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Document Preparation Profile (DPP)
Draft 10 – 1 April 2020

1. IDENTIFICATION

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

Safety Guide

Working ID: **DS526**

Proposed Title: **National Policies and Strategies for the Safety of Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation**

Proposed Action: **Development of a new Safety Guide**

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

Technical Officer(s): **D.G. Bennett**

2. BACKGROUND

The achievement of safety during radioactive waste and spent fuel management, decommissioning and remediation is dependent on the availability and implementation of comprehensive national policies and strategies[1]. Such national policies and strategies are also essential elements that assist Member States to achieve UN Sustainable Development Goals.

National policies and strategies for radioactive waste and spent fuel management, decommissioning and remediation need to consider and include all of the relevant sites, facilities and activities and their life cycles within a broader national programme in order to facilitate the achievement of a properly optimized level of safety. It is not sufficient only to optimize individual sites, facilities and activities, such as a single disposal facility or a single decommissioning project; optimization should also occur at the level of the national programme.

The Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management (the Joint Convention) places specific obligations on Contracting Parties. Article 32 of the Joint Convention requires Contracting Parties to report on national policies for the safety of radioactive waste and spent fuel management and on the implementation of practices aimed at the achievement of these policies. In the summary report of the Sixth Review Meeting of the Joint Convention, the Contracting Parties highlighted, as an 'overarching issue', relating to the importance of furthering the development and implementation of national policies and strategies for radioactive waste and spent fuel management, decommissioning and remediation. This is consistent with the following:

- The legacy of historical sites, facilities and radioactive waste and spent fuel that exists. For example, some States have nuclear facilities that have been permanently shut down with no

[1] Policy establishes aims or ends. Strategy is about the achievement of policy aims by selection of suitable strategic approaches that can be achieved with the application of available resources. Strategy is based upon a series of assumptions that can change over time. National policies should reflect national priorities, circumstances, structures, human and financial resources and should be reviewed and possibly updated from time to time.

clear plans for decommissioning. Areas affected by past accidents and various past activities that have not been properly managed or regulated also exist in some States.

- Information in the IAEA Radiation Safety Information Management System (RASIMS) database for Thematic Safety Area 4 (TSA4 – Public and Radiological Protection and Waste Safety), which shows that national policies and strategies for the safety of radioactive waste and spent fuel management, decommissioning and remediation remain weak or non-existent in many Member States.

- Feedback from IAEA peer review services (e.g. IRRS, Artemis) which indicates that further, better integrated, guidance is needed to assist Member States to develop, refine and implement national policies and strategies. Such guidance is also needed for delivery of peer review services.

- The observation by Richard A. Meserve, Chairman of the International Nuclear Safety Group (INSAG), in his 2019 Annual Letter of Assessment to the Director General of the IAEA, that it is long overdue for all countries using nuclear technologies to establish and pursue comprehensive radioactive waste management strategies, with disposal as their endpoint.

Summary of Analysis of Existing Safety Standards Publications on this Topic

The Safety Requirements relevant to national policies and strategies for radioactive waste and spent fuel management, decommissioning and remediation are included in multiple IAEA Safety Standards. For example, Requirements 1 and 10 of GSR Part 1; Requirements 29, 31, 47 and 49 of GSR Part 3; Requirement 2 of GSR Part 5 and Requirement 8 of GSR Part 6[2]. Requirement 15 of GSR Part 7 addresses the issue of managing radioactive waste generated in a nuclear or radiological emergency. Guidance on national policies and strategies for radioactive waste and spent fuel management, decommissioning and remediation is also included in multiple Safety Guides (e.g. SSG-14, SSG-15, SSG-47), but overall this guidance is uneven, and it is not well integrated or comprehensive. For example, one gap relates to a lack of guidance on optimization at the level of a national programme. Some further examples of deficiencies follow.

Specific Safety Guide SSG-14, Geological Disposal Facilities for Radioactive Waste, states that: "*This Safety Guide provides guidance for policy makers…*", however, it focusses on individual geological disposal facilities and provides no guidance on national policies or strategies or their development. Elements of national policies and strategies that have a large bearing on decisions made with respect to geological disposal are not within the scope of SSG-14, which is focused on the safety case for individual facilities.

