

Group D: Request 3.09 [TEPCO]



[Answer from TEPCO]

Both Nuclear Worker, Contractor

-Protective Equipment for Working Conditions : Full face mask, tyvek suit, overshoes, latex gloves, Cotton hat

-Medical Countermeasures : Stable Iodine Prophylaxis (See 3.39)

-Decontamination Protocols : Interfacial active agent, Orange oil

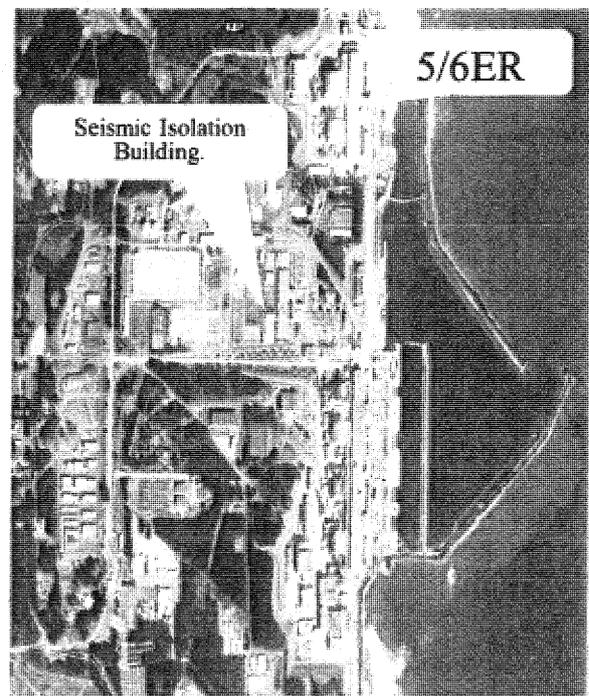
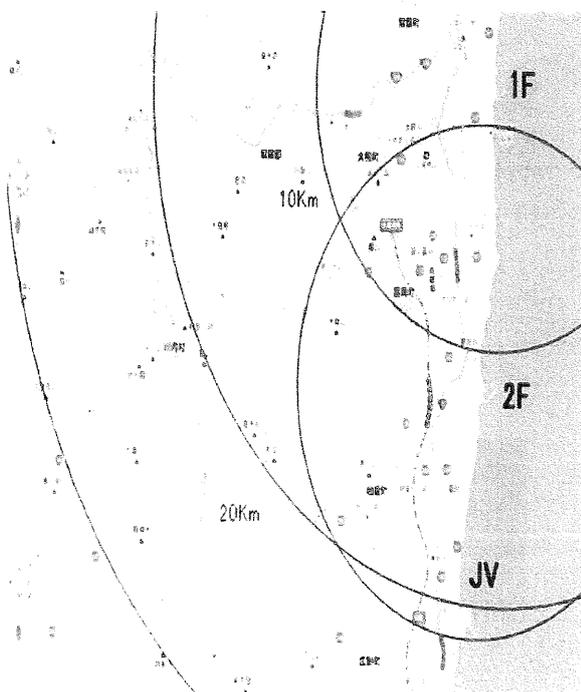
# Iodine Prophylaxis for Emergency Workers in Fukushima Daiichi NPS of TEPCO

Tokyo Electric Power Company

Industrial Physician of Head Office Hiroshi Kikuchi

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## The Seismic Isolated Building of 1F and J VILLAGE



