INTERNATIONAL ATOMIC ENERGY AGENCY
DIVISION OF RADIATION, TRANSPORT AND WASTE SAFETY

Radiation Safety Standards Committee (RASSC) – Fortieth Meeting
and
Waste Safety Standards Committee (WASSC) – Forty-first meeting

21–22 June 2016

IAEA Headquarters, Vienna, Austria

Chairman’s Report
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Joint RASSC / WASSC Session  
IAEA Headquarters, Vienna  
21 – 22 June 2016

RW.1 OPENING OF THE JOINT SESSION

RW 1.1 Opening of the Meeting

The Joint Session of RASSC and WASSC was opened by the Director of the Division of Radiation, Transport and Waste Safety (NSRW), Mr. Peter Johnston. He welcomed all participants and briefed them on some items of possible interest. These included the finalization of the three Draft Safety Guides addressing different aspects of the protection of the environment (DS427, DS432 and DS442) before they will be presented to the CSS for endorsement, and the proposal of the Secretariat to revise the Safety Guide RS-G-1.7 Application of the Concepts of Exclusion, Exemption and Clearance.

Mr. Johnston emphasized the cross-cutting nature of NORM related activities within NSRW and outlined two key issues that have to be addressed: first, at what level does NORM become necessary to regulate; and second, how can the graded approach be applied in a consistent manner. In this context, Mr. Johnston highlighted the Topical Session on Challenges in Regulating NORM Industries on 22 June 2016 as well as the importance of the upcoming NORM VIII Symposium, which will take place 18–21 October 2016 in Rio de Janeiro. The Agency has always played an active role in the organization of the NORM Symposia, the first of which was held in 1997, and the discussions that have taken place have played an essential role in the development of a consensus on how to manage these exposures.

Future important conferences to be held in Vienna include the International Conference on the Safety of Radioactive Waste Management (21–25 November 2016) and the International Conference on Radiation Protection in Medicine (11–15 December 2017). The latter one is a follow-up to the very successful predecessor held in Bonn in December 2012, and it will provide the radiation protection community with the opportunity to evaluate progress in implementation of the “Bonn Call for Action” as well as identifying new challenges from the increasing and varied applications of ionizing radiation in medical diagnosis and treatment.

Finally, Mr. Johnston mentioned two important anniversaries in 2016. Firstly, the Agency is celebrating its 60th anniversary in 2016. In recognition thereof, the Secretariat will organize a number of special events and activities, starting at the 60th General Conference in September. Secondly, 2016 marks the 20th anniversary of the establishment of the Department of Nuclear Safety with the specific responsibility of implementing a uniform procedure for the preparation and review of Safety Standards in all areas covered by the mandate of the Agency. As part of this process, the Secretariat created the Commission on Safety Standards (CSS) and the four advisory committees RASSC, WASSC, NUSSC and TRANSSC, all of them are also celebrating the 20th anniversary this year.

RW 1.2 Chairmen’s Introduction

Mr. Gustavo Massera (RASSC Chairman) and Mr. Geoff Williams (WASSC Chairman) thanked Mr. Johnston for his opening remarks. They also welcomed all newly appointed and existing members and observers of RASSC and WASSC to the Joint Session.
RW 1.3  Adoption of the Agenda

The Agenda of the Joint Session was approved and adopted without changes. The Agenda can be found in Annex II.

RW 1.4  Administrative Arrangements

The Scientific Secretaries drew attention to the location of the emergency exits, introduced the administrative support staff for the meeting and summarized the administrative arrangements. The Secretariat noted that a Topical Session on Challenges in Regulating NORM Industries would take place on Wednesday, 22 June 2016.

RW 2. GENERAL SAFETY STANDARDS ISSUES

RW 2.1 Report of the meetings of the Chairs and of the Commission on Safety Standards

Mr. Dominique Delattre, Head of the Safety Standards and Security Guidance Development Section (NSOC), presented the main results of the 39th CSS meeting held in April 2016. Two Safety Requirements (DS456, DS476) and three Safety Guides (DS399, DS454, DS455) were endorsed for publication, in addition two DPPs (for DS494 and DS495).

Since the 39th CSS meeting in November 2015, five draft Safety Standards (DS360, DS381, DS447, DS448, DS460) were approved by the Publication Committee and are being published soon.

The CSS agreed that the CSS Chair, with the assistance of volunteers from the CSS members, should prepare – on the basis of a RASSC contribution paper – a CSS policy on the implications of the UNSCEAR report “Attributing Health Effects to Ionizing Radiation Exposure and Inferring Risks” for the development of IAEA Safety Standards.

The CSS and the meeting of the Chairs requested that all Draft Safety Standards are subject to a comprehensive technical editorial review before their review at SPRESS Step 11 by the Committees.

The CSS requested to identify and study the conditions to be met in order to start the preparation of a Joint Safety-Security Fundamentals and make further steps toward better integration of safety and security.

A set of priorities for the 6th CSS term will be prepared jointly by the CSS Chair, the CSS Secretariat and the DIR-NSOC, for approval at the 40th CSS meeting. The priorities will be based on the recommendations from the 5th CSS end of term report and the discussion at the 39th CSS meeting.

There were no questions to this presentation.

RW 2.2 Status of the NSS-OUI IT platform – Update by the Secretariat

Mr. Delattre, provided a presentation on the latest status of development of the new IT platform “NSS-OUI” (Nuclear Safety and Security Online User Interface) in NUCLEUS. The presentation updated information provided at the three previous meetings of the Committees in November/December 2014, June 2015 and November 2015.
NSS-OUI is a content management system and knowledge management system. Publications are managed not only at the level of publication but also their content is managed. The system allows the managing of relationships between publications (top–down relationships as well as horizontal relationships between requirements). In addition, it has advanced search and navigation capabilities (search by publication or by requirement). The platform will be used in the future as part of the review and revision process for both Safety Standards and Nuclear Security Series publications.

Most of the current work in relation to safety standards focuses on the revision of existing safety standards. This means that systematic feedback on the application of safety standards, as well as the identification of gaps and/or inconsistencies, is becoming more important. In order to ensure greater consistency across the entire set of safety standards, it is also desirable to be able to update a number of different Safety Standards simultaneously.

The principal objectives of the new platform are:

1. To ensure that the review and revision of publications in the Safety Standards Series and in the Nuclear Security Series are based on a systematic process of collection and analysis of feedback;
2. To ensure that any revision of publications or parts of publications is justified by the above mentioned feedback process, therefore stability of the parts of the standards and guidelines that remain valid;
3. To maintain technical consistency between publications by managing them as a series;
4. To enhance semantic consistency through the systematic use of harmonized terminology;
5. To ensure comprehensive coverage by means of a systematic ‘top-down’ approach to review and revision complemented by topical gap analyses;
6. To support the harmonized use and application of Safety Standards and Nuclear Security Series publications by enhancing their user-friendliness and by providing tools for users to easily navigate within the series.

Mr. Delattre demonstrated the functionality of the new system, including the use of metadata, the various search functions and the mechanisms for providing feedback. It is intended that the final system will be compatible with use on a desk-top, tablet and smart phone and will work with all browsers. He requested feedback of the users on how the platform works.

A pilot exercise was initiated in March 2016 on the Safety Guides supporting SSR-2/2 (Rev 1), with the objective to demonstrate the use of the system for preparing the revision of a set of Safety Guides.

Further pilot testing will be initiated for the revision of existing Specific Safety Guides or General Safety Guides, as well as for the usage of the editor capabilities for technical editorial comments and for publishing.

RASSC and WASSC welcomed the development of the IT platform, noting that the system’s strong functionality can greatly improve the review and revision process. It was also noted that this development represents a major step towards online publishing of Safety Standards and Nuclear Security Series publications.

**RW 2.3 Timetable for Technical Editing of Safety Standards**

Mr. Delattre, provided information on the current status of technical editing of Draft Safety Standards, which is mandatory before SPESS Step 11.

