 3 month, 1 year, and 5 year periods (total of effective doses in every 3 month and 1 year periods when the total of effective doses in 1 year did not exceed 20 mSv)	Total of equivalent doses in every 3 month and 1 year periods for each type of human tissue
Women (except those who were diagnosed with no possibility of pregnancy)	Total of effective doses in every 1 month, 3 month, and 1 year periods (total of effective doses in every 3 month and 1 year periods when any monthly effective dose is unlikely to exceed 1.7 mSv)	
Pregnant women	Total of effective doses from internal exposure and equivalent doses received on the abdomen surface every month and throughout the period of pregnancy	

Employers are required to promptly notify the recorded doses to the relevant workers.

3 Limit of dose in facilities, etc.

① Limit of dose in facilities, etc. and surface contamination inspection, etc. (Articles 3-2, 25, 28 and 29)

- In facilities for handling unsealed accident-derived wastes and others, storage facilities or landfill facilities, employers shall limit the total of the effective dose due to external radiation and the effective dose due to airborne radioactive materials at such sites that are usually entered by workers within 1 mSv or less per week.
- The ceilings, floors, walls, equipment, etc. (limited to parts where the workers might touch) of facilities for handling accident-derived wastes and others shall be inspected once within a month, and decontamination work shall be performed for contamination exceeding the surface concentration limit (40 Bq/cm²) to reduce the concentration at or below the limit.
- Employers shall perform decontamination work to reduce the concentration at or below one tenth of the limit (4 Bq/cm², or 40 Bq/cm² in the case of facilities for handling accident-derived wastes and others) when accident-derived wastes and others are spilled.
- Employers shall limit the weekly average concentration for 3 months in a disposal site (other than facilities for handling accident-derived wastes and others) at or below one tenth of the airborne concentration limit (equivalent to 5 mSv per year).

② Work environment measurement (Articles 53 through 55)

Employers are required to measure and record the following items monthly and store the results for 5 years.

- a. Controlled areas: dose equivalent rate or dose equivalent due to external radiation
- b. Facilities for handling accident-derived wastes and others: concentration of radioactive materials in the air*

- Measurement date and time
- Measurement method
- Type, model and performance of measurement devices
- Measurement place
- Measurement conditions
- Measurement results
- Name of person in charge of measurement
- General description of actions taken based on the measurement results

* The concentration of radioactive materials in the air shall be measured by a working environment measurement expert.

4 Requirements to be met by the facilities, etc. for disposal of accident-derived wastes and others

① Clear indication of the border of the disposal site (Article 41-3)

Employers shall clearly indicate the border of the site where disposal of accident-derived wastes and others is operated with signs.

② Facilities for handling accident-derived wastes and others (Articles 41-4 through 41-8, and 33 through 35)

Employers shall, when disposing of unsealed accident-derived wastes and others, carry out the said works in the facilities and equipment that meet the following requirements depending on the waste to be handled. In addition, employers shall post signs in the facilities, etc. to keep unauthorized personnel off.

a. Accident-derived waste handling facilities	<ul style="list-style-type: none"> ① Use materials impermeable to gases or liquids and with corrosion resistance ② Have smooth surfaces and structures with few gaps ③ Have liquid leak-tight structure ④ Have measures implemented to control dust spread ⑤ Have double-entry doors installed at entrances and exits
b. Systems for crushing, classification, compression and concentration	<ul style="list-style-type: none"> ① Satisfy items ①, ③ and ④ of a above ② Have gas leak-tight structure
c. Incinerators	<ul style="list-style-type: none"> ① Satisfy item ② of b above ② Structure unlikely to spread ash
d. Landfill facilities and storage facilities	<ul style="list-style-type: none"> ① Have a structure separated from the external surroundings ② Have closing devices, such as keys at the doors, covers, etc.
e. Gaseous and liquid effluent facilities	<ul style="list-style-type: none"> ① Satisfy items ① and ③ of a, and item ② of b above
f. Transportation systems such as belt conveyors	<ul style="list-style-type: none"> ① Satisfy items ①, ③ and ④ of a, and item ② of b above

5 Measures to prevent the spread of contamination

① Use of containers and tools (Articles 37 and 27)

a. Employers shall, when temporarily storing accident-derived wastes or contaminants (with a surface contamination greater than 4 Bq/cm²) for keeping, storage, transport or disposal, or burial, use containers that meet the following criteria:

- For materials likely to contaminate air: containers made of corrosion-resistant material with gas leak-tight structure
- For liquid and wet contaminants: corrosion-resistant containers with liquid leak-tight structure to prevent spilling
- For transport work: containers unlikely to spread or discharge contents with a dose rate not exceeding 0.1 mSv/h at 1 m away from the container surface

b. Employers shall provide indications on tools for handling accident-derived wastes and others, such as shovels, and prevent these tools from use for any other purpose.

② Inspection for contamination of persons leaving an area or of goods being taken out (Articles 31 and 32)

Employers shall establish a contamination inspection area at the exit of a controlled area, and inspect the contamination of workers engaged in the relevant works, their belongings and goods to be taken out.

When a worker is identified as contaminated, he/she is not allowed to leave the area until washing himself/herself to reduce the surface density so as not to exceed the criterion (4 Bq/cm²). No contaminated goods are allowed to be taken from the area*.

* Goods to be transported to another disposal-related facility can be taken out using containers as specified in ① of 5 above.

③ Protective equipment (Articles 38 through 40)

Employers shall prepare respiratory protective equipment and protective clothing equivalent to or better than the following specifications depending on the wastes and works involved, and ensure that their workers use them.

	Radioactivity concentration higher than 2 million Bq/kg	Radioactivity concentration higher than 0.5 million Bq/kg to 2 million Bq/kg	Radioactivity concentration 0.5 million Bq/kg or less
Works under high dust concentration environment (Dust concentration: higher than 10 mg/m ³)	Double air-tight chemical protective suit to be worn over a long sleeve shirt, double rubber gloves worn over cotton gloves, rubber boots, and a dust mask (full face) with dust collection efficiency of > 99.9%	Air-tight chemical protective suit to be worn over a long sleeve shirt, rubber gloves worn over cotton gloves, rubber boots, and a dust mask with dust collection efficiency of > 95%	A long sleeve shirt, cotton gloves, rubber boots, and a dust mask with dust collection efficiency of > 80%
Works other than that under high dust concentration environment (Dust concentration: 10 mg/m ³ or below)	Air-tight chemical protective suit to be worn over a long sleeve shirt, rubber gloves worn over cotton gloves, rubber boots, and a dust mask with dust collection efficiency of > 95%	A long sleeve shirt, rubber gloves worn over cotton gloves, rubber boots, and a dust mask with dust collection efficiency of > 80%	A long sleeve shirt, cotton gloves, and rubber boots, and a dust mask with dust collection efficiency of > 80%

* Non-woven surgical masks and others may be used when handling plants and leaf mold.

