

## **Guidelines on Occupational Safety and Health Management at the TEPCO Fukushima Daiichi Nuclear Power Plant**

Enactment: Labour Standards Bureau Notification No. 0826-1, 26 August 2015

### **Section 1 Objectives**

1. Strengthening the occupational safety and health management system undertaken by TEPCO and the primary contractors together

In steadily promoting the decommissioning works, etc. at the TEPCO Fukushima Daiichi Nuclear Power Plant (hereinafter referred to as the "power plant"), in order to secure safety and health of workers engaged in the works, it is required to put into practice safety control, exposure dose control, and healthcare, etc. based on the occupational safety and health management by a plan-do-check –action cycle. Also, for establishing an appropriate occupational safety and health control organization, managing occupational safety and health management will be indispensable not only by TEPCO but also by the employers who have contracts for construction work, etc. directly with TEPCO (hereinafter referred to as "primary contractors"). In implementing the exposure dose control etc., the staff of the power plant who are responsible for radiation works and are the implementing body of separate construction works, the TEPCO head office which conduct supporting works for the power plant and the Fukushima Daiichi Decommissioning Company (hereinafter referred to as the "head office, etc.") should each fulfill their own responsibilities. For this reason, the occupational safety and health management system which clarifies activities of the head office, etc., the power plant and primary contractors should be established under the primary responsibility of TEPCO.

2. Improving the level of occupational safety and health management by the implementation of risk assessment by TEPCO, primary contractors and relevant subcontractors

Decommissioning works vary depending on specific construction projects and works as well as the surrounding situation at the power plant. Therefore the risk assessment that identifies dangers and hazards, estimates risks, set priorities and determines risk reduction measures should be conducted by the power plant, primary contractors and relevant subcontractors together (when works of the power plant or of the primary contractor are conducted based on several subcontracts, it includes all subcontractors following the said subcontracts, hereinafter referred to as “relevant subcontractors” ) under the primary responsibility of TEPCO, and occupational accident prevention measures should be systematically taken based on the assessment.

Though approximately 500 new workers come to the power plant site every month, there is only a

small increase in the total number of workers at the power plant. This suggests that the number of workers leaving jobs at the power plant every month is almost the same as the number of new workers beginning jobs. For this reason, since the safety and health education of new workers, etc. will be important, it is necessary to strengthen the education about the exposure reduction measures for work planners of the primary contractors and operation leaders of the relevant subcontractors.

3. Systematically implementing exposure dose control, and considering and implementing effective exposure reduction measures from the stage of placing orders.

For radiation exposure dose control, exposure dose information of all workers needs to be managed integrally throughout the power plant in order to have the best possible radiation control. In addition, in order to reduce the exposure dose associated with the works for each construction order at the power plant, the procurement section of TEPCO is required to have a fundamental policy on engineering measures for construction methods, equipment, facilities, construction machines, etc., and to incorporate these engineering measures into the construction specifications as exposure reduction specifications in placing construction orders. The power plant staff and primary contractors are also required to incorporate measures based on the exposure reduction specifications into the construction plans as radiation control plans. In addition, in conducting the works, they should implement the matters provided in the radiation control plans appropriately as well as to take measures for controlling the works such as shortening working hours and wearing protective equipment, according to the specific works.

4. Implementing appropriate healthcare, securing an emergency medical care system, and improving the work environment

For workers' healthcare, the statutory medical examination and the follow-up actions based on it should be appropriately implemented, and daily healthcare and heatstroke measures should be appropriately taken. In addition, based on the "Guidelines on Maintaining and Improving Health of Emergency Workers at the TEPCO Fukushima Daiichi Nuclear Power Plant," (Public Notice No. 5, 11 October 2011, which will be revised as "Guidelines on Maintaining and Improving Health of Emergency Workers at Nuclear Facilities", hereinafter referred to as "Ministerial Guideline", from 1 April 2016), an appropriate long-term healthcare should be provided to workers who were engaged in emergency works at the power plant.

In preparation for occurrence of occupational accidents, an emergency medical care system at the power plant site needs to be established, and the organization for conveying affected workers quickly to an appropriate medical institution should be strengthened.

In addition, in order to improve the work environment during decommissioning works, etc., it is

necessary to improve rest stations and food service facilities, remove or isolate contaminated radiation sources, and optimize protective equipment.