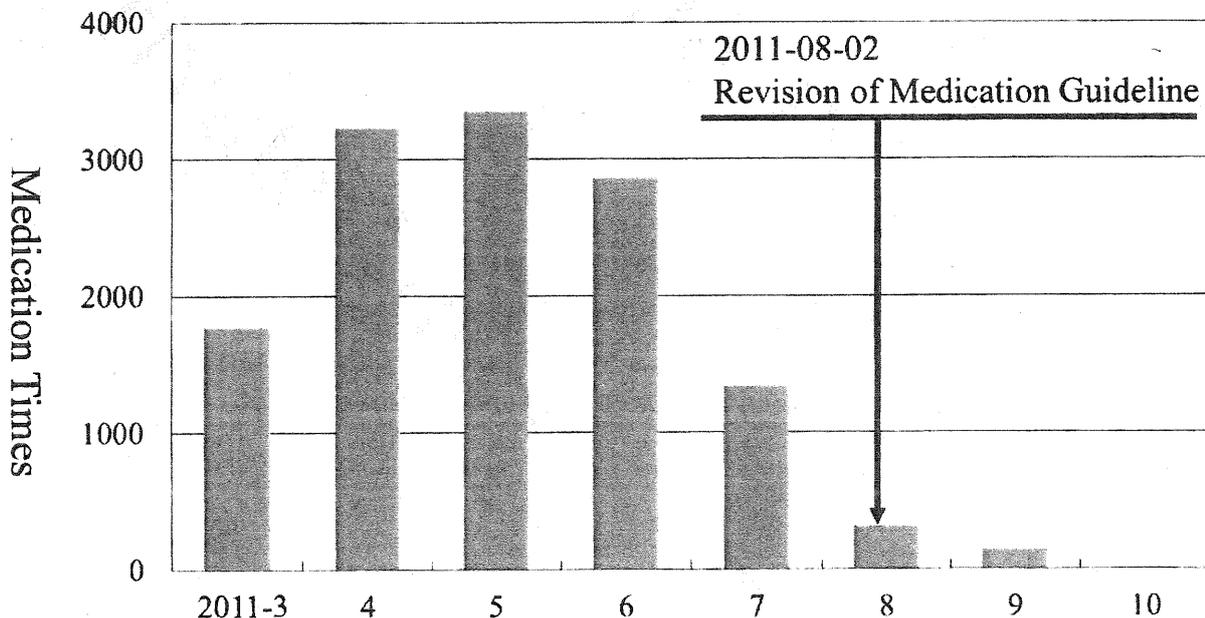
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## Stable Iodine Medication Record in Fukushima Daiichi NPS

- 7 months, from 2011-03-13 to 2011-10-12
- Medication was started following the emergency response plan of medical team. Medicated group were reduced to workers in some particular buildings on 2011-08-02, then suspended completely on 2011-11-21
- From the stockpiles of 30,000 tablets of stable iodine, one or two of 50mg stable iodine tablets were medicated each time.
- Cost free for all workers despite affiliation.
- Medicated mainly from the medical team of the emergency response headquarter at 2<sup>nd</sup> floor of the Seismic Isolation Building.
- Workers were consulted about anamnesis or contraindication, such as thyroid diseases or iodine hypersensitivity, and requested the consent with their signature.
- About 2,000 people including TEPCO workers and contractors took stable iodine. Age distribution is not known. More than 10 females took stable iodine by 2011-03-14
- Stable iodine medications were made almost 13,000 times, and total number of medicated tablets were almost 17,500
- Cumulative dosage of 75% of workers were less than 10 tablets per person, even the maximum dosage is 87 tablets.