④ Prohibition of smoking, etc. (Article 41-2)

Employers shall prohibit workers from smoking, eating, or drinking at such areas where they are likely to inhale or ingest radioactive materials, such as the facilities for handling accident-derived wastes and others.

6 Management of work, etc.

① Preparation of work rules (Article 41-13)

Employers shall, when disposing of accident-derived wastes and others, define work rules (i.e., manuals) necessary to protect workers from hazards due to radiation, and perform operations in accordance with the rules.

- Operation of equipment
- Adjustment of safety devices and automatic alarm devices
- Operational methods and procedures
- Monitoring of dose equivalent rates due to external radiation and the concentration of radioactive materials in the air
- Inspections with respect to the contamination of surface areas of the ceilings, floors, walls, equipment, etc., and the removal of such contamination
- Emergency measures in case of any abnormal event or accident
- Other necessary measures

② Work notifications (Article 41-14)

Employers who intend to dismantle or enter equipment or to perform works in which the total of the effective dose due to external radiation and the effective dose due to radioactive materials in the air may exceed 1 mSv per week shall submit a work notification* in advance to the Director of the relevant Labour Standards Inspection Office.

* "Form 1" specified in the Ionizing Radiation Ordinance

③ Evacuation and consultation with doctors, etc. in the case of accidents (Articles 42 through 45)

- a. When any accidents occur, employers shall clearly indicate the areas in which the effective dose is likely to exceed 15 mSv, prohibit all persons other than emergency workers from entering such areas, and submit a report to the Director of the relevant Labour Standards Inspection Office.
- b. Employers shall ensure that consultation with and treatment by medical doctors are promptly given to anyone who was in the accident site, who received exposure exceeding the limit or who accidentally ingested radioactive materials, and report the fact to the Director of the relevant Labour Standards Inspection Office. Furthermore, employers are required to record the exposure doses and maintain those records for 5 years.

6 Special Education, Medical Examinations etc.,

① Special Education (Article 52-8)

Employers shall, when assigning their workers to carry out the disposal of accident-derived wastes and others, provide them with the special education for the following subjects:

- Knowledge about accident-derived wastes and others
- Methods of disposal work
- Knowledge about the structure and handling methods of equipment used for the works (lecture and practical training)
- Effects of ionizing radiation on the human body, exposure dose control methods
- Relevant laws and regulations

Please make use of the standard textbook for the special education available on the MHLW website.

- Textbook for special education on the disposal of accident-derived wastes and others
<http://www.mhlw.go.jp/new-info/kobetu/roudou/gyousei/anzen/130417-1.htm>

② Medical Examinations (Articles 56 through 59)

Employers shall provide their workers who are regularly engaged in disposal of accident-derived wastes and others with medical examinations regarding the following items*¹, at the time of employment and reallocation, and periodically once every 6 months thereafter.

*¹ Some examination items may be omitted if radiation exposure dose in the previous year did not exceed 5 mSv and the dose in the current year is unlikely to exceed 5 mSv.

- Determination on whether the worker has an exposure history and evaluation
- White blood cell count and differential
- Red blood cell count and hemoglobin content test or hematocrit test
- Cataract eye test
- Skin test

An "Ionizing radiation medical examination card"*² shall be created based on the results of the medical examinations, and stored for 30 years. *² "Form 1-2" specified in the Ionizing Radiation Ordinance

For the medical examination results, opinions and observations of medical doctors shall be sought pursuant to the provisions of Article 66-4 of the Industrial Safety and Health Act, and the results shall be notified to the relevant worker.

When a medical examination is implemented, the "Report on the ionizing radiation medical examination results" shall be promptly submitted to the Director of the relevant Labour Standards Inspection Office. *³ "Form 2" specified in the Ionizing Radiation Ordinance

7 Exemptions applied when installing a disposal facility in a special decontamination area

Exemptions are applied to some provisions for a facility located in the special decontamination area, etc. in consideration of conditions where soil, etc. were contaminated before the facility was opened.

Cases where a disposal site is installed in the special decontamination area, etc.

With regard to the contamination inspection and contamination limit, it is only necessary to install one contamination inspection area at the exit of the site and set the contamination limit at 40 Bq/cm², etc.

Cases where removed soil is handled in landfill facilities in the special decontamination area, etc.

It is not necessary to use containers if measures to prevent contamination of workers, such as handling the removed soil using remote-controlled machinery, etc. are taken.

● Ordinance on Prevention of Ionizing Radiation Hazards (Ministry of Labour Ordinance No. 41, 1972) (Excerpt)

Chapter I. General Provisions

(Basic principle of prevention of ionizing radiation hazards)

Article 1. Employers shall endeavor to minimize the exposure of workers to ionizing radiation as low as possible.

(Definitions, etc.)

Article 2. "Ionizing radiation" (hereafter called "radiation") as set forth by this Ordinance shall be defined as the following particulate rays and electromagnetic waves:

- (1) Alpha-rays, deuteron-rays and proton-rays
- (2) Beta-rays and electron-rays
- (3) Neutron-rays
- (4) Gamma-rays and X-rays

2. In this Ordinance, "radioactive materials" shall be defined as radioactive isotopes (hereinafter referred to as "radioisotopes"), their compounds and the materials containing the radioisotopes which fall under any one of the following categories:

- (1) Radioactive materials with one radioisotope falling within one of the radioisotopes given in the first column of Attached Table 1 with a quantity and concentration equal to or exceeding those given in the second and third columns of the same table, respectively, corresponding to the radioisotope type concerned.
 - (2) Radioactive materials with one radioisotope falling within one of the radioisotopes given in the first column of Attached Table 2 with a quantity of equal to or exceeding that given in the second column of the same table, corresponding to the radioisotope type concerned. However, any solid material with a concentration of 74 Bq per gram or less and any sealed material with a quantity of 3.7 MBq or less shall be excluded.
 - (3) In the case of radioactive materials comprising two or more radioisotopes that are given in the first column of Attached Table 1, those falling under all of the following:
 - a) Those for which the sum of the ratio of the quantity of each radioisotope given in the first column of Attached Table 1 to the quantity given in the corresponding second column of the same table exceeds 1.
 - b) Those for which the sum of the ratio of the concentration of each radioisotope given in the first column of Attached Table 1 to the concentration given in the corresponding third column of the same table exceeds 1.
 - (4) In the case of radioactive materials comprising two or more radioisotopes not falling under the preceding item, those for which the sum of the ratio of the quantity of each radioisotope given in the first column of Attached Table 1 or Table 2 to the quantity given in the corresponding second column of Attached Table 1 or Table 2 exceeds 1. However, any solid material with a concentration of 74 Bq per gram or less and any sealed material with a quantity of 3.7 MBq or less shall be excluded.
3. In this Ordinance, "radiation works" shall mean those listed in Attached Table 2 of the Enforcement Order of the Industrial Safety and Health Act (hereafter referred to as the "Cabinet Order") (the radiation works other than those provided for by Article 59-2 shall not include works of decontamination of soil, etc. provided for by item 1 of Paragraph 7 of Article 2, works for collecting waste, etc. provided for by item 2 of the same article, and works for handling designated contaminated soil and wastes provided for by item 3 of the same paragraph of the Ordinance on Prevention of Ionizing Radiation Hazards for Works to Decontaminate Soil and Wastes Contaminated by Radioactive Materials Resulting from the Great East Japan Earthquake and Related Works (Ministry of Health, Labour and Welfare Ordinance No. 152, 2011, hereafter referred to as the "Ordinance for Decontamination").
4. The radioactive materials as established by the Ministry of Health, Labour and Welfare Ordinance based on item 4 of Attached Table 2 of the Cabinet Order shall correspond to those provided in Paragraph 2.

