Agenda Item RW6.1
Proposal to revise the safety guide “Application of the Concepts of Exclusion, Exemption and Clearance” (RS-G-1.7)
- For discussion -

Vladan Ljubenov (WES), Igor Gusev (RSM)
NSRW
Background

- Existing RS-G-1.7 (2004) based on the 1996 version of the BSS, issued prior to the publication of the Fundamental Safety Principles (SF-1)
- Basic information from RS-G-1.7 incorporated into the new BSS (GSR Part 3), much of the information in RS-G-1.7 is now redundant
  - Explanation of concepts, values
- GSR Part 3 introduced new concepts and definitions (exposure situations)
- GSR Part 3 does not expand upon the application of the concepts of exemption and clearance, but assumes that further guidance would be provided
- Need to provide guidance consistent with the revised BSS and other revised requirements (GSR Part 6)
- Need to address additional aspects (conditional clearance, exemption and clearance on the basis of surface contamination measurements)
In November 2015 RASSC and WASSC discussed the needs for its revision.

The Secretariat presented three options:

1. Separation of the waste (clearance) and radiation protection (exemption, commodities) aspects, through the development of two new documents;

2. Revision, development of a single document to cover both aspects with the values in the tables to remain unchanged;

3. Complete revision, development of a single document to cover both aspects, with exemption/clearance values subject to revision and values for clearance of contaminated surfaces and liquids to be developed.

Option 1 was suggested as the preferred one by the Secretariat.

Action: The Secretariat to prepare a detailed proposal and draft DPPs for the revision of RS-G-1.7.
New Safety Guide on Implementation of the Clearance Concept
- WASSC and RASSC
- Sci Sec V. Ljubenov

New Safety Guide on Application of the Concept of Exemption and Criteria for International Trade
- RASSC and WASSC
- Sci Sec I. Gusev
New Safety Guide on Implementation of the Clearance Concept

- Lead committee: WASSC
- Other committees: RASSC, TRANSSC
- Scientific secretary: V. Ljubenov, WES
New Safety Guide on Implementation of the Clearance Concept - Justification

• The RS-G-1.7 was based on an older version of the BSS
• Basic information from the RS-G-1.7 incorporated into the new BSS (GSR Part 3), much of the information in RS-G-1.7 is now redundant
• Information in RS-G-1.7 on application of clearance still relevant, but MS noted it should be expanded to provide more details on:
  – clearance process;
  – establishment of national regulations;
  – planning, organization and implementation;
  – technical and safety implications;
  – resources needed to implement the clearance process.
• RS-G-1.7 does not provide guidance on clearance of building and equipment based on surface contamination measurements, on clearance of liquids and gases and on conditional clearance

NEW SAFETY GUIDE IS NEEDED
New Safety Guide on Implementation of the Clearance Concept - Objective

- Provide detailed guidance on the application of the clearance concept for materials and buildings that are to be released from regulatory control.
- Guidance especially important for decommissioning - minimize radioactive waste to be disposed of.
- Guidance applicable to unconditional release of material for reuse or for conventional disposal during normal operation of a facility, and to other situations.
- Provide guidance on development of values for conditional clearance (reuse of material through recycling or other reuses).
- Exclusion and exemption won’t be addressed.
- Information presented will be applicable to facilities that use, manufacture, process or store radioactive material (NPPs, other nuclear fuel cycle facilities, research reactors, industrial plants, medical facilities, research facilities and accelerators, industries processing NORM).
New Safety Guide on Implementation of the Clearance Concept - Scope

- Clarification on the use of **terminology** - clearance vs. release;
- **Responsibilities** of the operator and the regulatory body;
- **All relevant steps in the clearance process**, including characterization, determination of the nuclide vector, measurement techniques, sampling, management of the process;
- Volumetric and surface specific criteria for **unconditional clearance**;
- Volumetric and surface specific criteria for **conditional clearance**;
- **Case by case approach** - for small quantities of material, or for other situations
  - where the assumptions for the generic derivation of clearance levels do not apply
  - for radionuclides for which clearance values are not given in GSR Part 3
New Safety Guide on Implementation of the Clearance Concept - Scope

