○**Ministry of Health, Labour and Welfare Notification No. 468**

The methods, criteria and classifications specified by the Minister of Health, Labour and Welfare shall be established as follows pursuant to the provisions of Paragraph 6 and 7, Article 2, Paragraph 2, 3, 6, and 7, Article5, Paragraph 2, Article 6, Item 3, Paragraph 1, Article 7 and Paragraph1, Article 16 of the Ordinance on Prevention of Ionizing Radiation Hazards at Works to Decontaminate Soil and Wastes Contaminated by Radioactive Materials Resulting from the Great East Japan Earthquake and Related Works (MHLW Ordinance No. 152, 2011).It will be applied from 1 January 2012.

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Methods, criteria, and classifications specified by the Minister of Health, Labour and Welfare pursuant to the provision of Paragraph 6, Article 2 and other Articles and Paragraphs of the Ordinance on Prevention of Ionizing Radiation Hazards at Works to Decontaminate Soil and Wastes Contaminated by Radioactive Materials Resulting from the Great East Japan Earthquake and Related Works.

(Methods for determining the radioactivity concentration in removed soil, etc.)

Article 1. The methods specified by the Minister of Health, Labour and Welfare pursuant to the provision of Paragraph 6, Article 2 of the Ordinance on Prevention of Ionizing Radiation Hazards at Works to Decontaminate Soil and Wastes Contaminated by Radioactive Materials Resulting from the Great East Japan Earthquake and Related Works (hereinafter referred to as the Ordinance of Decontamination) shall be established in each item below:

1. Radioactivity concentration of the samples (removed soil expected to contain the highest levels of radioactivity concentration. This applies to the following item) shall be analyzed and measured by the method prescribed in Item 2, Paragraph 1, Article 9 of the Standards on Working Environment Measurement (MHLW Ordinance No. 46, 1976).

2. Notwithstanding the provision of the preceding item, when there is a correlation between the radiation dose rate in the sample surface and the radioactivity concentration, the concentration shall be determined using the following methods described in (a) to (c):

   (a) A sample shall be placed in a container and weighed.

   (b) The maximum radiation dose rate at the surface of the container shall be measured.

   (c) The radioactivity concentration shall be calculated from the weight and the radiation dose rate obtained from (a) and (b) above, respectively.

2) The provision of the preceding paragraph shall apply to the method specified by the Minister of Health, Labour and Welfare pursuant to Paragraph7, Article 2 of the Ordinance for Decontamination.

3) The provision of Paragraph1 shall apply to the method specified by the Minister of Health, Labour and Welfare pursuant to Item 1, Paragraph2, Article 5 of the Ordinance for Decontamination.

4) The provision of Paragraph1 shall apply to the method specified by the Minister of Health, Labour and Welfare pursuant to Item 3, Paragraph1, Article 7 of the Ordinance for Decontamination

(Methods for determining average ambient dose rates)

Article 2. The methods other than those prescribed in each item of Paragraph 2, Article 5 of the Ordinance for Decontamination specified by Minister of Health, Labour and Welfare, shall be established as shown in each item below.

1. The points where radioactivity concentrations are to be measured shall be established according to the points in the right column based on the shape of the area described in the left column of the table in the areas where decontamination related works are performed pursuant to the provision of Paragraph 1, Article 5 of the Ordinance for Decontamination (when the work area exceeds 1,000 m^2, the area for measurement shall be divided into partitions of less than 1,000 m^2).

1. Square or rectangle shapes	One meter above the corners of a square or a rectangle and the cross point of their diagonal lines.
2. Other shapes	Approximately one meter above four points after evenly dividing the circumference of the area and the cross point of the diagonal lines of the square made by connecting the four points.

2. The average ambient dose rate pursuant to Paragraph 2, Article 5 of the Ordinance for Decontamination shall be the average of the ambient dose rates measured at all the measuring points specified in the preceding item.

3. Notwithstanding the provision of the preceding item, when the ambient dose rates in work places are expected to be significantly different in the case such as radioactive materials discharged by the accident are concentrated in certain work places, the average ambient dose rate pursuant to Paragraph2, Article 5 of the Ordinance for Decontamination shall be determined by the following equation:

$$R = \frac{\left(\sum_{i=1}^{n} (B_i \times WH_i) + A \times \left(WH - \sum_{i=1}^{n} (WH_i) \right) \right)}{WH}$$

Where,

R: The average ambient dose rate (unit: μSv/h)

n: The number of points one meter above the ground near the area where ambient dose rates are expected to be high (hereinafter referred to as "designated measurement points")

A: The average ambient dose rate determined according to the provision of Item 2 (unit: μSv/h)

B_i: The ambient dose rate at each designated measurement point. Substitute this measured value to determine R (unit: μSv/h)

WH_i: Work hours per day for the worker who was assigned for decontamination work and expected to receive the highest dose near each designated measurement point (unit: hour).

WH: A total work hours of the above worker in a day (unit: hour)

4. For the measurement of ambient dose rates, radiation survey meters listed in the table, Article 8 of the Standards on Working Environment Measurement shall be used.