Until the committee meetings in June 2016, technical editing was finished for the following Draft Safety Guides: DS427, DS432, DS442 and DS452. The drafts that will follow next are the Draft Safety Requirements DS478 (future Specific Safety Requirements SSR-4) and the Draft Safety Guides DS485, DS472 and DS473.
Mr. Tony Colgan (RASSC Scientific Secretary) inquired about the status of the Draft Safety Guides DS419 (Well Logging) and DS420 (Nuclear Gauges). In his response, Mr. Delattre conceded that their technical editing is pending. However, both drafts are expected to be back to the Committees for review and approval in June 2017.

RW.3 REVIEW OF IAEA SAFETY STANDARDS

RW 3.1 Draft Safety Guide: Arrangements for the Termination of a Nuclear or Radiological Emergency, DS474

Ms. Svetlana Nestoroska Madjunarova (IEC) presented a status update on the development of the Safety Guide DS474 to the participants.

The Safety Guide DS474 is intended to provide recommendations and guidance in relation to the respective Safety Requirements contained in GSR Part 7 (Requirement 18) and GSR Part 3 (Requirement 46), and to address the goal of emergency response in para 3.2 (i) of GSR Part 7 ("to prepare, to the extent practicable, for the resumption of normal social and economic activity"). The DPP was prepared in early 2013 and has been in the drafting stage in the period 2014–2015. The objective of the Safety Guide is to provide guidance and recommendations to Member States on developing arrangements at the preparedness state to respond to a nuclear or radiological emergency in relation to the transition to either an existing exposure situation, or to a planned exposure situation, as appropriate, and the termination of the emergency.

Six Consultancy Meetings and one Technical Meeting have been held throughout 2014 and 2015 to develop and discuss drafts of the guide. In addition, an ad-hoc Working Group on DS474 established in November 2014 held consultations with relevant international organizations throughout 2015. Ms. Nestoroska Madjunarova also referred to the International Conference on Global EPR, held in October 2015 in Vienna, and the related Recommendation 5 “Developing international guidance for the transition phase” in the President’s Summary Report, which should include guidance for adapting and lifting of protective actions.

Ms. Nestoroska Madjunarova provided an overview of the comments received by the Committees. Comments were received from 13 Member States (Australia, Canada, Germany, Iran, Ireland, Japan, Pakistan, Romania, Russia, South Africa, Sweden, Switzerland and USA) and four international organizations (EC, ENISS, WANO and WNA). In her presentation, Ms. Nestoroska Madjunarova summarized how the comments to the draft from the Committee members have been addressed, and explained the reasons for rejecting specific comments.

Several questions and comments were subsequently raised to the Secretariat.

France proposed to shorten the DS474 and to be more focused. It was clarified that those involved in its development consider the current extent of 50 pages, without appendix and annexes, to be appropriate to provide meaningful and useful guidance. In addition, France interjected that radiological criteria shouldn’t be the only prerequisites to be taken into account for making a decision to terminate an emergency. Ms. Nestoroska Madjunarova responded that only a few of the general and specific prerequisites given in Section 3 of DS474 relate to radiological criteria, while the others are non-radiological criteria.

The USA objected that the listing of the different emergency phases in DS474 would be confusing and unclear with regard to several aspects, referring to their general comment No. 13 in the resolution table. In this context, the USA complained that the comment has been rejected. Ms. Nestoroska Madjunarova explained in detail the reasons for rejection. With regard to terminology issues addressed
in this comment, she clarified that the usage of other nomenclature that does not closely relate to already established terminology in the IAEA Safety Standards Series would raise more confusion among readers. She also emphasized that States may decide to specify various phases as appropriate for them and their national protection strategy.

The document was approved to be submitted to Member States for comments.

**Action:** The Secretariat to submit DS474 to Member States for comment.

**RW 3.2 Draft Safety Guide: Management of Radioactive Residues from Uranium Production and Other NORM Activities, DS459**

Mr. Zhiwen Fan (WES/NSRW) presented a status update on the development of the Safety Guide DS459 to the participants. In June 2011, WASSC 31 concluded that the Safety Guide WS-G-1.2 (published in 2002) was to be revised in the light of new requirements and developments. WASSC 32 and the CSS endorsed the DPP in 2011 and 2012, respectively. The main input considered for the revision are the recently published relevant Safety Requirements and Safety Guides and current practices and experiences in Member States, but also a number of international conferences and workshops on NORM held in 2013 and 2014.

Mr. Fan explained the background for developing the Safety Guide. DS459 will focus on residues generated from uranium production and other NORM activities. It will apply for newly generated residues and new facilities (including from operation, decommissioning and remediation). The Safety Guide will take into consideration the needs of a new audience with rather weak awareness of radiation safety in NORM activities. It will consider the less developed knowledge and experience to NORM residues compared with those for radiation sources and the nuclear fuel cycle.

Seven Consultancy Meetings have been held between mid-2012 and mid-2016 to develop and discuss drafts of the guide. Progress reports on DS459 were provided at WASSC 38 (November 2014) and WASSC-40 (November 2015). In the course of development of the Safety Guide, the title proposed in the DPP – Management of Radioactive Residues from Mining, Mineral Processing, and other NORM related Activities – has been changed into Management of Radioactive Residues from Uranium Production and Other NORM Activities (endorsed at WASSC 38) to better meet the scope of the Safety Guide.

The current draft of the Safety Guide includes the following sections: 1. Introduction; 2. Overview of NORM residues; 3. Governmental, legal and regulatory framework; 4. Protection of people and the environment; 5. System for regulatory control; 6. Strategies for NORM residue management; 7. The safety case and safety assessment for NORM residues management; and 8. Safety consideration for long term management of NORM residues. Additional information is provided in three Appendices and four Annexes. Mr. Fan noted that DS459, due to its scope and nature, is a complex Safety Guide, and to address in-situ leaching (ISL) adequately, a specific Safety Report is being developed.

Mr. Fan provided an overview of the comments received by the Committees. In total, 260 comments were received from Germany, Ireland, Japan, Korea, USA and the European Commission. Among them, 206 were accepted without modifications, 24 accepted with modifications, and 30 rejected. He noted that the guide has improved significantly thanks to the comments received. Mr. Fan explained in detail the reasons why specific comments were rejected by the Secretariat. Those comments that either changed the scope of the document or were inconsistent with the Safety Requirements GSR Part 3, GSR Part 5 or SSR-5 were rejected.

Finally, Mr. Fan presented two issues for advice by the Member States in the process of further development of the Safety Guide, based on two comments received. The first issue is the activity limit requiring a radiological risk assessment. In residues from uranium mining, the activity concentrations
of all radionuclides in the U-238 and Th-232 decay series are, in most cases, less than 1 Bq/g. In the international practice, however, the activity limit requiring a radiological risk assessment was set to 0.2 Bq/g for each of the above-mentioned radionuclides. The second issue is the question whether a situation of exposure due to radionuclides of natural origin in new construction materials and agricultural fertilizer should be treated as an existing exposure situation, as addressed in footnotes 17 and 64 of the current draft.

Australia raised some concern that the new guidance could entail the danger of overregulating the NORM industry with respect to activities with low risks. Mr. Fan responded that this is not the intention of the guidance as will follow a graded approach in regulation of radiation risks.

There were no further questions. The document was approved by RASSC and WASSC to be submitted to Member States for comments.

**Action:** The Secretariat to submit DS459 to Member States for comment.

**RW 3.3 Draft Safety Guide: Deterministic Safety Analysis for Nuclear Power Plants, DS491**

Mr. Palmiro Villalibre (NSNI) gave a presentation summarizing the history of the draft and mentioned the requirements which are supported by this Safety Guide. SSG-2 was published in 2009 to provide guidance on how to meet the requirements in NS-R-1 and GSR Part 4. The current revision of SSG-2 was initiated mainly

- to provide recommendations in accordance with Safety Requirements established in SSR-2/1 (Rev.1) and GSR Part 4 (Rev.1), both published in early 2016;
- to take into account feedback and lessons learned from the TEPCO Fukushima Daiichi NPP accident and other sources, as well as recent experience with Deterministic Safety Analysis included in Safety Analysis Reports for current reactor designs in the Member States;
- to ensure consistency with current IAEA Safety Standards.