- Considerations of clearance of liquids;
- Consideration of clearance of gases;
- Additional requirements for building materials containing naturally occurring RN;
- Considerations of averaging masses and averaging areas;
- Discussion of aspects of homogeneity and application of clearance levels to non-homogenous material;
- Discussion of derivation of unconditional clearance levels for radionuclides for which there are no values in GSR Part 3;
- Discussion of the independence of exemption levels and conditional clearance levels.
New Safety Guide on Implementation of the Clearance Concept - Scope

- This new Safety Guide will differentiate between:
  - Clearance and exemption, describing the concepts and the scope of this document and of the separate document on exemption and reference levels for commodities;
  - Clearance and discharges for gaseous and liquid releases;
  - Material that is eligible for clearance and material that is considered as part of existing exposure situations (commodities);
  - Clearance of materials and release of contaminated sites;
  - (Conditional) clearance and transport requirements.
New Safety Guide on Implementation of the Clearance Concept – Related publications

- Decommissioning of Facilities, General Safety Requirements, GSR Part 6 (GSR Part 6)
- Radiation Protection and Safety of Radiation Sources: International Safety Standards, General Safety Requirements Part 3 (GSR Part 3)
- Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities, draft Safety Guide DS452
- Decommissioning of Medical, Industrial and Research Facilities, draft Safety Guide DS403
- Monitoring for Compliance with Exemption and Clearance Levels, Safety Reports Series No. 67
- Derivation of Activity Concentration Values for Exclusion, Exemption and Clearance, Safety Reports Series No. 44
- The new Safety Guide on Application of the Concept of Exemption of Practices and Sources
- Regulatory Control of Radioactive Discharges to the Environment, draft Safety Guide DS442
New Safety Guide on Implementation of the Clearance Concept – Overview

1. Introduction
   Background, Objective, Scope, Structure

2. Regulatory framework for clearance
   2.1 General
   2.2 Responsibilities
   2.3 Organization
   2.4 Graded approach

3. Clearance of solid material
   3.1 General
   3.2 Characterisation of the material to be cleared
   3.3 Volumetric criteria for unconditional clearance
   3.4 Surface criteria for unconditional clearance
   3.5 Volumetric criteria for conditional clearance
   3.6 Surface criteria for conditional clearance
   3.7 Graded approach
   3.8 Case by case approach
   3.9 Monitoring programme
   3.10 Dilution
New Safety Guide on Implementation of the Clearance Concept – Overview

4. Clearance of liquid material
   4.1 General
   4.2 Application of the concept

5. Clearance of gaseous material
   5.1 General
   5.2 Application of the concept

Annexes on:

- Surface criteria for unconditional clearance
- Volumetric criteria for conditional clearance
- Surface criteria for conditional clearance
New Safety Guide on Implementation of the Clearance Concept – Production schedule

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New Safety Guide on Application of the Concept of Exemption and Criteria for International Trade

- Lead committee: RASSC
- Other committees: WASSC, TRANSSC
- Scientific Secretary: I. Gusev, RSM
New Safety Guide on Application of the Concept of Exemption and Criteria for International Trade - Justification

- RS-G-1.7 was published in 2004, prior to the publication of the Safety Fundamentals SF-1 and GSR Part 3.

- The concept of exemption in planned exposure situations and application of reference levels for existing exposure situations are explained in the GSR Part 3. This document also gives derived values for practical application.

- More generally, the main remaining part is Section 5 of RS-G-1.7 on the application of the values would need to be retained and further developed.

- There is also a need to provide guidance on the exemption process itself, ensuring consistency with what is contained in SSG-36 that addresses exemption specifically as it applies to consumer products.
New Safety Guide on Application of the Concept of Exemption and Criteria for International Trade - Justification

• General Conference: “to further develop a technical document on a harmonized framework for the current international standards relating to radioactivity in commodities.”

• It would appear that the generic values for the exemption and clearance of bulk material given in the BSS would be appropriate for this purpose and this should be clarified in the proposed Safety Guide.

• Requirement 51 of GSR Part 3 (para. 5.22.) requires that “the regulatory body or other relevant authority shall establish specific reference levels for exposure due to radionuclides in commodities such as construction materials, food and feed, and in drinking water, each of which shall typically be expressed as, or be based on, an annual effective dose to the representative person that generally does not exceed a value of about 1 mSv.”