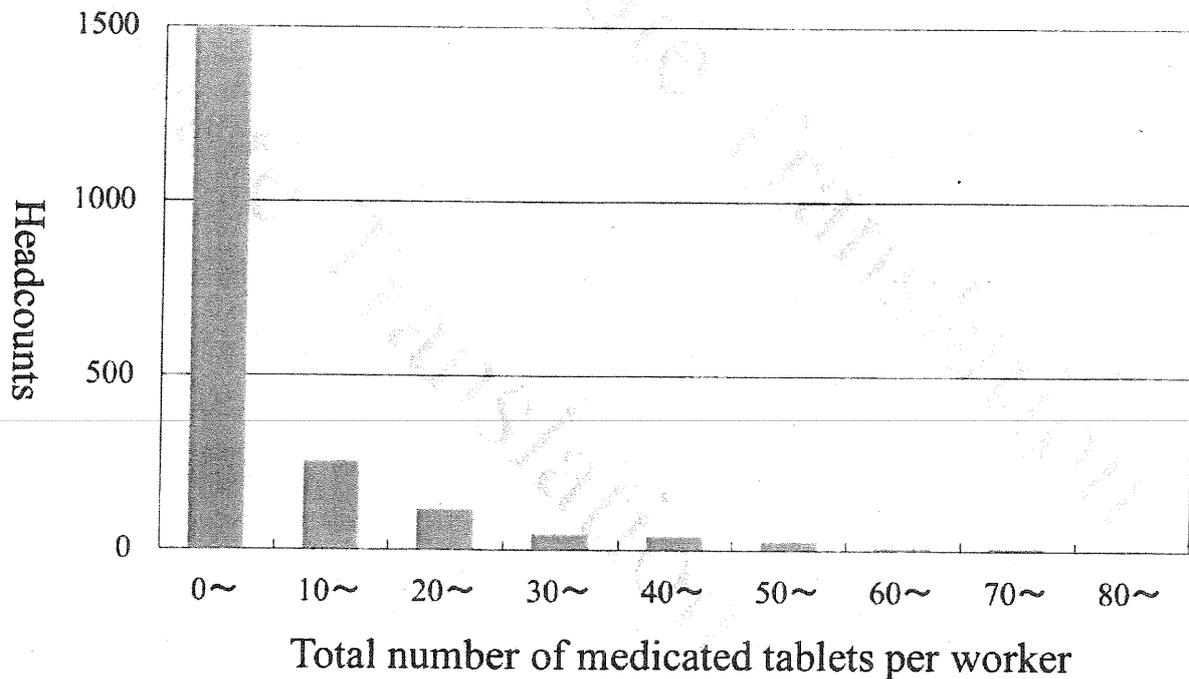
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## Stable Iodine Medication Times in Fukushima Daiichi NPS



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## Headcount of Stable Iodine Medicated Workers



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## Health Checkup for Workers Medicated Stable Iodine

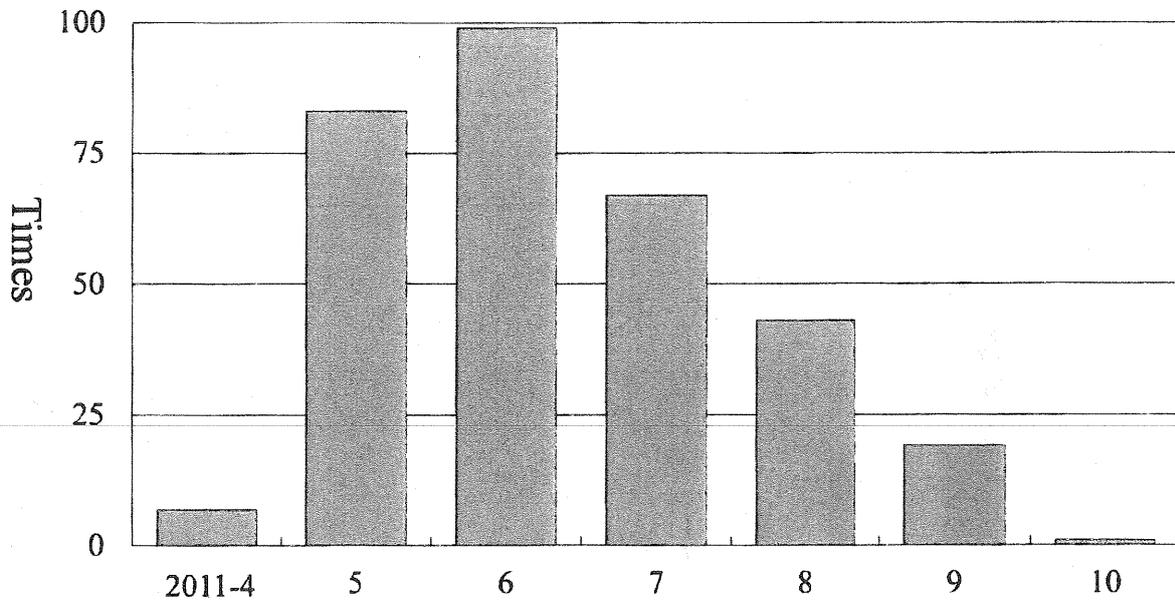
- Health checkup started from 2011-04-13 and the latest checkup was on 2011-10-03.
- Objective workers are either,
  - (1) medicated stable iodine continuously more than 14 days, or
  - (2) more than 20 tablets of accumulated dosage in the first time or after the last health checkup.

