

## **Guidelines on Prevention of Radiation Hazards for Decontamination Works**

### **(Overview)**

**(Labour Standards Bureau Notification No. 1222-6, 22 December 2011, Partial Revision of Labour Standards Bureau Notification No. 0615-6, 15 June 2012)**

(Note 1) Revised parts from the previous version are underlined.

(Note 2) See “Guideline on Prevention of Radiation Hazards for Workers Engaged in Works under a Designated Dose Rate” (Labour Standards Bureau Notification No. 0615-6, 15 June 2012) for the guidelines on works under a designated dose rate (the works other than decontamination works, etc. in areas where the average ambient dose rate exceeds 2.5 μSv/h)

### **1 Scope**

- (1) “Decontamination works” refers to (a) works for decontamination, etc., (b) works for collecting, transporting, or storing removed soil or wastes contaminated with the radioactive materials (with radioactivity concentration of cesium exceeding 10,000Bq/kg), and (c) works for handling designated contaminated soil and wastes (contaminated soil, etc. whose radioactivity concentration of cesium exceeds 10,000Bq/kg) excluding (a) and (b) above hereinafter referred to as the “works for handling designated contaminated soil and wastes”
- (2) “Employers of decontamination works, etc.” refers to employers who operate decontamination works in the special decontamination areas or in the intensive contamination survey areas under the provisions of the Act on Special Measures Concerning the Handling of Radioactive Pollution.
- (3) Employers should not engage persons who are under 18 years old in the aforementioned decontamination works.

### **2 Principles**

- (1) Employers of decontamination works, etc. should make every effort to minimize exposure from ionizing radiation to the workers reducing as low as possible.
- (2) When implementing works for handling designated contaminated soil and wastes, employers of decontamination works, etc. should make minimizing the radiation exposure received by the workers engaged in handling designated contaminated soil and wastes (hereinafter referred to as the “workers engaged in handling designated contaminated soil and wastes”) a top priority. In addition, they should make every effort to take measures such as decontamination of the workplace in advance.
  - (a) Based on the principles, employers who perform works for handling designated contaminated soil and wastes are required to decontaminate work areas in advance to the

work, and to reduce radiation exposure dose to the minimum possible level, and in principle, assign the workers to the area where the average ambient dose rate is less than 2.5μSv/h so that exposure dose control will not be needed.

- (b) However, among works for handling designated contaminated soil and wastes, it may not be possible to implement measures for decontamination, etc. in advance for restoration of roads and the water supply, etc., which are the minimum requirements for decontamination. In addition, works such as soil covering, paving roads, turning and plowing of farmland, etc. may be regarded as the tasks that are implemented concurrently with decontamination.

### 3 Targets of exposure dose and methods for measured exposure dose control

- (1) Employers of decontamination works, etc. should measure the exposure doses of decontamination workers by the following methods:

- (a) Workplace with an average ambient dose rate exceeding 2.5μSv/h

External exposure dose: measurement by personal dosimeters

Internal exposure dose: measurement is required according to the specific works and concentration of radioactive materials in the contaminated soil, etc. to be handled

	Highly radioactive contaminated soil and wastes (> 500,000Bq/kg)	Other than highly radioactive contaminated soil and wastes
Works under the high dust concentration (> 10 mg/m <sup>3</sup> )	Internal exposure dose measurement every three months	Screening test
Other than work under the high dust concentration	Screening test	Screening test (only when incidentally exposed to high dust concentration)

- (b) The workplace with the average ambient dose rate of 2.5μSv/h or less (for workers engaged in handling designated contaminated soil and wastes, it is limited to the works for which workers are expected to be engaged in the workplace with the average ambient dose rate greater than 2.5μSv/h due to its nature including such works as restoring local infrastructures).

External exposure dose measurement made by personal dosimeter is desirable, but measurement by a representative worker may be accepted.