## **Section 2 Works for application of the guideline**

This guideline should be applied to radiation works and separate construction works to be conducted at the power plant site.

## **Section 3 Establishment of the occupational safety and health management system**

### 1. Matters be dealt with by TEPCO

Although each employer is responsible for the safety and health control of radiation works and separate construction works at the power plant site pursuant to the Industrial Safety and Health Act and Ordinance on Prevention of Ionizing Radiation Hazards (hereinafter referred to as the "Ionizing Radiation Ordinance"). When workers of two or more employers are engaged in radiation works and separate construction works to be conducted by TEPCO itself at the same place on the basis of several contract agreements, the head of the power plant (hereinafter referred to as the "plant director") should provide instructions or support to the relevant subcontractors and conduct the following matters so that the occupational safety and health management will be conducted integrally for all radiation works and separate construction works as a whole.

#### (1) Selection of the general safety and health manager at the power plant

The plant director assigns a general safety and health manager, and instructs him/her to conduct the matters described in subsections (3) to (7) below so that the occupational safety and health management of the radiation works and the separate construction works as a whole would be implemented appropriately at the power plant site.

It should be noted that, when TEPCO does not do the works itself but conducts only the ordering and design control of the works, and outsources the radiation works and separate construction works to the primary contractors, the plant director should, considering the special nature of the radiation works and separate construction works, instruct the general safety and health manager to conduct the matters shown in Section 3, item 1 subsections (4), (6) and (7) under close cooperation with the primary contractors. In this case, the safety and health coordinating meeting described in item 1 subsection (4) should consist of all the primary contractors. In addition, when TEPCO outsources the works which it does not conduct itself at

the same place to two or more primary contractors, TEPCO should select and assign a worker who supervises and conducts the matters described in Section 2, item 2 for two or more works from the workers of the primary contractors concerned.

(2) Selection of the construction execution safety manager

The plant director assigns the construction execution safety manager who takes charge of the safety of the separate construction works at the power plant site, and instructs him/her to assist the general safety and health manager and control technical matters among those described in the subsections (3) to (5) below.

In addition, the plant director makes him/her responsible for controlling persons in charge of separate construction works at the power plant. Especially in the case where dangerous works will be conducted, the plant director should instruct him/her to provide the required instructions for securing safety at the construction site under the supervision of persons in charge of the construction works.

It should be noted that the plant director should actively involve not only persons in charge of the radiation control department and the disaster remediation department but also those in charge of the occupational safety and health department in the supervision of construction works.

(3) Selection of the person who conducts the occupational safety and health management in each relevant subcontractor

The plant director should request relevant subcontractors to select a person who conducts the occupational safety and health management, and instruct him/her to conduct the matters described below:

- a. Communicate with the general safety and health manager
- b. Coordinate with the general safety and health manager and the said relevant subcontractors about the required activities described in subsections (4) to (6) below.
- c. Communicate and coordinate works among all relevant subcontractors when the said relevant subcontractors are entrusted with some part of the works.

(4) Holding etc. of safety and health coordinating meetings for all the relevant subcontractors who conduct radiation works and separate construction works

- a. The plant director should set and hold periodically once within a month the safety and health coordinating meeting for all the relevant subcontractors, and request participation of the general safety and health manager, the construction execution safety manager, and those who conduct the safety and health control in relevant subcontractors.

- b. Matters to be discussed in the safety and health coordinating meetings should be as follows:
- Those related to communication and coordination between the head office, etc. and the power plant staff and relevant subcontractors.
  - Those related to implementation of working environment measurements in terms of external radiation and concentration of radionuclides in the air, and of matters related to precautions in conducting the works based on the results.
  - Those related to measures to ensure safety in separate construction works including promotion of information sharing and cooperation, and promotion of causative analysis of industrial accidents and elimination of prevention measures in the case of nearby construction works; together these should exceed what would be available for each separate contract relation.
  - Those related to implementation of the safety and health education including matters about radiation works such as the special education.
  - Those related to preparation or improvement of work plans (including those related to exposure control of workers and measures to reduce workers' exposure dose. The same should be applied hereinafter).
  - Those related to unification of signals and alarms given during radiation works and separate construction works.
  - Those related to actions such as evacuation when an accident should occur.

(5) Instructions or support for the preparation of work plans, etc.