Chapter II. Controlled Areas, Exposure Dose Limit and Measurement

(Indications, etc. of the controlled areas)

Article 3. Employers who operate businesses carrying out radiation works (hereinafter referred to as the "employer" except in the case of Article 62) shall demarcate those areas that fall under any of the following (hereinafter referred to as "controlled areas") by posting signs:

- (1) Areas in which the total of the effective dose due to external radiation and the effective dose due to radioactive materials in the air may exceed 1.3 mSv per 3 months.
 - (2) Areas in which the surface density of radioactive materials may exceed one-tenth of the limits listed in the Attached Table 3.
2. The effective dose due to external radiation as prescribed in item 1 of the preceding paragraph shall be calculated in 1 cm dose equivalent.
3. The effective dose due to radioactive substances in the air as prescribed in item 1 of Paragraph 1 shall be calculated by multiplying 1.3 mSv by the equivalent of one-tenth of the average limit for 3 months as designated by the Minister of Health, Labour and Welfare of the average concentration of radioactive materials in the air during the working hours in a week (when working hours in a week exceed 40 hours or are less than 40 hours, the value used shall be obtained by multiplying the average concentration of radioactive materials in the air during the working hours in a week by the value obtained by dividing said working hours by 40 hours; hereinafter referred to as the "weekly average concentration").
4. Employers shall not allow persons, other than those with a need to enter the controlled areas, to do so.
5. Employers shall post signs, at easily visible places in the controlled areas, concerning the requirements to wear the radiation measuring instrument specified in Paragraph 3 of Article 8, warnings concerning the handling of radioactive materials and the necessary emergency measures in the event of an accident, etc., to be taken to prevent health hazards to workers due to radiation.

(Limit of radiation exposure dose in facilities, etc.)

Article 3-2. With respect to any radiation equipment rooms in Paragraph 1 of Article 15, work rooms for handling radioactive materials in Paragraph 2 of Article 22, storage facilities in Paragraph 1 of Article 33 (including the applications to the cases of the provisions of Article 41-9), disposal-by-storage facilities in Paragraph 1 of Article 36, sites for handling accident-derived wastes and others in Paragraph 2 of Article 41-4 or landfill facilities in Paragraph 1 of Article 41-8, employers shall limit the total of the effective dose due to external radiation and the effective dose due to radioactive materials in the air equivalent to 1 mSv or less per week at such sites that are usually entered by workers by installing shielding walls, protective screens or other shielding devices, or by installing a local exhaust ventilation system or equipment which seals the emission source of gas, vapor or dust of radioactive materials.

2. The provisions of Paragraph 2 of the preceding article shall apply mutatis mutandis to the calculation of the effective dose due to external radiation as prescribed in the preceding paragraph.
3. The effective dose due to radioactive materials in the air as prescribed in Paragraph 1 of this article shall be calculated by multiplying 1mSv by the ratio of the weekly average concentration to the limit designated by the Minister of Health, Labour and Welfare under the provisions of Paragraph 3 of the preceding article. (Exposure dose limit for radiation workers)

Article 4. Employers shall ensure that the effective dose received by workers engaged in radiation works in a controlled area (hereinafter referred to as "radiation workers") does not exceed 100 mSv per five years and 50 mSv per year.

2. Regardless of the provisions in the preceding paragraph, employers shall ensure that the effective dose received by female radiation workers (excluding female workers who were diagnosed with no possibility of pregnancy and those specified in Article 6) does not exceed 5 mSv per three months.

Article 5. Employers shall ensure that the equivalent dose of radiation workers does not exceed 150 mSv per year for the eye lens and 500 mSv per year for the skin.

Article 6. Employers shall ensure that the dose received by female radiation workers who are diagnosed as pregnant does not exceed the dose specified in the items in the following categories, starting from the time they are diagnosed as pregnant until delivery (hereinafter referred to as "pregnancy"):

(1) Effective dose due to internal exposure: 1 mSv

(2) Equivalent dose received on abdomen surface: 2 mSv

(Dose measurement)

Article 8. Employers shall measure the doses due to external and internal exposure received by radiation workers, emergency workers and workers who enter the controlled area temporarily, in the controlled area.

2. The dose due to external exposure provided for in the preceding paragraph shall be measured with the units of 1 cm dose equivalent and 70 μ m dose equivalent (in the case of neutron-rays, 1 cm dose equivalent). However, in accordance with the provisions of the following paragraph, the measurement carried out using a radiation measuring instrument attached to the parts of the body specified in item 3 of the following paragraph shall be made with the unit of 70 μ m dose equivalent.

3. The dose due to external exposure provided for in Paragraph 1 shall be measured by attaching a radiation measuring instrument to the parts of the body designated in the following items. The dose, however, may be calculated based on the dose equivalent rate measured by a radiation measuring instrument when dose measurement using a radiation measuring instrument is extremely difficult, and the dose may be determined by calculation when the application of the alternative method is also extremely difficult.

(1) The chest for male workers and female workers who were diagnosed with no possibility of pregnancy, and the abdominal area for other female workers.

(2) The part most likely to be exposed to radiation among the head, neck, chest, upper arm, abdominal area and thigh (excluding cases where the parts most likely to be exposed to radiation for male workers and female workers who were diagnosed with no possibility of pregnancy are the chest and upper arm, and cases where the parts most likely to be exposed to radiation for other female workers are the abdominal area and the thigh).

(3) The part most likely to be exposed to radiation (excluding the case of neutron-rays), if such part is other than the head, neck, chest, upper arm, abdominal area and thigh.

