SPESS F
Document Preparation Profile (DPP)
Version 2.0 dated 29-05-2023

1. IDENTIFICATION

Document Category or set of publications to be revised in a concomitant manner

Safety Requirements

Working ID: **DS548**

Proposed Title: **Predisposal Management of Radioactive Waste, GSR Part 5 (Rev.1)**

Proposed Action: **revision of a publication**

Predisposal Management of Radioactive Waste, 2009, GSR Part 5

Review Committee(s) or Group: **WASSC, RASSC, TRANSSC, NUSSC, EPReSC, NSGC**

Technical Officer(s): **G. Bruno (NSRW/WES)**

2. BACKGROUND

IAEA Safety Standards Series No. GSR Part 5, Predisposal Management of Radioactive Waste, was published in 2009 with the objective to establish, on the basis of IAEA Safety Standards Series No. SF-1, requirements for the predisposal management of radioactive waste. It sets out the objectives, criteria and requirements for the protection of human health and the environment that apply to the siting, design, construction, commissioning, operation, shutdown and decommissioning of facilities for the predisposal management of radioactive waste, and the requirements to be met to ensure the safety of such facilities and activities.

GSR Part 5 was developed in a conjunction with the following safety standards:

- IAEA Safety Standards Series No. GS-R-1, Legal and Governmental Infrastructure for Nuclear, Radiation, Radioactive Waste and Transport Safety (superseded in 2010)
- IAEA Safety Standards Series No. GS-R-2, Preparedness and Response for a Nuclear or Radiological Emergency (superseded in 2015)
- IAEA Safety Standards Series No. GS-R-3, The Management System for Facilities and Activities (superseded in 2016)
- IAEA Safety Series No. 115, International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (superseded in 2014)
- IAEA Safety Standards Series No. WS-R-5, Decommissioning of Facilities Using Radioactive Material (superseded in 2014)
- IAEA Safety Standards Series No. TS-R-1, Regulations for the Safe Transport of Radioactive Material, 2005 Edition (superseded in 2009)

- IAEA Safety Standards Series No. WS-G-2.3, Regulatory Control of Radioactive Discharges to the Environment (superseded in 2018)
- IAEA Safety Series No. 111-G-1.1, Classification of Radioactive Waste (superseded in 2009)
- IAEA Safety Standards Series No. WS-G-2.5, Predisposal Management of Low and Intermediate Level Radioactive Waste (superseded in 2016)
- IAEA Safety Standards Series No. WS-G-2.6, Predisposal Management of High Level Radioactive Waste (superseded in 2016)
- IAEA Safety Standards Series No. WS-G-2.7, Management of Waste from the Use of Radioactive Materials in Medicine, Industry, Agriculture, Research and Education (superseded in 2019)
- IAEA Safety Standards Series No. GS-G-3.3, The Management System for the Processing, Handling and Storage of Radioactive Waste (superseded in 2022)

3. JUSTIFICATION FOR THE PRODUCTION OF THE PUBLICATION

A feedback study on GSR Part 5 was carried out during the eighth term of the WASSC (2018-2020). On analyzing the results of this study, the Committee decided at its last meeting of the term (agenda item W3.1 of 50th WASSC meeting) not to recommend the revision of GSR Part 5 for the next term. However, areas of improvements were identified which would be taken into consideration when deciding on the revision of GSR Part 5.

Noting the considerable progress made and experience gained by Member States in the predisposal management of radioactive waste and the evolution of the IAEA Safety Standards Series publications since the publication of GSR Part 5, and the abovementioned feedback study, the WASSC revisited the issue at its 52nd meeting and the Secretariat was requested to develop a DPP for revision of GSR Part 5 (action under agenda item W2.2[1]). In addition, the Committee provided further comments on GSR Part 5. The latter, as well as feedback from the eighth term of the WASSC, is made available on the Nuclear Safety and Security Online User Interface platform (NSS-OUI) to streamline revision.

GSR Part 5 needs harmonization with all the current General Safety Requirements publications, such as IAEA Safety Standards Series Nos GSR Part 1 (Rev. 1), GSR Part 2, GSR Part 3, GSR Part 4 (Rev. 1), GSR Part 6, and GSR Part 7. In addition, the publications of the International Commission on Radiological Protection (ICRP) have evolved since GSR Part 5 was issued in 2009.