- a. Provide appropriate data and information as well as provide instructions or support as appropriate, to relevant subcontractors so that the work plans that the said subcontractors prepare may be suitable.
- b. Check the work plans for the works, considering the possibility that the effective dose may exceed 1 mSv per day, among those works which the related subcontractors conduct.
- c. In conducting the check described in a above, the radiation control department of TEPCO should mainly check the exposure control method, and, if required, provide instructions or support about improvement of the work plans, etc.
- d. The relevant subcontractors should provide instructions to make the work plans known to the relevant workers.

(6) Understanding exposure status, etc.

Conduct the matters described in Section 5 item 1.

(7) Implementation of investigation of the dangers or hazards of radiation works and separate

construction works (risk assessment), and taking measures based on the assessment and safety and health education

Conduct the matters described in Section 4.

## 2. Matters for primary contractors to conduct

Each employer is responsible for the occupational safety and health management concerning the radiation works and separate construction works at the power plant site pursuant to the Industrial Safety and Health Act and the Ionizing Radiation Ordinance; however, in implementing the radiation works and the separate construction works at the power plant site, when primary contractors receive contract orders from TEPCO and direct relevant subcontractors in works that the primary contractor should conduct at the same location, the primary contractors should provide instructions or support to relevant subcontractors so that the measures will be appropriately taken by relevant subcontractors as an employer, and conduct the following matters so that the occupational safety and health management of radiation works and separate construction works are conducted appropriately.

### (1) Selection of the general safety and health manager in primary contractors

The primary contractors should select a general safety and health manager among supervisors of works (he/she should be a general safety and health manager as prescribed in Article 15 of the Industrial Safety and Health Act in the case where the works falls under construction of a certain scale; the same should be applied hereinafter.) so that occupational safety and health management of the radiation works and separate construction works will be implemented appropriately, and instruct him/her to conduct the matters described in subsections (2) to (6) below in cooperation with the general safety and health manager and construction execution safety manager who are selected by TEPCO as shown in item 1, subsections (1) and (2).

### (2) Selection of the person who conducts the occupational safety and health management in each relevant subcontractor

Relevant subcontractors should be requested to select a person who conducts the job of occupational safety and health management (he/she should be a general safety and health manager as prescribed in Article 16 of the Industrial Safety and Health Act in the case where the works falls under construction of a certain scale; the same should be applied hereinafter), and instruct him/her to conduct the matters described below:

- a. Communicate with the general safety and health manager of the primary contractors
- b. Coordinate with the general safety and health manager of the primary contractor about the required activities, as described in subsections (3) to (5) below, to be conducted by the said

relevant subcontractors.

- c. Communicate and coordinate works among all relevant subcontractors when the said relevant subcontractors are entrusted some part of the works.

(3) Holding safety and health coordinating meetings etc. for all the relevant subcontractors

- a. Set a safety and health coordinating meeting for all the relevant subcontractors, and hold periodically once within a month, while cooperating with the safety and health coordinating meetings which TEPCO holds as described in the item 1 subsection (4).
- b. Matters to be discussed in safety and health coordinating meetings should be as follows:
  - Those related to exposure control.
  - Those related to measures to ensure safety in separate construction works including promotion of information sharing and cooperation, and promotion of causative analysis of industrial accidents and elimination of prevention measures in the case of nearby construction works; together these should exceed what would be available for each separate contract relation.
  - Those related to implementation of safety and health education including the matters about radiation works such as the special education.
  - Those related to preparation or an improvement of work plans.
  - Those related to unification of signals and alarms given during radiation works and separate construction works
  - Those related to actions such as evacuation when an accident should occur.

(4) Instructions or support to prepare work plans, etc.

- a. Provide instructions or support to relevant subcontractors so that the work plans that the said subcontractors prepare may be suitable.
- b. Check in advance the work plans for the works whose effective dose is likely to exceed 1 mSv per day, among those works which relevant subcontractors conduct as well as report to the Director of the Tomioka Labour Standard Bureau about the radiation works pursuant to Section 8 item 4.
- c. Provide instructions to the relevant subcontractors in order to make the work plans be known to the said subcontractors' workers.

(5) Understanding exposure situation, etc.

Conduct the matters described in Section 5 item 2.

(6) Implementation of the risk assessment concerning radiation works and separate construction works, and taking measures based on the results, implementation of safety and health education

Conduct the matters described in Section 4.

