

Document Preparation Profile (DPP)

Final version approved by CSS on 02-11-2011

1. IDENTIFICATION

Document Category **Safety Guide**

Working ID: **DS453**

Proposed Title: **Occupational Radiation Protection**

Proposed Action: **New document**

To revise existing guidance on Occupational Radiation Protection, based on the revised Basic Safety Standards (BSS), and to bring all the relevant safety guides on protection of workers into a single comprehensive safety guide on Occupational Radiation Protection.

Propose to combine and supersede the following Safety Guides;

- **RS-G-1.1 Occupational Radiation Protection (1999),**
- **RS-G-1.2 Assessment of Occupational Exposure Due to Intakes of Radionuclides (1999),**
- **RS-G-1.3 Assessment of Occupational Exposure Due to External Sources of Radiation (1999),**
- **RS-G-1.6 Occupational Radiation Protection in the Mining and Processing of Raw Materials (2004) and**
- **GS-G-3.2 The Management System for Technical Services in Radiation Safety (2008).**

Review Committee(s) or Group: **RASSC (Leading),**

WASSC, TRANSSC, NUSSC

Technical Officer(s): **Pappinisseri Puthanvedu Haridasan (NSRW)**

2. BACKGROUND/RATIONALE

The International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (BSS No.115, 1996) broadly covers three categories of exposure. These are occupational exposure, public exposure and medical exposure. The revised BSS (DS379) also endorses these three categories. The revised BSS also makes use of this categorisation to define the relevant radiation protection requirements, as appropriate according to the exposure situation whether planned, emergency or existing.

Occupational exposure is all radiation exposure of workers incurred in the course of their work with the exception of excluded exposures and exposures from exempt practices or exempt sources, as a result of situations that can reasonably be regarded as being the responsibility of the operating management. Occupational exposure to ionizing radiation can occur in a range of medical, research and academic establishments, industries and nuclear installations. Adequate radiation protection of workers is essential for the safe and acceptable use of radiation, radioactive material and nuclear

energy. Guidance on the BSS requirements is currently provided generically in three Safety Guides RS-G-1.1, RS-G-1.2 and RS-G-1.3 and specifically for the mining and processing of raw materials in RS-G-1.6.

The long term structure of the Safety Standards contains a Safety Guide on Occupational Radiation Protection combining the above mentioned safety guides, along with any other relevant material from other safety guides in one comprehensive Safety Guide which will provide generic guidance on how to meet the requirements on occupational exposure established in the new Basic Safety Standards.

It is foreseen to produce, in parallel to this Safety Guide two other generic Safety Guides, the first covering radiation protection in medical exposure (Safety in medical uses of ionizing radiation – DS399 a new safety guide that will supersede RS-G-1.5 and associated Safety Report Series 38, 39 and 40) and the second on public exposure (Radiation protection of the public and the environment - DS432) which will encompass all exposures of the public.

3. OBJECTIVE

The objectives of the Safety Guide on Occupational Radiation Protection are;

- (a) Provide updated guidance on occupational radiation protection in planned, emergency and existing exposure situations as defined in the revised BSS. The Safety Guide will provide guidance on the control of occupational exposures including the assessment of doses from external sources of radiation and from intakes of radioactive materials. The Safety Guide is intended for regulatory bodies, employers, workers, licensees and registrants, management authorities, and health and safety committees concerned with the radiation protection of workers.
- (b) Provide detailed explanations on the new technical terms which are used in the new BSS and provide guidance on the revised concepts related to occupational radiation protection.
- (c) To update the IAEA safety guides with respect to the publications made after 1999 (year of the publication of the current Safety Guide RS-G-1.1) in the area of radiation protection. The most important of these publications is the ICRP recommendation number 103 (2007).
- (d) To bring together in one document the main Safety Guides which are relevant to occupational radiation protection.
- (e) To provide new guidance on protection of pregnant workers
- (f) To provide new guidance on protection of itinerant workers

4. JUSTIFICATION

The revision of the Safety Guide on Occupational Radiation Protection is justified as the existing guidance on occupational radiation protection was developed during the period 1996-1999 and major changes have occurred since then in the area of occupational radiation protection including external and internal exposure assessment methodologies and techniques. The revision of the BSS and the 2007 recommendations of the International Commission on Radiation Protection also lead to the updating and revision of all the relevant safety guides on radiation protection of workers. Currently the relevant guidance documents are scattered and there are many repetitions in the texts of those guides. Bringing of all those guides into a comprehensive single Safety Guide will help the users in the practical applications of the guidance in a more systematic way.

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

This is a generic Safety Guide which is included in the document “Long Term Structure of the IAEA Safety Standards and Current Status” (2010) paralleling the proposed Safety Guides on radiation protection of the public and medical exposures. It belongs to the Thematic Areas of radiation protection and will provide guidance on the requirements on occupational radiation protection established in the revised BSS.

This Safety Guide will supersede the following Safety Guides;

1. INTERNATIONAL ATOMIC ENERGY AGENCY, Occupational Radiation Protection, Safety Guide, RS-G-1.1 (1999).
2. INTERNATIONAL ATOMIC ENERGY AGENCY, Assessment of Occupational Exposure Due to Intakes of Radionuclides, Safety Guide RS-G-1.2 (1999).
3. INTERNATIONAL ATOMIC ENERGY AGENCY, Assessment of Occupational Exposure Due to External Sources of Radiation, Safety Guide RS-G-1.3 (1999).
4. INTERNATIONAL ATOMIC ENERGY AGENCY, Occupational Radiation Protection in the Mining and Processing of Raw Materials, Safety Guide RS-G-1.6 (2004).
5. INTERNATIONAL ATOMIC ENERGY AGENCY, The Management System for Technical Services in Radiation Safety, Safety Guide GS-G-3.2 (2008).