(Methods for testing internal exposure)

Article 3. The methods specified by the Minister of Health, Labour and Welfare pursuant to Item 2, Paragraph 2, Article 5 of the Ordinance for Decontamination shall be one of the following:

1. At the completion of work for the day, the surface density of radioactive materials discharged by the accident, deposited on the surface of the dust mask shall be measured using a radiation survey meter.

2. At the completion of work for the day, the surface density of radioactive materials discharged by the accident, deposited in the nasal cavities shall be measured using a radiation survey meter.

(Criteria for the measured internal exposure doses)

Article 4. The criteria for the measured internal exposure doses specified by the Minister of Health, Labour and Welfare pursuant to Paragraph 3, Article 5 of the Ordinance for Decontamination shall be the value sufficiently below 1mSv in total for a duration of three months, determined based on the surface density of radioactive materials discharged by the accident deposited on the dust mask or in the nasal cavities of the decontamination workers at the completion of the work day.

(Methods to measure external exposure doses)

Article 5. The method specified by the Minister of Health, Labour and Welfare pursuant to Paragraph 6, Article 5 of the Ordinance for Decontamination shall be one of the following:

1. The external exposure dose of a decontamination worker whose dose is expected to be the average of all workers in the same work site is measured pursuant to the provision of Paragraph 1, Article 5 of the Ordinance for Decontamination and the measured value is considered to be the external exposure dose for all workers at the site.

2. The average ambient dose rate determined pursuant to Article 2 is multiplied by the work hours per day of each decontamination worker, and the recorded value is considered to be the external exposure dose of the workers at the site.

(Methods for measurement of internal exposure doses)

Article 6. The method specified by the Minister of Health, Labour and Welfare pursuant to Paragraph7, Article 5 of the Ordinance for Decontamination shall be the method for calculating effective doses using the following equation by nuclides and chemical species listed in the first column of Attached Table 1 of the MHLW Notification No. 93 in 1988 (the dose limit and calculation method are specified by the Minister of Health, Labour and Welfare based on the provision of Paragraph 3, Article3, Paragraph6, Article 8 and Paragraph2, Article 9 of the Ordinance on Prevention of Ionizing Radiation Hazards, hereinafter referred to the "1988 Ministerial Notification"). In this method, when more than one nuclide of radioactive materials discharged by the accident are inhaled or ingested, effective doses determined by each radioactive material discharged by the accident shall be added.

$$E_i = eI$$

Where,

E_i: Effective dose due to internal exposure (unit: mSv)

e: Effective dose coefficients listed in the second and third columns for inhalation and ingestion, respectively of Attached Table 1 of the 1988 Ministerial Notification based on nuclides and chemical species in the first column of the table. (unit: mSv/Bq)

I: Amount of radioactive materials discharged by the accident inhaled or ingested (unit: Bq)

(Methods to calculate doses)

Article 7. The method specified by the Minister of Health, Labour and Welfare pursuant to Paragraph 2, Article 6 of the Ordinance for Decontamination, doses shall be calculated as follows:

1. The 1cm dose equivalent due to external exposure is determined to be the effective dose due to the external exposure. By adding this effective dose to the internal exposure dose calculated based on the provisions of the preceding article, the overall effective dose shall be determined.

However, when the external radiation dose was measured with a radiation survey meter attached to the body part prescribed in the provision of Paragraph 5, Article 5 of the Ordinance of Decontamination, this value is used for calculation by an appropriate method at that site of the 1cm dose equivalent rate and shall be determined to be the effective dose due to external exposure.

2. Equivalent dose shall be calculated as the 1cm dose equivalent rate on the abdomen.

(Classification of works)

Article 8. The classification of decontamination work specified by the Minister of Health, Labour and Welfare pursuant to Paragraph 1, Article 16 of the Ordinance for Decontamination, shall be established in the left column of the table below and the minimum required protective equipment corresponding to the work is described in the right column.

Work classification	Protective equipment
Works involving handling highly radioactive contaminated soil and wastes pursuant to the provision of Item 1, Paragraph 2, Article 5 of the Ordinance for Decontamination (hereinafter referred to as highly radioactive contaminated soil and wastes in this article) performed in an area where the dust concentration exceeds $10mg/m^3$.	A dust mask with particle collection efficiency of 95% or higher; whole body chemical protection suite (wear on top of long-sleeve clothes); long-sleeve clothes; impermeable protective gloves and high boots
Works involving handling highly radioactive contaminated soil and wastes performed in an area where the dust concentration is less than $10mg/m^3$.	A dust mask with particle collection efficiency of 80% or higher; long-sleeve clothes; impermeable protective gloves and high boots
Works involving handling contaminated soil, removed soil, or contaminated wastes other than highly radioactive contaminated soil and wastes performed in an area where the dust concentration exceeds $10mg/m^3$.	A dust mask with particle collection efficiency of 80% or higher; long-sleeve clothes; protective gloves and impermeable high boots
Works involving handling contaminated soil, removed soil, or contaminated wastes other than highly radioactive contaminated soil and wastes performed in an area where the dust concentration is less than $10mg/m^3$.	Long-sleeve clothes; protection gloves and impermeable high boots