The DPP was approved by NUSSC/RASSC/WASSC in November 2014 and by the CSS in April 2015. Three Consultancy Meetings have been held in the period 2015–2016 to develop and discuss drafts of the guide.

With respect to the implications from Fukushima Daiichi NPP accident, specific aspects included in DS491 are:

- **Section 3: Identification and categorization of postulated initiating events and accident scenarios**
  - Identification of Design Extension Conditions (DEC);
  - Event sequences and accident scenarios to be ‘practically eliminated’;
- **Section 7: Deterministic Safety Analysis (DSA) for different plant states and accident scenarios**
  - DSA for DEC without significant fuel degradation;
  - DSA for DEC with core melting;
  - DSA in support of ‘practical elimination’ of certain conditions.
Applications of DSA to several areas – e.g. NPP design by the designer, periodic safety review, plant modifications and severe accident management guidelines – will be provided as an Annex in DS491.

Mr. Villalibre provided an overview of the comments received from the Committees. In total, 420 comments from 18 Member States and 3 International Organizations were received, mainly for clarification and some for addition of relevant information. Resolutions were provided for each of them and the corresponding changes have been incorporated in the draft; no unresolved comments remained. There were no questions; the document was approved to be submitted to Member States for comments.

**Action:** The Secretariat to submit DS491 to Member States for comment.

**RW 3.4 Draft Safety Requirements: Regulations for the Safe Transport of Radioactive Materials 20xx edition (revision of SSR-6), DS495**

Mr. Stephen Whittingham (RIT/NSRW) introduced the draft Safety Requirements *Regulations for the Safe Transport of Radioactive Materials*, 20xx Edition, on behalf of the Technical Officer Ms. Nancy Capadona (RIT/NSRW). The draft document is a revision of the 2012 Edition of the Regulations for the Safe Transport of Radioactive Material (SSR-6), with a scope applying to the transport of radioactive material by all modes on land, water or air.

A detailed review by TRANSSC identified the need to update the current requirements to address ageing management for packages to be transported after long periods of storage as well as the need to improve harmonization with UN transport regulations. In addition, a new category of Surface Contaminated Objects (SCO-III) is to be introduced to cover the transport of large reactor components and other items with surface contamination. A small number of comments were received during the period of review by the Committees and all of these have been satisfactorily resolved.

RASSC and WASSC had no questions or comments on the document, which was therefore approved for submission to Member States for comment.

**Action:** The Secretariat to submit DS495 to Member States for comment.

**RW.4 DOCUMENT PREPARATION PROFILE FOR APPROVAL**

**RW 4.1 Draft Safety Guide: Nuclear Power Plants Operation, DS497**

Mr. Peter Tarren (NSNI) introduced the document on behalf of the Technical Officer Ms. Vesselina Ranguelova (NSNI). The aim of this DPP is to enable the revision of eight closely interrelated Safety Guides, namely NS-G-2.2 to 2.8 and NS-G-2.14. Most of them were developed in the period 2000–2002 and need review following the latest updates of the Safety Requirements after the Fukushima Daiichi accident. This revision will take into consideration:

- the experience gained with the application of safety standards, e.g. from Member States and from OSART missions;
- the State-of-the-art in operational safety, e.g. improvements which have been implemented at many NPPs worldwide;
- the revisions implemented in some of the other safety standards and, in particular, the amendment of the IAEA Safety Requirements undertaken after the Fukushima Daiichi accident;
• the long term structure of the IAEA Safety Standards.

Prior to the meeting, 46 comments were received from members of all Safety Standards and Security Guidance Committees. Most of comments are concerning proposals for modifications in each of the individual guides, beside a few editorial comments. 36 comments were accepted without further modification, another 10 with modification. The revision will ensure consistency with SSR-5, GSR Part 6 and GSG-1 on issues related to radiation protection and radioactive waste management.

Based on the results of the IAEA Technical Meeting to review the IAEA Safety Guides on NPP Operational Safety, held from 16 to 20 November 2015, and using the new IT platform NSS-OUI for revision of the IAEA Safety Standards, a two-step approach for preparing the revision of the Safety Standards on NPP operational safety was proposed by the Secretariat.

RASSC and WASSC approved the DPP for DS497 for submission to the CSS for endorsement.

Action: The Secretariat to submit DS497 to the CSS for endorsement.

RW.5 SAFETY STANDARDS FOR INFORMATION

RW 5.1 Draft Safety Guide: Radiation Protection of the Public and Protection of the Environment, DS432

RW 5.2 Draft Safety Guide: Prospective Radiological Environmental Impact Assessment for Facilities and Activities, DS427

RW 5.3 Draft Safety Guide: Regulatory Control of Radioactive Discharges to the Environment, DS442

Mr. Diego Telleria (WES/NSRW) briefed the Committee members on the history of development and latest status of the set of three Safety Guides covering radiation protection of the public and the environment. The drafts were developed following SPESS procedures, interpreting requirements in GSR Part 3 (and other relevant Safety Requirements), taking into account experience in Member States and relevant international frameworks. DS432 provides guidance to implement generic requirements on public and environmental protection for the 3 exposure situations. DS427 and DS442 provide guidance to implement specific requirements on public and environmental impact assessment and on control of discharges for planned exposure situations.

The three Draft Safety Guides were approved for submission to Member States in November 2014 and for submission to CSS in November 2015, subject to incorporation of some editorial inputs and the full technical editing by the Secretariat. As soon as the last-mentioned task was completed in May 2016, the most recent versions were uploaded to the Committees webpages for information, to seek confirmation from the Committee members that the technical editing has not changed the essence. This approach was requested by the Chairs of the involved Committees (NUSSC, RASSC and WASSC) during the 39th CSS meeting held in April 2016, when the three drafts DS427, DS432 and DS442 were introduced to the CSS members in a presentation for information.

Prior to the 41st WASSC meeting, Australia submitted five editorial comments plus another one related to para. 1.21, which is more substantive with regard to content. The United Kingdom also sent a few editorial comments. All these comments were carefully considered and resolved by the Secretariat. A slide with the comparison between original and revised text in para. 1.21 of DS427 was presented.
ENISS raised concerns regarding the new text in para. 1.21, arguing it would be in contradiction to the previous view during the discussion of the draft. The Chair of WASSC and the Secretariat argued that the old text in para 1.21 is not consistent with the new philosophy of the ICRP regarding the protection of non-human species, that the changes made reflect much better the current ICRP position and that the decision on the approach to demonstrate protection of the environment still remains with the national regulator.

The United Kingdom raised the question if the latest change in para. 1.21 does affect other paragraphs in DS427. In his response, Mr. Telleria pointed out that such change triggered modifications for only two other paragraphs, specifically 5.78 and 1-2 in Annex I of DS427.

India asked for criteria when carrying out a radiological EIA for a radioactive waste disposal facility. The Secretariat clarified that DS427 does apply to disposal facilities only during the operational period while it does not provide guidance on prospective assessments of ‘delayed’ exposures that may occur in the post-closure period of a disposal facility. Specific guidance on assessment of exposures for disposal is given in the Specific Safety Guide SSG-23.

Upon request of the WASSC Chairman, Ms. Katherine Asfaw (NSOC), the Technical Editor, and Mr. Telleria provided some details on the technical editing of the three Safety Guides and the associated Consultancy Meeting. The main objectives of the editing process would be to ensure (a) the internal consistency of the three documents, and (b) the correct usage of terminology according to the IAEA Safety Glossary.

Finland asked how the Secretariat would ensure that the CSS members are being informed about the latest changes made during the Joint RASSC/WASSC Session. It was decided to send the three draft Safety Guides for information to those countries which provided comments prior to the meeting (Australia, United Kingdom) or requested to evaluate the latest changes made during the meeting (Finland).

**Action:** The Secretariat to send DS427, DS432 and DS442 for information to those countries which provided comments prior to the meeting (Australia, United Kingdom) or requested to evaluate the latest changes made during the meeting (Finland).

**Action:** The Secretariat to submit DS427, DS432 and DS442 to the CSS for endorsement for publication.

### RW.6 OTHER SAFETY STANDARDS ISSUES


Mr. Vladan Ljubenov (WES/NSRW) and Mr. Igor Gusev (RSM/NSRW) summarized the discussions that had taken place at the meetings of RASSC and WASSC in November 2015 as well as at two Consultancy Meetings that were held in early 2016.