**Section 4 Implementation of risk assessment and the measures based on the results, and implementation of safety and health education, etc.**

1. Implementation of risk assessment and the measures based on the results

TEPCO and the primary contractors should, for works conducted by themselves or as part of the works that are outsourced to relevant subcontractors, conduct risk assessment and take measures based on the results in accordance with the considerations shown in item 2 below.

It should be noted that, when TEPCO outsources works not conducted by it, TEPCO should support the risk assessment which primary contractors and relevant subcontractors conduct and the measures taken by them based on the results by directing persons in charge of executing the construction to participate in the planning.

2. Considerations in conducting the risk assessment

- (1) TEPCO and primary contractors should identify dangers or hazards caused by the buildings, equipment, raw materials, gases, steam and dust, actions for the works or other reasons, and take measures as specified in regulations, or measures required in order to prevent workers' dangers or health hazards based on the results.
- (2) The risk assessment should be conducted in formulating construction plans as described in Section 6 item 2 subsection (1), as well as at the time described below. It should be noted that, for those works that are being conducted now and that the risk assessment has not been conducted yet, the risk assessment should be conducted wherever possible.
  - a. When structures are installed, transferred, changed or dismantled.
  - b. When new equipment, raw materials, etc. are adopted or changed.
  - c. When new working methods or work procedures are adopted or changed.
  - d. In addition, when dangers or hazards caused by buildings, equipment, raw materials, gases, steam and dust, actions for the works or other reasons have changed or are likely to change, such as the cases described below:
    - (i) When there is a problem in the specific investigation in the past, among cases in which occupational accidents occurred.
    - (ii) When there are degradations of machines/equipment by aging, changes in the knowledge and experiences concerning occupational safety and health of workers due to turnover of workers, and new accumulation of the knowledge concerning occupational safety and health, after a certain period of time since the previous risk assessment.



- (3) The following matters should be taken into account in implementing the risk assessment.
- a. The exposure reduction measures (e.g. wearing a protective mask, restriction of working hours) may be obstacles for implementing reduction measures against dangers or hazards other than radiation (e.g. risk of narrowing the worker's field of view or causing heatstroke by wearing a protective mask, risk of increased travel time or heatstroke due to the physical load when wearing protective clothing, and less time to keep workplace in proper order due to shortening of working hours). For these reasons, optimal methods need to be studied so that exposure reduction measures and the dangers or health hazards of preventive measures are compatible.
  - b. The risk assessment and measures based on the results should be conducted according to provisions in the "Guideline on investigation of dangers or hazards, etc." (Guideline Notification No. 1, 10 March 2006).

### 3. Implementation of safety and health education, etc.

The plant director and primary contractors should provide their workers with the education defined in subsections (1) to (3), and provide instructions or support to the relevant subcontractors so that they can conduct the said education appropriately. Especially the plant director should give support by dispatching lecturers or providing education materials or educational facilities.

#### (1) Implementation of new workers' education

New workers at the power plant should be provided with the special education defined in Article 52-7 of the Ionizing Radiation Ordinance as well as those considering the peculiarity of the works at the power plant site as described below.

- a. Performance and handling methods of protective equipment such as protective masks (including giving appropriate instructions using the fit tester for wearing respiratory protective devices and taking measuring against leak by having persons wearing eyeglasses use the seal piece, etc. ).
- b. Handling method of the personal alarm dosimeter (hereinafter referred to as "PAD"), and the exposure dose control method such as how to read the exposure dose record.
- c. Contamination prevention measures and decontamination methods, such as of the body, protective equipment, removable tools, and other items.
- d. Narrowed view of view when wearing protective masks, and danger of getting protective equipment including clothing, footwear and gloves caught in movable parts of machines when carrying out works.
- e. Danger of heatstroke and its preventive measures due to wearing protective equipment, including clothing, footwear, gloves, and masks, and the limited number of rest stations.

f. Exposure dose reduction measures such as identifying locations with high dose rates and securing a separation distance from the radiation source, effective utilization of radiation shielding, wearing of protective equipment, and shortening of working hours.

g. First aid for injured or ill persons and emergency communication methods.

