

QUESTIONNAIRE TO THE REGULATORY BODY MEETING TURKU 2008

INVITATION

In conjunction with the 2008 ISOE Symposium, 25-27 June 2008, we are preparing a 3rd Senior Regulatory Body representatives meeting, to be held 24 June 2008 in Turku (Finland). We hope to encourage your participation in this meeting which follows on from the very successful Regulatory Body representatives meetings in 2004 (Lyon) and 2006 (Essen). The purpose of the meeting is to provide a forum for open exchange and discussion within specialised regulatory audience concerned with occupational radiation protection. For this occasion, the contamination management in NPPs from the occupational point of view has been chosen as the main topic.

OBJECTIVES OF THE MEETING

The main objectives of the meeting are:

- To meet with regulators from other organisations
 - To exchange information regarding regulatory control on **contamination management in NPPs from the occupational radiation protection perspective** focusing on
 - controlled and supervised areas inside NPP
 - occupational exposure control and assessment due to both external and internal contamination.
- This meeting will not deal with aspects of contamination management other than those related to occupational radiation protection.
- To help to improve national regulatory effectiveness on occupational radiation protection by comparing national reality versus international context

AGENDA

- Introduction of the different representatives
- Brief presentation on national requirements on contamination management
- Discussion
- Conclusions

OBJECTIVES OF THE QUESTIONNAIRE

In order to introduce the Regulatory Body representatives meeting it is expected to draw an overview of regulatory control on contamination management in NPPs from an occupational perspective in the different ISOE member countries with their similarities and differences. Therefore we would like you to answer, briefly, to the following questionnaire to stimulate information exchange and discussions. Only one response per country is necessary.

Please do not go into the details, just describe a few "objective data".

Even in case you will not be able to attend the meeting the information you can provide is precious. If you agree, questionnaires filled in by national authorities will be sent to the regulatory contacts participating in ISOE.

Yes, I agree

The information can be used only in the RB-meeting

COUNTRY AND REPRESENTATIVE IDENTIFICATION

- ❑ **Country:** Japan
- ❑ **Name of the Regulatory Body:** Nuclear and Industrial Safety Agency (NISA)
- ❑ **Name and post of the person(s) who fill in the questionnaire:**
Yoshihisa HAYASHIDA
Principal Officer
Safety Information Research Division
Japan Nuclear Energy Safety Organization (JNES)
(JNES is an Independent Administrative Agency, which is an expert organization who conducts specialized and fundamental activities to ensure nuclear safety, in collaboration with NISA.)

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

- ❑ **Legal framework on contamination control**
 - Does your legal framework have requirements on radioactive contamination control?
YES. If so, give a short description of the content of references.
 - Law on Regulation for Nuclear Source Material, Nuclear Fuel Material and Reactors
 - Regulation Concerning Prevention from Radiation Hazards due to Ionizing Radiation (Industrial Safety and Health Law)
 - Law Concerning Prevention from Radiation Hazards due to Radio-Isotopes, Etc.
 - These Laws include the following topics:
 - Establishment of radiological controlled area and access control
 - Dose limit, surface contamination limit and limit of radioactive material in the air
 - Management of going in and out to controlled area
 - Personal protective equipment
 - Prohibition of eating and drinking and smoking
 - Medical surveillance
 - Measurement
 - Record
 - Does your legislation specify reference levels for contamination?
YES.
- ❑ **Reference contamination levels on official documents**
 - Does some official document of the licensee specify levels for contamination?
 - If so specify the document.
The licensee describes to their "Operational Safety Program" that they obey the reference value provided in the law.
 - Are the reference levels for contamination in NPP the same for all NPPs in your country?
The licensee obeys the reference value provided in the law.
Detailed operational contamination control is different according to the plant.

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

□ Contamination control in controlled or supervised areas in NPPs.

- How many controlled area categories could exist on NPP site?
There are following areas on the NPP site:
 - Controlled area (radiological controlled area),
 - Conservation area,
 - Peripheral monitoring area.

- What are the maximum contamination levels allowed in the different categories of controlled areas of NPPs for different categories of radionuclides/ types of emissions? If levels are specific for each site, please give an order of magnitude of the range covered for the different reference levels (Registration, Investigation and Intervention).
 - For places that the person might touch such as the floor and the wall in the controlled area, the surface contamination density of the radioisotope must be less than 4 Bq/cm² for alpha emitter, and 40 Bq/cm² for non alpha emitter.
 - Outside of the controlled area, 0.4 Bq/cm² for alpha emitter, and 4 Bq/cm² for non alpha emitter.
 - Licensee divides the controlled area according to the radiation level, concentration of radioactive material in the air and surface contamination level in order to manage the controlled area. An example is shown in Table 1 and Table 2. Some differences are in each plant for detailed operation.

- What are the basic technical requirements in NPP to control spread of contamination? Which of them are specified by legal or approved documents and on which the licensee may decide in his own responsibility?
 - Delimitation by wall or fence etc. and installation of sign.
 - Measures of access control and lock management etc. corresponding to dangerous level
 - Prohibition of eating and drinking and smoking in the place where the person might take radioactive material from mouth.
 - Radiological surveillance of surface contamination.
 - Radiological measurement and decontamination of personnel and things at the exit of the controlled area.
 - Use of personal protective equipment and clothes.

These are described in the "Regulation Concerning Establishment, Operation and others of Practical Power Generation Nuclear Reactor" based on the "Law on Regulation for Nuclear Source Material, Nuclear Fuel Material and Reactors" and "Regulation Concerning Prevention from Radiation Hazards due to Ionizing Radiation" based on the "Industrial Safety and Health Law".