Medical team of Fukushima Daiichi examined the medication record and notified to workers about health checkup guidance.

- Health Checkup were basically performed by J VILLAGE Medical Center or Health Management Group of TEPCO Head Office.
- Blood tests were performed. TSH, FT<sub>3</sub>, FT<sub>4</sub>, K were measured.
- The results were sent from investigation institutes to the health management group of TEPCO head office. The blood test results and status were notified to workers.
- Cost for health checkup were covered by TEPCO.

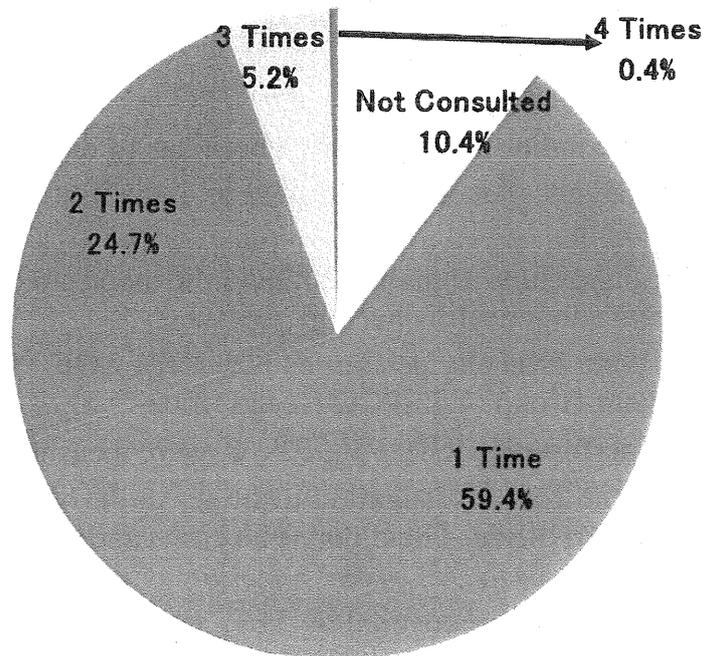
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## Health Checkup for Workers Medicated Stable Iodine



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## Health Checkup Times of Workers medicated more than 20 stable iodine tablets provided in 1F



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## Health Condition of Stable Iodine Medicated Workers

- There are no declaration about side effects with stable iodine prophylaxis including anaphylaxis with iodine hypersensitivity and no suspected case of side effect among the injured and sick persons in Fukushima Daiichi.
- All of the 229 examinees are male and about 20% are over 40 years old.
- Health checkups were performed about 300 times. The most frequent person got checkups 4 times. About 10% of examinees did not get checkup. A little less than 90% of persons they were medicated stable iodine were not listed on the health checkup based on the criterion as mentioned before.
- Two of workers in 20s and one of 30s were with evidence of both high TSH and low FT<sub>4</sub>. Transient hypothyroidism were suspected for these three workers because the re-examine of all of them after the suspend of stable iodine prophylaxis indicated the normal level of TSH and FT<sub>4</sub>. Another one in 20s with evidence of both high TSH and low FT<sub>4</sub> got thorough reexamination and the absence of any abnormality was confirmed.
- 1.8% (four persons) of examinees were both TSH>5.0 and normal level of FT<sub>4</sub>. It was not recognized as increase of hypothyroidism because it was reported that almost 1 to 3.5% of male are with potential hypothyroidism.