In view of the above, it is appropriate to initiate the revision of GSR Part 5, as requested by WASSC (action under agenda item W2.2 of the 52nd WASSC meeting).

4. OBJECTIVE

The objective of the proposed publication is to establish requirements for the predisposal management of all types of radioactive waste to ensure the safety of the predisposal radioactive waste management facilities and activities in respect of the protection of workers, the public and the environment.

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[1] Three actions were requested from the Secretariat under agenda item W2.2 of the 52nd WASSC meeting, namely, revision of GSR Part 5 and two related safety guides - IAEA Safety Standards Series No. WS-G-6.1, Storage of Radioactive Waste, and IAEA Safety Standards Series No. GSG-3, The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste.

As the proposed publication is a revision of an existing publication, it will update the requirements, as necessary, and add any new requirements, as appropriate, taking into account the experience gained in the predisposal management of radioactive waste since 2009 and relevant IAEA Safety Standards Series publications.

The publication is intended for use by all entities including governments, regulatory bodies, and operating organizations concerned with radioactive waste management and decision making related to the development, operation, decommissioning and closure of any facilities generating radioactive waste and where radioactive waste will be handled, processed, and stored, as well as any other organizations involved in radioactive waste management.

5. SCOPE

The publication will establish safety requirements that apply to all facilities and activities related to predisposal management of radioactive waste, covering all steps from waste generation up to disposal, including processing (pretreatment, treatment, and conditioning), storage, and transport.

The publication will address the predisposal management of all types of radioactive waste that may arise from the commissioning, operation and decommissioning of nuclear facilities, the use of radionuclides in medicine, industry, agriculture, research, and education, radioactive waste generated in a nuclear or radiological emergency, the processing of materials that contain naturally occurring radionuclides, and the remediation of contaminated areas – including spent nuclear fuel declared as radioactive waste and disused sealed radioactive sources declared as radioactive waste.

The publication will cover the safety aspects relevant to the radioactive waste form itself, in respect of its subsequent handling, processing, and storage, the safety of the predisposal radioactive waste management facilities and activities in respect of protection of workers, the public and the environment.

6. PLACE IN THE OVERALL STRUCTURE OF THE RELEVANT SERIES AND INTERFACES WITH EXISTING AND/OR PLANNED PUBLICATIONS

The proposed publication will interface at least with the following IAEA safety standards and related international conventions (this is not, and cannot be, regarded as an exhaustive list):

- EUROPEAN ATOMIC ENERGY COMMUNITY, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, INTERNATIONAL MARITIME ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS ENVIRONMENT PROGRAMME, WORLD HEALTH ORGANIZATION, Fundamental Safety Principles, IAEA Safety Standards Series No. SF-1, IAEA, Vienna (2006).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, IAEA Safety Standards Series No. GSR Part 1 (Rev. 1), IAEA, Vienna (2016).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Leadership and Management for Safety, IAEA Safety Standards Series No. GSR Part 2, IAEA, Vienna (2016).
- EUROPEAN COMMISSION, FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL LABOUR ORGANIZATION, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, UNITED NATIONS ENVIRONMENT

PROGRAMME, WORLD HEALTH ORGANIZATION, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards, IAEA Safety Standards Series No. GSR Part 3, IAEA, Vienna (2014).

