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**: **France**
- **Name of the Regulatory Body: ASN (Nuclear Safety Authority)**
- **Name and post of the person(s) who fill in the questionnaire: Xavier NIEL, project manager, Nuclear power plant department.**

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,

  The French legal framework is based on the global radiation risk (external + internal). With some exceptions, regulations don't difference between exposure due to irradiation or contamination.

  However, the labour code (Regulatory part, Book 4, Title 4) includes provisions for the following topics related, directly or indirectly, to contamination control:

  - Area classifications (chapter 2, section 1)
  - Implementation of collective and personal protective equipment (chapter 2, section 4)
  - Occupational individual exposure surveillance (chapter 3, section 6)
  - Medical surveillance (chapter 4)
  - Contamination control for pregnant women, coming to give birth or breast-feeding: (Regulatory part, Book 1, title 5, chapter 2, section 3)

  Some provisions on radioactive contamination control about radiological surveillance, hygiene and design rules are detailed in the title 3, section 2 of the Ministerial order which deals with area classifications (dated May 15, 2006).

  - Does your legislation specify reference levels for contamination? No, it doesn't for the legislation on occupational RP but transport legislation specifies maximum contamination levels for packages. These levels are usually taken as reference level by licensees.

- **Reference contamination levels on official documents**

  - Does some official document of the licensee specify levels for contamination? YES.
  - If so specify the document.

    The licensee works with his own "Radiation Protection Handbook", that is a document reflecting the practical RP provisions to be implemented to achieve compliance with the legislation in force. This document included harmonised reference levels to comply with the legislation in force.

    The French ASN does not approve this document even if comments are made from time to time.

  - Are the reference levels for contamination in NPP the same for all NPPs in your country?

    In France, only EDF operates NPP so its RP handbook is applicable to all NPP.

- **Contamination control in controlled or supervised areas in NPPs**.

  - How many controlled area categories could exist on NPP site? There are 4 categories for controlled areas inside NPP and one for the supervised area on the NPP site (ministerial order dated May 15, 2006). Area classification in based on global radiation risk. For external exposure only, the maximum dose rate specified in the table below have to be complied with :

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

Free Area	Supervised Area	Controlled area			
		Regulated Access	Specially Regulated Access	Specially Regulated Access	Forbidden Access
<80μSv/month	< 7.5μSv/h	< 25μSv/h	<2mSv/h	<100mSv/h	>100mSv/h

- 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). No levels are fixed by the regulations. In French NPPs, contamination level is based on ^{60}Co equivalent activity for β-ray and ^{241}Am equivalent activity for α-ray.

- 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 and signing of areas
  - Radiological surveillance of surfaces and atmosphere
  - Passing zones between zones with different risk of contamination
  - Protective personal equipment
  - Decontamination
  - Ventilation
  - Monitoring of loose/fixed contamination in passing zones

  Basic requirements to control contamination are established in the legislation (labour code and ministerial orders May 15, 2006 (zoning) and October 26,2005 (controls). General requirements on these measures are specified in the RP handbook of the licensee in which more specific requirements are established.

- Does your legislation or approved documents include requirements about the monitoring program? YES, the labour code (Chapter II, section 2) prescribes area monitoring, as well as the ministerial orders dated May 15, 2006 and October 26,2005. EDF RP handbook gives further details. Which document? see previous answer.
- What kind of requirements (periodicity, certificated instruments, exclusive performed by RP-personal with special education and training, averaging surface (volume, duration), registration and reporting)? All these detailed requirements are specified in the RP handbook of the licensee or in the procedures that develop the RP handbook of the licensee. For example, periodicity of surveillance depends on the type of risk and the classification of the area, instrumentation must be certified and/or verified at frequencies depending on the type of instruments. Monitoring must be performed by qualified personnel.

❑ **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? The RP handbook of the licensee. The legislation gives only a general objectives.

- Which requirements?
  -

- What are the reference levels for contamination of protective personal equipment? They are different depending on the types of emitters. They are harmonised for all NPPs. It's equivalent to 0.4 $Bq.cm^{-2}$ contamination level.

- Is it allowed to enter controlled areas with street clothes? Usually not. However, 3 NPPs in France have implemented, partially or totally, EDF's EVEREST Project. Its purpose is to enter in some controlled areas in "street" clothes, depending on the contamination level (<0.4 Bq.cm^{-2}), as long as there is a proof of lack of contamination in the area. However, it's still not possible to enter the reactor building without protective clothes.

- 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? No levels are specified by regulations. However, the licensee established such levels in its in-house Directive n°82. If affirmative, provide reference levels: 0.4 Bq.cm^{-2} for removable and fixed contamination.

❑ **Estimation of effective dose from internal contamination**

- Does your legislation or approved documents include requirements about internal contamination of occupational exposed persons? No. Which document?
  However, the Labour code includes global exposure limits for workers (unit : Sv) and the need to monitor for internal exposure. Ministerial order (dated September 1st, 2003) gives values of efficient dose by unity of incorporation (DPUI) for several nuclides (unit : Sv.Bq^{-1}) to be used to estimate internal exposure.

- Which requirements?
  - Global dose (included internal engaged doses on 50 years) of exposed workers : (Regulatory part, Book 4, title 4, chapter 3, section 6)
  - Contamination control for pregnant women, coming to give birth or breast-feeding : (Regulatory part, Book 1, title 5, chapter 2, section 3)

- What are the methods and criteria for assessment of internal doses?
  Method: Whole Body Counter for routine monitoring and bioassays in special cases.
  Criteria:
  - Internal dose controls are carried out at the entrance and exit of the NPP or at least annually for permanent workers
  - Also whenever an intake is suspected.

- What are the reference levels for internal doses (please give examples for typical nuclides, allowed averaging volume or surface or …)? There are no reference levels. When internal exposure is detected, the dose is estimated by the medical physicist (DPUI, exposure time, kind of nuclides). Estimation result is compared with annual efficient dose limit.

❑ **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? Labour Code (R. 4451-13)
- Which requirements? Annual dose to the skin (irradiation + contamination) must be < 500mSv.

- What is the triggering level of contamination to carry out an assessment of skin dose?
  Workers pass through a whole body detector, including hand and foot monitor, calibrated on contamination scenario. If they are still contaminated after a gentle wash, medical department takes care of them.

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

- What is the maximum level allowed for personal contamination at the exit of the controlled area : It is equivalent to 0.4 $Bq.cm^{-2}$

- How contamination is measured in 1 cm^2? For discussion in plenary session. Basically, contamination is located in one area and then a collimated detector provided with a 1 cm^2 hole is used.

❑ **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. In France, with some exception like hygiene rules or pregnant women or breast-feeding, there is no difference between internal and external exposure protection. The dose limits and ALARA principle are to be applied to effective (and sometimes equivalent) dose. Annual dose reports established by IRSN and EDF both show that internal exposure at NPP is detected on a very limited number of worker (~200) compared with the number of workers monitored (~38000).
  From the regulatory point of view sometimes to prevent internal contamination, protective equipment is used that slow the work incurring in higher external doses. The RP handbook includes reference level for the uses of respiratory protection.

Find attached a copy (in French) of ministerial orders dated May 15,2006 and October 26, 2005

Do you have some additional topics, which you would like to discuss during the RB meeting: No