(2) Strengthening of education for operation leaders of the relevant subcontractors

For leaders of the workplaces of the relevant subcontractors (such as work group leaders, or foreman, hereinafter referred to as "operation leader"), education on matters described below should be provided in addition to the education for new workers.

a. Locations with high dose rate at the power plant and shielding equipment.

b. Rest stations, evacuation routes in the case of emergencies, etc.

c. Determination of exposure reduction measures by work management, such as shortening of working hours and wearing of protective equipment, and the methods for monitoring the reduction measures.

d. Methods to determine the exposure dose during the works and to control working hours.

e. Methods to determine the amount of planned dose as well as the PAD setting value, and the methods to observe them.

(3) Strengthening of education for construction planners of the primary contractors

Primary contractors should provide the construction planners with education on the matters described below in addition to the education for new workers described in subsection (1).

a. Knowledge on construction methods based on fully automated or remote control.

b. Knowledge on decontamination, etc. of locations with high dose rate before starting the works (removal of radiation sources).

c. Methods for securing a separation distance from the radiation source in locations with high dose rate.

d. Knowledge on shielding of the radiation source at locations with high dose rate.

e. Knowledge for setting routes from rest stations, etc. to workplaces.

f. Knowledge for setting rest stations, etc.

g. Knowledge for setting planned total exposure dose and planned personal dose of workers.

## **Section 5 Exposure dose control**

### **1. Matters for TEPCO to conduct**

#### **(1) Integrated exposure dose information control**

In order to manage workers' basic information and the exposure dose information for all the

workers engaged in radiation works and separate construction works at the power plant site, the information should be managed in an integrated manner. For this reason, the plant director, in cooperation with the head office, etc., should establish the organization to manage the exposure dose related information (hereinafter referred to as "systematic control organization") and instruct the organization to manage the exposure dose information securely, considering the points of Attachment 1.

(2) Strengthening of the control function of access to the power plant site for radiation workers and separate construction workers

The plant director should have information for all workers who enter the power plant and conduct matters described in a to c below.

- a. Obtaining workers' basic information.
- b. Checking the special education implementation record (excluding the practical skill education).
- c. Issuing each worker's identification card with a personal ID number and face photo and implementation of access control.

(3) Ensured recording, integration, and notification of the exposure dose information

The plant director should record the exposure dose information corresponding to each worker's fundamental information to control their cumulative dose, and notify his/her employees and the primary contractors' employees of the results periodically.

(4) Support to relevant subcontractors, etc.

The plant director should take appropriately actions described below in notification of the exposure dose.

- a. Provide required support to primary contractors to enable them to notify workers of the exposure dose without delay.
- b. Provide support to relevant subcontractors to enable them to notify workers of the exposure dose in writing in order that workers are certainly notified of the exposure dose.

2. Matters for primary contractors to conduct

(1) Exposure dose control

In order to implement appropriately the exposure dose control of workers of the primary contractors and relevant subcontractors who are engaged in radiation works and separate construction works, considering the matters described in Attachment 1, the primary contractors should select radiation control persons and establish a system to know the exposure dose of all

workers of primary contractors and relevant subcontractors under the supervision of the general safety and health manager shown in in Section 3 item 2 subsection (1), including matters as described below:

- a. Conduct exposure dose control of primary contractors' and relevant subcontractors' workers in cooperation with TEPCO.
- b. Instruct the relevant subcontractors' radiation control persons so that exposure dose control of relevant subcontractors' workers will be conducted properly.
- c. Manage appropriately the workers' identification cards which the plant director issues so that the card will not be used by any other person than whom the card is issued to.
- d. Participate in the safety and health coordinating meetings which TEPCO holds as described in the Section 3 item 1 subsection (4) and discuss the matters related to the radiation control.
- e. Conduct other matters required for the radiation control.

(2) Appropriate implementation of the notice of exposure dose, etc.

- a. The primary contractors should conduct matters described below for their employees who are engaged in works at the power plant in cooperation with TEPCO.
  - (i) For daily external exposure dose, notify the worker himself/herself in writing (dose receipt) etc. at the time of the PAD return.
  - (ii) For effective dose which is the total of the external dose and the internal dose, and its cumulative values, notify the worker himself/herself once in a month in writing.
- b. The primary contractors should provide required instructions or support to relevant subcontractors so that the radiation control persons can conduct the matters described in a above appropriately for the said subcontractors' workers.
- c. The primary contractor needs to conduct the actions described below appropriately to notify workers of the exposure dose.
  - (i) Establish an organization that enables notification to workers of the exposure dose without delay.
  - (ii) In order to notify relevant subcontractors' workers of an exposure dose certainly, provide instructions or support so that relevant subcontractors notify workers of the exposure dose in writing or by using an electronic system in the workplace (this is limited to those subcontractors that allow confirmation that the worker himself/herself reviews the data, and if not, that enables workers to receive E-mail messages, for example, drawing their attention to the availability of the data).

