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 x
The information can be used only in the RB meeting

COUNTRY AND REPRESENTATIVE IDENTIFICATION

- **Country**: **Spain**
- **Name of the Regulatory Body: Nuclear Safety Council**
- **Name and post of the person(s) who fill in the questionnaire: Olvido Guzmán. Occupational Radiation Protection 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, give a short description of the content of references.
    Royal Decree 783/01 **http://www.csn.es/descarga/rpsri.pdf** . This document include provisions for the following topics related to contamination control:
    - Definition and types of contamination: Annexe I
    - Area classifications: Art. 15, Art. 17, Art. 18
    - Contamination control during pregnancy: Art. 10 and 12
    - Use of personal protective equipment and adequate detectors: Art. 18
    - Radiological surveillance: Art. 26
    - Individual surveillance: Art. 27, Art. 28, Art. 29, art. 30
    - Medical surveillance: Art. 40, Art. 42
  - Does your legislation specify reference levels for contamination? NO for the legislation on occupational RP. Transport legislation specify levels for packages.

- **Reference contamination levels on official documents**
  - Does some official document of the licensee specify levels for contamination? YES.
  - If so specify the document.
    The so-called “Radiation Protection Manual (RPM)” The RPM is a document reflecting the practical implementation of the licensee responsibility for radiation protection through the adoption of management structures, policies, plans, training, procedures and other measures developed and implemented to achieve continuing compliance with the legislation in force and to apply the ALARA principle.

    The Spanish legislation on Licensing of Nuclear and Radioactive Facilities (Royal Decree 1836/99, Art. 20) requires submission and approval of “Radiation Protection Manual (RPM)” in the licensing process of a Nuclear Power Plant (NPP).
  - Are the reference levels for contamination in NPP the same for all NPPs in your country?
    YES. Since 2002 when a generic document was produced by a consensus between utilities and the CSN based on homogeneous and coherent radiological criteria to be used by the facilities as a guidance to produce their respective Radiation Protection Manuals. This document included harmonised reference levels to comply with the legislation in force.

- **Contamination control in controlled or supervised areas in NPPs**.
  - How many controlled area categories could exist on NPP site? In Spain, there are 4 categories for controlled areas inside NPP and one for the supervised area on the NPP site. See table 1.

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- 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) In Spain, all NPPs have the same levels for the maximum contamination (superficial and atmospheric) allowed in controlled areas, which are specified in table 1.

- 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 external contamination in passing zones

  Basic measures to control contamination are established in the legislation. General requirements on these measures are specified in the Radiation Protection Manual (official document). More specific requirements may be decided by the licensee.

- Does your legislation or approved documents include requirements about the monitoring program? YES. Which document? The Radiation Protection Manual. 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 RPM or in the procedures that develop the RPM. 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 qualifies personnel. Average surface for surface contamination is 300 cm^2.

- **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 RPM.

  - Which requirements?
    In Spain the are reference levels for :
    - clothes in contact with the skin
    - clothes worn above the previous masks
    - reuse of respiratory equipment.

  - 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. Their values are specified in table 3.

  - Is it allowed to enter controlled areas with street clothes? YES. In one plant in Spain, depending on the type of work to carry out, it is allowed to enter controlled areas in street clothes as long as there is a proof of lack of contamination in the area.

  - Is it allowed to wear protective clothes outside controlled areas on the NPP site? YES, for some plants, requiring previous control of contamination.

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- **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? The RPM. If affirmative, provide reference levels: 0.4 Bq/cm^2 for removable contamination and 4 Bq/cm^2 for fixed contamination.
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- **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? Royal Decree 783/01 **http://www.csn.es/descarga/rpsri.pdf** and the Radiation Protection Manual

  - Which requirements?
    - Internal dosimetry of exposed workers: Art. 27 and 28
    - Contamination control during pregnancy: Art. 10 and 12

  - 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 must be 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 …)? See Table 4.

- **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? Royal Decree 783/01 **http://www.csn.es/descarga/rpsri.pdf**.

  - Which requirements?
    - Requirements for assessing internal dosimetry in case of risk of contamination.
    - Requirements for the type of dosimetry
    - Requirements for registration of doses

  - What is the triggering level of contamination to carry out an assessment of skin dose? The reference level set up for skin contamination averaged on 100 cm^2 is 4 Bq/cm^2 for β-γ emitters. In case α emitters have to be measured, the reference value would be 0,4 Bq/cm^2.This level applies for contamination that cannot be removed by the hot showers.