4. The dose due to internal exposure under the provisions of Paragraph 1 shall be measured at least quarterly for workers who enter sections of a controlled area where there is a possibility of taking in radioactive materials either by inhalation or ingestion (at least monthly for female workers whose effective dose exposure may exceed 1.7 mSv in any single month (except for female workers who were diagnosed with no possibility of pregnancy) and female workers during pregnancy). However, in cases where a radiation worker mistakenly inhales or ingests radioactive materials, the measurement shall be conducted immediately after such ingestion or inhalation.

5. In measuring the dose due to internal exposure under the provisions of Paragraph 1, the measured value shall be determined using the method provided by the Minister of Health, Labour and Welfare.

6. Radiation workers, emergency workers and workers who enter the controlled area temporarily shall wear radiation measuring instruments in the controlled area, with the exception of cases coming under the proviso to Paragraph 3.

(Confirmation, recording, etc. of dose measurement results)

Article 9. Employers shall confirm the results of the measurement of the dose due to external exposure under the provisions of Paragraph 1 of the preceding article daily for workers who are likely to be exposed to radiation exceeding 1 mSv per day in terms of 1 cm dose equivalent.

2. Employers shall calculate and record the dose for radiation workers listed in each of the following items without delay by using the methods provided by the Minister of Health, Labour and Welfare on the basis of the measurement and/or calculation results under the provisions of Paragraphs 3 or 5 of the preceding article, and keep such records for 30 years. This provision shall not apply in the event that an employer turns over such records to an organization designated by the Minister of Health, Labour and Welfare after keeping them for a period of 5 years.

(1) Quarterly, annual and 5-year totals of the effective dose for male workers and female workers who were diagnosed with no possibility of pregnancy (quarterly and annual totals of the effective dose for workers whose effective dose did not exceed 20m Sv/year in the past 5 years).

(2) Monthly, quarterly and annual totals of the effective dose for female workers (except female workers who were diagnosed with no possibility of pregnancy) (quarterly and annual totals of the effective dose for workers whose effective dose is unlikely to exceed 1.7 mSv per month).

(3) Quarterly and annual totals of the tissue dose equivalents by human tissue.

(4) Monthly and the during-pregnancy totals of the effective dose due to internal exposure and the equivalent dose exposure to the abdomen surface of female workers during pregnancy.

3. Employers shall, without delay, inform each radiation worker of the dose specified in each item of the preceding paragraph based on the records under the provisions of the preceding paragraph.

(Contamination inspection of contamination removing tools, etc.)

Article 30. After conducting the decontamination or the cleaning for the objects designated in Article 28 or Paragraph 1 of the preceding article, employers shall inspect the tools used for decontamination or cleaning each time, and, if the tools are found to be contaminated to levels exceeding the limits listed in the Attached Table 3, employers shall prohibit the workers from using such tools until the contamination of the tools is reduced to the levels lower than those listed in the said table.

2. Employers shall post a written notice which indicates that the tools are contaminated with radioactive materials at locations or places where the said tools are stored.

3. The provisions of Paragraph 2 of Article 27 shall apply mutatis mutandis to the tools as provided by Paragraph 1.

(Contamination inspection of workers leaving controlled areas)

Article 31. Employers shall provide a contamination inspection site at the exit of the controlled areas (where contamination may occur of the workers' bodies, their equipment worn and other items exceeding one tenth of the limits listed in the Attached Table 3; the same shall apply hereafter in this and the next articles) to inspect the contamination of those workers' bodies and their equipment worn who were engaged in work in the controlled areas and are to leave the said areas.

2. If the levels of the contamination of the workers' bodies and their equipment worn are found to exceed one tenth of the limits listed in the Attached Table 3 through the inspection of the preceding paragraph, employers shall not permit the contaminated workers to leave the controlled areas unless the workers go through the following measures at the contamination inspection site of the preceding paragraph:

(1) Wash the body until the level of contamination is reduced to or less than one tenth of the limit designated in the Attached Table 3, if the body is contaminated.

(2) Take off or remove any equipment worn from their bodies, if such equipment are contaminated.

3. In accordance with instructions as provided by the preceding paragraph, workers shall wash their bodies or take off or remove any equipment worn from their bodies.

(Protective equipment)

Article 38. Employers shall, if their workers are engaged in works in the area designated in the provisions of Article 28, emergency works, or other works in which the workers may inhale air contaminated to the level exceeding that designated by the Minister of Health, Labour and Welfare under Paragraph 3 of Article 3, provide them with effective personal respiratory protective equipment depending on the level of contamination, such as dust masks, gas masks, hose masks, oxygen breathing apparatuses, and make them use such equipment for the works.

2. When implementing the works as provided for by the preceding paragraph, workers shall use the protective equipment described in the same paragraph.

Article 39. Employers shall, if their workers are engaged in works in which the workers may be contaminated to the level exceeding one tenth of the limit designated in the Attached Table 3, provide them with effective protective clothes, gloves and shoes, and make them use such items for the works.

2. When implementing the works as provided for by the preceding paragraph, workers shall use the protective equipment described in the same paragraph.

Section 2. Prevention of Contamination Caused by Radioactive Materials Discharged by the Accident

(Clear indications of the border of the disposal sites of accident-derived wastes and others)

Article 41-3. Employers who operate a business to dispose of accident-derived wastes and others (objects under the provisions of Paragraph 2 of Article 2 and contaminated by those which are prescribed by (a) or (b) of item (ii) of Paragraph 7 of Article 2 of the Ordinance for Decontamination, and other radioactive materials discharged by the accident (this shall mean radioactive materials discharged by the nuclear power plant due to the accident that occurred associated with the Tohoku-Pacific Ocean Earthquake that occurred on 11 March 2011; the same shall apply hereinafter), the same shall apply hereinafter) (hereafter in this Section referred to as "disposal operator") shall indicate the border of the sites where the said business is operated with signs.

(Facilities for handling accident-derived wastes and others)

Article 41-4. Disposal operators shall, when carrying out works for handling unsealed accident-derived wastes and others, provide dedicated work facilities and carry out the said works inside the said facilities.

2. The provisions of Paragraph 4 of Article 3 and Paragraph 2 of Article 33 shall apply mutatis mutandis to the work facilities in the preceding paragraph (hereinafter referred to as "facility for handling accident-derived wastes and others").

(Structure, etc. of facilities for handling accident-derived wastes and others)

Article 41-5. Disposal operators shall conform to the following, regarding walls, floors, and other places with a risk of contamination inside the facilities for handling accident-derived wastes and others;

- (1) The parts shall be made of materials impermeable to gases or liquids and with high corrosion resistance.
- (2) Surfaces shall be finished smoothly.
- (3) Structures shall have as few protrusions, dents, or gaps as possible.
- (4) In the case of possible contamination by liquids, structures shall be liquid leak-tight.

2. Disposal operators shall take measures to control dust spread when there is a risk of contamination by dust at the facilities for handling accident-derived wastes and others.

