39th Meeting of the Radiation Safety Standards Committee
40th Meeting of the Waste Safety Standards Committee

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Agenda Item RW7.1
- for discussion -

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NSRW

IAEA
International Atomic Energy Agency
Application of the Concepts of Exclusion, Exemption and Clearance

SAFETY GUIDE

No. RS-G-1.7
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Background

• RS-G-1.7 published in 2004 (prior to the publication of the Safety Fundamentals SF-1 and most of the current Safety Requirements in the waste safety and radiation safety areas)
• Covers aspects of relevance to radiation protection and management of radioactive waste
• Both the key related Safety Requirements documents, the BSS (radiation protection) and the decommissioning requirements (waste management), have been revised in the meantime (GSR Part 3 and GSR Part 6 published in 2014)
  • New concepts and definitions introduced (such as exposure situations)
  • Old concepts abandoned (exclusion)
• All these changes make the RS-G-1.7 outdated
Issues and Basis for Changes

- The concepts of exemption and clearance are now explained in the GSR Part 3
- The values of activity concentrations for radionuclides of artificial origin in bulk, derived using the exemption concept, and also used as values for unconditional clearance (Table 1 of the RS-G-1.7) are now included in the GSR Part 3
- This makes most of the current content of the RS-G-1.7 a repetition of the relevant parts of the GSR Part 3
- The main remaining part is the Section 5 on the application of the values, which contains less than 5 pages of guidance
- Such situation does not justify the continuation of the existence of the RS-G-1.7 in its current version
Issues and Basis for Changes

- There is a need to provide guidance on the clearance process
  - Establishment of national regulations
  - Planning of the clearance process, its organization and implementation
  - Technical and safety implications
  - Resources needed
- The issue of conditional (specific) clearance should be addressed in the Safety Standards as well
- Existing Standards do not address adequately
  - Clearance of liquid materials
  - Clearance of building structures on the basis of surface contamination measurements
Issues and Basis for Changes

- National and international trade of non-food commodities containing radionuclides with activity concentrations below the values provided in Tables 1 and 2 of RS-G-1.7 should not be subject to regulatory control for the purposes of radiation protection.
- Values in the Tables 1 and 2 are established on the basis of the 10 µSv annual effective dose criterion.
- Req. 51 of the GSR Part 3 requires that an annual effective dose to the representative person does not generally exceed a value of about 1 mSv.
- RS-G-1.7, para 5.9: for commodities a confirmation should be obtained at the first point of entry into trade that these values are not exceeded (dose criterion only is not practicable).
- Clear guidance is needed on the applicability of the values given in Tables 1 and 2.
- The revision of paragraphs 5.8 – 5.10 (Trade sub-section) is needed to align the guidance with the GSR Part 3.
Affected Sections of the Safety Standards

- The complete text of the RS-G-1.7
  - Sections 2 and 5 to be revised
    - 2. The Concepts
    - 5. Application of the values
  - Other sections to be deleted
    - 3. Basis for the Derivation of Activity Concentration Values
    - 4. Values of Activity Concentrations
Identification and Analysis of Alternative Approaches

- Three options discussed:
  - Option 1 - Separation of the waste (clearance) and radiation protection (exemption, commodities) aspects, development of two new documents
  - Option 2 – Revision, development of a single document to cover both aspects, values to remain unchanged
  - Option 3 – Complete revision, development of a single document to cover both aspects, exemption / clearance values subject to revision, values for clearance of contaminated surfaces and liquids to be developed
Identification and Analysis of Alternative Approaches – Option 1

• Separate the issues related to waste and to contaminated non-food commodities

• Suspend the RS-G-1.7 and start development of a new Safety Guide on Clearance of Material and Waste (title subject of discussion in WASSC)

• WASSC to be the leading Committee

• The Table 1 with the nuclide specific activity concentration values won’t be included in the new document and the values won’t be subject to any discussion and revision, as they are now included in the GSR Part 3

• The new Safety Guide will provide guidance on implementation of clearance of material and waste in the context of predisposal management of radioactive waste, decommissioning and environmental remediation
Identification and Analysis of Alternative Approaches – Option 1

- The new Safety Guide will cover regulatory, organizational, technical, safety and financial aspects of clearance, addressing the process and specific issues, such as:
  - Unconditional and conditional clearance
  - Clearance of liquid materials
  - Clearance of surface contaminated items and structures
  - Sampling, measurements
  - Use of scaling factors, averaging, uncertainties
  - Ensuring compliance with the values

- The new Safety Guide will also include details on the derivation of the values (from the SRS 44), and will provide examples of values for conditional clearance on the basis of typical scenarios (conventional landfill, incineration, metal melting)

- The details of the content will be elaborated in the DPP for the new Safety Guide
Identification and Analysis of Alternative Approaches – Option 1

- The radiation protection aspects related to contaminated non-food commodities (exemption related aspects) will be addressed in a separate publication (Safety Report) – RASSC electronic Working Group involved.

- RS-G-1.7 refers to the Safety Report SRS 44 on Derivation of Activity Concentration Levels for Exclusion, Exemption and Clearance as the main source of scenarios for evaluation.

- The SRS 44 does not contain scenarios related to international trade on non-food commodities but is more focused on waste exposure scenarios (Table 2, SRS no. 44).

- Thus the scenarios for calculations of activity concentrations in case of trade of non-food commodities should be re-visited separately from the Safety Guide on Clearance of Material and Waste.

- Option 1 is the preferred option for the Secretariat, it is considered a clear and straightforward revision process for both the waste and the commodities related aspects.
Identification and Analysis of Alternative Approaches – Option 2

• Start a revision of the document and include guidance on both waste and commodities related aspects in a single Safety Guide, but without discussing the existing exemption and clearance values, and without developing new values for liquids and for surfaces.

• The new document will focus on guidance with regard to processes and application of values.

• Second preference by the Secretariat.

• More complicated, as consensus is needed by the two communities dealing with waste and commodities.
Identification and Analysis of Alternative Approaches – Option 3

- Start a complete revision of the document and include guidance on both waste and commodities related aspects
- Existing exemption and clearance values will be subject to review and potential revision
- Surface specific exemption and clearance values, as well as values for liquids will be developed

- This option is demanding from the coordination point of view, as well as resource intensive (large number of experts to be involved, probably many meetings needed)
- There are large uncertainties about the achievement of consensus, having in mind the past challenges with the development and approval of RS-G-1.7
- The Secretariat does not recommend this option
Resources Impacted

- Estimation of the resources needed (for Option 1)
- Development of a new Safety Guide on waste related aspects (clearance)
  - 5 CS meetings (4 consultants x 5 days for each CS meeting)
  - 1 TM meeting (20 participants x 3 days)
- IAEA staff:
  - 1 Scientific Secretary – 12 weeks
  - 1 administrative assistant – 6 weeks
- Development of a new Safety Report on radiation protection aspects related to contaminated non-food commodities
  - 3 CS meetings (3 consultants x 3 days for each CS meeting)
  - 1 TM meeting (40 participants x 4 days)
- IAEA staff:
  - 1 Scientific Secretary – 24 weeks
  - 1 administrative assistant – 10 weeks
Recommendation

- The Secretariat recommends the Option 1
  - Suspend the RS-G-1.7
  - Start development of two new documents
    - Safety Guide on clearance of material and waste (WASSC)
    - Safety Report on radiation protection aspects related to contaminated non-food commodities (RASSC)
Thank you for your attention