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**: **Belgium**
- **Name of the Regulatory Body: Federal Agency for Nuclear Control**
- **Name and post of the person(s) who fill in the questionnaire:**
  Jean-Philippe Guisset – Inspector, Base Nuclear Installations

REGULATORY CONTROL ON CONTAMINATION MANAGEMENT IN NPP

- **Legal framework on contamination control**

  - Does your legal framework have requirements on radioactive contamination control?
    YES, however limited
    If so, give a short description of the content of references.
    Royal Decree (20/07/2001)
    http://www.fanc.fgov.be/CWS/GED/pop_View.aspx?LG=1&ID=528
    - Definition and types of contamination: art. 2
    - Contamination during pregnancy (information and exclusion): art. 20.1.1 and art. 25
    - Radiological surveillance: Art. 23.1 10°
    - Dose determination: art. 21
    - Medical surveillance: art. 24
    - Isolation from other rooms and technical requirements: art. 27.4, art. 29.4 and 30.2
    - Use of personal protective equipment: art. 27.4, art. 30.3
    - Signalisation: art. 31.3
    - Decontamination: art. 68

    Royal Decree (25/04/1997)
    - Dose registration and medical surveillance

  - Does your legislation specify reference levels for contamination?
    NO for the legislation on occupational RP.
    Transport and waste legislation specify levels for packages.

- **Reference contamination levels on official documents**

  - Does some official document of the licensee specify levels for contamination? If so specify the document.
    The Safety Analysis Report specifies contamination levels or refers to procedure to be set up by the licensee. By including a reference to the Safety Analysis Report in the license, the SAR is considered a legally based document, which has to be enforced. There is a procedure for levels of contamination on floors and fixed equipments, on portative equipments, on protective equipments and during specific workshops. The procedure is “Control of surface contamination in the RCA”.
  - Are the reference levels for contamination in NPP the same for all NPPs in your country?
    Yes.

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

  - How many controlled area categories could exist on NPP site? 5
  - 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).

There are 3 categories of contamination levels within the controlled area: < 0.4 Bq/cm2, between 0.4 and 4 Bq/cm2 and > 4 Bq/cm2 (beta/gamma contamination).
There is no specific level for alpha contamination into the controlled area. As the ratio between beta contamination and alpha contamination is always very high(>>100), the beta contamination level requirement ensures a very low alpha contamination level.
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?
Royal Decree (20/07/2001) art. 27.4: general requirement for contamination prevention: the zone must be adequately designed and furbished taking into account the radioactive substances being present and the activities to be done.
Following licensee's procedures, all workers must have a training before entering into the controlled area. During this training, they are explained how using the protective equipments. Documents explaining the characteristics of protective equipments are available. A procedure defines the required protective equipments to be worn during the work: “Working clothes at TNPP”.
For workshops with a high risk of spreading contamination, separated working areas are defined: working area, access area and an area to put on protective equipments. Different types of protective actions are taken depending on the risk of spreading contamination (welding, …)

- 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)?
  Royal Decree (20/07/2001) art. 23.1 10° states that the determination of contamination and doses are the competence of the Health Physics department in consultation with the occupational physician. Both have a license and a special education and training.
  The controls of contamination within the RCA is made with these frequencies:
  - minimum once a day for workshops with risk of contamination;
  - once a week for corridors and rooms with transit;
  - once a month for other rooms.
  It can be made more frequently, depending on specific risk assessments.

❑ **Contamination control of personal protective equipment.**

- Does your legislation or approved documents (company instructions) include requirements about contamination of protective personal equipment? Which document? Which requirements?
  Royal Decree (20/07/2001) art. 30.3: requirement to periodically control protective personal equipment (ppe) for contamination and effectiveness and to decontaminate them as needed.
  A licensee's procedure ("Work organisation at the laundry") defines:
  - actions in function of radiation level of contaminated ppe:
    < 20 µSv/h = cleaning, 20 to 200 µSv/h = decay storage; > 200 µSv/h = waste
  - allowed contamination of cleaned ppe (1, 6 or 12 Bq/cm^2 in function of type garment).
  What are the reference levels for contamination of protective personal equipment?
  The Safety Report §12.5 refers to procedures to be set-up by the licensee.
  The reference levels for fixed contamination on protective personal equipments into the RCA are:
  - 12 Bq/cm2 for shoes;
  - 6 Bq/cm2 for gloves and overalls;
  - 1 Bq/cm2 for respiratory masks.
  No transferable contamination is tolerated (<0.4 Bq/cm2)

- Is it allowed to enter controlled areas with street clothes? Is it allowed to wear protective clothes outside controlled areas on the NPP site?
  NO - Royal Decree (20/07/2001) art. 30.3: requirement to wear appropriate protective clothes identified in function of the activity level and prohibition to wear them outside the controlled zone.

❑ **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:
  Royal Decree (20/07/2001) art. 68: forbid to re-use materials before they are decontaminated to a level deemed non dangerous, this article actually intend exceptional situations.
  The Safety Report §12.5 refers to procedures to be set-up by the licensee.
  The levels of contamination for materials before exiting the controlled area are 0.1 Bq/cm2 for alpha contamination and 1 Bq/cm2 for beta contamination.

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

- Does your legislation or approved documents include requirements about internal contamination of occupational exposed persons? Which document? Which requirements?
  In the two Royal Decrees (20/07/2001 and 25/04/1997), the dose estimation from contamination are not distinctly treated from external dose estimation. The requirements are to be set by analyse of the Health Physics department. The effective dose coefficients are explicitly defined in art. 21 of the Royal Decree (20/07/2001).
- What are the methods and criteria for assessment of internal doses?
  The beta/gamma monitors that control the non–contamination of workers before exiting the controlled area (IPM9 in Tihange NPP) are able to detect internal contamination at a very low level. If there is a suspicion of internal contamination at the IPM9, the worker involved is then controlled in an anthropo – gammametry system. The identified isotopes and the dose factor for each isotope (Sv/Bq) are taken into account to calculate the internal dose (on a 50 years time span).
- What are the reference levels for internal doses (please give examples for typical nuclides, allowed averaging volume or surface or …)?
  We didn't have any internal contamination's case since 2001. The isotope detected is generally Co60 (several thousand Bq).

❑ **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? Which requirements?
  The Safety Report §12.5 refers to procedures to be set-up by the licensee.
  The level of contamination for skin before exiting the controlled area is 1 Bq/cm2.
  For the level of fixed contamination on the overalls into the controlled area, a study was made to ensure that the level of contamination didn't lead to an excessive skin dose.
  The procedure treating of this point is "Control of surface contamination in the RCA".
- What is the triggering level of contamination to carry out an assessment of skin dose?
  There is no triggering level such as this in Tihange NPP.
- What is the maximum level allowed for personal contamination at the exit of the controlled area?
  It is 1 Bq/cm2 in beta-gamma isotopes.

- How contamination is measured in 1 cm^2? <u>For discussion</u> in plenary session.
  If somebody is detected "contaminated" at the IPM9, small probes are used to search more precisely the localisation of the contamination on the skin.
  X (countrate in cps) = S (surface in cm2) x L (level in Bq/cm2) x R (rate of detection of the probe in %) x 0.8 (transmission rate of the probe).
  The measurement is averaged on a 300 cm2 surface.

❑ **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? <u>For discussion.</u>
  The internal risk is the first to take into account but the external risk may also be important, depending on the equipment that is concerned. To explain a bit more: if there is a contamination risk we shall always require to put protective equipment (mask…) even if this can lead to a little increase of the dose.

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