3. Disposal operators shall take measures to prevent spread of contamination such as by providing double-entry door at the entrance and exit of the facilities for handling accident-derived wastes and others.

(Crushing equipment)

Article 41-6. Disposal operators shall, when crushing, classifying, compressing, or condensing accident-derived wastes and others, or contaminated objects outside the facilities for handling accident-derived wastes and others, use equipment that conforms to the following items according to the cases listed in the said items:

- (1) In the case of possible contamination by gases, the equipment shall have a gas leak-tight structure, and shall be made of corrosion-resistant material with low gas permeability.
- (2) In the case of possible contamination by liquids, the equipment shall have a liquid leak-tight structure, and shall be made of corrosion-resistant material with low liquid permeability.
- (3) In the case of possible contamination by dust, the equipment shall have a structure with no possibility to spread the dust.

2. The provisions of Paragraph 2 of Article 33 shall apply mutatis mutandis to crushing equipment (this shall mean the equipment in the preceding paragraph and its accessory equipment; the same shall apply to Paragraph 1 of Article 34 which applies mutatis mutandis to Article 41-9).

(Belt conveyors and other transportation equipment)

Article 41-7. Disposal operators shall, when transporting accident-derived wastes and others, or contaminated objects outside the facilities for handling accident-derived wastes and others, except for cases using containers as provided for by the text of Paragraph 1 of Article 37 which applies mutatis mutandis to Article 41-9, or taking measures for the proviso of the same paragraph, use equipment that conforms to the following items according to the cases listed in the said items:

- (1) In the case of possible contamination by gases, the equipment shall have a gas leak-tight structure, and shall be made of corrosion-resistant material with low gas permeability.
- (2) In the case of possible contamination by liquids, the equipment shall have a liquid leak-tight structure, and shall be made of corrosion-resistant material with low liquid permeability.
- (3) In the case of possible contamination by dust, the equipment shall have a structure with no possibility to spread the dust.

2. The provisions of Paragraph 2 of Article 33 shall apply mutatis mutandis to belt conveyors and other transportation equipment (this shall mean the equipment in the preceding paragraph and its accessory equipment; the same shall apply to Paragraph 1 of Article 34 which applies mutatis mutandis to Article 41-9).

(Landfill facilities)

Article 41-8. Disposal operators intending to conduct landfill operations for accident-derived wastes and others, or contaminated objects, shall conduct the work in landfill facilities separated from external surroundings and which are provided with a locking mechanism and other closing devices or tools at the parts leading to the outside of the said facilities, such as doors and covers.

2. The provisions of Paragraph 4 of Article 3 and Paragraph 2 of Article 33 shall apply mutatis mutandis to the landfill facilities in the preceding paragraph.

(Application to other cases)

Article 41-9. The provisions of Paragraph 4 of Article 3 (limited to the applications to the cases of the provisions of Paragraph 3 of Article 33), Article 25, the text of Article 26, Paragraphs 1 and 2 of Article 27 (including the applications to the cases of the provisions of Paragraph 3 of Article 33), Articles 28 and 29, Paragraphs 1 and 2 of Article 30, Articles 31 and 32, Paragraphs 1 and 2 of Article 33 (including the applications to the cases of the provisions of Paragraph 2 of Article 34 and Paragraph 2 of Article 35), Paragraph 1 of Article 34, Paragraph 1 of Article 35, Article 37 (except Paragraph 4), and Articles 38 to 41-2 shall be applicable with necessary modifications to the disposal operators. In this case, the terms under the provisions of the upper columns listed in the middle columns of the following table shall be replaced with the terms listed in the lower columns of the said table.

=====After application and replacement by the provisions of Article 41-9 =====

Article 25. Employers shall control the three-month average of the weekly average concentration in workplaces other than the facilities for handling accident-derived wastes and others to one-tenth or less of the limit designated by the Minister of Health, Labour and Welfare under Paragraph 3 of Article 3.

(Equipment to prevent dispersion of radioactive materials)

Article 26. When sprays or powders including accident-derived wastes and others may be dispersed by handling accident-derived wastes and others, employers shall make their workers engaged in the said work use protective equipment under the provisions of Paragraph 1 of Article 39 which applies mutatis mutandis to Article 41-9.

(Tools to handle radioactive materials)

Article 27. For tools such as shovels to be used in handling of accident-derived wastes and others, employers shall post a written notice stating such usage, and shall not use these tools for other purposes.

2. Employers shall, if not using the tools provided in the preceding paragraph, keep them in tool-storing hangers, trays, etc., which have a design structure and are made of materials allowing for easy removal of contamination.

(Measures to be taken when radioactive materials are spilled, etc.)

Article 28. When contamination occurs due to an accident such as spills of the accident-derived wastes and others, either in liquid or powder form, employers shall immediately take measures for preventing the spread of the contamination, indicate the area with possible contamination by posting a warning notice and remove the contaminant until the level of the contamination becomes below the limit listed in the Attached Table 3 (or one tenth of the limit listed in the Attached Table 3 if the contamination occurred in the place other than facilities for handling accident-derived wastes and others).

(Contamination inspection in workplaces for handling radioactive materials)

Article 29. Employers shall inspect the ceiling, floor, walls, equipment, etc. (limited to the parts where the workers might touch) of the facilities for handling accident-derived wastes and others at least monthly, and if the said objects are found to be contaminated to the levels exceeding the limits listed in the Attached Table 3, employers shall decontaminate the objects to or below the limits.

2. Employers shall, when cleaning the said objects as set forth in the preceding paragraph, use a method that does not cause dispersion of dust.

(Inspection of contamination of items taken from controlled areas)

Article 32. For items to be taken from the controlled areas, employers shall inspect their status of contamination at the contamination inspection site as described in Paragraph 1 of the preceding article when taking out the items; except where the items are to be carried out under the provisions of Paragraph 1 of Article 41-7.

2. Neither employers nor employees shall take out those items found to be contaminated to the levels exceeding one tenth of the limit designated in the Attached Table 3 through the inspection conforming to the provisions of the preceding paragraph; except where the items are to be carried out under the provisions of Paragraph 1 of Article 41-7, or to be carried to the contamination removing facilities, facilities for disposal or discarding of accident-derived wastes and others by using the containers as provided for by the text of Paragraph 1 of Article 37 which applies mutatis mutandis to Article 41-9 or by taking measures for the proviso of the same paragraph.

(Storage Facilities)

Article 33. Employers shall store accident-derived wastes and others in storage facilities separated from the external surroundings and which are provided with a locking mechanism and other closing devices or tools at the parts leading to the outside of the said facilities, such as doors and covers.

2. Employers shall post notices of the fact at easily visible places outside such storage facilities.

3. The provisions of Paragraph 4 of Article 3 shall apply mutatis mutandis to the storage facilities set forth in Paragraph 1.