- INTERNATIONAL ATOMIC ENERGY AGENCY, Safety Assessment for Facilities and Activities, IAEA Safety Standards Series No. GSR Part 4 (Rev. 1), IAEA, Vienna (2016).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Decommissioning of Facilities, IAEA Safety Standards Series No. GSR Part 6, IAEA, Vienna (2014).
- FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS, INTERNATIONAL ATOMIC ENERGY AGENCY, INTERNATIONAL CIVIL AVIATION ORGANIZATION, INTERNATIONAL LABOUR ORGANIZATION, INTERNATIONAL MARITIME ORGANIZATION, INTERPOL, OECD NUCLEAR ENERGY AGENCY, PAN AMERICAN HEALTH ORGANIZATION, PREPARATORY COMMISSION FOR THE COMPREHENSIVE NUCLEAR-TEST-BAN TREATY ORGANIZATION, UNITED NATIONS ENVIRONMENT PROGRAMME, UNITED NATIONS OFFICE FOR THE COORDINATION OF HUMANITARIAN AFFAIRS, WORLD HEALTH ORGANIZATION, WORLD METEOROLOGICAL ORGANIZATION, Preparedness and Response for a Nuclear or Radiological Emergency, IAEA Safety Standards Series No. GSR Part 7, IAEA, Vienna (2015).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Safety of Nuclear fuel Cycle Facilities, IAEA Safety Standards Series No. SSR-4, IAEA, Vienna (2017).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Disposal of Radioactive Waste, IAEA Safety Standards Series No. SSR-5, IAEA, Vienna (2011).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Regulations for the Safe Transport of Radioactive Material, 2018 Edition, IAEA Safety Standards Series No. SSR-6 (Rev. 1), IAEA, Vienna. (under revision, DS543)
- INTERNATIONAL ATOMIC ENERGY AGENCY, Classification of Radioactive Waste, IAEA Safety Standards Series No. GSG-1, IAEA, Vienna (2009).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors, IAEA Safety Standards Series No. SSG-40, IAEA, Vienna (2016).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Predisposal Management of Radioactive Waste from Nuclear Fuel Cycle Facilities, IAEA Safety Standards Series No. SSG-41, IAEA, Vienna (2016).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Predisposal Management of Radioactive Waste from the Use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education, IAEA Safety Standards Series No. SSG-45, IAEA, Vienna (2019).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Storage of Radioactive Waste, IAEA Safety Standards Series No. WS-G-6.1, IAEA, Vienna (2006).
- INTERNATIONAL ATOMIC ENERGY AGENCY, The Safety Case and Safety Assessment for the Predisposal Management of Radioactive Waste, IAEA Safety Standards Series No. GSG-3, IAEA, Vienna (2013).

- INTERNATIONAL ATOMIC ENERGY AGENCY, Storage of Spent Nuclear Fuel, IAEA Safety Standards Series No. SSG-15 (Rev. 1), IAEA, Vienna (2020).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities, IAEA Safety Standards Series No. SSG-47, IAEA, Vienna (2018).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Decommissioning of Medical, Industrial and Research Facilities, IAEA Safety Standards Series No. SSG-49, IAEA, Vienna (2019).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Leadership, management and culture for safety in radioactive waste management, IAEA Safety Standards Series No. GSG-16, IAEA, Vienna.
- INTERNATIONAL ATOMIC ENERGY AGENCY, Application of the Concept of Exemption, IAEA Safety Standards Series No. GSG-17, IAEA, Vienna (in publication).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Application of the Concept of Clearance, IAEA Safety Standards Series No. GSG-18, IAEA, Vienna (in publication).
- INTERNATIONAL ATOMIC ENERGY AGENCY, Regulatory Control of Radioactive Discharges to the Environment, IAEA Safety Standards Series No. GSG-9, IAEA, Vienna
- DS526, National Policies and Strategies for the Safety of Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation (new publication in preparation).
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, INFCIRC/546, IAEA, Vienna (1997).

As appropriate, information from the relevant IAEA Nuclear Energy Series publications will be taken into account in the development of the proposed publication.

7. OVERVIEW

The tentative table of contents for the proposed publication is as follows.

1. INTRODUCTION
   1.1 Background
   1.2 Objective
   1.3 Scope
   1.4 Structure

2. PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT IN THE PREDISPOSAL MANAGEMENT OF RADIOACTIVE WASTE
   1.1. Radioactive waste management
   1.2. Radiation protection
   1.3. Environmental Protection

3. RESPONSIBILITIES ASSOCIATED WITH THE PREDISPOSAL MANAGEMENT OF RADIOACTIVE WASTE
   3.1 General
   3.2 Responsibilities of the government
   3.3 Responsibilities of the regulatory body
   3.4 Responsibilities of licensees and operating organizations

3.5 Approach to safety

4. STEPS IN THE PREDISPOSAL MANAGEMENT OF RADIOACTIVE WASTE
   4.1 General
   4.2 Generation of radioactive waste
   4.3 Processing of radioactive waste
   4.4 Storage of radioactive waste
   4.5 Radioactive waste acceptance criteria

5. DEVELOPMENT AND OPERATION OF PREDISPOSAL RADIOACTIVE WASTE MANAGEMENT FACILITIES AND ACTIVITIES
   5.1 General
   5.2 Approach to safety in predisposal management of radioactive waste
   5.3 Development and operation of predisposal radioactive waste management facilities
   5.4 Other provisions (system of accounting for and control of nuclear material, Existing facilities)

6. REFERENCES

7. CONTRIBUTORS TO DRAFTING AND REVIEW

In the course of drafting, some modifications may be made, if necessary, to accommodate new information and/or feedback provided (see Annex to this DPP).