## **Section 6 Consideration and implementation of effective exposure reduction measures from**

## **the stage of placing orders**

### 1. Activities during the stage of placing orders

#### (1) Preparation of order specifications that include exposure dose reduction measures

Exposure reduction measures related to methods, equipment, facilities and construction machines should be considered and the effective exposure reduction measures should be incorporated into the construction plans from the stage of placing orders. For this reason, when TEPCO plans the works conducted by itself or outsources the work that TEPCO itself does not conduct to primary contractors, TEPCO should prepare beforehand an “exposure dose reduction specification” that shows fundamental views on matters described below in cooperation with the section ordering the construction works and the radiation control section (in the case where they correspond to radiation works whose planned dose may exceed one man-sievert for the entire work (total planned dose of all workers, unit: man-sievert, hereinafter referred to as “total planned dose”, after hearing proposals from the primary contractors) to incorporate into the order specifications.

- a. Promotion of construction methods based on fully automated or remote control.
- b. Implementation of decontamination, etc. of locations with high dose rate before starting the works (removal of radiation sources).
- c. Securing a separation distance from the radiation source in locations with high dose rate.
- d. Shielding of the radiation source at locations with high dose rate.
- e. Setting of rest stations, etc.
- f. Minimization of travel routes from rest stations, etc. to workplaces.

#### (2) Systematic exposure dose reduction measures which include small-scale construction in the same building, etc.

When two or more small-scale constructions are ordered in the same building etc., it is effective to implement systematic exposure dose reduction measures considering the building etc. as a unit. For this reason, in such a case, TEPCO should prepare the exposure dose reduction specification in which the fundamental view on matters provided in subsection (1) a to f is shown, and incorporate it into the order specifications concerned, in order to take systematic exposure dose reduction measures which includes two or more small-scale constructions.

#### (3) Ex-post verification of planned dose by dividing according to the specific number of work

In order to take exposure dose reduction measures effectively, after setting the planned dose appropriately, the planned dose and the actual dose should be compared after the construction works to verify the validity of the planned dose. For this reason, TEPCO should assign a

specific number for each operation process that allows comparison of the planned dose and the actual dose.

(4) Instructions or support to primary contractors

The plant director should provide primary contractors with required instructions or support in the preparation of a radiation control plan as described in item 2 subsection (1).

2. Activities in the construction plan preparation stage

(1) Preparation of radiation control plans

In preparing construction plans of radiation works whose total planned dose may exceed one man-sievert, radiation control plans that describe matters given below should be prepared and incorporated into the construction plans, by the plant director for works conducted by TEPCO directly and by the primary contractors for radiation work outsourced from TEPCO.

- a. Specific implementation on matters described in item 1 subsection (1) a to f.
- b. Exposure dose reduction measures by the optimal work management according to the specific works, such as shortening of working-hours and wearing of protective equipment.

(2) Trial calculation of the exposure dose reduction effect, and the fundamental view of setting the planned dose

In order to evaluate the effect of exposure dose reduction measures, it is effective to compare the total planned dose assumed when the measures are not taken, and that assumed when the measures are taken. For this reason, TEPCO and primary contractors should, in preparing the radiation control plans described in subsection (1), conduct the calculation described below and incorporate the results into the plan.

- a. Total planned dose assumed when the measures are not taken.
- b. Total planned dose assumed when the measures are taken.
- c. Fundamental view of setting planned dose for every worker assuming to take measures (average individual dose per day, operation process, average and the maximum individual dose for each operation period).

(3) Preparation of exposure dose reduction measures for each operation process

- a. TEPCO and primary contractors should prepare exposure dose reduction measures for each operation process so that the matters described in the radiation control plans will be implemented in the workplace.
- b. For reducing exposure doses, a specific planned dose needs to be set for each operation process. For this reason, the primary contractors should set a planned dose (the maximum

individual dose, an average individual dose, a total planned dose) of each operation process.

