

## **QUESTIONNAIRE TO THE REGULATORY BODY MEETING TURKU 2008**

### **INVITATION**

In conjunction with the 2008 ISOE Symposium, 25-27 June 2008, we are preparing a 3<sup>rd</sup> 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:** Lithuania
- ❑ **Name of the Regulatory Body:** Radiation Protection Centre
- ❑ **Name and post of the person(s) who fill in the questionnaire:** Vladimir Achmedov, Gintautas Balcytis

## REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

- ❑ **Legal framework on contamination control**
  - Does your legal framework have requirements on radioactive contamination control? If so, give a short description of the content of references.  
The general requirements of monitoring of workplaces, including contamination control of work places are described in Order No. 63 On the Procedure of Monitoring of Radiation Exposure and Workplaces (adopted on 16 October 2007). Hygiene Standard HN 87:2002 “Radiation Protection in nuclear facilities” adopted by the Order No. 643 on 17 December 2002 by the Minister of Health Care describes categories of controlled areas in Ignalina NPP. One of the categorization criterions is surface contamination levels (see table below).
  - Does your legislation specify reference levels for contamination?  
No, Lithuanian legislation don't specify reference levels for contamination. In Hygiene Standard HN 73:2001 “Basic Standard of Radiation Protection” adopted by the Order No. 663 on 21 December 2001 by the Minister of Health Care and some other legislation documents is written, that any licensee should establish reference levels applied in their facilities and these reference levels should be approved by the Radiation Protection Centre.
- ❑ **Reference contamination levels on official documents**
  - Does some official document of the licensee specify levels for contamination?  
Yes, INPP Radiation Protection Instruction specifies levels for contamination.
  - If so specify the document.  
INPP Radiation Protection Instruction. This document is approved by Radiation Protection Centre.
  - Are the reference levels for contamination in NPP the same for all NPPs in your country?  
There is only one NPP in Lithuania – Ignalina NPP (INPP).
- ❑ **Contamination control in controlled or supervised areas in NPPs.**
  - How many controlled area categories could exist on NPP site?  
In NPP controlled area could exist three categories of premises.
  - 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). The contamination levels are described in Hygiene Standard HN 87:2002 “Radiation Protection in nuclear facilities” and are presented in the table below.

## REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

	Categorie		
	I	II	III
Surface contamination of $\alpha$ particles, Bq·cm <sup>-2</sup>	>20	4–20	<4
Surface contamination of $\beta$ particles, Bq·cm <sup>-2</sup>	>266	40–266	<40
Aerosol volume activity, Bq·cm <sup>-3</sup>	>1110	185–1110	<185

- 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?

The NPP workers cannot enter or leave NPP without measuring of contamination. In the table below the reference levels for the aerosols and Iodine 131 are presented. These reference levels are described in the INPP Radiation Protection Instruction.

	Reference level, Bq·m <sup>-3</sup>
Short lived aerosols	$3,7 \cdot 10^2$
I-131	$1,1 \cdot 10^2$
Long lived aerosols	$0,8 \cdot 10^2$

- Does your legislation or approved documents include requirements about the monitoring program? Which document? What kind of requirements (periodicity, certificated instruments, exclusive performed by RP-personal with special education and training, averaging surface (volume, duration), registration and reporting)?

The requirements for monitoring of workplaces is described in Order No. 63 On the Procedure of Monitoring of Radiation Exposure and Workplaces (adopted on 16 October 2007). Specific requirements for monitoring of workplaces in INPP are also included in INPP Monitoring Schedule, approved by RPC. This schedule includes requirements of monitoring periodicity, monitoring instruments, type of monitoring and areas of INPP, which should be monitored, reference levels.

### □ Contamination control of personal protective equipment.

- Does your legislation or approved documents (company instructions) include requirements about contamination of protective personal equipment? Which document? The requirements for contamination of protective personal equipment (PPE) are included in INPP Radiation Protection Instruction.

- Which requirements?

It is prohibited to enter controlled area without PPE. It is used an extra PPE in a high contamination level works. The workers should undergo instruction before extra PPE will be used. If PPE is contaminated or damaged, the workers should get a clean and safe PPE. The PPE is changed every week.

- What are the reference levels for contamination of protective personal equipment?

The reference levels for contamination of protective personal equipment are described in the INPP radiation protection instruction and given in the table below.