The key points to emerge in the review of the Safety Guide *Application of the Concepts of Exclusion, Exemption and Clearance* (RS-G-1.7) are the following:

- The Safety Requirements publications *Radiation Protection and Safety of Radiation Sources: International Basic Safety Standards* (GSR Part 3) and * Decommissioning of Facilities* (GSR Part 6) have been revised since RS-G-1.7 was published in 2004.
• Requirements on the application of the concepts of exemption and clearance are now included in GSR Part 3. The values of activity concentrations for radionuclides of artificial origin in bulk, derived using the criteria for exemption, and which are also used as values for unconditional clearance (Tables 1 and 2 of RS-G-1.7), are also included in GSR Part 3. Thus, much of the current content of the RS-G-1.7 is now incorporated in higher level documents.

• There is now considerably more experience and international consensus on the clearance process. The need to document this in the form of additional detailed guidance is a priority for many Member States.

• The existing Safety Standards do not address adequately the clearance of liquid materials and of building structures on the basis of surface contamination measurements.

• While values for surface-contaminated commodities in transport have been included in the Regulations for the Safe Transport of Radioactive Material (SSR-6), no comparable values have been developed for international trade.

• The exemption values in RS-G-1.7 have been developed on the basis of an individual dose criterion of 10 µSv in a year. On the other hand, GSR Part 3 establishes an individual dose criterion of 1 mSv in a year for contaminated commodities.

RASSC and WASSC had previously agreed that RS-G-1.7 should be reviewed and endorsed the development of additional guidance on the clearance process, including the development of activity concentrations for contaminated liquids and for surface contamination. The Secretariat was now proposing to develop two separate Safety Guides to cover the material in RS-G-1.7 as follows:

• one Safety Guide to deal exclusively with the issue of clearance;

• one Safety Guide to deal with the issue of exemption as well as national and international trade in non-food commodities.

Given the desire to use identical numbers in many instances for both exemption and clearance, the Secretariat recognized the need to develop both Safety Guides in parallel.

Australia agreed on the need to provide updated guidance but also wanted to open up the values for consideration. This was strongly supported by IRPA, who noted that the actual doses are often up to two orders of magnitude lower than the individual dose criterion of 10 µSv per year. This has a major impact on decommissioning, in particular, and this unnecessary conservatism is costing many billions of dollars every year.

The EC noted the considerable effort that was necessary to achieve agreement on the current numbers, which are identical in both the International BSS and the European BSS. Given that the values for exemption and clearance are incorporated in national legislation, the EC questioned the political will to review these values now.

This position was supported by ENISS, who also noted that conditional clearance is a major concern. The WHO recognized that the current values for exemption and clearance contained in the BSS might not be perfect, but agreed that it would be inappropriate to open these for review at this time. Rather, the international organizations should continue to collect experience on the application and implementation of the BSS.

IRPA added that the timescales involved are long – recognizing at this stage that the numbers are inappropriate and will need to be reviewed in the future will allow us to plan for that work. This was supported by the UK, who agreed on the need for stability but also recognized that the economic arguments could not be ignored. The United States and Israel agreed the conservatism in the numbers
needed to be considered. India welcomed the initiative to develop clearance values for liquids and gases and sought clarification on how the values for gases would be applied.

Mr. Pinak (SH-RSM) noted that the issue was often not with the numbers, but with how they are, or are not, applied. In developing the new safety guides, the conservative nature of the values used could be underlined with a recommendation to take this into account in decision-making.

Mr. Gusev added that the RASSC Electronic Working Group (EWG) previously established to deal with criteria for non-food commodities could be re-established to include the broader issue of exemption. It would be important to clearly identify in the DPP how these related issues should be addressed, and input from the Committee members would be welcomed. Mr. Gusev proposed to develop new terms of reference for the EWG and to circulate these to all RASSC members and observers, along with a request for nominations.

The Chairman thanked RASSC and WASSC for their active involvement in the discussion and their clear recommendations to the Secretariat. He noted the agreement of the two Committees to proceed with the development of two separate Safety Guides. He asked the Secretariat to develop DPPs for these two documents and also to re-establish the RASSC EWG.

**Action**: The Secretariat to develop a DPP for a new Safety Guide on clearance.

**Action**: The Secretariat to develop a DPP for a new Safety Guide on exemption and trade in contaminated non-food commodities.

**Action**: The Secretariat to establish a RASSC Electronic Working Group to develop the Safety Guide on exemption and trade in contaminated non-food commodities.

**RW 6.2 Proposal to develop guidance material on living in contaminated environments**

Mr. Peter Johnston (DIR-NSRW) summarized recent discussions within the Secretariat on challenges faced by communities living in contaminated environments. Such environments consist not only of those contaminated as a result of nuclear accident, such as occurred in Chernobyl and Fukushima, but also sites contaminated as a result of past practices. Areas of high natural background, whether the exposure is due to gamma radiation or to radon, present different issues that would need to be considered and addressed separately.

While there are several safety standards and technical documents dealing with radiation protection principles, remediation, post-remediation management and stakeholder involvement, there is no specific document addressing the specific needs of population groups and economic sectors during the remediation of radioactively contaminated land. Considerable experience on the issues that need to be considered, and how they can be addressed, has been gained as a result of various Agency activities. This experience could be brought together into one document and made more widely available.

The Secretariat therefore decided to seek the views of both RASSC and WASSC on the benefits of producing such a document. Possible topics for inclusion would be the setting of reference levels and the associated optimization issues, specific guidance for affected groups (e.g. exposure of children at home and at school, collection and consumption of forest foods, use of firewood and produced ash), self-help initiatives to reduce radiation exposure, trade in contaminated food and commodities and monitoring programmes. The Secretariat considered that a safety report might be the most appropriate format for the document, but this is also open for discussion.

The ICRP welcomed the initiative, pointing out that many of these issues are addressed in its publications 109 and 111. The ICRP also considered that the document could usefully be extended to include the period, often of several years, after remediation works had come to an end. France noted
the importance and difficulty of the issues to be addressed in the document and agreed with the points made by ICRP.

Brazil supported the proposal and offered to make available all relevant information from the Goiania accident that involved contamination of the environment by Cs-137. Norway noted that there is extensive data available from the period of nuclear testing and this material should be included. The United States underlined the importance of dealing with optimization and economic/societal issues and also suggested that the scope could be extended to include non-human species.

Japan indicated it was supportive of this initiative from the Secretariat and would hopefully be able to share valuable experiences following the Fukushima Daiichi accident. Japan also noted that this is a difficult and sensitive issue for the affected populations and requested some additional time to consider the matter further. The ICRP referred to the ongoing dialogue and public consultation it organized in Japan following the Fukushima Daiichi accident; a lot has been learnt from these discussions and it would be very helpful if the outcomes could be included in the proposed new document.

The ILO supported the development of a document as described by the Secretariat and underlined the importance of ensuring that its existence is well advertised. Mr. Johnston agreed that a communication plan could be developed prior to publishing the document.

Mr. Johnston thanked RASSC and WASSC for their comments and support for the proposal. The next step for the Secretariat would be to convene a Consultancy Meeting to develop a detailed DPP for the new document, which would then be shared with both Committees for further comment and approval.

**Action:** The Secretariat to develop a DPP for a new guidance document on living in and maintaining economic activities in a contaminated environment.

**RW 6.3 Progress on Code of Conduct Supplementary Guidance on Management of Disused Radioactive Sources**

Ms. Monika Kinker (WES/NSRW) updated the Committees on the work to develop guidance on the management of disused sealed radioactive sources (DSRS), on behalf of Mr. Hilaire Mansoux (RIT/NSRW). This is a topic of particular interest and importance for many Member States and has been noted previously by both the Board of Governors and the IAEA General Conference.