Specific Safety Guide SSG-15, Storage of Spent Nuclear Fuel, states that "… *In determining the overall strategy, the owner should take into account interdependencies between all stages of spent fuel management, the options available and the overall national spent fuel management strategy."* How such interdependencies should be taken into account is not indicated, and in fact cannot be achieved within the scope of SSG-15.

Specific Safety Guide SSG-47, Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities, provides in Section 5 considerable guidance on the selection of decommissioning strategies for individual sites and facilities, and notes at paragraph 5.19 that these may be influenced by national policies on the management of radioactive waste. However, SSG-47 does not

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[2] Use of the search capabilities of the Nuclear Safety and Security Online User Interface (NSS-OUI) system shows that statements on policy, policies, strategy or strategies are contained in the following IAEA requirements publications relevant to the safety of radioactive waste and spent fuel management, decommissioning and remediation: GSR Parts 1, 2, 3, 4, 5, and 6; SSRs 4, 5 and 6.

give guidance on how national policies for the safety of radioactive waste management can be developed or on how they influence selection of an appropriate decommissioning strategy for a single facility.

3. JUSTIFICATION FOR THE PRODUCTION OF THE DOCUMENT

Given that appropriate national policies and strategies are needed to address existing and new facilities and activities, to address existing legacy situations and to prevent the creation of future legacy situations, there is a clear need for comprehensive, integrated guidance on approaches to their development and implementation.

Although there are many requirements on national policies and strategies on radioactive waste and spent fuel management, decommissioning and remediation in the IAEA Safety Requirements, the supporting guidance is not comprehensive or well-integrated and does not fulfil Member States requests for how to establish and implement national policies and strategies.

At its 44th Meeting in November 2017, the Waste Safety Standards Committee (WASSC) considered the totality of the existing safety standards and proposed the development of a new Safety Guide on National Policies and Strategies for the Safety of Radioactive Waste and Spent Fuel Management, Decommissioning and Remediation.

A new Safety Guide on this topic will provide valuable, sought-after support to the IAEA Member States and the Contracting Parties to the Joint Convention on establishing and implementing national policies and strategies for the management of spent fuel and radioactive waste, including radioactive waste generated in a nuclear or radiological emergency, decommissioning and remediation – guidance that does not presently exist.

A new Safety Guide is proposed because of the gaps and slight inconsistencies in the existing guidance and because it would not be manageable to revise the many existing safety standards publications that currently contain only brief references to policies and strategies on radioactive waste and spent fuel management, decommissioning and remediation. If the approach of revising existing safety guides was to be followed, it would not be simple to decide where amongst the various safety guides to include new guidance to address the gaps and, more importantly, it would not achieve what is wanted, which is integrated and, as far as possible, comprehensive guidance in this area. The development of this new Safety Guide is an opportunity to address the gaps and slight inconsistencies in the existing guidance; subsequent revisions of related Safety Standards should then lead to improved consistency of the guidance as a whole.

4. OBJECTIVE

The objective of this Safety Guide is to provide integrated, comprehensive recommendations on developing and implementing national policies and strategies for the safe management of all types of radioactive waste[3] and radioactive residues (such as residues containing naturally occurring radioactive material, NORM) and for the safe decommissioning of facilities and activities, and for remediation. In so doing, the Safety Guide will address optimization and the interdependencies between related actions at the national level, in accordance with Principle 5 of the Fundamental Safety Principles and various Safety Requirements.

The target audience for the publication will be governments, regulatory bodies, and operating organizations.

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[3] Including spent fuel declared as waste and disused sealed radioactive sources declared as waste.