• It is noted that the values in Table 2 of RS-G-1.7 were established on the basis of an annual effective dose of 10 µSv for realistic cases and 1 mSv for low probability cases. This would mean that the 1 mSv criterion for existing exposure situations in BSS Requirement 51 would be met. It will also avoid the calculation of a new set of values.
There is also a need to provide guidance on the application of exemption to surface contaminated non-food commodities. It is noted that values for surface contamination of packages are provided in the IAEA Transport Regulations and this Safety Guide will need to consider their applicability to surface contaminated non-food commodities.

An objective would be to resist the development of an additional set of values for non-food commodity trade.
Objective

- The objective of the Safety Guide is to provide guidance on exemption issues in the framework of planned exposure situations and application of reference levels in existing exposure situations of international trade.

- The Safety Guide will cover similar ground to that in RS-G-1.7, but use the newer terminology given in GSR Part 3.

- More guidance will however be given on the development of a harmonized approach to the application of the concepts and values given in GSR Part 3 to long-lived radionuclides that may be present in non-food commodities, including those that may have been contaminated as a consequence of an accident, in order to facilitate international trade in such commodities.

- The document will be of particular value for regulatory bodies in Member States to assist them the applying the BSS requirements on the exemption of a source or practice from regulatory control. The application of this Safety Guide will promote the harmonization of trade in contaminated non-food commodities.
New Safety Guide on Application of the Concept of Exemption and Criteria for International Trade - Scope

• The Safety Guide will provide guidance on the application of the concept of exemption in a regulatory framework. It will also develop guidance on the application of the requirements in the BSS relating to commodities in existing exposure situations, those that may have been contaminated as a consequence of a nuclear or radiological accident.

• The emergency exposure situations will not be addressed.

• The actual criteria for exemption will not be reviewed or revised — the BSS criteria and derived radionuclide concentrations and total activities of radionuclides will be used without any change, but further consideration will be given to surface contamination of commodities.

• The issue of exclusion will be addressed in the introductory sections using text that is duplicated in the proposed new safety guide on clearance. This will explain the principle and its relationship to exemption and clearance, but no specific guidance is considered necessary.

- Safety Guide RS-G-1.7;
- GSR Part 3;
- The new Safety Guide planned to be developed in parallel that will address clearance for planned exposure situations;
- Regulations for the Safe Transport of Radioactive Material, (SSR-6);
- Predisposal Management of Radioactive Waste (GSR Part 5)
- Decommissioning of Facilities (GSR Part 6)
- IAEA-TECDOC-1449, Radiological Aspects of Non-fixed Contamination of Packages and Conveyances
- RASSC Electronic Working Group advise
New Safety Guide on Application of the Concept of Exemption and Criteria for International Trade - Overview

I. INTRODUCTION
II. THE CONCEPTS
III. ROLES AND RESPONSIBILITIES
IV. GENERIC EXEMPTION
V. SPECIFIC EXEMPTION
VI. DEVELOPMENT OF LEVELS FOR SURFACE CONTAMINATION
VII. IMPLICATIONS FOR INTERNATIONAL TRADE
VIII. MEASUREMENT APPROACHES

ANNEX Dosimetric Modelling of Surface Contamination of non-food commodities
ANNEX NATIONAL EXPERIENCE – Routine practice (including known and unknown origin of radioactive material)
ANNEX NATIONAL EXPERIENCE – Chernobyl accident (decades after accident)
ANNEX NATIONAL EXPERIENCE – Fukushima accident (years after accident)
# New Safety Guide on Application of the Concept of Exemption and Criteria for International Trade
- **Production schedule**

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Differences and Commonalities

• Common issues
  – Annexes dealing with surface contamination

• Different audiences

• Duplications of the CS work and overlapping will be avoided via coordinated effort in preparation of two safety guides.

• Joint consultancy meetings will be organized as necessary.
The Committees are invited to:

• comment and discuss this proposal for preparing two safety guides resulting from review and revision of RS-G-1.7

• endorse the proposal and task the Secretariat to finalize and process respective DPPs
Thank you!