The intention is to develop a guidance document parallel to the existing *Guidance on Import and Export of Radioactive Sources*. It will be primarily targeted at non-nuclear States with only DSRS as potential waste. The guidance will lay out the basic principles and provisions for safe and secure management of DSRS, including their reuse, recycling, storage and disposal. Those steps that should be taken before acquisition of a source, in relation to its management at the end of the lifecycle, will also be addressed.

Technical Meetings organized in October 2014 and December 2015 recognized the need for this guidance and provided broad support for its format and content. Subsequently the draft guidance was submitted to Member States for comment from February to June 2016, with 95 comments received from 11 Member States. A further Technical Meeting is planned for 27 June to 1 July 2016 to resolve the comments and to seek agreement on submitting the document for approval and endorsement by IAEA policy-making organs.
RW 6.4 Revision of the Self-Assessment of Regulatory Infrastructure for Safety (SARIS) Question Sets

Mr. Teodros Hailu (RIT/NSRW) reminded the Committees that the Self Assessment for Regulatory Infrastructure for Safety (SARIS) tool has been in use for a number of years. SARIS is used by Member States prior to an Integrated Regulatory Review Service (IRRS) mission to prepare the Advance Reference Material (ARM) and is designed to assist the host in identifying the degree of compliance with IAEA safety standards and to develop an action plan to address non-compliances.

SARIS has been structured along the same lines as the IAEA safety standards, with one primary question for each overarching requirement in the standards, and subsidiary questions for the requirements in the paragraphs. There are then a number of subsidiary questions to evaluate the extent to which the requirement is being implemented. Mr. Hailu noted that the same issue is covered in a number of safety standards and this has resulted in duplication of the questions in SARIS.

There was general agreement that the SARIS tool was too burdensome on Member States and that a reduction in the time needed to answer the questionnaire would allow more time for implementation. Consequently, work started in 2014 to review and redesign the question sets with the intention of reducing the number of questions while still covering all of the requirements, and also for consistency with new or revised safety standards. The result is a reduction of 75% in the number of questions, from 2,872 to 677. Currently the new question sets are being uploaded into SARIS and the updated version will be published and released to Member States shortly (July 2016).

The Chairman noted that the reduced amount of work for Member States using SARIS is particularly welcome and that Argentina will use the new process to support its upcoming IRRS mission.

RW.7  NUCLEAR SECURITY DOCUMENTS FOR CLEARANCE


Ms. Fitriah Bakri (NSNS) outlined the purpose, scope and content of the draft implementing guide. The document focuses on the development of a national strategy for capacity building, including the identification of methodologies for assessing infrastructure needs. A systematic and integrated approach is taken to the development and continuous improvement of organizational and individual competencies.

The document is relevant to all organizations involved in nuclear security and reflects the multi-disciplinary and cross institutional nature of the issue. It is anticipated that the application of the Implementing Guide will enhance the human, scientific, technological and managerial competence as well as organizational, institutional and national capabilities.

The draft text was prepared through a number of Consultancy Meetings with a broad geographical distribution of experts. It was submitted to Member States for comment in mid-2015 and 30 comments were received. The majority of comments were accepted, sometimes with minor modification. Those comments that were inconsistent with the scope of the document were rejected.

RASSC and WASSC had no questions or comments on the document, which was therefore cleared for publication.

**Action:** The Secretariat to submit the draft Implementing Guide *Building Capacity for Nuclear Security* (NST009) for publication.
RW 7.2 Draft Implementing Guide: Preventive and Protective Measures against Insider Threats, NST041

Mr. Robert Larsen (NSNS) introduced the draft implementing guide, which is an update to Nuclear Security Series No. 8 and reflects the updated Recommendations in Nuclear Security Series No. 13. It provides updated general guidance to States, their competent authorities, and operators on selecting, implementing, and evaluating measures for addressing defined insider threats.

Experience has shown that all staff are a potential security risk and that nuclear material can and will be stolen by insiders with specific knowledge of the facility. The document focuses primarily on preventive and protective measures against such insider threats in relation to unauthorized removal of nuclear material and sabotage of nuclear material and facilities. The existing guidance has been expanded to include cyber-security guidance and to address protection principles that are cross-cutting for physical protection, accounting and control, and computer-based systems.

Mr. Larsen emphasized that two important issues are addressed throughout the document. Firstly, preventive and protective measures should be implemented in a balanced manner that is not incompatible with safety and, secondly, security measures and safety measures need to be designed and implemented in an integrated manner.

RASSC and WASSC had no questions or comments on the document, which was therefore cleared for publication.

Action: The Secretariat to submit the draft Implementing Guide Preventive and Protective Measures against Insider Threats (NST041) for publication.

RW.8 TOPICAL SESSION: CHALLENGES IN REGULATING NORM INDUSTRIES

The objective of the topical session was to present the key safety issues in terms of policy, regulatory and operational aspects of NORM industries, to identify and prioritize areas where safety and optimisation of protection is challenging, and to suggest areas where the Secretariat could work further to enhance the internationally harmonized system. In the morning session, issues of relevance to all NORM industries were discussed. The afternoon session focused specifically on the coal industry for which a Safety Report is currently being developed. The Agenda for the Topical Session can be found in Annex III.

Session 1: General Issues and Perspectives

Mr. John Rowat (WES/NSRW) gave an overview of the IAEA activities in developing safety standards and supporting documents applicable to NORM industries and activities. He also summarized IAEA projects to assist Member States with their implementation. Future work and remaining challenges include application of the graded approach, need of industry specific guidelines for radiation protection and management of NORM residues, long term management of bulk amount of residues and remediation of NORM legacy sites, as well as the need of enhanced and improved knowledge, understanding and communication.

Mr. Malcolm Crick (UNSCEAR) provided an overview on worker exposure arising from different industries. The information based on a UNSCEAR 2008 report shows that under certain mining circumstances, the exposure to worker can be significant. However, the data is sparse, making it difficult to identify meaningful trends on global exposures or to reach firm conclusions. Nine categories are identified for concern of public exposure. While the individual doses are generally low, there are challenges for disposal and site restoration due to huge volume of residues with enhanced
NORM. UNSCEAR is conducting a new occupational exposure survey, updating assessment of exposures from electricity production, and planning new public exposure surveys.

Mr. Jean-Francois Lecomte (ICRP) introduced the activities of ICRP Task Group 76 to develop a conceptual framework for the practical application of the new ICRP recommendations on radiation protection for NORM industries. The framework is intended to provide information on the position of NORM in the ICRP system, the approach for protection of workers, the public and the environment, and optimization and dose criteria that may apply, as well as emergency exposure situations and existing exposure situations.

Mr. Jared Thompson summarized the mission and current key issues of the Conference of Radiation Control Program Directors (CRCPD). He focused on practical perspective on issues of NORM industries. He pointed out the distinction used in the United States between NORM and TENORM (Technologically Enhanced NORM), which is different from IAEA definition of NORM. Concern on NORM (TENORM) includes mining and extraction, drilling for oil and gas and industrial/chemical processes. CRCPD has developed model regulations for NORM, aimed at promoting consistency in approach across the relevant industries. Various streams of residues of particular concern come from the oil/gas industry, phosphate fertilizer production and water treatment. The regulatory control of TENORM is complex because of variety of residues and wastes; many possible and actual regulators; gaps in national regulatory coverage both at the state and regional level; and challenges in residues and waste disposal.

Mr. Frank Harris (Rio Tinto) expressed the view that the current international approach to NORM is ‘at best fractured and in some case is non-existent.’ He reviewed issues related to NORM in terms of regulatory, radiation protection and safety, transport, waste, and nuclear non-proliferation. It is expected that regulators establish a consistent approach with practicality as the key and provide clarified guidance on application. Enhanced harmonization, openness and awareness amongst industries and regulators need be encouraged by further development and application of IAEA Safety Standards. Mr. Harris noted that the current approach in IAEA safety standards is based on exemption under an activity concentration of 1 Bq/g, but this takes no account of the doses due to radon, which are often much higher than those due to gamma radiation. Such an approach is no longer tenable and needs to be reviewed.

During the Panel Discussion, many questions were raised, such as ICRP policy on occupational exposure to radon, application of ICRP recommendations on using a range of reference level under difference exposure situations, need of clarification between ‘protection of environment’ and ‘protection of biota’, application of graded approach and risk based approach, expectation of specific tools and methodology supporting NORM management and promotion of harmonization.

