Agenda Item: NRW6.3

DS427: A general framework for prospective radiological environmental impact assessment and protection of the public

(original title in the DPP: Radiological Environmental Impact Assessment for Facilities and Activities)

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Waste and Environmental Safety Section/ NSRW
Objectives of the presentation

• To present the consideration of comments to DS427 version Nov. 2014 by Secretariat.
• To discuss the essential comments not accepted (and receive advice from Committee).
• To discuss next steps.
Comments received: DS427, version April 2014

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- 198 comments were accepted.
- Tables of Resolutions and new version of DS427 uploaded to Web (November 2014).
Comments received: DS427, version Nov. 2014

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Will eventually result in a well improved version!
Increased scope definition.
Improved interrelation with other Safety Standards.
Increased simplicity/clarity to the potential exposures and flora and fauna sections.
Reduction of superfluous information.
Less redundancy.
Terminology, editorial and style improvement.
Essential comments to be discussed

**General**
1. Need of a new structure (to separate small/simple from nuclear installations).
2. Provision of different possibilities (flexible) versus more prescriptive approach.
3. Provision and use of criteria versus non-criteria.
5. Radiological Environmental Impact Assessment (REIA) in the framework of Safety Assessment.

**Specific**
6. Inclusion of direct radiation.
7. Optimization (in Safety Assessment and in Setting Discharge Limits versus in REIA).
8. To much details in the section of protection of flora and fauna versus generic simple assessment.
9. Use of the criteria (bands) for plants and animals (lower boundary versus upper boundary)
1. Need of a new structure (to separate small/simple from nuclear installations).

- The framework for radiological environmental impact assessment is intended to be general.
- Current structure have existed for a while.
- Pros of the current approach:
  - Is an explicit application of the ‘graded approach’ requirement.
  - Avoids repetitions on the description of the methodologies.
  - Give the message that: despite in different ways, normal and potential exposures must be considered in all kind of activities facilities.
- Cons of the current approach:
  - Interferences of the way the assessments are recommended for small versus nuclear activities/facilities.

Conclusion by Secretariat:
Leave this discussion to Secretariat once all the issues are sorted out and agreed!

Agreed by WASSC
2. Provision of different possibilities (flexible) versus more prescriptive approach.

- For radiological impact assessment to representative person (normal; potential):
  - This is justified by the complexity and diversity of the options for management of environmental issues and the characteristics of different activities and facilities.
  - Flexibility in location, habit data, environmental dispersion conditions (conservative set versus realistic set), environmental transfer parameters (single values, versus distribution) application of countermeasures is an usual practice in radiation protection of public.
  - Generic (cautious) approach versus more detailed realistic approach is justified on ‘graded approach’ and availability of information.
  - To enable consistency with already existing national approaches and regulations.
  - Already agreed by WASSC/RASSC.

Conclusion by Secretariat:

Keep it flexible!
3. Provision and use of criteria versus non-criteria.

- DS427 provides criteria and discussions on the use of criteria for: dose constraint; risk constraint; ranges of acceptable doses in connection with countermeasures, criteria for flora and fauna.
- Some of these criteria are mentioned in Requirements (dose constraint and risk constraint) but are not all specified.
- Criteria are needed for an assessment (evaluation).
- Criteria are needed to support decisions.
- DS427 proposes criteria based on ICRP (potential exposures and flora & fauna) and INSAG (potential exposures).
- Criteria are mentioned since DPP and DS427 must provide guidance.

Conclusion by Secretariat:

Keep criteria in DS427!

Agreed by WASSC, with the caveat that the criteria which is neither mentioned nor defined in the Requirements should go to an Annex (e.g., criteria for flora and fauna).

- SF-1 and GRS Part 3 include ‘safety objectives’ and ‘requirements’ on protection of the environment (but, despite BSS discuss the issue, it does not include ‘requirements’ on explicit protection of flora and fauna).
- ICRP produced a sound and practical approach to assess protection of the environment, and IAEA proposes in DS427 a generic and even simpler approach based on ICRP, consistent with other existing approaches in Member States. This approach does not produce an additional burden to operators and regulators.
- The Secretariat and other international organizations (UNSCEAR, UNEP, IUR, EC, NEA) have endorsed the use of ICRP approach, particularly for planned exposures situations.
- UNEP (co-sponsor of GSR Part 3) is considering co-sponsoring DS427 as it is.

Conclusion by Secretariat: After discussions during WASSC meeting, it is appropriate that the guidance on flora and fauna is moved to an Annex in DS427.