(Facilities for exhausted air or liquids)

Article 34. Employers shall, when dealing with exhausted air or liquids from the facilities for handling accident-derived wastes and others, crushing equipment, or belt conveyors and other transportation equipment, storing or purifying the said exhausted air or liquids, conduct such work within a facility with a gas and liquid leak-tight structure and the facility shall be made of corrosion-resistant materials with low liquid permeability.

2. The provisions of Paragraph 2 of the preceding article shall apply mutatis mutandis to the facilities as set forth in the preceding paragraph.

(Incinerators)

Article 35. Employers shall, when incinerating accident-derived wastes and others or any objects found to be contaminated to the level exceeding one tenth of the limit designated in the Attached Table 3 (hereinafter referred to as "contaminated objects"), use an incinerator in a structure which eliminates the possibility of gas leakage and spread of ashes.

2. The provisions of Paragraph 2 of Article 33 shall apply mutatis mutandis to the incinerators set forth in the preceding paragraph.

(Containers)

Article 37. Employers shall use containers when storing or keeping accident-derived wastes and others, or when carrying, temporarily storing before disposal or conducting landfill operations of accident-derived wastes and others or contaminated objects; provided, that this does not apply to a case in which it is extremely difficult to put these materials in containers, and effective measures are taken to shield the leakage of radiation to outside or to prevent spread of contamination, or these materials are handled in the facilities for handling accident-derived wastes and others, or these materials are carried out under the provisions of Paragraph 1 of Article 41-7.

2. When using the containers designated in the preceding Paragraph for the purposes listed in the left column of the following table, the employer shall ensure that each of such containers has the structure correspondingly listed in the right column of the same table according to the classified uses. (omitted)

(Decontamination of protective equipment, etc.)

Article 41. Employers shall, if their workers are engaged in works in the facilities for handling accident-derived wastes and others, provide dedicated work clothes and make them wear such work clothes at their workplaces.

(Prohibition of smoking, etc.)

Article 41-2. Employers shall prohibit their workers from smoking, eating, or drinking in the facilities for handling accident-derived wastes and others and any workplaces where they are likely to inhale or ingest accident-derived wastes and others, and post notices at easily visible places in such workplaces.

2. Workers shall not smoke, eat, or drink at the workplaces set forth in the preceding paragraph.

=====

(Exemption for Special Decontamination Areas)

Article 41-10 Concerning the landfill of accident-derived wastes and others, (limited to the removed soil prescribed in (a) of item (ii) of Paragraph 7 of Article 2 of the Ordinance for Decontamination, the same shall apply hereafter in this Paragraph) in the special decontamination areas provided for by Paragraph 1 of Article 25 of the Act on Special Measures Concerning the Handling of Environmental Pollution by Radioactive Materials Discharged by the Nuclear Power Station Accident Associated with the Tohoku-Pacific Ocean Earthquake That Occurred on 11 March 2011 (Act No. 110 of 2011) or intensive contamination survey areas provided for by Paragraph 1 of Article 32 of the same Act (hereafter in the next Paragraph referred to as "special decontamination areas, etc."), the provisions of Article 37 (except Paragraph 4) which applies mutatis mutandis to the preceding Article and the provisions of Article 41-5 shall not be applied provided that the measures listed in the following items are taken.

(1) Measures to prevent contamination of workers' bodies by accident-derived wastes and others, such as carrying out the works by remote control.

(2) Measures to control spread of dust such as wetting accident-derived wastes and others

(3) Measures to control spread of dust such as by working at a place as far away from the border of the landfill facility as possible

(4) Measures to determine the surface density of radioactive materials discharged by the accident at the border of the landfill facility at least monthly and to control the said surface density to less than whichever is higher of the limit listed in the Attached Table 3 and the surface density of radioactive material discharged by the accident at the surroundings of the said landfill facility

2. When the provisions of Articles 28, 31, 32, and Paragraph 2 of Article 33 (limited to the case of application mutatis mutandis to Paragraph 2 of Article 35), Paragraph 1 of Article 35, and Article 37 (except Paragraph 4) which are all related to the disposal works of accident-derived wastes and others, shall apply mutatis mutandis to special decontamination areas, etc., the terms under the provisions of the left upper columns listed in the middle columns of the following table shall be replaced with the terms listed in the right lower columns of the said table.

=====After replacement by the provisions of Article 41-10 =====
(Measures to be taken when radioactive materials are spilled, etc.)

Article 28. When contamination occurs due to an accident such as spills of the accident-derived wastes and others, either in liquid or powder form, employers shall immediately take measures for preventing the spread of the contamination, indicate the area with possible contamination by posting a warning notice, and, in the case of the indoors, remove the contaminant until the level of the contamination becomes below the limit listed in the Attached Table 3, and in the case of the outdoors, remove the contaminant until the level of the contamination becomes below the limit listed in the Attached Table 3 or the surface density of accident-derived wastes and others in the surrounding area, whichever is higher.

(Contamination Inspection of Workers Leaving Work Rooms)

Article 31. Employers shall provide a contamination inspection site at the controlled area (where contamination may occur of the workers' bodies, their equipment worn and items exceeding the limits listed in the Attached Table 3; the same shall apply hereafter in this and the next articles) or at the exit of the operating site to inspect the contamination of workers' bodies and their equipment worn who were engaged in work in the controlled area and are to leave the said area.

2. If the levels of the contamination of the workers' bodies and their equipment worn are found to exceed the limits listed in the Attached Table 3 through the inspection of the preceding paragraph, employers shall not permit the contaminated workers to leave the controlled area unless the workers go through the following measures at the contamination inspection site of the preceding paragraph:

- (1) Wash the body until the level of contamination is reduced to the limit or less than the limit designated in the Attached Table 3, if the body is contaminated.
- (2) Take off or remove any equipment worn from their bodies, if such equipment are contaminated.

3. In accordance with instructions as provided by the preceding paragraph, the workers shall wash their bodies or take off or remove any equipment worn from their bodies.

(Inspection of Contamination of Items Taken From Work Rooms)

Article 32. In terms of items which the workers take with them from the controlled areas, the employer shall inspect the status of contamination of the said items regarding radioactive materials at the contamination inspection room as described in Paragraph 1 of the preceding Article when the workers take the items with them leaving the said areas except where the items are to be carried out under the provisions of Paragraph 1 of Article 41-7.

2. Neither employers nor employees shall take out the items found to be contaminated to the levels exceeding the limit designated in the Attached Table 3 through the inspection conforming to the provisions of the preceding paragraph; except where the items are to be carried out under the provisions of Paragraph 1 of Article 41-7, or to be carried to the contamination removing facilities, facilities for disposal or discarding of accident-derived wastes and others by using the containers as provided for by the text of Paragraph 1 of Article 37 which applies mutatis mutandis to Article 41-9 or by taking measures for the proviso of the same paragraph.