It is generally observed that:

- There is a need of appropriate control of NORM. However, the development of a framework for control is not emphasized as much as it should be.
- NORM industries cover a big variety of practices, processes, circumstance and involve multiple regulatory bodies.
- Occupational exposure to miners can be significant under certain circumstances.
- Residues cover a wide range of physical, chemical and radiological characteristics. Many have the dual characteristics of long lived radionuclides and bulk amount of the order of millions of tons, making challenges for management and remediation.
- Non-radiological hazards are often the dominant risk.
• There is limited awareness, resources and experiences on issues of radiation protection and NORM residues/waste amongst many of the industry sectors concerned.

• IAEA has published Safety Requirements for the control of NORM industry. Guidance and supporting documents are under development.

• UNSCEAR is conducting survey on occupational exposure, updating assessment of exposure from electricity production and planning new public exposure survey.

• ICRP is developing a report on application of its recent Recommendations (ICRP 103) on industrial processes involving NORM.

• There is a need for of a consistent, graded and integrated approach in dealing with NORM.

There are many challenges in establishing control over NORM, of which those below should be prioritized:

• Lack of appropriate standards and guidelines for NORM, taking account of complexity of the nature related to NORM industries, multiple regulators and broad stakeholders.

• Application of the graded approach (regulatory measures and resources commensurate with the risk) for regulation of NORM industries including their residues, based on good knowledge and understanding of the diverse industrial sectors.

• Application of consistent approaches amongst international communities, thematic aspects, industry sectors, different regulatory bodies, and amongst Member States.

• Synergies and system optimization with integrated consideration of radiological and non-radiological hazards.

• Need to improve the process of sharing radiation protection operational management experience among various industrial sectors—in this regard proprietary barriers are counterproductive.

• Limited experience in radiation protection for many industry sectors concerned, except for uranium production.

• Siting and long-term management of bulk amount of NORM residues, including consideration of institutional control and financial aspects.

• Remediation of legacy site and care about use of the land related past practice.

• Reuse and recycle of NORM residues for avoidance of the need of long term management and disposal.

• Stakeholder trust: a need to develop a common language for engaging open and transparent dialogues with stakeholders (e.g. decision makers, regulators, the public, industry, etc.).

While joint efforts are needed to address the challenges, the IAEA should:

• Continue its lead role in developing international safety standards and supporting documents with priority on topics to address challenges identified.

• Review the applicability of an approach based on activity concentrations (1 Bq/g for uranium and thorium and 10 Bq/g for potassium).
• Provide information to support application of graded approach for regulation of NORM industries including their residues based on good knowledge and understanding of the diverse industrial sectors;

• Promote application of relevant safety standards to improve consistency amongst thematic aspects, industry sectors, different regulatory bodies, and amongst Member States;

• Develop documents and tools to support the management of NORM industries; and

• Consider establishing a new network for NORM community.

Session 2: Coal Industry – Mining, Combustion & Residues

The dedicated session on the coal industry, for which a Safety Report is currently under development, heard presentations by invited speakers from China, the Russian Federation and Poland. These presentations focused on regulation, operational experience for radiation protection, assessment and management of the doses (for workers and the public), country and regional views as well as opportunities and challenges. A panel discussion followed the presentations.

Mr. Senlin Liu noted that China has the largest worldwide capacity in terms of coal production and large number of mines and approximately 6 million miners. The industry is regulated since 2013 with requirements for worker protection, residue/waste management, and transport. Management of NORM residues (in terms of volume and activity level), clearance level, criteria for radioactive waste, and design criteria for final disposal repository were identified as national regulatory challenges. Underground radon concentrations are often higher than 1,000 Bq m\(^{-3}\) and for the stone coalmines the mean value is nearly 6,000 Bq m\(^{-3}\). Annual average effective dose to underground coalminers in small-sized coalmines is 3.3 mSv/y, and that of stone coalmines is 10.9 mSv/y. For building materials (such as carbonized bricks, which is another challenge for public exposure management requires establishment of a national action plan), additional dose to the general public living the houses in some regions is in the range from 3.1 mSv to 6.8 mSv per year. A systematic approach is used to make a decision on the regulation actions in the national regulation.

Mr. Ivan Stamat reported that the Russian Federation has approximately 30% of the world reserves of coal and a long history of the study of radioactivity. A special programme is in operation for the managing the specific activity of NORM in coal; specifically, coal samples are taken from the ash and slag on the energy companies and from the main coal-basins. Regulation of the radioactivity of coal covers the main aspects for radiation protection, including radiation protection of workers in coal industry (mine, open cuts) and environmental protection in connection with the air emissions of power plants and storage of waste from coal combustion. An equation using activity concentrations is used, which triggers the implementation when \(A_{\text{SP}}\) is greater than 10 Bq/g. Three levels (level of intervention, area optimization and region restrictions) of control are applied for selection of regulation areas and control of natural radioactivity (special measures).

For building materials manufactured using ash and slag, a different formula is used, based on the limits indicated below:

- If the \(A_{\text{SP}}\) in such materials is less than 740 Bq/kg, no restrictions apply.
- If the \(A_{\text{SP}}\) exceeds 740 Bq/kg, certain restrictions on their use are set.

\[ A_{\text{SP}} = A_{\text{Ra}} + 1.3 A_{\text{Th}} + 0.09 A_{\text{K}} \]

where \(A_{\text{Ra}}\) and \(A_{\text{Th}}\) are the specific activity of \(^{226}\text{Ra}\) and \(^{232}\text{Th}\) in radioactive equilibrium with all daughter decay products of \(^{238}\text{U}\) and \(^{232}\text{Th}\), respectively, and \(A_{\text{K}}\) is the specific activity of \(^{40}\text{K}\) (all in Bq/kg).

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1 A_{\text{SP}} = A_{\text{Ra}} + 1.3 A_{\text{Th}} + 0.09 A_{\text{K}}
Regarding worker doses, the effective dose to workers does not exceed 2 mSv/y for more than 85% of workers in the mines. Main contributors to the exposure of miners are Rn-222 and its decay products in air (50–70 %), followed by inhalation of long-lived natural radionuclides.

Mr. Boguslaw Michalik introduced the production of hard coal and lignite (which is declining) by using EURACOAL statistics. Sources and pathways of radiation risk in the coal industry (including information on discharged activity & activity concentration in sediments) were mentioned with a special emphasis on discharge of radium-bearing waters into surface waters, its subsequent transportation and accumulation in sediments. Current legislation in Poland requires monitoring of radiation exposure in underground mines (transposition of European legislation (1996) in 2004). The new Council Directive 2013/59/EURATOM (which requires notification, exemption, licensing, NORM mixing/dilution option) will be transposed into national law with a graded approach with three levels of authorisation until February 2018. Dealing with the building materials, the activity concentration index is used; however, there are many different approaches. Problem areas are NORM above the clearance level with a real risk of overestimating the problem by assigning NORM to a category of radioactive waste. It was noted that requirements should be defined for radiation protection experts involved in NORM and recommendations (criteria) concerning environmental impact caused by NORM discharge should be studied further.

During the Panel Discussion, questions were raised in relation to the radionuclide content of coal imported from Australia, actions to reduce the doses to public from carbonized brick which is monitored in some provinces in China and plan for the measurement of radon. The radon and gamma contribution to the worker doses in coal mines in Poland was highlighted and in response, it was indicated that gallery size is the main parameter to introduce a monitoring program and good ventilation makes the problem negligible. The ILO informed the participants on mycoses as a major occupational health problem in mines, which requires further work for occupational radiation protection.

The Draft Safety Report on Radiation Protection and Management of NORM Residues in the Coal and Coal Ash Industry was introduced in brief. The report will be a part of industry specific NORM library of IAEA documents and draft content of the report include following chapters:

- Overview of the Coal Industry (occurrence and reserves, mining and uses of coal, electricity production, residue recycling, underground coal gasification, coal in the chemical industry and coal bed methane),
- Radiation Protection and Regulatory Considerations (application of the standards to industrial activities involving, radiological characterization, graded approach to regulation and radiation monitoring),
- Coal mining, coal combustion & combustion products, coal to chemicals, underground coal gasification and coal bed methane production, and
- Monitoring considerations.