(4) Ex-post verification of the planned dose for each operation process

In order to improve the exposure dose reduction measures continuously, it is necessary to compare the planned dose with the actual dose. For this reason, TEPCO and the primary contractors should compare the planned dose and the actual dose for each operation process. When the actual dose exceeds the planned dose, the cause should be investigated and, if required, the radiation control plan (in which the exposure dose reduction measures for every operation process are included) should be revised with respect to the said operation process.

## **Section 7 Healthcare measures, etc.**

### **1. Implementation of the medical examination, etc.**

#### **(1) Workers' healthcare**

##### **a. Implementation of the medical examination**

The plant director and primary contractors should regularly provide the medical examination pursuant to the Occupational Safety and Health Act and other regulations, and the medical examination pursuant to the Ionizing Radiation Ordinance to their workers. As a result of hearing opinions from a medical doctor about the results of the medical examination concerned, they should take appropriate actions for workers who were diagnosed as impaired, and requiring consideration of their present employment, taking opinions from the medical doctor into account.

##### **b. Daily healthcare**

The plant director and primary contractors should check each worker's condition before starting work daily, such as for symptoms of fever and diarrhea. In the case of poor health, they should urge the worker consult a doctor.

For workers who have engaged in works at the power plant for a long period of time (approximately three months, as a rough indication), in addition to workers recognized to be striving to maintain their health based on the results of the medical examination, they should provide health guidance by a medical doctor or public health nurse, taking the opportunity at the time of a medical examination. All possible measures for preservation of health should be taken for workers who were proved to have underlying diseases such as cardiac disease and cerebrovascular disease, from the results of past medical examinations, the existence of previous diseases based on health questionnaire results, existence of subjective or objective symptoms, etc. by providing thorough daily checks of conditions as well as implementing

health guidance.

c. Instructions and support to relevant subcontractors

The plant director and primary contractors should provide required instructions and support to relevant subcontractors so that the relevant subcontractors can conduct the matters shown in a and b appropriately.

(2) Considerations in implementing the ionizing radiation medical examination

Matters described below should be considered in implementing the ionizing radiation medical examination.

- a. Although for the ionizing radiation medical examination pursuant to Article 56, paragraph 1 of the Ionizing Radiation Ordinance, it is allowed to omit some inspection items in paragraphs 3 and 4 of the same article, for workers who may exceed 5 mSv a year as an effective dose, it is not desirable to omit the items allowed in paragraph 3 of the same article for workers considering the possibility that the effective dose received in one year may exceed 5 mSv.
- b. For workers whose accumulated doses from 11 March 2011 to 31 March 2012 exceeded 50 mSv after 13 December 2011, the inspection of the eyes for cataract should be conducted without omission during the period when they are engaged in radiation works. In the said inspection, the examination under a slit-lamp microscope should be conducted approximately once a year. It should be noted that this should not apply when the workers concerned do not want the examination.

2. Ensuring the emergency medical system

The plant director should, in cooperation with the head office, etc., strive to strengthen an emergency transport organization and utilize positively an air ambulance to shorten transport time. Also, in order to provide first aid to severely injured persons immediately, he/she should establish the required health and medical organization and allocate medically trained persons to work in an examination room, etc. as well as secure the medical materials and equipment required for first aid. In order to secure medical staff and maintain and improve the appropriate transport system of injured persons, the head office, etc. and the plant director should participate in a liaison organization consisting of relevant national organizations, relevant medical institutes, neighboring fire departments, etc.

3. Heatstroke measures

The plant director and the primary contractors should take appropriate heatstroke measures according to Attachment 2.



#### 4. Long-term healthcare measures

The plant director and the primary contractors should provide appropriate long-term healthcare to those who were engaged in emergency works at the power plant site according to the ministerial guideline.

#### 5. Improvement of the work environment

TEPCO should, in order to improve the work environment at the power plant, promote paving, etc. of soil systematically for reducing ambient dose rate in air by removing and isolating contaminants and preventing internal exposure due to dust, etc. Also, it should improve rest stations and food service facilities as efforts to prevent accumulation of fatigue and promote recovery from it.

### **Section 8 Reporting to the Ministry of Health, Labour and Welfare**

#### 1. Reporting of accidents, etc.

The plant director should report to the Director of the Tomioka Labour Standards Inspection Office immediately to that effect (arbitrary form) when occupational accidents, etc. (limited to those requiring medical treatment at an outside medical institute) have occurred, when a fire or explosion has occurred, when leakages of radioactive materials or materials contaminated with radioactivity or abnormal exposures to radiation have occurred, or locations with unusually high ambient dose rate have been newly discovered.