8. PRODUCTION SCHEDULE: Provisional schedule for preparation of the publication, outlining realistic expected dates for each step

STEP 1: Preparing a DPP	DONE
STEP 2: Internal review of the DPP (Approval by the Coordination Committee)	March 2023
STEP 3: Review of the DPP by the review Committee(s) (Approval by review Committee(s))	Q2 2023
STEP 4: Review of the DPP by the CSS (approval by CSS) or information of the CSS on the DPP	Q4 2023
STEP 5: Preparing the draft publication	Q4 2023/Q4 2024
STEP 6: First internal review of the draft publication (Approval by the Coordination Committee)	Q1 2025
STEP 7: First review of the draft publication by the review Committee(s) (Approval for submission to Member States for comments)	Q2/Q3 2025
STEP 8: Soliciting comments by Member States	Q4 2025
STEP 9: Addressing comments by Member States	Q1 2026
STEP 10: Second internal review of the draft publication (Approval by the Coordination Committee)	Q2 2026
STEP 11: Second review of the draft publication by the review Committee(s) (Approval of the draft)	Q4 2026
STEP 12: (For Safety Standards) Editing of the draft publication in MTCD and endorsement of the draft publication by the CSS (For nuclear security guidance) DDG's decision on whether additional consultation is needed,	Q2 2027

establishment by the Publications Committee and editing	
STEP 13: Approval by the Board of Governors (for SF and SR only)	2027
STEP 14: Target publication date	2028

9. RESOURCES

Estimated resources involved by the Secretariat (person-weeks) and the Member States (number and type of meetings)

Secretariat: 25 person-weeks for drafting.

Member States:

- 18-24 consultant weeks (assuming 6 one-week consultancies, each with 3-4 experts).
- 2 Technical Meetings, each with participants from 30 Member States.

ANNEX:

Following the 48th WASSC meeting in October 2019, a draft questionnaire on the usefulness, strengths, and weaknesses of GSR Part 5 was circulated to WASSC members and observers for comment before being finalized and officially circulated. Member States were then given three months to consult with national stakeholders in preparing responses to the final version of the questionnaire. The feedback received was compiled and presented at the 50th WASSC meeting (Summary Report) under agenda item W3.1). In 2022, the responses of the WASSC eighth term were entered into NSS-OUI as feedback to be retained for a future revision of GSR Part 5.

The ninth term of WASSC was invited, after training and demonstration sessions on NSS-OUI from July 2021 to November 2022, to supplement the responses of the previous term, if they so wished, by inserting further feedback into NSS-OUI. Feedback from Member States - both eighth and ninth terms - on the application of GSR Part 5 and the areas identified for improvement can be obtained from NSS-OUI in form of a comment resolution table (CRT).

In 2022, the IAEA has completed an assessment of the applicability of the IAEA safety standards to non-water-cooled reactors (NWCRs) and small modular reactors (SMR). The assessment revealed that IAEA safety standards on predisposal management of radioactive waste are sufficiently general that they apply to all waste from ‘evolutionary and innovative designs’ (EIDs). However, upon detailed examination, a few areas were identified that may benefit from additional consideration. As an example, GSR Part 5 mentions the need for radioactive waste to be stored in a “passive, safe condition”, but passive safety is not itself a requirement. This contrasts with the corresponding publication for waste disposal (SSR-5), where passive safety is a requirement. The generation and long term storage of radioactive waste at multiple sites could, if permitted, have implications for safety on account of the possibly lower level of supervision at the site, for example, of a single EID or SMR, in comparison to what would be achievable at the site of a large NPP. For this reason, it might be worthwhile considering whether passive safety in predisposal management should be upgraded to a requirement. While this point is not restricted to EIDs, its significance could be raised if SMRs were to be spread widely across a territory. The findings of the abovementioned assessment are presented in IAEA Safety Reports Series No. 123 and can be downloaded as a preprint version at the following link: SRS-123.