SPESS F
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1. IDENTIFICATION:

IAEA Safety Standards Series No. SSG-17 (Rev. 1), Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries

Working ID: **DS549**

Proposed Title: **Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries**

Proposed Action: **Revision of Specific Safety Guide SSG-17**

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

Technical Officer(s): **Teodros Hailu, NSRW/RIT**

2. BACKGROUND

The IAEA Safety Guide SSG-17 "Control of Orphan Sources and Other Radioactive Material in the Metal Recycling and Production Industries" was published in 2012. The objective of SSG-17 is to provide guidance and recommendations for the control of radioactive material in scrap metal and metal products for the protection of workers, the public and the environment.

SSG-17 is intended to implement mainly Requirements 1 to 4 of the 'General Requirements for Protection and Safety' established in IAEA Safety Standards Series No. GSR Part 3, "Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards". The implementation of these requirements for control of radioactive material that might be discovered in scrap metal recycling and processing industries will help to prevent incidents and mitigate the consequences.

3. JUSTIFICATION FOR THE PRODUCTION OF THE PUBLICATION

Since SSG-17 pre-dates GSR Part 3, it is necessary to revise and update the Safety Guide. There is also a need to ensure consistency with relevant safety requirements established in GSR Part 1 (Rev. 1) and GSR Part 7. The recommendations provided in IAEA Safety Standards Series No. GSG-15, Remediation Strategy and Process for Areas Affected by Past Activities or Events, need to be taken into consideration, as well as the supplementary guidance to the Code of Conduct on the Safety and Security of Radioactive Sources, "Guidance on the Management of Disused Radioactive Sources".

The revision of SSG-17 is needed since several other relevant IAEA publications have been issued after its publication in 2012 and Member States would benefit from a revised and updated Safety Guide in line with the current safety standards. Furthermore, there is a need to revise the terminology used in the publication to ensure consistency with the new definitions in the IAEA safety requirements publications and the IAEA Nuclear Safety and Security Glossary, 2022 (Interim) Edition.

The revised Safety Guide will also take into consideration the experience and approaches in the control of orphan sources and other radioactive material that are found in the metal recycling and production industries.

4. OBJECTIVE

The objective of the proposed revision of SSG-17 is to provide recommendations on how to apply the relevant requirements in GSR Part 3 for the protection of workers, the public and environment, with a focus on the control of orphan sources and radioactive material that might be found in scrap metal and metal products which might enter the metal recycling and production industries.

The recommendations in the Safety Guide will also address requirements from other relevant safety standards, the Code of Conduct on the Safety and Security of Radioactive Sources and its supplementary guidance.

The recommendations provided will be intended mainly for governments and national authorities, including regulatory bodies, but it will also provide recommendations for the metal recycling and production industries on arrangements that need to be made, in accordance with a graded approach, for the protection workers, the public and the environment.

5. SCOPE

The Safety Guide will address the identification and management of orphan sources and other radioactive material that may inadvertently enter in the metal recycling supply chain, including the recycling and processing of scrap metal in metal production industries. It will apply to all organizations involved in metal recycling and production industries. Taking into consideration the wide range of facilities and activities in handling scrap metal for recycling and subsequent processing, the Safety Guide will provide recommendations on how to apply a graded approach to the control of orphan sources and other radioactive material at metal recycling and production facilities.

The Safety Guide will provide recommendations on national and international cooperation needed for prevention and management of orphan sources or radioactive material encountered in these industries. It will also address the interface between safety and security measures in relation to orphan sources and other radioactive material that might be found in metal recycling and production industries.

This Safety Guide will not cover the responsibilities of authorized parties related to the loss of control over radioactive material; national response plans that might be activated as a consequence of the discovery of radioactive material; decontamination activities of premises that might be contaminated due to melting of a radioactive material or other causes, or the subsequent management of any radioactive waste that arises as a result of discovery of a radioactive material in metal recycling industries. Although the revised Safety Guide will address the need for interface of safety with nuclear security when an orphan source or other radioactive material is discovered in a metal recycling and production industry, it will not provide guidance or recommendations specific to nuclear security aspects.

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

This Safety Guide will interface with at least the following IAEA Safety Standards Series and

other IAEA publications (the list is not intended to be final or exhaustive):

1) SF-1, Fundamental Safety Principles (2006)
2) GSR Part 1 (Rev. 1), Governmental, Legal and Regulatory Framework for Safety (2016)
3) GSR Part 3, Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards (2014)
4) GSR Part 5, Predisposal Management of Radioactive Waste (2009)
5) GSR Part 7, Preparedness and Response for a Nuclear or Radiological Emergency (2015)
6) GSG-7, Occupational Radiation Protection (2018)
7) GSG-8, Radiation Protection of the Public and the Environment (2018)
8) GSG-13, Functions and Processes of the Regulatory Body for Safety (2018)
9) GSG-15, Remediation Strategy and Process for Areas Affected by Past Activities or Events (2022)
10) GSG-18, Application of the Concepts of Clearance [IAEA Preprint] (2022)
11) RS-G-1.9, Categorization of Radioactive Sources (2005)
12) SSG-19, National Strategy for Regaining Control over Orphan Sources (2011)
13) SSG-26 (Rev. 1), Advisory Material for the IAEA Regulations for Safe Transport of Radioactive Material (2022)
14) SSG-45, Predisposal Management of Radioactive Waste from the Use of Radioactive Material in Medicine, Industry, Agriculture, Research and Education (2019)
15) SSG-49, Decommissioning of Medical, Industrial and Research Facilities (2019)
16) SSG-60, Management of Residues Containing Naturally Occurring Radioactive Material from Uranium Production and Other Activities (2021)
17) NSS-5, Identification of Radioactive Sources and Devices (2007)
18) NSS No. 9-G (Rev. 1), Security of Radioactive Material in Transport (2020)
19) NST-016, Detection at State Borders of Nuclear and other Radioactive Material out of Regulatory Control (draft under development)
20) Code of Conduct on the Safety and Security of Radioactive Sources (2004)
21) Guidance on the Management of Disused Radioactive Sources (2018)

7. OVERVIEW

The current structure and content of SSG-17 was reviewed in a consultancy meeting in January 2023 which concluded that, although most of the current structure will be retained, there is a need for some changes in a revised version.