5. SCOPE

The Safety Guide will address:

- National policies and strategies for safe management of radioactive waste and residues, including NORM residues, arising from activities and facility operations, decommissioning and remediation.
    - All classes of radioactive waste, including spent fuel declared as radioactive waste and disused sealed radioactive sources declared as radioactive waste.
    - All steps in the management of radioactive waste and residues, including waste generation, waste minimization, clearance, predisposal management of radioactive waste and disposal of radioactive waste.
- National policies and strategies for decommissioning of facilities.
- National policies and strategies for remediation of areas contaminated by radioactive substances.

Although the Safety Guide will cover radioactive waste generated as a result of a nuclear or radiological emergency, it will not provide guidance on emergency preparedness and response for radioactive waste and spent fuel management, decommissioning and remediation.

Nuclear security can factor into national policies and strategies for radioactive waste management, decommissioning and remediation and will be given due consideration as the development of the guide progresses.

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

The Safety Guide would have a cross-cutting role in in the Safety Standards Series, similar to that of General Safety Guide GSG-1, 'Classification of Radioactive Waste'.

This Safety Guide will interface with the following IAEA Safety Standards and related international conventions (the list is not intended to be final or exhaustive):

- SF-1 Fundamental Safety Principles
- GSR Part 1 (Rev. 1) Governmental, Legal and Regulatory Framework for Safety
- GSR Part 2 Leadership and Management for Safety
- GSR Part 3 Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards
- GSR Part 4 (Rev. 1) Safety Assessment for Facilities and Activities
- GSR Part 5 Predisposal Management of Radioactive Waste
- GSR Part 6 Decommissioning of Facilities
- SSR-5 Disposal of Radioactive Waste
- GSG-1 Classification of Radioactive Waste
- RS-G-1.7 Application of the Concepts of Exclusion, Exemption and Clearance (under revision by DS499 Application of the Concept of Exemption and DS500 Application of the Concept of Clearance)

- SSG-1 Borehole Disposal Facilities for Radioactive Waste (under revision by DS512)
- SSG-14 Geological Disposal Facilities for Radioactive Waste
- SSG-29 Near Surface Disposal Facilities for Radioactive Waste
- SSG-40 Predisposal Management of Radioactive Waste from Nuclear Power Plants and Research Reactors
- SSG-41 Predisposal Management of Radioactive Waste from Nuclear Fuel Cycle Facilities
- SSG-44 Establishing the Infrastructure for Radiation Safety
- SSG-45 Predisposal Management of Radioactive Waste from the Use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education
- SSG-47 Decommissioning of Nuclear Power Plants, Research Reactors and Other Nuclear Fuel Cycle Facilities
- SSG-49 Decommissioning of Medical, Industrial and Research Facilities
- WS-G-5.1 Release of Sites from Regulatory Control on Termination of Practices
- WS-G-6.1 Storage of Radioactive Waste
- Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management, INFCIRC/546

The Safety Guide will interface with the following draft Safety Standards being in an advanced stage of development:

- DS459 Management of Residues Containing Naturally Occurring Material from Uranium Production and Other Activities (Revision of Safety Guide WS-G-1.2)
- DS468 Remediation Process for Areas Affected by Past Activities and Accidents (Revision of Safety Guide WS-G-3.1)
- DS489 Storage of Spent Nuclear Fuel (Revision of Safety Guide SSG-15 by amendment)

As appropriate, information from the following IAEA Nuclear Energy Series publications will be taken into account in the development of this Safety Guide[4]:

- NW-G-1.1 Policies and Strategies for Radioactive Waste Management
- NW-G-2.1 Policies and Strategies for the Decommissioning of Nuclear and Radiological Facilities
- NW-G-3.1 Policy and Strategies for Remediation

7. OVERVIEW

Examples of topics on which guidance relating to national policies and strategies for waste and spent fuel management, decommissioning and remediation will be developed include:

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[4] These NE Series publications are concerned with waste technologies and refer to obsolete and superseded Safety Standards (e.g. Safety Series No. 115 dated 1996; WS-R-1 dated 1999; GS-R-1 dated 2000; WS-R-2 dated 2000; WS-G-2.5 dated 2003; WS-G-2.7 dated 2005). As such they were not endorsed by Safety Standards Committees.