- (2) Employers other than “those of decontamination works, etc.” should assign their workers to conduct decontamination, etc. in workplaces with the average ambient dose rate of 2.5μSv/h or less and maintain frequency of work within dozen times (days) per year (sufficiently below

1mSv/y). Self-employed workers, residents, and volunteers should do likewise, by taking note of the following matters:

- (a) Residents and self-employed workers may conduct works of decontamination, etc. when they need to decontaminate soil of their own residences, offices, farmland, and so forth in the area where the average ambient dose rate might exceed 2.5 $\mu$ Sv/h. In such cases, frequency of the work should be less than dozen times (days) per year, to prevent them from receiving effective doses higher than 1mSv/y during the work time.
- (b) When recruiting volunteers, the volunteer organizers should note that the ICRP specified the exposure dose limit to the public from the radiation source at 1mSv/y under the planned exposure situation. When it is necessary to recruit volunteers for the works which may expose volunteers to dose over 1mSv/y, it is desirable to provide the same measures as those provided by the employers of decontamination works, etc. to the volunteers.
- (3) Since it is difficult for self-employed and individual proprietors to manage their exposure doses, etc. by themselves, it is desirable for them not to engage in works for handling designated contaminated soil and wastes by taking appropriate measures in advance such as decontamination of the workplace. In the case that individual proprietors and self-employed workers need to become involved in works for handling designated contaminated soil and wastes, they should be considered as employers of workers for handling designated contaminated soil and wastes. Thus, these guidelines should be applied to self-employed workers and individual proprietors.
- (4) The exposure dose limits for workers are effective doses of 100mSv per five years and 50mSv per one year (5mSv for female workers who may be possibility woman of pregnancy medically and internal effective dose of 1mSv and equivalent doses of 2mSv on the abdominal surface for pregnant female workers).

When employers of decontamination works, etc. assign their workers who have engaged in radiation works at the nuclear power plant, etc., to decontamination works or works under a designated dose rate, it is necessary to ensure that the total sum of effective doses for individual workers during radiation works or works under a designated dose rate and the effective dose during decontamination works should not exceed the aforementioned limits. For the works for handling designated contaminated soil and wastes, the exposure doses received during the period between 1 January 2012 to 30 June 2012, if known, should be added to the dose received after 1 July 2012 for the exposure dose control purpose.

- (5) Employers of decontamination works, etc. should record the exposure dose measurement results, keep the records for 30 years, (records which have been kept for five years or the records of the workers for decontamination works who terminated employment may be transferred to the designated organization) and inform the workers of their records.

- (6) Employers of decontamination works, etc. should issue copies of the records defined in (5) above to the decontamination worker who is going to terminate employment or to all of the decontamination workers if they terminate their businesses.
- (7) When employers of decontamination works, etc. employ fixed-term contract workers or temporary workers, they should take note of the following matters in order to appropriately control their exposure doses:
  - (a) When employing fixed-term contract workers or temporary workers for a pre-defined period of less than three months, the exposure dose should be determined and recorded every month.
  - (b) At the end of the contract period, the employer should calculate the total sum of the effective doses which the contractors received during the contract period and determine the exposure dose from the results, record them, and issue a copy of their records to the fixed-term contract or temporary decontamination workers.

#### **4 Measures to reduce radiation exposure**

- (1) When employers of decontamination works, etc. implement decontamination works, they should conduct the survey of workplaces in advance (when the works for handling designated contaminated soil and wastes have been continuously conducted in one area, the survey in the area should be conducted once every two weeks during the work period).
- (2) When implementing decontamination works, the employers of decontamination works, etc. should devise a work plan (when handling designated contaminated soil and wastes, the works are limited to those in the workplaces where the average ambient dose rate exceeds 2.5 $\mu$ Sv/h).
- (3) When implementing decontamination works, employers of decontamination works, etc. should appoint an operation leader from competent workers to direct the work, and delegate him or her to conduct the work according to the work plan (when handling designated contaminated soil and wastes, the works are limited to those in the workplaces where the average ambient dose rate exceeds 2.5 $\mu$ Sv/h).
- (4) When starting their operation of works for decontamination, etc. or handling of designated contaminated soil and wastes at the workplace where the average ambient dose rate exceeds 2.5 $\mu$ Sv/h, employers of decontamination works, etc. and employers of workers under a designated dose rate should submit a Notice for Works in advance to the Labour Standards Inspection Office within the jurisdiction of the workplace.
- (5) Employers of decontamination works, etc. should promptly provide workers for decontamination works with medical examinations or treatments in cases (a) when workers mistakenly inhaled or ingested radioactive materials, and (b) when workers cannot

decontaminate themselves to the level less than 40Bq/cm<sup>2</sup> by washing themselves after contaminated by radioactive materials.