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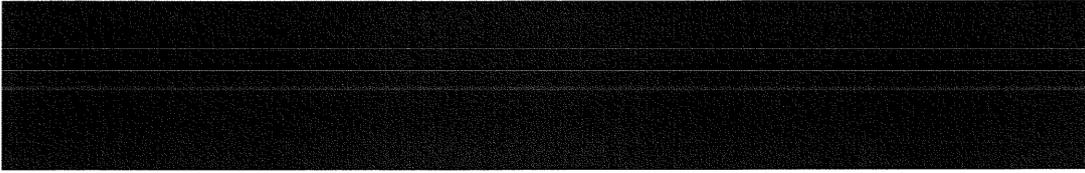
## Committed Thyroid Equivalent Dose and Record of Stable Iodine Prophylaxis

- 178 workers were evaluated as received more than 100mSv committed thyroid equivalent dose by the examinations made by the National Institute of Radiological Sciences or by the Japan Atomic Energy Agency. Age construction and stable iodine prophylaxis is as shown in table below.

	Stable Iodine Prophylaxis		Total
	Medicated	Not medicated	
Under 40	76	25	101
Over 40	25	52	77
Total	101	77	178

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Group D: Request 3.09 [Municipal officials]



[Answer from Fukushima Prefecture]

As shown in the Attached Sheet 1.

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# Regarding the protective measures against radiation for the officials of Fukushima Prefecture

April 22, 2011  
Disaster Response Headquarters of Fukushima Prefecture

Guideline for safety management of prefectural officials who engage in the  
emergency response measures within the 20 km zone of Tokyo Electric Power Company  
Fukushima Daiichi Nuclear Power Station

**1 Purpose**

The prefecture stipulates a guideline for safety management of prefectural officials who engage in the emergency response measures within the 20 km zone of TEPCO Fukushima Daiichi Nuclear Power Station.

**2 Explanation for officials who engage in the measures**

The prefecture shall sufficiently explain in advance about the description of works and necessity to officials who engage in the emergency response measures and gain their consent before they engage in any work as well as prohibiting pregnant women, possibly pregnant women as well as breast-feeding women from working.

**3 Working terms and conditions**

The prefecture shall require the officials who engage in the emergency response measures to observe the following terms.

(1) Development of the safety management system

① Each group shall manage the exposure level of officials engaging in the operations, and allocate personnel to manage the exposure level within each group for safety management, such as the management of individual dosimeters.

② In the work site, officials shall work in a group of two or more, and two or more officials are required to carry dosimeters all the time in order to thoroughly undertake the safety management measures.

(2) Provision of protective equipment

Be sure to wear protective equipment (protective clothes, masks, goggles, rubber gloves and dosimeters)

(Note 1)

Note 1: Protective equipment

- Protective clothes (Tyvek suits) (to be provided)
- Dust-proof masks (to be provided)
- Half-faced masks (Absorption can) (To be provided : Collected if unused)
- Goggles (to be provided)
- Rubber gloves (to be provided)
- Rain coats (plastic) (to be provided)
- Dosimeters (to be leased)

※ Each worker is required to prepare working clothes, sealing tape (for patching of

**1 Response for officials who worked around the accident site immediately after the accident at the Fukushima Daiichi Nuclear Power Station**

(1) Main works after the accident

- Emergency monitoring of environmental radiation level (outdoor work)
- Restoration of power source of devices installed (outdoor work)
- Coordination and adjustment with relevant organizations (indoor work)

(2) Measures actually taken to ensure radiation protective measures were undertaken (outdoor workers)

Protective equipment	Tyvek suits	○
	All face mask	○
Administration of drugs	Stable iodine	○
	DTPA	×
	Prussian blue	×
Method of decontamination	Officials exposed to radiation over 5,000cpm were decontaminated in a decontamination room by flushing with water.	