(Incinerators)

Article 35. Employers shall, when incinerating accident-derived wastes and others or any objects found to be contaminated to the level exceeding the limit designated in the Attached Table 3 (hereinafter referred to as "contaminated objects"), use an incinerator in a structure which eliminates the possibility of gas leakage and spread of ashes.

2. The provisions of Paragraph 2 of Article 33 shall apply mutatis mutandis to the incinerators set forth in the preceding paragraph.

Chapter IV-II. Control of Special Work

(Work Rules for Works Related to Disposal of Accident-derived Wastes and others,)

Article 41-13. When carrying out works related to disposal of accident-derived wastes and others, the employer shall formulate regulations necessary to protect workers from hazards due to radiation for such works with respect to the following matters, and shall carry out such works according to such regulations:

- (1) Operation of equipment related to disposal of accident-derived wastes and others.

- (2) Adjustment of safety devices and automatic alarm devices.
- (3) Operational methods and procedures.
- (4) Measures concerning the monitoring of dose equivalent rates due to external radiation and the concentration of radioactive materials in the air.
- (5) Measures concerning inspections with respect to the contamination of surface areas of the ceilings, floors, walls, facilities, etc., and the removal of such contamination.
- (6) Emergency measures at the time any abnormal event occurs.
- (7) In addition to each item above, the measures necessary to protect workers from radiation hazards.

2. When formulating the regulations prescribed in the preceding Paragraph, the employer shall take steps to ensure that the workers involved become fully aware of each item in the same Paragraph. (Submission of the Work Request for Disposing Accident-derived Wastes and Others,)

Article 41-14. When carrying out the following works, the employer (limited to a primary contractor, when he exists, specified in Article 15 (1) of the Industrial Safety and Health Act (hereinafter referred to as "The law") shall submit a work request in advance to the Head of the Labour Standards Inspection Office with jurisdiction over the district in which the workplace exists (hereafter referred to as "The Head of the relevant Labour Standards Inspection Office").

- (1) Works to dismantle or enter the facilities contaminated by accident-derived wastes and others, to demolish, modify, repair, clean, or inspect the said facilities.
- (2) Works in which the total of the effective dose due to external radiation and the effective dose due to radioactive materials in the air may exceed 1 mSv per week.

2. The provisions of Paragraph 2 of Article 3 and Paragraph 3 of Article 3-2 shall apply mutatis mutandis to calculate the effective dose due to external radiation and the effective dose due to radioactive materials in the air provided for in item 2 of the preceding Paragraph.

Chapter VII. Working Environment Measurement

(Workplaces Where the Work Environment Measurement Shall Be Done)

Article 53. The workplaces as established by the Ministry of Health, Labour and Welfare Ordinance based on the item 6 of Article 21 of the Cabinet Order are as given below:

- (1) The portion corresponding to the controlled area of sites in which radiation work is carried out.
- (2) Workplaces for handling radioactive materials
- (2) (ii) facilities for handling accident-derived wastes and others
- (3) Workplaces in which works listed in item 7 of Attached Table 2 of the Cabinet Order are carried out.

(Measurement, etc., of dose equivalent rate)

Article 54. Employers shall periodically measure the dose equivalent rate or dose equivalent due to external radiation in the controlled area designated in item 1 of the preceding article by using radiation measuring instruments at least monthly (or at least in every 6 months where stationary radiation equipment is used with a predetermined method and fixed shielding positions or where the radiation equipment loaded with radioactive source material of less than 3.7 GBq is used), record the following matters for each measurement and store the records for 5 years.

- (1) Measurement date and time
- (2) Measurement method
- (3) Type, model and performance of measurement devices
- (4) Measurement place
- (5) Measurement conditions
- (6) Measurement results
- (7) Name of the person in charge of the measurement
- (8) General description of actions taken based on the measurement results

2. Notwithstanding the provisions of the preceding paragraph, the dose equivalent rate and dose equivalent set forth in the preceding paragraph may be determined by calculation when measurement using a radiation measuring instrument is extremely difficult.

3. The measurements specified in Paragraph 1 or the calculations specified in the preceding paragraph shall be made for a 1 cm dose equivalent rate or 1 cm dose equivalent. However, in places where a 70 µm dose equivalent rate may exceed 10 times the 1 cm dose equivalent rate, or a 70 µm dose equivalent may exceed 10 times the 1 cm dose equivalent in the controlled areas prescribed in item 1 of the preceding article, the same shall be made for the 70 µm dose equivalent rate or the 70 µm dose equivalent.

4. Employers shall inform workers who enter the controlled area of the results of the measurement specified in Paragraph 1 or the results of calculation specified in Paragraph 2 by posting them at an easily visible place, etc.

(Measurement of Concentrations of Radioactive Materials)

Article 55. In terms of the workplaces as provided for by items 2 to 3 of Article 53, the employer shall make measurements of contaminations of radioactive materials in the air periodically, once at an interval which is shorter than a month by radiation measuring instruments, and shall record these measurements each time as given in the respective items of Paragraph 1 of the preceding Article and shall keep the records for a period of five years.

Chapter VIII. Medical Examinations

(Medical examinations)

Article 56. Employers shall provide their workers who are regularly engaged in radiation works and enter the controlled areas with medical examinations by medical doctors regarding the following items, at the time of employment and reallocation, and periodically once every six months thereafter.

- (1) Investigation and evaluation of radiation exposure history (for workers with exposure history, confirm the location of works, nature of works, duration, existence of radiation damage, existence of subjective symptoms and other details concerning radiation exposure)
- (2) Examination of leukocyte count and percentage
- (3) Examination of red blood cell count and hemoglobin contents or hematocrit values
- (4) Examination of eyes for cataract
- (5) Examination of the skin

2. Among the medical examination items in the preceding paragraph, those prescribed in item (4) of the same paragraph may be omitted depending on the type, etc., of radiation sources used with respect to the items required at the time of employment or reallocation to the said work.

3. Among the medical examination items provided in Paragraph 1 that must be carried out periodically, all or some of items (2) to (5) of the same paragraph may be omitted if medical doctors determine those examinations are unnecessary.

4. Regardless of the provisions of the Paragraph 1, the items described in items (2) through (5) in the same paragraph may be exempted if medical doctors determine those examinations are unnecessary for the workers whose effective doses did not exceed 5 mSv in the year before the medical examinations (limited to periodical examinations; the same shall apply to this paragraph), and their effective doses are not likely to exceed 5 mSv in the year the medical examinations will be conducted.