This Safety Guide will interface with the following Safety Standards;

1. 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, Safety Standards Series No. SF-1, IAEA, Vienna (2006).
2. INTERNATIONAL ATOMIC ENERGY AGENCY, Governmental, Legal and Regulatory Framework for Safety, General Safety Requirements, GSR Part 1 (2010).
3. INTERNATIONAL ATOMIC ENERGY AGENCY, Preparedness and Response for a Nuclear or Radiological Emergency, Safety Requirements GS-R-2 (2002).
4. INTERNATIONAL ATOMIC ENERGY AGENCY, Building Competence in Radiation Protection and the Safe Use of Radiation Sources, Safety Guide RS-G-1.4 (2001).
5. INTERNATIONAL ATOMIC ENERGY AGENCY, Radiological Protection for Medical Exposure to Ionizing Radiation, Safety Guide RS-G-1.5 (2002).
6. INTERNATIONAL ATOMIC ENERGY AGENCY, Application of the Concepts of Exclusion, Exemption and Clearance, Safety Guide RS-G-1.7 (2004).
7. INTERNATIONAL ATOMIC ENERGY AGENCY, Safety of Radiation Generators and Sealed Radioactive Sources, Safety Guide RS-G-1.10 (2007).
8. INTERNATIONAL ATOMIC ENERGY AGENCY, Regulations for the Safe Transport of Radioactive Material, Safety Requirements TS-R-1 (2009).

9. INTERNATIONAL ATOMIC ENERGY AGENCY, Regulatory Control of Radiation Sources, Safety Guide GS-G-1.5 (2004).
10. INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Radioactive Waste Management in the Operation of Nuclear Power Plants, Safety Guide NS-G-2.7 (2002).
11. INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection Aspects of Design for Nuclear Power Plants, Safety Guide NS-G-1.13 (2005).
12. INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection and Radioactive Waste Management in the Design and Operation of Research Reactors, Safety Guide NS-G-4.6 (2009).
13. INTERNATIONAL ATOMIC ENERGY AGENCY, Radiation Protection Programmes for the Transport of Radioactive Material, Safety Guide TS-G-1.3 (2007).
14. INTERNATIONAL ATOMIC ENERGY AGENCY, Criteria for Use in Preparedness and Response for a Nuclear or Radiological Emergency, General Safety Guide.GSG-2 (2011).

Draft Standards

The following draft standards also interface with the proposed Safety Guide;

1. International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources (Revised BSS – In preparation), DS379
2. Justification of Practices, DS401.
3. Leadership and Management for Safety, DS456 (Revision of GS-R-3,2006)
4. Advisory Material for the IAEA Regulations for the Safe Transport of Radioactive Material, DS425.
5. Safety in medical uses of ionizing radiation, DS399.

Relevant ICRP Publications since 1999

1. International Commission on Radiological Protection, Publication No.**103**: The 2007 Recommendations of the International Commission on Radiological Protection, 2007.
2. International Commission on Radiological Protection, Publication No.**104**: Scope of Radiological Protection Control Measures, 2007.
3. International Commission on Radiological Protection, Publication No.**101**: The Optimisation of Radiological Protection: Broadening the Process, 2006.
4. International Commission on Radiological Protection, Publication No.**100**: Human Alimentary Tract Model for Radiological Protection, 2006.

ICRP recommendations on radon, air crew exposure and changes in the dose conversion coefficients are also expected in due course.

Relevant ISO and IEC Standards related to occupational radiation protection

(eg: ISO27048, 2011)

6. OVERVIEW

The Safety Guide will provide updated guidance on protection of the workers in all exposure situations (Planned, Emergency and Existing Exposure Situations). The Guide will address the technical and organisational aspects of the control of occupational exposures, methods for the assessment of external radiation doses, methods to assess intakes of radionuclides in all the exposure situations in terms of normal as well as potential exposures. Consideration will also be given to guidance on occupational exposure to natural sources including the mining and processing of raw materials. The Safety Guide will provide new guidance on protection of the pregnant workers and itinerant workers.

The details of the proposed table of contents are provided in the Annex.

The current Safety Guides RS-G-1.1, RS-G-1.2, RS-G-1.3 and RS-G-1.6 are co-sponsored by the International Labour Organisation (ILO). The involvement of ILO as a co-sponsor of the new Safety Guide on Occupational Radiation Protection is considered essential for the application of the Safety Guide in the Member States.

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

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STEP 1: Preparing a DPP	DONE
STEP 2: Approval of DPP by the Coordination Committee	November 2010
STEP 3: Approval of DPP by the Safety Standards Committees or the relevant group where appropriate	June 2011
STEP 4: Approval of DPP by the CSS	November 2011
STEP 5: Preparing the draft	November 2011 - January 2013
STEP 6: Approval of draft by the Coordination Committee	February 2013
STEP 7: Approval by the Safety Standards Committees for submission to Member States for comments	June 2013
STEP 8: Soliciting comments by Member States	August 2013
STEP 9: Addressing comments by Member States	December 2013
STEP 10: Approval of the revised draft by the Coordination Committee Review in NS-SSCS	January 2014
STEP 11: Approval by the Safety Standards Committees for submission to the CSS	June 2014
STEP 12: Endorsement by the CSS	September 2014
STEP 13: Establishment by the Publications Committee and/or Board of Governors (for SF and SR only)	
STEP 14: Target publication date	April 2015

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

8. RESOURCES

1 CM during 2011

1 TM and 1 CM during 2012

2 CMs during 2013.

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APPENDICES

REFERENCES

ANNEXES

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