- Prioritization amongst the development of new facilities, decommissioning of facilities and remediation of existing sites and facilities across the nation.
- National needs for, and provision of, resources over time, and how to balance short-term and long-term commitments and liabilities.
- The roles of radioactive waste classification and clearance in the national system for radioactive waste management, and their implications for other components of the national system for radioactive waste management, decommissioning and remediation.
- Assessing and providing the range of predisposal management facilities required nationally.
- The provision of local, regional and/or centralized waste management facilities (e.g. waste processing and waste storage facilities) nationally.
- Assessing and providing an appropriate range of disposal facilities required nationally.
- The timing/scheduling and duration of activities across the nation and their implications (e.g. of waste generation, of decommissioning and remediation, of local, regional and centralized waste storage, of waste disposal facility development and operation).
- Site end-states, institutional control of facilities, and remediation objectives and their consistency across the nation.
- Optimization of the national programme for waste and spent fuel management, decommissioning and remediation taking account of interdependencies.

A tentative structure and content for the Safety Guide is as follows.

1. INTRODUCTION
   1.1 Background
   1.2 Objective
   1.3 Scope
   1.4 Structure

2. RESPONSIBILITIES
   2.1 Responsibilities of the government
   2.2 Responsibilities of the regulatory body
   2.3 Responsibilities of licensees and operating organizations

3. NATIONAL POLICIES

   This section will address topics such as the following and how they should be addressed in national policies for radioactive waste and spent fuel management, decommissioning and remediation:

   - Objectives for protection of people and the environment
   - Provision of resources
   - Regulatory approaches
   - Interactions with interested parties
   - Waste classification
   - Waste minimization (and the waste hierarchy)

- Waste import and export
- Waste clearance and reuse of materials
- Identification of the range and types of waste management facilities required
- Development and optimal use of waste management facilities
- Decommissioning of facilities
- Remediation of sites
- Site end-states and institutional control
- Interdependencies and interactions between policies, and optimization at the level of a national programme

4. NATIONAL STRATEGIES

   This section will address how the topics discussed in Section 3 should be addressed in national strategies for radioactive waste and spent fuel management, decommissioning and remediation. It will address the prioritization and scheduling of activities taking account of the hazards, radiological and other types of risk, and the needs for sustainability and management of interdependencies.

5. GRADED APPROACH TO NATIONAL POLICIES AND STRATEGIES

   This section will address how the guidance provided in the preceding sections could be applied in different Member States having different programmes and situations, in accordance with the graded approach.

6. REFERENCES
7. CONTRIBUTORS TO DRAFTING AND REVIEW

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

	DATE
STEP 1: Preparing a DPP	DONE
STEP 2: Approval of DPP by the Coordination Committee	Q1 2020
STEP 3: Approval of DPP by the Review Committees	Q2 2020
STEP 4: Approval of DPP by the CSS	Q4 2020
STEP 5: Preparing the draft	Q4 2021
STEP 6: Approval of draft by the Coordination Committee	Q2 2022
STEP 7: Approval by the relevant review Committees for submission to Member States for comments	Q4 2022
STEP 8: Soliciting comments by Member States	Q2 2023
STEP 9: Addressing comments by Member States	Q4 2023
STEP 10: Approval of the revised draft by the Coordination Committee Review in NS-SSCS	Q1 2024
STEP 11: Approval by the relevant review Committees Review in NSOC-SGDS (Technical Editorial review)	Q2 2024
STEP 12: - Submission to the CSS - Submission in parallel and approval by the Publications Committee - MTCD Editing - Endorsement of the edited version by the CSS	Q3 2024
STEP 13: Establishment by the Publications Committee and/or Board of Governors (for SF and SR only)	N/A
STEP 14: Target publication date	Q1 2025

9. RESOURCES

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

Staff: 15 staff weeks for drafting (assuming inputs from necessary staff in NSRW).
Consultants: 12-16 consultant weeks (assuming of 4 one-week consultancies, each with 3-4 experts).
Technical Meeting: One technical meeting with participants from 30 Member States.