It was also noted that, over the last 15 years, the IAEA has developed numerous publications related to NORM industries, and both operators and regulators are involved in drafting IAEA publications. The Safety Reports and TECDOCs that have been published are geared to providing both junior operators and regulators with the information to ensure “good practice” in operation and regulation.

Finally, the participants were informed about the NORM VIII symposium which will be organized in Rio de Janeiro from 18–21 October 2016. The NORM VIII Symposium is a major event in a series initiated in the Netherlands in 1997, followed by Germany in 1998, Belgium in 2001, Poland in 2004, Spain in 2007, Morocco in 2010 and China in 2013. The Symposium will bring together a world-wide audience to address the radiation protection control of NORM, and will include the results of new
research, explore practical case studies of industrial applications and waste disposal practices, evaluate the practical implication of international and national standards as well as identifying new societal needs and technical requirements for regulators and industry on NORM. Possible solutions for using, recycling and disposal of NORM residues will be another focus area, as well as the quality of NORM sampling and measurements. (Symposium web-site: http://normviii.ird.gov.br/).

RW.9 CLOSING OF THE MEETING

RW 9.1 Conclusions of the Joint Session

Mr. Johnston confirmed that the Secretariat will proceed to organize a Consultancy Meeting to prepare a DPP on the issue of living and working in contaminated environments. The many helpful comments received during the meeting would be fully taken into account. RASSC and WASSC will be fully involved as the document is drafted and finalized. Mr. Williams underlined the importance of such a document, noting that it is cross-cutting in nature and is likely to generate extensive discussion in future meetings.

Mr. Massera and Mr. Williams thanked the members and observers of both Committees for their active involvement in the meeting. They highlighted in particular the agreement on the three safety guides on protection of the environment and the important discussions on managing NORM industries. Mr. Massera welcomed the clear way forward on the revision of RS-G-1.7 and encouraged RASSC members and observers to engage actively in the Electronic Working Group that will be established.

RW 9.2 Closing

The joint RASSC/WASSC session was closed by the Chairs, Mr. Massera and Mr. Williams.
## ANNEX I. LIST OF ACTIONS

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<th>Agenda Item</th>
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<td>RW3.1</td>
<td>DS474, Draft SG: <em>Arrangements for the Termination of a Nuclear or Radiological Emergency</em>, to be submitted to the Member States for comment</td>
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<tr>
<td>RW3.2</td>
<td>DS459, Draft SG: <em>Management of Radioactive Residues from Uranium Production and Other NORM Activities</em>, to be submitted to the Member States for comment</td>
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<td>RW3.3</td>
<td>DS491, Draft SG: <em>Deterministic Safety Analysis for Nuclear Power Plants</em>, to be submitted to the Member States for comment</td>
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<td>DS495, Draft SR: <em>Regulations for the Safe Transport of Radioactive Material 20xx edition</em>, to be submitted to the Member States for comment</td>
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<td>DPP for DS497, Draft SG: <em>Nuclear Power Plants Operation</em>, to be submitted to the CSS for endorsement</td>
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<td>RW5</td>
<td>DS432, Draft SG: <em>Radiation Protection of the Public and Protection of the Environment</em></td>
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<td>DS427, Draft SG: <em>Prospective Radiological Environmental Impact Assessment for Facilities and Activities</em></td>
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<td>DS442, Draft SG: <em>Regulatory Control of Radioactive Discharges to the Environment</em></td>
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<td>1. To send for information to those Member States which provided comments prior to the meeting (Australia, United Kingdom) or requested to evaluate the latest changes made during the meeting (Finland)</td>
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<td>2. To be submitted to the CSS for endorsement for publication</td>
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<td>RW6.1</td>
<td>To develop a DPP for a new Safety Guide on clearance</td>
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<td>RW6.1</td>
<td>To develop a DPP for a new Safety Guide on exemption and trade in contaminated non-food commodities</td>
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<tr>
<td>RW6.1</td>
<td>The Secretariat to establish a RASSC Electronic Working Group to develop the Safety Guide on exemption and trade in contaminated non-food commodities</td>
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<td>The Secretariat to develop a DPP for a new guidance document on living in and maintaining economic activities in a contaminated environment</td>
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<td>RW7.1</td>
<td>NST009, Draft Implementing Guide: <em>Building Capacity for Nuclear Security</em>, to be submitted for publication</td>
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<td>RW7.2</td>
<td>NST041, Draft Implementing Guide: <em>Preventive and Protective Measures against Insider Threats</em>, to be submitted for publication</td>
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<td><strong>RW1.</strong> Opening of the Joint Session</td>
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<tr>
<td>RW1.1 Opening of the Meeting</td>
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<td>RW1.4 Administrative Arrangements</td>
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<th><strong>RW3. Review of IAEA Safety Standards</strong></th>
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<tr>
<td>RW3.1 DS474 Draft Safety Guide: Arrangements for the Termination of a Nuclear or Radiological Emergency</td>
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<td>(also to EPreSC, NUSSC and TRANSC)</td>
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<tr>
<td>RW3.2 DS459 Draft Safety Guide: Management of Radioactive Residues from Uranium Production and Other NORM Activities</td>
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The three Safety Guides dealing with protection of the public and the environment have undergone technical editing and will be considered at the next meeting of the Commission on Safety Standards in November 2016. RASSC and WASSC are invited to review the changes that have made to confirm that these are acceptable. Any comments can be made at the meeting and do not need to be submitted in advance.
RW6.3 Progress on Code of Conduct Supplementary Guidance on Management of Disused Radioactive Sources For information H. Mansoux (presenter: M. Kinker)

RW6.4 Revision of the Self-Assessment of Regulatory Infrastructure for Safety (SARIS) Question Sets For information T. Hailu

RW7. Nuclear Security Documents for Clearance

(also to NUSSC, TRANSSC and NSGC)

RW7.2 NST041 Draft Implementing Guide: Preventive and Protective Measures against Insider Threats For publication R. Larsen
(also to NUSSC, TRANSSC and NSGC)

Wednesday, 22 June 2016, 09:00–17:45

RW8. Topical Session: Challenges in Regulating NORM Industries

In the morning session, issues of relevance to all NORM industries will be discussed. The afternoon session will focus specifically on the coal industry for which a Safety Report is currently being developed.

A detailed agenda for the session will be circulated with the next version of the agenda.

RW9. Closing of the Meeting

RW9.1 Conclusions of the Joint Session G. Massera / G. Williams

RW9.2 Closing G. Massera / G. Williams

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25/29
Joint RASSC / WASSC Topical Session

Challenges in Regulating NORM Industries

Wednesday, 22 June 2016

IAEA Headquarters, Vienna

The International Basic Safety Standards (GSR Part 3) establish requirements for NORM industries under planned and existing exposure situations. This brings new challenges to regulatory bodies, and operators, as these activities cover broad industrial sectors of much diversified characteristics, and many of which have not been regulated in the past in term of radiation safety.

For the application of the IAEA Safety requirements on NORM activities, consideration needs to be given to radiation protection of workers, the public and the environment for a wide range of NORM industries on a global basis. The IAEA has initiated many activities, including the development of safety guides and safety reports, for assisting Member States in implementing relevant IAEA Safety Requirements.

In managing the residues and waste in NORM industries, radiation protection of the public and environment need to be addressed. This includes discharge control, reuse and recycle of residues, and the application of the concepts of exemption and clearance. Long-term safety of NORM residues is a particular challenge, such as appropriate control of disposal of residues in conventional landfill, decommissioning and remediation of relevant facilities and sites. Various options should be considered, understood, applied and assessed as to whether radionuclides and other potentially hazardous materials are appropriately isolated from the human environment.

While radiological aspects of NORM industries can be characterised in a general way, radiation protection management should be site and practice specific. As such, radiation protection addressing public health concerns associated with releases of radionuclides to the environment, the use of excavated ores for preparing building materials, and the safe long-term management of NORM residues and waste requires tailored and graded approaches and understanding on consequence management. This requires consultation and engagement with a number of stakeholders.