5. At the time of the medical examinations under the provisions of Paragraph 1, employers shall submit data showing the dose to which the said workers have been exposed since the last medical examinations to the medical doctors (or shall submit material necessary to estimate the dose in the case such dose cannot be derived by calculation [or shall submit material necessary to understand the situation in which the said workers were exposed to the said radiation in case such material is not available]).

(Recording of Results of Medical Examinations)

Article 57. The employer shall prepare the Individual Ionizing Radiation Medical Examination Cards (Form No.1-2) based on the results of the medical examinations provided for by Paragraph 1 of the preceding Article (including medical examinations received by workers under the proviso of Paragraph 5 of Article 66 of the Law and called the "Ionizing Radiation Medical Examination" in the following Article and Article 59) and keep the cards for a period of 30 years. However, this is not applied when the employer hands over those Individual Ionizing Radiation Medical Examination Cards to the institutions designated by the Minister of Health, Labour and Welfare after keeping them for five years.

(Notification of Results of Medical Examinations)

Article 57-3. Employers shall notify their workers who underwent the medical examinations provided in Paragraph 1 of Article 56 of their medical examination results without delay.

Chapter IX. Submission of records concerning designated emergency workers

(Submission of records concerning designated emergency workers)

Article 59-2. Employers shall without delay submit a copy (a copy of the relevant electromagnetic record on an electromagnetic media if the relevant record is prepared in electromagnetic records (records prepared by an electronic method, magnetic method or any other method which cannot be recognized by human perception, and provided for information processing by electronic computer)) of the record of the results of medical examinations described in the following items concerning the medical examinations received by workers (referred to as "designated emergency workers" in Form 3) who are or have been engaged in emergency works designated by the Minister of Health, Labour and Welfare (hereafter in this article and Form 3 referred to as "designated emergency works") during the period of the emergency works or radiation work (including the period of time in which the relevant workers are required to receive medical examinations according to the direction of the provisions of Paragraph 4 of Article 66 of the Industrial Safety and Health Law) to the Minister of Health, Labour and Welfare.

- (1) An individual medical examination card provided for by Article 51 of the Ordinance on Industrial Safety and Health (limited to the record of results of medical examinations performed under Paragraph 1 of Article 44 and Paragraph 1 of Article 45 of the Ordinance on Industrial Safety and Health, and under the directions of the provisions of Paragraph 4 of Article 66 of the Industrial Safety and Health Law) (Form 5 in the Ordinance on Industrial Safety and Health)
- (2) An individual ionizing radiation medical examination card provided for by Article 57 (Form 1-2) or individual ionizing radiation medical examination card for decontamination provided for by Article 21 of the Ordinance for Decontamination (Form 2)

2. Employers shall, on the day prescribed in the respective items, prepare and submit to the Minister of Health, Labour and Welfare a dose, etc. control status report (Form 3) that includes the dose of the relevant workers calculated using a method stipulated by the Minister of Health, Labour and Welfare and prescribed in Paragraph 2 of Article 9, records specified in the provisions of Paragraph 1 of Article 45, and other necessary matters based on the results of measurement or calculation under the provisions of Paragraph 3 or 5 of Article 8, corresponding to the classification of workers listed in the following items, in writing or by recording medium by electromagnetic means (electronic method, magnetic method or any other method which cannot be recognized by human perception).

- (1) Workers engaged in the designated emergency works: the last day of every month (limited to the period during which the relevant workers are engaged in the designated emergency works)
- (2) Workers engaged in radiation works (except the designated emergency works): the last day of every third month (limited to the period during which the relevant workers are engaged in radiation works (except the designated emergency works))

Chapter X. Miscellaneous Provisions

(Provision of radiation measuring instruments)

Article 60. Employers shall have necessary radiation measuring instruments to fulfill the requirements specified herein. However, this shall not apply if any measures have already been taken to make radiation measuring instruments easily available anytime when needed.

(Delivery of records and other information)

Article 61-2. Employers who make and store the records set forth in Paragraph 2 of Article 9 shall deliver such records to the organization designated by the Minister of Health, Labour and Welfare when closing their businesses.

2. Employers who prepare and keep the individual ionizing radiation medical examination cards shall deliver such individual ionizing radiation medical examination cards to the organization designated by the Minister of Health, Labour and Welfare when closing their businesses.

(Adjustment)

Article 61-3. The exposure doses received or that will be received by the radiation workers who are or used to be decontamination workers provided for in Paragraph 3 of Article 2 of the Ordinance for Decontamination or who are or used to be workers engaged in works under a designated dose rate provided for in Paragraph 4 of the same article during the decontamination works provided for in Paragraph 9 of the same article or works under a designated dose rate provided for in Paragraph 10 of the same article as decontamination workers or workers engaged in works under a designated dose rate shall be considered as the exposure doses received during radiation works.

Article 61-4. Concerning workers who regularly engage in radiation works and enter the controlled areas, and were workers engaged in decontamination, etc. stated in Paragraph 3 of Article 2 of the Ordinance for Decontamination just before the transfer to the said radiation works, the last medical examinations (limited to those performed within 6 months prior to the day of the transfer to the said works) which the said workers had based on the provisions in Paragraph 1 of Article 20 of the Ordinance for Decontamination shall correspond to medical examinations before the transfer to the said work based on provisions in Paragraph 1 of Article 56.

(Applications to Other Cases)

Article 62. The provisions of Paragraph 4 of Article 3 (including the applications to the cases of the provisions of Paragraph 3 of Article 15, Paragraph 2 of Article 22, Paragraph 3 of Article 33, Paragraph 2 of Article 36, Paragraph 2 of Article 41-4, and Paragraph 2 of Article 41-8), Paragraph 3 of Article 7, Article 8, Article 9, the text of Paragraph 1 of Article 18 (including the applications to the cases of the provisions of Paragraph 2 of the same Article), Articles 31 and 32, Paragraph 1 of Article 33, Paragraph 1 of Article 34, Paragraph 1 of Article 35 (including the applications of these provisions to the cases of the provisions of Article 41-9 (including the applications with replacement of terms under the provisions of Paragraph 2 of Article 41-10)), Paragraph 1 of Article 36, Articles 38, 39 and 41, Article 41-2 (including the applications of these provisions to the cases of the provisions of Article 41-9), Paragraph 1 of Article 41-6, Paragraph 1 of Article 41-7, Paragraph 1 of Article 41-8, paragraphs 1 and 3 of Article 42, Article 44, Paragraph 1 of Article 45, Paragraph 4 of Article 54, Article 59-2, and Paragraph 1 of Article 61-2 shall be applicable with necessary modifications to the cases of the employer undertaking work other than the radiation works (except employers as described in Paragraph 1 of Article 2 of the Ordinance for Decontamination) and the employees within the workplace where the radiation works are performed.

Please contact your Prefectural Labour Bureau or Labour Standards Inspection Office, should you have further questions.