**2 Response from April 22 to September 14, 2011**

Pursuant to the Guideline for safety management of prefectural officials who engage in the emergency response measures within the 20 km zone of Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Station' enacted on April 22, 2011 (partially revised on May 12, 2011) (shown in the attached sheet 1-(1)) and (2))

**3 Response from September 15, 2011 onward**

Pursuant to the Guideline for safety and hygiene management of officials who engage in operations in the caution zone' enacted on September 15, 2011 (shown in the attached sheet 1-(3))

May 12, 2011

## Disaster Response Headquarters of Fukushima Prefecture

suits) and long boots.

Guideline for safety management of prefectural officials who engage in the emergency response measures within the 20 km zone of Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Station

1 Purpose  
The prefecture stipulates a guideline for safety management of prefectural officials who engage in the emergency response measures within the 20 km zone of TEPCO Fukushima Daiichi Nuclear Power Station.

2 Explanation for officials who engaged in the measures  
The prefecture shall sufficiently explain in advance about the description of works and necessity to officials who engage in the emergency response measures and gain their consent before they engage in any work as well as prohibiting pregnant women, possibly pregnant women as well as breast-feeding women from working.

3 Working terms and conditions  
The prefecture shall require the officials who engage in the emergency response measures to observe the following terms.

(1) Development of the safety management system  
① Each group shall manage the exposure level of officials engaging in the operations, and allocate personnel to manage the exposure level within each group for safety management, such as the management of individual dosimeters.

② In the work site, officials shall work in a group of two or more, and two or more officials are required to carry dosimeters all the time in order to thoroughly undertake the safety management measures.

(2) Provision of protective equipment  
Be sure to wear protective equipment (protective clothes, masks, goggles, rubber gloves and dosimeters).

(Note 1)

Note 1 : Protective equipment

- Protective clothes (Tyvek suits) (to be provided)
- Dust-proof masks (to be provided)
- Half-faced masks (Absorption can) (To be provided : Collected if unused)
- Goggles (to be provided)
- Rubber gloves (to be provided)
- Rain coats (plastic) (to be provided)
- Dosimeters (to be leased)

\* Each worker is required to prepare working clothes, sealing tape (for patching of suits) and long boots.

(3) Management of dosimeters  
① Wear dosimeters at all times, and immediately evacuate if the dosimeter reads the upper limit of 5 mSv or the alarm is activated.

② If an official gets involved in the operation twice or more, specify the upper limit of accumulated exposure dose at 50 mSv per year, and record the accumulated exposure dose in the attached form after every operation and manage the dose.

(4) Implementation of screening  
After the operation, confirm the level of contamination at the Soso Public Health & Welfare Office, and get decontaminated if exceeding the contamination limit. (Note 2)

Note 2: Contamination limit: Implement the screening pursuant to the screening standard specified by the Social Health & Welfare Department as of March 14, 2011.

(Description)

(5) Response in case of emergency  
Organize a communication system to immediately evacuate in the event of emergency, such as abnormality found in the nuclear power plant.

(6) Treatment of used protective equipment  
Take protective measures to prevent the contaminated materials from spreading by putting the used protective equipment into plastic bags and seal them. After that, keep them in a place designated by Soso Public Health & Welfare Office.

(7) Other  
If officials work with police or SDF for the operation, the person in charge of managing the exposure level stipulated in 3 (1) ① is required to make efforts to share all information for the exposure management and try to manage the safety of officials involved in the operation.

September 15, 2011

Guideline for management of safety and hygiene of officials who engage in works  
within the caution zone

Director General of the General Administration Department  
Administrator of Comprehensive Safety & Hygiene  
Fukushima Prefecture

1 Purpose

This Guideline is set forth as stipulated below, based on the Guideline for safety management of prefectural officials who engage in the emergency response measures within the 20 km zone of Tokyo Electric Power Company Fukushima Daiichi Nuclear Power Station (partially revised on May 12, 2011, hereinafter called 'Headquarters Guideline') which was drawn up by the Disaster Response Headquarters as of April 22, 2011, and the notice issued by the National Government as well as Regulations for Management of Safety & Hygiene of Fukushima Prefectural Officials, Article 40 relating to guidelines for management of safety & hygiene of officials who engage in operations within the caution zone designated pursuant to the Basic Act on Disaster Control Measures, Article 63, Paragraph 1 (hereinafter called 'Caution Zone'), which was deemed to be replaced with the Act on Special Measures Concerning Nuclear Emergency Preparedness, Article 28, Paragraph 2, ensuring the accident occurred at the TEPCO Fukushima Daiichi Nuclear Power Station.

