3rd Meeting of EPReSC

29 November - 1 December 2016

Agenda Item 5.3
EPR Series publications under development:
Operational intervention levels for radiological emergencies
and methodology for their derivation
[EPR-RAD-OILs]

- For information -

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Overview of the presentation

- Refresher on operational criteria and OILs
- Refresher and update on the EPR-NPP-OILs publication (agenda item 7.2 of the 2nd EPReSC meeting)
- Main differences between the EPR-NPP-OILs and the EPR-RAD-OILs publications
- EPR-RAD-OILs publication:
  - Basis
  - Objectives
  - Scope
  - Structure
  - Content
  - Current status
- Next steps
Refresher
(Operational criteria)

GENERIC CRITERIA

- Conditions on-scene
- Abnormal facility conditions
- Field and laboratory measurements

Observables/Indicators
Emergency Action Levels (EALs)
Operational Intervention Levels (OILs)

ACTIONS
Operational Intervention Levels (OILs) are operational criteria that allow the prompt implementation of protective actions and other response actions on the basis of monitoring results that are readily available during a nuclear or radiological emergency.

Default OIL value exceeded

Response action

Example:
For a LWR emergency, relocate at > 25 μSv/h ambient dose equivalent rate at 1m above ground level
Refresher and update
(EPR-NPP-OILs - Agenda item 7.2 of the 2nd EPReSC meeting)

- Approved by the IAEA Publications Committee and in the final steps of publication
- During the 2nd EPReSC Meeting the following was discussed:
  - Basis
  - Objectives
  - Scope
  - Structure
  - Content
  - Innovations
  - Current status
  - Follow up actions / Next steps
Follow up actions / next steps:

• Integrate the guidance and tools into the assessment and prognosis arrangements of IAEA’s Incident and Emergency System (IES)  
  ↩️ Ongoing (Technical Meeting to Review the IAEA’s Assessment and Prognosis Procedures for Nuclear and Radiological Emergencies)

• Provide training to Member States:
  • Pilot interregional training course 3 - 7 October 2016 in Vienna (J3-TR-53338)  ↩️ Implemented (33 participants from 24 Member States)
  • Regional training course planned for May 2017 in Japan  ↩️ Under preparation
  • In addition: Training material associated to the EPR-NPP-OILs pub. expected to be published in 2017.
Follow up actions / next steps (cont.):

- On the basis of the EPR-NPP-OILs publication develop further guidance for:
  - **Radiological OILs** (issuance of an additional EPR Series publication)
  - **OILs for other reactor types** (issuance of additional annexes)
  - **OILs for the new generic criteria** in GSR Part 7 (issuance of additional annexes):
    - Vehicles, equipment and other items
    - Food and other commodities traded internationally
    - Enabling a transition to an existing exposure situation
Main differences
(Between the EPR-NPP-OILs and the EPR-RAD-OILs pubs.)

• **Scope:**
  – EPR-NPP-OILs → Reactor emergencies
  – EPR-RAD-OILs → Radiological emergencies

• **Why do we need a separate publication?** Due to:
  – The intention to provide a detailed technical basis, in combination with,
  – significant differences in the:
    • Protection strategy
    • Monitoring strategy
    • Radionuclides and radionuclide mixes
    • Public behaviour
    • Behaviour of the radionuclides
    • Exposure scenarios
    • Instrument response
    • Other operational considerations

• **Will include OILs for the “new” generic criteria of GSR Part 7:**
  – Vehicles, equipment and other items
  – Food and other commodities traded internationally
  – Enabling a transition to an existing exposure situation
Basis for the publication (Requirements)

The IAEA Safety Standard Series No. GSR Part 7 in § 4.28 (4) requires that:

“Once the protection strategy has been justified and optimized and a set of national generic criteria has been developed, pre-established operational criteria (conditions on the site, emergency action levels (EALs) and operational intervention levels (OILs)) for initiating the different parts of an emergency plan and for taking protective actions and other response actions shall be derived from the generic criteria.”
Basis for the publication (Justification)

OILs are addressed in Safety Standards, as well as in EPR-Series publications and Technical Documents. However, no detailed guidance on how to derive the OILs has been published.

Need for a new EPR Series publication describing the methodology in detail.
Basis for the publication
(Relationship with other EPR publications)

- GSR Part 7
  - Establishes the requirement for OILs
- GSG-2 and GS-G-2.1
  - Provide recommendations and guidance on the use of OILs and selected examples
- TECDOC-955, EPR-NPP Public Protective Actions, EPR-Medical
  - Provide practical considerations on the use of OILs and selected examples
- Draft EPR-NPP-OILs and planned EPR-RAD-OILs
  - Will provide the methodological foundation
Objectives of the publication

1. Assist IAEA Member States in meeting para. 4.28 (4) of the IAEA Safety Standard Series No. GSR Part 7.

2. Contribute to the harmonization of national criteria for response actions (a need emphasized by the 55th and 56th IAEA General Conference in resolutions GC(55)/RES/9 and GC(56)/RES/9).

3. Provide a solid methodological foundation for:
   - existing OILs;
   - revising the existing OILs; and,
   - developing further OILs in a systematic, consistent and defensible way.
Scope of the publication

- Addresses OILs for a radiological emergency (as defined in para. 2.1. of GS-G-2.1) for the monitoring of:
  - The ground (OIL1, OIL2 and OIL3)
  - The skin (OIL4)
  - Food, milk and drinking water (OIL5, OIL6, OIL7)
  - The thyroid (OIL8).
  - Vehicles, equipment and other items (OIL?).
  - Food and other commodities traded internationally (OIL?).
  - Enabling a transition to an existing exposure situation (OIL?).
Structure of the publication

• Four main sections:
  • **Section 2**: Practical information regarding the use of the OILs
  • **Section 3**: Explanation of the methodology for deriving the OILs
  • **Section 4**: Spreadsheets for calculating the OILs
  • **Section 5**: Revision of the default OIL values

• One Appendix: Relationship with other IAEA publications
• One CD: Spreadsheets
Content (Section 2)

- **"OIL charts"**: a practical tool for using the default OIL values during the response to an emergency.

- Important practical information for using the OILs and making recommendations on warranted response actions.
Detailed explanation of the methodology for deriving the default values (most valuable section).
Content
(Section 4 and CD)

Description of the **spreadsheets** used to calculate the default OIL values (included in the attached CD to facilitate the revision of the OILs).
• General considerations concerning the revision of the default OIL values to take into account different underlying assumptions or another methodological approach than the one used by the IAEA.

• Instructions for adapting the default OIL value provided for the beta count rate from activity on the skin to a specific instrument.
Current status

- Document preparation profile (DPP) **approved** by the IAEA Coordination Committee

- J3-CS-54064 Kick-off meeting for the development of the EPR-RAD-OILs publication, planned for 3-6 May 2016, Vienna

- Started initial drafting and calculations by the IEC
Next steps

• Complete initial draft and calculations (approx. + 6 months)
• Quality assurance of the data and calculations and revision of draft by selected external experts (approx. + 3 months)
• Implementation of feedback (approx. + 3 months)
• Internal clearance processes and publication (approx. + 1 year)
Thank you!

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