A new Section 2 (replacing the existing Section 2) will be introduced to give a brief overview of orphan sources and other radioactive material in the metal recycling industry, including assessment of the problem and the need for a national strategy for control of orphan sources.

Section 3 in the revised Safety Guide will be extended to cover radiation protection principles, and roles and responsibilities of organizations that might be involved in managing orphan sources and other radioactive material.

Sections 4 and 5 will be restructured and updated in line with the current safety requirements and nuclear security recommendations on the respective content of the sections: monitoring for radioactive material, and response to the discovery of radioactive material.

Sub-sections of the current section 5 on provision of information and reporting will be included in new Section 6.

Sections 6 and 7 of the current Safety Guide will be merged and updated as a new Section 7 to provide recommendations on management of recovered radioactive material and any contaminated areas. Subsections of Section 2 of the current Safety Guide, such as contamination, will be included in the new Section 7.

A new Section 8 will be introduced to cover the interface between safety and nuclear security measures in the event of orphan sources or other radioactive material being found in the metal recycling and processing industries.

Appendixes and the Annexes will be updated respectively.

Proposed table of contents:

1. INTRODUCTION

Background

Objective

Scope

Structure

2. ORPHAN SOURCES AND OTHER RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

Recycling of metals containing radioactive material

Financial and human impact

National strategy and cooperation for control of orphan sources

International agreement

3. ROLES AND RESPONSIBILITIES FOR ORPHAN SOURCES AND OTHER RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

Protection of workers, the public and the environment

Roles and responsibilities of the government

Roles and responsibilities of the regulatory body

Roles and responsibilities of the metal recycling and production industries

Roles of other organizations involved in managing orphan sources and other radioactive material

4. MONITORING FOR ORPHAN SOURCES AND OTHER RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

Procedures, training, and awareness of personnel

Routine monitoring and laboratory analysis

Acceptance testing, calibration and maintenance

Alarms and investigation levels

5. RESPONSE TO THE DISCOVERY OF ORPHAN SOURCES AND OTHER RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

Response plan

Response in the event of discovered orphan sources and radioactive material

Response to an intact orphan source
Response to a ruptured orphan source
Response to other radioactive material in a consignment of scrap metal
Response to the detection of radioactive material in the input streams prior to melting
Response to contamination due to melting of radioactive material

Rejection of incoming shipments

6. PROVISION OF INFORMATION AND REPORTING ON ORPHAN SOURCES AND OTHER RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

Reporting of events

Provision of information to the public

International cooperation

7. MANAGEMENT OF RECOVERED RADIOACTIVE MATERIAL AND CONTAMINATED AREAS IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

Management of found orphan sources

Management of contamination by radionuclides

Remediation of contaminated areas

Management of radioactive waste

8. MANAGEMENT OF SAFETY AND SECURITY INTERFACES FOR ORPHAN SOURCES AND OTHER RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

APPENDIX I: CATEGORIZATION OF RADIOACTIVE SOURCES

APPENDIX II: CLEARANCE LEVELS

REFERENCES

ANNEX I: REVIEW OF SELECTED EVENTS INVOLVING RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

ANNEX II: EXAMPLES OF NATIONAL AND INTERNATIONAL INITIATIVES INVOLVING RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

ANNEX III: TEMPLATE AND GUIDANCE FOR REPORTING AN EVENT OF DISCOVERY OF AN ORPHAN SOURCE OR OTHER RADIOACTIVE MATERIAL IN THE METAL RECYCLING AND PRODUCTION INDUSTRIES

8. PRODUCTION SCHEDULE:

Provisional schedule for preparation of the publication:

	A*
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))	June 2023
STEP 4: Review of the DPP by the CSS (approval by CSS) or information of the CSS on the DPP	October 2023
STEP 5: Preparing the draft publication	1Q 2024
STEP 6: First internal review of the draft publication (Approval by the Coordination Committee)	3Q 2024
STEP 7: First review of the draft publication by the review Committee(s) (Approval for submission to Member States for comments)	4Q 2024
STEP 8: Soliciting comments by Member States	1Q 2025
STEP 9: Addressing comments by Member States	2Q 2025
STEP 10: Second internal review of the draft publication (Approval by the Coordination Committee)	3Q 2025
STEP 11: Second review of the draft publication by the review Committee(s) (Approval of the draft)	4Q 2025
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, establishment by the Publications Committee and editing	2Q 2026
STEP 13: Approval by the Board of Governors (for SF and SR only)	N/A
STEP 14: Target publication date	2026

- Column A for Safety Fundamentals, Safety Requirements and Safety Guides.

- Column B for Nuclear Security Series publications
- Column C for TECDOCs, safety reports and other publications

9. RESOURCES

Estimated resources involved:

Secretariat (person-weeks): 15 weeks

Member States (number and type of meetings): 4 to 5 one-week CSs, and HBAs as needed.