## 5 Measures for prevent spread of contamination and internal exposure

- (1) When employers of decontamination works, etc. implement works handling highly radioactive contaminated soil and wastes or works that may cause high dust concentration (excluding works for handling designated contaminated soil and wastes), they should take measures to control dispersion of dust by keeping the soil in the wet condition, etc. in advance. When employers of decontamination works, etc. collect or transport removed soil or contaminated wastes (including those generated by works for handling designated contaminated soil and wastes) at or to the location other than the workplace, they should use dedicated containers, and when they store removed soil or contaminated wastes, they should take measures needed to prevent removed soil or contaminated wastes from dispersing or leaking.
- (2) Employers of decontamination works, etc. should set a contamination survey area in the workplace or nearby, and assess the contamination when workers leave the workplace to prevent spread of contamination from workers. If the body surface is contaminated, let the person wash his or her body. If equipment, etc. is contaminated, let the person remove it from his or her body. If objects to be removed from the site are contaminated, they should not be allowed to be removed from the site in principle.
- (3) Employers of decontamination works, etc. should let workers wear effective respiratory protective equipment and protective clothing according to the work categories and the levels of radioactivity concentration in soil and wastes shown in the table below to prevent body surface and internal contaminations.

(Respiratory protective equipment for filtering air)

	Highly radioactive contaminated soil and wastes (>500,000Bq/kg)	Other than highly radioactive contaminated soil and wastes
Work under a high dust concentration (> 10mg/m <sup>3</sup> )	Dust collection efficiency: ≥95%	Dust collection efficiency: ≥80%
Work other than work under a high dust concentration	Dust collection efficiency: ≥80%	Dust collection efficiency: ≥80%*

\* Non-woven fabric masks (such as surgical masks, etc.) may be used if the work does not generate mineral dusts.

(Protective clothing)

	Highly radioactive contaminated soil and wastes (>500,000Bq/kg)	Other than highly radioactive contaminated soil and wastes

Work under a high dust concentration (> 10mg/m <sup>3</sup> )	Whole body chemical protective clothing for coverage, long sleeve clothing, rubber gloves, rubber boots	Long sleeve clothing, cotton gloves, rubber boots
Work other than under a high dust concentration	Long sleeve clothing, rubber gloves, rubber boots	Long sleeve shirts, cotton gloves, rubber boots

- (4) Employers of decontamination works, etc. should prohibit workers from smoking, eating, and drinking in areas where they may inhale or ingest contaminated soil and wastes.

## 6 Education for workers

- (1) Employers of decontamination works, etc. should provide education to the operation leaders
- (2) Employers of decontamination works, etc. should provide special education concerning the following topics to the workers:
  - (a) Lectures
    - 1) The effects of ionizing radiation on human organisms and exposure dose control methods
    - 2) The methods and procedures of decontamination related works
    - 3) The structure and instructions of the machinery, etc. used for decontamination related works (only limited to knowledge about outlines of the machinery, etc. for the works for handling designated contaminated soil and wastes)
    - 4) Relevant laws and regulations
  - (b) Practical training
    - 1) Methods of decontamination and handling machinery, etc. used for decontamination related works(limited only to methods of decontamination related works for the works for handling designated contaminated soil and wastes)
- (3) It is desirable that employers other than employers of decontamination works, etc., who conduct decontamination related works at their own sites or facilities, etc., provide education to workers on necessary topics in conducting the decontamination related works.  
It is equally desirable to provide education to workers who are not formally employed such as individual proprietors, self-employed workers, and volunteers, etc.
- (4) It is desirable that the ordering parties place an order for decontamination works only after confirming that employers of decontamination works, etc. have established a system to secure the required workforce sufficient to conduct the work by the work commencement date.