2 Applicable officials

Officials of organizations that belong to respective secretariat of Governor's Departments and Bureau, Prefectural Assembly, Election Administration Committee, Audit Commissioners, Personnel Committee, Labour Relations Commission and Marine Fisheries Coordination Committee.

3 Applicable operations

Operations that allow officials to access the caution zone

- (1) The emergency response measures stipulated in the Act on Special Measures Concerning Nuclear Emergency Preparedness, Article 26, Paragraph 1
- (2) Operations to be implemented through public access based on the Standards for temporary access to the caution zone, Article 2 (1) (Official notice issued by the Chief of Nuclear Emergency Response Headquarters as of April 23, 2011)

4 Operational restrictions for officials

- The following officials are not permitted to engage in the operations.
  - (1) Female officials who are pregnant or possibly pregnant and/or breast-feeding.

(3) Management of dosimeters

(1) Wear dosimeters at all times, and immediately evacuate if the dosimeter reads the upper limit of 5 mSv or the alarm is activated.

(2) If an official gets involved in the operation twice or more, specify the upper limit of accumulated exposure dose at 50 mSv per year, and record the accumulated exposure dose in the attached form after every operation and manage the dose.

(4) Implementation of screening

After the operation, confirm the level of contamination at the Soso Public Health & Welfare Office, and get decontaminated if exceeding the contamination limit. (Note 2)

Note 2: Contamination limit: Implement the screening pursuant to the screening standard specified by the Social Health & Welfare Department as of March 14, 2011.  
(Description)

(5) Response in case of emergency

Organize a communication system to immediately evacuate in the event of emergency, such as abnormality found in the nuclear power plant.

(6) Treatment of used protective equipment

Take protective measures to prevent the contaminated materials from spreading by putting the used protective equipment into plastic bags and seal them. After that, keep them in a place designated by Soso Public Health & Welfare Office.

(7) Other

If officials work with police or SDF for the operation, the person in charge of managing the exposure level stipulated in 3 (1) ① is required to make efforts to share all information for the exposure management and try to manage the safety of officials involved in the operation.

2.) Officials who reached the upper limit of the exposure dose stipulated in Article 7, (1) ②.

5 Restriction of access

If officials engage in the operations stipulated in 3. (2), they are not permitted to access the following zones pursuant to the Standards for temporary access to the caution zone, 3 (1).

(1) Areas deemed to have high risk due to the high air dose rate

(2) Areas affected by the recent Tsunami and deemed to give danger to temporary accessor (officials)

6 Compliance rules for the operations

If officials engage in the operations, they are required to act in a group of two or more at any time.

In order to suppress the exposure dose as much as possible, streamline the operational procedures and make the staying time as short as possible as well as observe the following events.

(1) Application of protective equipment

Officials are required to wear the following protective equipment to prevent absorption of radioactive substances and contamination in principle.

Also, prepare and carry sealing tapes for repair in case the protective clothes are damaged.

① Protective clothes (Tyvek suits)

② Dust-proof masks

③ Protective masks with absorption cans (All or half-faced)

④ Goggles (for half-faced protective masks)

⑤ Rubber gloves

⑥ Rubber boots

⑦ Rain coats (plastics-make if raining)

(2) Measuring of the exposure dose

In the operational site, let each official carry a dosimeter at any time to measure the exposure dose.

(3) Adjustment of scope and time for access

Based on the result of the prior monitoring and the air dose rate on the implementing day, adjust the scope and time as necessary.

(4) Prohibition of smoking

In order to prevent aspiration and oral intake of dust, do not smoke or eat and drink while working.

(5) Evacuation from the caution zone

In the event of the following situations, stop the operation and immediately evacuate from the caution zone.