#### 2. Reporting of selection of the general safety and health manager

When the general safety and health manager is selected as described in the Section 3 item 1 subsection (1), the plant director should report to the Director of the Tomioka Labour Standards Inspection Office immediately to that effect (arbitrary form). When the general safety and health manager is changed, the plant director should report to that effect in the same way as described above.

#### 3. Reporting of the radiation control plan and the results of risk assessment

- a. The plant director or primary contractors should submit the radiation control plan prepared according to Section 6 item 2 subsections (1) to (3) together with Form 1 to the Director of the Tomioka Labour Standards Inspection Office within 14 days before the start of the operation process for works for which the total planned dose may exceed one man-sievert among the

radiation works and separate construction works conducted by themselves (except for preparatory tasks such as transportation of materials to the site, etc.). When the radiation control plan is revised, the revised radiation control plan should be submitted to the Tomioka Labour Standards Inspection Office before starting the operation process related to the change.

- b. The plant director or primary contractors should submit the comparison results of actual and planned doses for each operation process conducted according to Section 6 item 2 subsection (4) in to the Director of the Tomioka Labour Standards Inspection Office (arbitrary form) immediately.
- c. TEPCO or the primary contractors should submit a summary of the results of the risk assessment conducted according to Section 4 item 2 subsection (2) in the construction planning stage promptly to the Director of the Tomioka Labour Standards Inspection Office, together with the radiation control plan as specified in Attachment 3 for radiation works and separate construction works that may exceed one man-sievert. It should be noted that, the same should be applied when the results of the risk assessment are changed.
- d. The radiation works and the separate construction works for which the radiation control plan is prepared and the risk assessment described in item 3 a and c will be conducted should be those ordered after 1 November 2015.

#### 4. Reporting of radiation works

- a. Among radiation works and separate construction works conducted at the power plant site, for those in which workers may be exposed to an effective dose of 1 mSv per day or higher, the plant director or primary contractors should submit the registration Form 2, "Radiation work registration at TEPCO Fukushima Daiichi Nuclear Power Plant" for each operation process (using the assigned number for each said process) to the Director of the Tomioka Labour Standards Inspection Office beforehand (or immediately after completing the work in the case where response is required within 24 hours after recognition of the situation, such as response to an emergency).

In addition, after completing the said operation process, the average effective dose, the highest effective dose, and the total effective dose of the engaged workers should be reported to the Director of the Tomioka Labour Standards Inspection Office (arbitrary form) immediately.

It should be noted that, for the notification concerning the works for which the radiation control plan described in in Section 6 item 2 subsection (1) is submitted, Form 3 should be submitted together with the exposure dose reduction check list (Form 4) prepared based on the exposure dose reduction measures for every operation process.

- b. The plant director or primary contractors should submit the "Work registration sheet to register designated high dose work" (Form 5) with an attached list of names of workers to be engaged

in the works when the works to be conducted by themselves are judged to correspond to the designated high dose works.

#### 5. Reporting of exposure doses of workers

The administrator in the head office should report the total cumulative dose of all workers engaged in radiation works or designated high dose work within the power plant site at the end of the month to the Industrial Health Division, Industrial Safety and Health Department, Labour Standards Bureau, Ministry of Health, Labour and Welfare. It should be noted that all workers and designated high dose workers should be treated separately in the report.

#### 6. Reporting of occupational safety and health management

The plant director should submit a report on the implementation status of actions in Section 3 item 1 and Section 5 item 1 once in a quarter using Form 6 to the Director of the Tomioka Labor Standards Inspection Office.

#### 7. Submission of records, etc. of designated emergency workers

TEPCO and the primary contractors should submit records concerning designated emergency workers as described below to the Industrial Health Division, Industrial Safety and Health Department, Labour Standards Bureau, Ministry of Health, Labour and Welfare concerning the matters specified in Attachment 4.

- (1) Copy of the record of results of the medical examination as specified in Article 59-2, paragraph 1 of the Ionizing Radiation Ordinance
- (2) Exposure dose control implementation reports as specified in Article 59-2, paragraph 2 of the Ionizing Radiation Ordinance
- (3) Examination results of cancer screening, etc. as specified in Section 2-2 of the ministerial guideline