## 7 Measures for healthcare

- (1) Employers of decontamination works, etc. should regularly provide the workers engaged in decontamination works with special and general medical examinations by medical doctors at the time of employment or when transferring and once every 6 months thereafter on a regular basis (general medical examinations once every year for the works for handling designated

contaminated soil and wastes in the workplaces with the average ambient dose rate not exceeding 2.5 $\mu$ Sv/h) (test items not related to investigation of the exposure history are not required if the medical doctor considers unnecessary or if effective dose received by workers is not likely to exceed 5mSv.).

It should be noted that workers on less than a 6-month-contract or a dispatched contract should also be provided with medical examinations at the time of employment in order to identify their exposure history and current health status.

- (2) Employers of decontamination works, etc. should prepare the “personal ionizing radiation medical examination cards for decontamination, etc.” based on the results of the medical examinations and store the records for 30 years (it should be noted that the records which have been kept for five years or the records of the workers engaged in decontamination works who terminated employment may be transferred to the designated organization).

## **8 Safety and Health Management System**

- (1) The primary contractors should appoint a general safety and health manager among the individuals who supervise and manage the decontamination works, and assign him or her to conduct tasks (a) to (c) shown below in order to ensure appropriate safety and health management of the decontamination works:
  - (a) Instruct the relevant subcontractors to assign a leader responsible for safety and health control and for communication and coordination among workers.
  - (b) Hold a safety and health meeting with all relevant subcontractors once every month on a regular basis.
  - (c) Provide guidance or support to relevant subcontractors as appropriate to ensure that the relevant subcontractors prepare work plans appropriately.
- (2) The primary contractor should select a radiation administrator to conduct radiation dose control and assign the radiation administrator to develop the unitary management system for radiation exposure doses of all workers from the relevant subcontractors under the direction of the general safety and health manager.
- (3) Employers of decontamination works, etc. should appoint health managers or safety and health promoters to assign administration of technical matters including exposure dose measurement and recording of dose measurement results, etc., contamination inspection, etc., prevention of body and internal contaminations, education for workers, and measures for healthcare. It is desirable to appoint a safety and health promoter even in the workplace with less than 10 workers.

Employers of decontamination works, etc. should appoint a leader in charge of radiation administration regardless of the size of the workplace and assign him or her to conduct tasks

including exposure dose measurement and recording of dose measurement results, etc., contamination inspection, etc., and prevention of body and internal contaminations.

- (4) Employers of decontamination works, etc. should implement the following matters, when they assign the workers, who had been engaged in the emergency work at the TEPCO Fukushima Daiichi Nuclear Power Plant, to the decontamination works:
- (a) A report pursuant to Article 59, Paragraph 2 of the Ordinance on Prevention of Ionizing Radiation Hazards (hereinafter referred to as the “Ionizing Radiation Ordinance”) should be submitted to the Minister of Health, Labour and Welfare (addressed to the Industrial Health Division, Ministry of Health, Labour and Welfare )
- Copies of the medical examination cards stated in Sections 7-1 after medical examinations without delay.
  - The “status report on radiation exposure dose control, etc. for designated emergency workers” (the Ionizing Radiation Ordinance Form No.3) at the end of every three months.
- (b) General health guidance should be provided to workers and inspections required by the guidelines should be implemented for workers who received exposure dose greater than 50mSv during the period of the emergency operation in accordance with the “Guidelines on Maintaining and Promoting the Health of Emergency Workers at the TEPCO Fukushima Daiichi Nuclear Power Plant” (Re: Public Notice of Guidelines on Maintaining and Promoting the Health of Emergency Workers at the TEPCO Fukushima Daiichi Nuclear Power Plant, Bulletin No. 5, 2011).