The objective of this topical session will be to present the key safety issues in terms of policy, regulatory and operational aspects of NORM industries, to identify and prioritize areas where safety and optimisation of protection is challenging, and to suggest areas where the Secretariat could work further to enhance the internationally harmonized system.

In the morning session, issues of relevance to all NORM industries will be discussed. The afternoon session will focus specifically on the coal industry for which a Safety Report is currently being developed.
09:00 Opening of the Joint Topical Session
Chairmen’s Introduction  G.MASSERA (RASSC) / G. WILLIAMS (WASSC)

**Session 1:**
General Issues & Perspectives
Chair: Geoff Williams
Rapporteur: Zhiwen Fan

This Session will “set the scene” for the Topical Session, presenting an overview of the IAEA work, international perspectives and remaining challenges.

09:10 IAEA Work Programme on NORM – Achievements and Challenges

This presentation will give an overview of the IAEA activities in developing Safety Standards dealing with NORM industries and assisting Member States with their implementation. Future work and remaining challenges will also be addressed.

**Presenter:** John ROWAT (IAEA)

09:40 Radiation Exposure due to NORM Industries

This presentation session will give an overview on exposures arising from different NORM industries.

**Presenter:** Malcolm CRICK (UNSCEAR)

10:00 Application of the ICRP Recommendations to NORM Industries

This presentation will discuss the activities of Task Group 76 to develop a conceptual framework for the practical application of the new ICRP recommendations on radiation protection for NORM industries.

**Presenter:** Jean-François LECOMTE (ICRP TG 76)

10:30 Coffee Break

11:00 Challenges in Regulating NORM industries – the View from the United States

This session will discuss challenges and experiences in regulating NORM industries in the United States, including stakeholder issues.

**Presenter:** Jared THOMPSON (Arkansas Department of Health and Chair of the Conference of Radiation Control Program Directors)

11:45 Challenges Faced by NORM industries – an Industry Perspective

This presentation will discuss challenges facing NORM industries from the viewpoint of the operator.

**Presenter:** Frank HARRIS (Rio Tinto)

12:30 Panel Discussion

**Session 1** will be completed by an open discussion of the importance of the issues identified in the presentations, and will be moderated by the Chair.
This Session will focus specifically on the coal industry and will contribute to the Safety Report currently being developed on this topic.

14:00 Challenges in Regulating the Coal Industry – Experience in China

This presentation will emphasize on specific, detailed examples of experience from operating coal mines, from the viewpoint of regulator.

Presenter: Senlin LIU (China Institute of Atomic Energy)

14:40 Radiation Exposure from the Coal Industry – Experience in the Russian Federation

This paper will describe the current situation regarding the assessment and management of the exposures of workers and the public from all aspects of the coal industry in the Russian Federation.

Presenter: Ivan STAMAT (Rospotrebnadzor)

15:20 The Coal Industry in Europe and Coal Combustion Products in the Construction Industry

This presentation will focus on specific, detailed examples of experience from the European practice with a special focus on the issue of residues and recycling, e.g. fly ash in building materials.

Presenter: Bogusław MICHALIK (Silesian Centre for Environmental Radioactivity Central Mining Institute)

16:00 Coffee Break

16:30 Rapporteur summary – Session 1 & 2

The Topical Session Rapporteur will present views of the key points raised by the presentations and through discussion.

16:50 Panel Discussion

Session 2 will be completed by an open discussion of the importance of the issues identified in the presentations, and will be moderated by the Chair.

17:30 Closing of the Topical Session

Session Chairs will give brief closing remarks with respect to possible future IAEA work that could be undertaken.

17:45 Reception

All participants are invited to a reception in the Mozart Room, adjacent to the IAEA restaurant in F building (ground floor).
### ANNEX IV.
LIST OF PARTICIPANTS

**Radiation Safety Standards Committee (RASSC)**

<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
<th>Role</th>
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<tr>
<td>Argentina</td>
<td>Mr Gustavo Massera</td>
<td>CHAIRMAN</td>
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<td>Australia</td>
<td>Mr Alex Kalaiзовski</td>
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<td>Belgium</td>
<td>Mr Lodewijk Van Bladel</td>
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<td>Bulgaria</td>
<td>Mr Nikolay Todorov</td>
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<td>Croatia</td>
<td>Ms Ivana Kralik</td>
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<td>Czech Republic</td>
<td>Ms Karla Petrova</td>
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<td>Denmark</td>
<td>Ms Mette Ohlenschlaeger</td>
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<td>Finland</td>
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<td>France</td>
<td>Mr Jean-Luc Godet</td>
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<td>Mr Manfred Helming</td>
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<td>Mr Arpad Vincze</td>
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<td>India</td>
<td>Mr M.R. Sankaran</td>
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<td>Iran</td>
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<td>Italy</td>
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<td>Japan</td>
<td>Mr Toshiyasu Teratani</td>
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<td>Korea, Republic of</td>
<td>Mr Seung Haeng Lee</td>
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<td>Lithuania</td>
<td>Mr Albinas Mastauskas</td>
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<td>Netherlands</td>
<td>Ms Miriam Tijsmans</td>
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<td>Pakistan</td>
<td>Ms Ameena Bano</td>
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<td>Syrian Arab Republic</td>
<td>Mr Ibrahim Othman</td>
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<td>United Kingdom</td>
<td>Ms Susan McCreedy-Shea</td>
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<td>United States of America</td>
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**Advisors**

- **France**
  - Mr Philippe Berard
  - Mr Jean-Francois Lecomte
- **Germany**
  - Ms Annemarie Schmitt-Hannig
- **Japan**
  - Mr Hindenori Yonehara
  - Mr Isao Kawaguchi
  - Mr Nobuyuki Sugiuira
  - Mr Hirokazu Tachikawa
- **United States of America**
  - Ms Cindy Flannery
United Nations Organizations
FAO Mr James Sasanya
ILO Mr Shengli Niu
   Mr Michael Gaunt
PAHO Mr Pablo Jimenez
UNSCEAR Mr Malcolm Crick
   Mr Ferid Shannoun
WHO Ms Maria del Rosario Perez
   (RASSC/WASSC sessions)

International Organizations
EC Mr Stefan Mundigl
NEA/OECD Mr Edward Lazo
ISO Mr Yann Billarand

Other Organizations
ENISS Mr Bernd Lorenz
ICRP Mr Nobuyuki Hamada
IEC Mr Miroslav Voytchev
IRPA Mr Roger Coates
ISSPA Mr Wolfgang Fasten
WNA Ms Binika Shah

Waste Safety Standards Committee (WASSC)

Argentina Ms Marcela Medici
Australia Mr Geoff Williams CHAIRMAN
Belgium Mr Walter Blommaert
Brazil Mr Nerbe Rupert Junior
Bulgaria Mr Nikolay Grozev Alternate
Canada Ms Pamela Doughty
China Mr Xinhau Liu Alternate or Advisor
China Mr Qiaoe Zhang Alternate or Advisor
Croatia Mr Dejan Skanata
Denmark Mr David Ulfbeck
Egypt Mr Mohamed Abdel Geleel Alternate
Finland Ms Kaisa-Leena Hutri Alternate
France Mr Christophe Serres Alternate
Germany Mr Christain Goetz
Hungary Mr Istvan Lazar
India Mr Chetan Karkash Kaushik
Israel Mr Roni Hakmon
Italy Ms Nadia Cipriani Alternate
Iran Mr Hossein Sadeghloo
Japan Mr Ryuta Dobashi Alternate or Advisor
Japan Mr Tatsuya Kijima Alternate or Advisor
Japan Mr Taiki Yoshii Alternate or Advisor
Japan Mr Hirokazu Tachikawa Alternate or Advisor
Korea, Republic of Mr Won-Jae Park
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<th>Country</th>
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<tr>
<td>Netherlands</td>
<td>Ms Saskia van Hensbergen</td>
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<td>Ms Marina Nepeypivo</td>
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<td>European Commission</td>
<td>Ms Borislava Batandjieva-Metcalf</td>
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