	Surface contamination of $\beta$ particles, Bq·cm <sup>-2</sup>
Skin, towel	0,4
Underclothes, internal side of protective personal equipment (PPE)	0,4
External side of PPE, internal side of extra PPE	4
External side of extra PPE and footwear, which are used in controlled area:	
permanent presence in III categorie area	4
temporary presence in II categorie area	40
Extra PPE for the respiratory parts	
1. internal surface	0,4
2. external surface	4

## REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

The surface of the workers permanent presence area	4
The surface of the workers temporary presence area	40

- Is it allowed to enter controlled areas with street clothes?  
No, it is not allowed to enter controlled areas with street clothes.
- Is it allowed to wear protective clothes outside controlled areas on the NPP site?  
No, it is not allowed to wear protective clothes outside controlled areas on the NPP site.

□ **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? Which document? If affirmative, provide reference levels: INPP radiation protection instruction include requirements about levels of contamination allowed for reusable working material at the exit of controlled areas.  
The reference levels are provided in the table below.

Contaminated object	β contamination, Bq·cm <sup>-2</sup>		Dose rate of γ-ray, μSv/h, R=0,1 m	
	Removable contamination	Not removable contamination		
Working material, equipment	Not allowed	0,4	0,6	
Transport	Not allowed	0,4	0,6	
Special vehicle for transportation of radioactive waste			Not allowed	0,6    0,6
Surface of radioactive waste container, which is used for transportation of radioactive waste to storage facility	4,0	Not regulated	Not regulated	

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

- Does your legislation or approved documents include requirements about internal contamination of occupational exposed persons? Which document?  
Hygiene Standard HN 73:2001 “Basic Standard of Radiation Protection” and Hygiene Standard HN 112:2001 “Requirements for Monitoring of Internal Exposure” adopted by the Order No. 389 on 17 July 2001 by the Minister of Health Care.
- Which requirements?  
According to the Hygiene Standard HN 73:2001 “Basic Standard of Radiation Protection”, licensee shall identify workers which have a risk of internal exposure and organize their individual monitoring with the aim of assessment of their internal exposure according to the order defined by legal acts. Hygiene Standard HN 112:2001 “Requirements for Monitoring of Internal Exposure” includes requirements of monitoring of internal contamination, monitoring program planning requirements, radionuclides and analysis results assessment requirements.
- What are the methods and criteria for assessment of internal doses?  
The Hygiene Standard HN 112:2001 describes direct and indirect monitoring. Direct monitoring include whole body radionuclide activity measuring. Indirect monitoring include blood, urine and other physical specimens tests. This document includes a formula, which shows the necessity of monitoring.

$$d_j = (A_j \cdot e(g)_{j,inh} \cdot f_{fs} \cdot f_{hs} \cdot f_{ps}) / 0,001,$$

$A_j$  – j radionuclide activity (Bq), all other coefficients are given in Hygiene Standard HN 112:2001.

$$D = \sum d_j.$$

If D is 1 or more, monitoring is necessary.

- What are the reference levels for internal doses (please give examples for typical nuclides, allowed averaging volume or surface or ...)?  
Reference level for internal dose in INPP (for application of regular internal monitoring) is 0,1 mSv.

## REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

### □ Estimation of effective dose from external contamination. Skin doses

- Does your legislation or approved documents (company instructions) include requirements about contamination of skin? Which document?

Yes, the Hygiene Standard HN 73:2001 "Basic Standard of Radiation Protection" includes requirements for contamination of skin.

- Which requirements?

Annual equivalent dose limit for the skin – 500 mSv (for workers). This limit shall be applied to the average dose over 1 cm<sup>2</sup> of the most highly irradiated area of the skin.

- What is the triggering level of contamination to carry out an assessment of skin dose?

The triggering level of contamination to carry out an assessment of skin dose is 0,4 Bq·cm<sup>-2</sup>.

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

The maximum level for personal contamination at the exit of the controlled area for skin, towel is 0,4 Bq·cm<sup>-2</sup>, for underclothes, internal side of protective personal equipment (PPE) – 0,4 Bq·cm<sup>-2</sup>, for external side of PPE, internal side of extra PPE – 4 Bq·cm<sup>-2</sup>.

How contamination is measured in 1 cm<sup>2</sup>? For discussion in plenary session.

The contamination in INPP is measured up with body contamination control system RTM 860, body contamination control system PMW-3e.

### □ 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.

The risk assessment depends on the type and conditions of work. Decisions concerning the risk of internal or external contamination are taken by qualified radiation protection officers in INPP and if necessary with consultations of Radiation Protection Centre or other experts. But of course, we agree that the question (also the previous one) can be discussed during the meeting.