  - What is the maximum level allowed for personal contamination at the exit of the controlled area: 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.

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

- **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 Spain there is a great aversion to internal dose. 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 RPM includes reference level for the uses of respiratory protection.

Do you have some additional topics, which you would like to discuss during the RB meeting: the CSN would be interested in knowing how other countries deal with:

- Hot particles control
- Calibration sources for contamination instrumentation
- Control of reusable material at the exit of controlled areas

TABLES

Table 1 Maximum contamination levels allowed in controlled areas

	FREE ACCESS	SUPERVISED	CONTROLLED			
			FREE PERMANENCE	LIMITED PERMANENCE	RESTRICTED PERMANENCE	PROHIBITED ACCESS
DR	< 0,5 µSv/h (1)	< 3 µSv/h	< 25 µSv/h and	< 1 mSv/h and	< 100 mSv/h and	>100 mSv/h or
AC		<0,4 Bq/cm^2 β/γ < 0,04 Bq/cm^2 α Averaged on 300 cm^2	< 4 Bq/ cm^2 β/γ < 0,4 Bq/ cm^2 α, Averaged on 300 cm^2 and	<40 Bq/ cm^2 β/γ < 4 Bq/ cm^2 α, Averaged on 300 cm^2 and	< 400 Bq/ cm^2 β/γ < 40Bq/ cm^2 α, Averaged on 300 cm^2 and	>400 Bq/ cm^2 β/γ Ó > a 40 Bq/ cm^2 α, Averaged on 300 cm^2 or
SC			< 0,1 DAC	< 1 DAC	< 10 DAC	> 10 DAC

Dose Rate (DR), Airborne Contamination (AC) and Surface contamination (SC):

(1) Exceptionally, in those areas were restriction of access in not efficient higher dose rates can be allowed provided that the dose rate is always lower than 2,5 µSv/h. Nevertheless, these areas will be subjected to an administrative radiological control.

Table 2 Reference levels for contamination in controlled areas

		CONTROLLED AREA	SUPERVISED AREA	FREE ACCESS AREA
DR	RL	3µSv	0,5 µSv	0,5 µSv
	IL/IL	THE HIGHEST DOSE RATE VALUE WHICH DEFINES THE AREA		
SC	RL	4 Bq/cm^2 β/γ and 0,4 Bq/cm^2 α	0,4 Bq/cm^2 βγ and 0,04 Bq/cm^2 α	0,4 Bq/cm^2 β/γ and 0,04 Bq/cm^2 α
	IL/IL	THE HIGHEST SURFACE CONTAMINATION VALUE WHICH DEFINES THE AREA		
AC	RL	< MDA (< 0,05 DAC for β/γ radiation)		
	IL/IL	THE HIGHEST AIRBORNE CONTAMINATION VALUE WHICH DEFINES THE AREA		

RL: recording Level
IL/IL: Investigation/intervention Level

Table 3 Reference levels for contamination control of personal protective equipment

	CLOTHES IN CONTAC WITH THE SKIN		CLOTHES WORN ABOVE THE PREVIOUS ONES		REUSE OF RESPIRATORY EQUIPMENT	
EMMITERS	**β-γ and low toxicity α**	**Remainder α emmiters**	**β-γ and low toxicity α.**	**Remainder α emmiters**	**β-γ and low toxicity α**	**Remainder α emmiters**
FIXED CONTAMINATION	< 4 Bq/cm^2	< 0,4 Bq/cm^2	< 40 Bq/cm^2	< 4 Bq/cm^2	< 4 Bq/cm^2	< 0,4 Bq/cm^2

Table 4 Reference levels for internal dosimetry and skin contamination

	INTERNAL DOSIMETRY-	SURFACE CONTAMINATION (1)
		Skin dose due to skin contamination
RL	1 mSv/year (2)	4 mSv/month averaged on 1 cm^2
Inv. L	1 mSv/year	50 mSv/month
Int. L	5 mSv/year	450 mSv/year

RL: recording Level
IL/IL: Investigation/intervention Level

(1) The reference level set up for skin contamination averaged on 100 cm2 is 4 Bq/cm2 for β-γ emitters. In case α emitters have to be measured, the reference value would be 0,4 Bq/cm2..
(2) For those radioisotopes that, by virtue of their physical-biological characteristics, this value it is not compatible with the Minimum Detectable Activity of the measurement technique, the approach established for the recording of dose will be followed whenever activities higher than the MDA are measured.