WASSC decided that the methodology and criteria (based on ICRP) presented in the Section on assessment of the protection of flora and fauna must go in an Annex (and not in the main text).
5. Radiological Environmental Impact Assessment (REIA) in the framework of Safety Assessment

- REIA is presented on DS427 as a standalone framework, which can be used in a decision (EIA) or a (regulatory) authorization processes (terminology will be revised).
- **Safety Assessment** is also part of a (regulatory) authorization process and is a wider and overarching framework.
- REIA is not Safety Assessment, but is part of Safety Assessment. Other IAEA Safety Guides give recommendations on Safety Assessment and DS427 is compatible with those.
- DS427 ‘serves’ to Safety Assessment Safety Guides (e.g., DS427 provides more detailed guidance).
- A REIA must be considered as the input for **Setting Discharge Limits** (GSR Part 3).

Conclusion by Secretariat: The guidance provided by DS427 is compatible with those other frameworks and processes, and there is not overlapping or inconsistencies.

Agreed by WASSC, with the caveat that the relation of DS427 and Safety Assessment Guidance should be clearly explained in the Scope of the document.
6. Inclusion of direct radiation

- Some activities and facilities can produce direct exposure to public which may be identified as representative persons for the assessment.
- In those cases, the radiological impact of these direct exposures should be included.

Conclusion by Secretariat: Direct irradiation may be necessary to include in a radiological environmental impact assessment and should be kept mentioned in DS427
7. Optimization (in Safety Assessment and in Setting Discharge Limits versus in REIA).

- REIA may be part of Safety Assessment in a (regulatory) authorization process; REIA must be an input for of Setting Discharge Limits in a (regulatory) authorization process.
- Safety Assessment process/Safety Case includes optimization of safety, workers protection and public protection, mostly at the design stage.
- Setting Discharge Limits process includes also an additional optimization of public protection, once the activity or facility is built, just before authorizing the operation.

Conclusion by Secretariat: Optimization is done, first, in the wider framework of Safety Assessment/Safety Case and afterward, during the Setting of Discharge Limits. It should not be discussed when doing ‘only’ a REIA, which does not include all the necessary elements for optimization.

Agreed by WASSC, with the caveat that the relation of REIA and the Optimization Process in the Safety Assessment Guidance must be clearly indicated in DS427.
8. To much details in the section of protection of flora and fauna versus generic simple assessment

- Actually, the proposal in DS427 for protection of flora and fauna is very generic and simple. There is a bit of additional informative discussions, because it is a relatively new approach.
- The proposed generic/simple approach is advisable for most exposure scenarios related to normal operation of activities and facilities.

Conclusion by Secretariat: Despite some descriptions can still be simplified, there is a need of some details in the definition of the approach to protect flora and fauna proposed in DS427, because it is a new topic and its advisable to provide correct guidance.

Agreed by WASSC, with the caveat that all these information (methods and criteria based on ICRP) and discussions will be in the Annex and not in the main text.
9. Use of the criteria for plants and animals (lower boundary versus upper boundary)

- ICRP approach (to assess radiological impact to flora and fauna) provides criteria, in the form of bands of dose rates to reference animal and plants (the Derived Consideration Reference Levels: DCRLs).
- ICRP 124 explains the use of the bands.
- DS427 simplifies ICRP approach by defining a cautious generic exposure scenario and a conservative use of the criteria (bands).
- Using the lower boundary of the DCRLs bands in combination with the cautious exposure scenario is correct and does not impose a burden to the operation of facilities and activities.

Conclusion by Secretariat: with the assessment methodology proposed by the IAEA in DS427, based on ICRP 108 and 124, it is advisable to use, for simplicity and precaution, the lower boundary of DCRLs bands.

Agreed by WASSC, with the caveat that all these information (methods and criteria based on ICRP) and discussions will be in the Annex and not in the main text.
Next steps

- Incorporation of comments: New version of DS427 (before end of the year).
- Technical/editorial review by Safety and Security Coordination Section (Publications Unit) (early 2015)
- Ready for submission to MS (if permitted by Committees: Feb/March 2015).
- Consideration/incorporation of inputs from MS/Internal approvals (May to August 2015).
- Submission to SSAC for approval for publication (August for the meeting November 2015).

Note: WASSC expressed that can approve in principle the document for submission to MS, subject to the amendments discussed, but stressing the importance of submitting the 3 documents together (DS432, DS427 and DS442).
Thanks!

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