① If the daily exposure dose exceeded the upper limit stipulated in Article (1) ①.

② If an emergency such as abnormal condition occurs at the Fukushima Daiichi Nuclear Power Station.

(6) Implementation of screening

After the operation, be sure to confirm the level of contamination at a specific screening institution, and decontaminate spots following the instructions of the screening institution if exceeding the standards shown by the Social Health & Welfare Department, Fukushima Prefecture as of March 14, 2011.

(7) Disposal of used protective equipment

If protective equipment is found to be contaminated after screening (6), seal it off in a plastic bag so as to prevent spreading of contaminated substances, following the instructions given by the screening institution.

7 Management of exposure dose

Management of the exposure dose on officials will be provided as follows.

(1) Upper limit of the exposure dose

① The upper limit of exposure dose rate for daily operation is basically 1 mSv.

However, the upper limit will be 5mSv if it is inevitable due to the operation 3 (1).

② If officials are to get involved in the operation twice or more, the cumulative exposure doses (including the exposure dose radiated while working in the deliberate evacuation zone) will be basically 20 mSv per year. However, if it is inevitable to exceed 20 mSv/yr through the operation 3 (1), the officials are allowed to keep working on the condition that the exposure dose should not exceed 50 mSv/yr and 100 mSv within 5 years.

Particularly, female officials should not exceed 5 mSv/quarter.

(2) Management and recording of exposure dose

① If a group has officials engaging in the operation, the group is responsible for the management of the officials' exposure doses, and will appoint an official in charge of exposure management out of the executives.

① If a group has officials who work for the Prefectural Disaster Response Headquarters, the group is required to manage the exposure doses of the officials working in the caution zone through communication and coordination with the Headquarters.

③ Regarding the daily exposure doses of officials who engaged in the operations, after the issuance of this notice, record them in the attached management records in stead of the Management records of radiation for officials who engaged in the emergency response measures within 20 km zone from the TEPCO Fukushima Daiichi Nuclear Power Station' (hereinafter called 'Management Records of Headquarters Guideline' stipulated in the Headquarters Guideline, Article 3 (3) ②), and obtain approval from the official and the chief of the group every time before recording.

Also, the exposure doses of officials who worked in the deliberate evacuation zone shall be comprehensively managed with the attached management records.

(2) Management of the exposure doses will be on yearly basis (April 1 to March 31, next year), but the initial year will be counted from the following day of the accident at the Fukushima Daiichi Nuclear Power Station (March 12, 2011) to March 31, 2012.

If there is any period when the exposure doses are not known, state 'not clear' in the management records when keeping the records.

(5) Conserve the management records (including the Management Records of Headquarters Guideline) for 30 years.

(6) The chief of the group is required to immediately send the management records to the chief of the group to which the official is transferred.

Also, if the official leaves the position or the order of the caution zone and the deliberate evacuation zone is lifted, send them to the Health & Welfare Unit.

(3) Report of the exposure dose

The chief of the group is required to quarterly report the officials' exposure doses to the Comprehensive Safety & Hygiene Administrator (Health & Welfare Unit) via each division of the department.

When reporting, send the copy of the management records of the officials.

8 Safety & hygiene education

The chief of the group shall provide the safety & hygiene education including matters relating to harmfulness of the radiation exposure, performance of the protective equipment and usage manuals before the official gets into the operation.

3 Protective measures against heat stroke

The chief of the group shall be fully cautious about the measures against the heat stroke when the official gets involved in the operation.

10 Special health examination

The chief of the group shall have the officials engaging in the operation take special health examination, such as medical interview by doctors and blood tests, pursuant to the Regulations of Safety & Hygiene Management for Fukushima Prefectural Officials, Article 33, Paragraph 4.

11 Development of the communications system at the time of emergency

Each group shall develop the communications system in line with respective job descriptions to be able to immediately evacuate from the caution zone if an emergency, such as circumstances changing at the Fukushima Daiichi Nuclear Power Station.