Does your legislation or approved documents include requirements about the monitoring program? YES. Which document?

- Regulation Concerning Establishment, Operation and others of Practical Power Generation Nuclear Reactor (Law on Regulation for Nuclear Source Material, Nuclear Fuel Material and Reactors)

What kind of requirements (periodicity, certificated instruments, exclusive performed by RP-personal with special education and training, averaging surface (volume, duration), registration and reporting)?

- Surface radioactive density of contaminated substance.
- Average concentration for one week of radioactive material in the air.
(Measurement and record every one week)

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

□ Contamination control of personal protective equipment.

- Does your legislation or approved documents (company instructions) include requirements about contamination of protective personal equipment? **YES**. Which document?
 - Regulation Concerning Prevention from Radiation Hazards due to Ionizing Radiation (Industrial Safety and Health Law)
- Which requirements?
Decontamination of personal protective equipment and clothes to be used.
- What are the reference levels for contamination of protective personal equipment?
 - 4 Bq/cm² for alpha emitter, and
 - 40 Bq/cm² for non alpha emitter.However, about the part that comes in contact with the person,
 - 0.4 Bq/cm² for alpha emitter, and
 - 4 Bq/cm² for non alpha emitter.
- Is it allowed to enter controlled areas with street clothes?
It is possible to enter controlled area with usual work clothes in the places without potential contamination.
- Is it allowed to wear protective clothes outside controlled areas on the NPP site? **NO**.

□ Contamination control of reusable working materials at the exit of controlled areas.

- Does your legislation or approved documents (company instructions) include requirements about the levels of contamination allowed for reusable working material at the exit of controlled areas? **YES**. Which document?
 - Regulation Concerning Establishment, Operation and others of Practical Power Generation Nuclear Reactor.If affirmative, provide reference levels:
Reference level at the exit of controlled area for taking out the working material.
 - 0.4 Bq/cm² for alpha emitter, and
 - 4 Bq/cm² for non alpha emitter.

□ Estimation of effective dose from internal contamination

- Does your legislation or approved documents include requirements about internal contamination of occupational exposed persons? **YES**. Which document?
 - Regulation Concerning Establishment, Operation and others of Practical Power Generation Nuclear Reactor.
 - Regulation Concerning Prevention from Radiation Hazards due to Ionizing Radiation.
 - Regulation of Laws Concerning the Prevention from Radiation Hazards due to Radioisotopes and Others.
- Which requirements?
 - Record of internal exposure by inhalation.
 - Limit of internal exposure during pregnancy.
 - Medical surveillance
 - Measurement of internal exposure.
- What are the methods and criteria for assessment of internal doses?
Method: Whole Body Counter for routine monitoring. In special cases, bioassays or a method by calculation using the radioactive material in the air of work place.
Criteria:
 - Once every three months.
(Once every month during pregnancy)
 - When radioisotope was inhaled or taken from mouth.

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

- What are the reference levels for internal doses (please give examples for typical nuclides, allowed averaging volume or surface or ...)?
Occupational exposure is estimated in effective dose which is the sum of external and internal exposures in accordance with the legislation. (100mSv/5y, 50mSv/y).
As for the woman during pregnancy, limit of internal exposure is 1mSv during pregnancy.

□ Estimation of effective dose from external contamination. Skin doses

- Does your legislation or approved documents (company instructions) include requirements about contamination of skin? **YES**. Which document?
 - Regulation Concerning Establishment, Operation and others of Practical Power Generation Nuclear Reactor.
 - Regulation Concerning Prevention from Radiation Hazards due to Ionizing Radiation.
- Which requirements?
 - Limit of skin dose.
 - Radiological measurement and decontamination of personnel at the exit of the controlled area
 - Use of personal protective equipment
 - Medical surveillance
- What is the triggering level of contamination to carry out an assessment of skin dose?
 - 0.4 Bq/cm² for alpha emitter, and
 - 4 Bq/cm² for non alpha emitter.
 - These are the reference level for going out the controlled area.
- What is the maximum level allowed for personal contamination at the exit of the controlled area?
 - 0.4 Bq/cm² for alpha emitter, and
 - 4 Bq/cm² for non alpha emitter.
- How contamination is measured in 1 cm²? For discussion in plenary session.

□ External risk versus internal risk perception

- External risk versus internal risk perception and practice in your country? How and why do you weight the risks different? What is the practice in your country? What are the experiences? For discussion.
Occupational exposure is estimated in effective dose which is the sum of external and internal exposures in accordance with the legislation. (100mSv/5y, 50mSv/y).
As for the woman during pregnancy, limit of internal exposure is 1mSv during pregnancy.

Do you have some additional topics, which you would like to discuss during the RB meeting:

Table 1. Example of operational division for controlled area by dose rate

Division name	Dose-1	Dose-2	Dose-3
Dose rate (mSv/h)	< 0.1	0.1<= , <1.0	> 1.0

Table 2. Example of operational division for controlled area by contamination

Division name	Area A	Area B	Area C	Area D
Surface contamination density (Bq/cm ²)	No contamination	< 4	< 40	>= 40
Radioactive material concentration in the air (Bq/cm ³)		< 4x10 ⁻⁵	< 4x10 ⁻⁴	>= 4x10 ⁻⁴

Area B might be divided into area B1 which does not include contamination and area B2 which include contamination.