



# **International Conference on the Safety of Radioactive Waste Management**

**IAEA Headquarters  
Vienna, Austria**

**21–25 November 2016**

**Ref. No.: IAEA-CN-242**

## **Announcement and Call for Papers**

### **A. Introduction**

The sustainable use of nuclear energy and nuclear technologies requires that radioactive waste and spent fuel be safely managed. The safety of radioactive waste and spent fuel management relies on sound science and technology. Furthermore, appropriate legal, governmental and regulatory frameworks need to be in place.

Over the past decades many countries have made significant progress in the development and implementation of comprehensive radioactive waste and spent fuel management strategies. Some countries have taken concrete steps towards implementation of safe geological disposal of high level radioactive waste and spent fuel, whilst many other countries are still in an early planning phase. In addition, a number of Member States of the International Atomic Energy Agency (IAEA) are actively planning to introduce nuclear energy and thus need to develop appropriate competencies to establish, in a timely manner, programmes for the safe and responsible management of radioactive waste and spent fuel.

It is consequently of high importance to share the experience gained in developing and implementing solutions for the safe management of radioactive waste and spent fuel, in order to reach a higher level of safety worldwide.

Regular conferences related to the safety of radioactive waste management have been organized by the IAEA in the past:

- International Conference on Topical Issues in Nuclear, Radiation and Radioactive Waste Safety (Vienna, Austria, 1998)
- International Conference on the Safety of Radioactive Waste Management (Córdoba, Spain, 2000)
- International Conference on Issues and Trends in Radioactive Waste Management (Vienna, Austria, 2002)
- International Conference on the Safety of Radioactive Waste Disposal (Tokyo, Japan, 2005)

Since then many developments have occurred in the field of radioactive waste management.

Technology exists for the management of all types of radioactive waste, and the demonstration of safety of predisposal and disposal facilities and activities has progressed significantly. A comprehensive set of IAEA safety standards have been published to support the safe development of radioactive waste management programmes, and a suite of technical reports have been developed to provide information on best practices applied by Member States to comply with the requirements and guidance presented in the safety standards. In parallel, the review process under the Joint Convention on the Safety of Spent Fuel Management and on the Safety of Radioactive Waste Management has gained in maturity, thereby contributing to the enhancement of safety in this area.

More than 10 years after the last IAEA conference on this topic, the 2016 International Conference on the Safety of Radioactive Waste Management will bring together stakeholders from all the areas involved in the safe development of radioactive waste management programmes. The conference will allow all the progress achieved so far to be reviewed, address the remaining challenges and help to identify means to address these in a timely manner.

## **B. Objectives**

The purpose of the conference is to highlight the importance of an integrated long term approach towards the management of radioactive waste and spent fuel, to foster information exchange between Member States, and to provide inputs that will promote further harmonization of safety in the fields of predisposal management and disposal of radioactive waste. The conference will serve as a forum for discussing past experiences and future challenges. Furthermore, it will seek to identify Member States' needs in order to assist them — through specific activities under future IAEA programmes in this area — to develop and implement safe solutions for the management of their entire radioactive waste inventory.

The conference will address all aspects of predisposal management and disposal of radioactive waste and spent fuel, including waste arising from accidental situations. The management of radioactive waste and residues from mining activities, as well as the control of discharges from nuclear facilities and activities, are, however, outside of its scope.

## C. Format and Topics

The conference will consist of an opening session with a panel discussion, topical sessions with keynote addresses and oral contributions, and poster sessions. The conference will conclude with a panel session addressing key points from the week's discussions for consideration by the IAEA Secretariat.

The topical sessions will be structured around the following main topics:

- National Policy, Strategy and Framework for Radioactive Waste Management
- Predisposal — Waste processing
- Predisposal — Storage
- Disposal of Very Low Level Waste and Low Level Waste
- Disposal of Intermediate Level Waste
- Disposal of Disused Sealed Radioactive Sources
- Disposal of High Level Waste, Including Spent Nuclear Fuel Declared as Waste
- Post-Accident Waste Management: Lessons Learned and Preparedness

### **National Policy, Strategy and Framework for Radioactive Waste Management**

All Member States should have a clear framework setting out roles and responsibilities for the various interested parties so that they can successfully develop, license and implement safe radioactive waste facilities and activities. Experience shows that it is beneficial to have engagement by the regulator during all stages including during the pre-licensing stage: this must be achieved without losing credibility and independence.

The session will address the following points:

- National framework, policy and strategy
- Roles and responsibilities of the various interested parties in the different steps of radioactive waste management (e.g. regulator, operator, civil society, etc.)
- Confidence building in the decision-making process and science and technology
- Interactions/relations between the regulator and operator during the pre-licensing and licensing processes
- National approaches for building competencies for radioactive waste management (including the human resources component and knowledge transfer)
- Role of international cooperation in national radioactive waste management programmes:
  - International collaborative research and development
  - International guidance and legal instruments
  - Roles and timing of peer reviews

- National approaches for the handling of radiological and non-radiological requirements
- Interface of safety, security and safeguards within radioactive waste management
- Funding mechanisms for radioactive waste management programmes

### **Predisposal — Waste Processing**

For most radioactive waste types, including disused sealed radioactive sources, there is already proven technology available for treatment and conditioning. In all cases the selected technology should take account of the safety case for storage and, where possible, with planned future stages of waste management (e.g. disposal). In cases where the final end point is not defined, treatment and conditioning should be in line with an assumed disposal end-point.

The session will address the following points:

- Good practices — e.g. in minimization; segregation; characterization; classification; conditioning
- Innovative technologies — e.g. for conditioning and characterization
- Clearance levels and application of clearance levels
- Challenges in the management of legacy and special wastes (e.g. graphite, beryllium), and mixed hazard waste
- Approaches and solutions for treatment and conditioning without a defined end point — options and interdependences of different waste management steps to be considered
- Regulatory approach for predisposal oversight: requirements, compliance control, review and assessment, inspections, enforcement actions

### **Predisposal — Storage**

Within overall radioactive waste management, including for disused sealed radioactive sources, storage is a necessary interim step, where proven technology exists. Storage is not in itself a long term solution although it may be a ‘step towards a solution’. For some types of waste (high level waste (HLW) and spent fuel) there can be a real safety reason for storage (e.g. to allow cooling or decay), but for some other waste types storage is driven more by operational factors such as availability of disposal routes or cost effectiveness. When developing storage facilities it is necessary to ensure from the very start that wastes can be controlled and monitored and safely retrieved.

The session will address the following points:

- Developing the safety case for storage
- Examples of good practices, including in monitoring, inspection and knowledge management
- Regulatory aspects: expectations for demonstration of safety, inspections, decisions, and actions upon non-compliance
- Challenges when storage time is extended for longer than planned: waste form evolution/degradation, relicensing, ageing management, regulatory considerations for storage time extensions

- Technological and safety aspects of multi-purpose casks (storage/transport/disposal)

### **Disposal of Very Low Level Waste and Low Level Waste**

There is an existing safe disposal solution for most waste types and many examples where disposal facilities for very low level waste (VLLW) and low level waste (LLW) are operated safely and for which post-closure safety has been demonstrated. Member States may take advantage of existing experience/disposal concepts, but in all cases a safety case and supporting safety assessment specific to their wastes and sites will have to be developed. The safety case must take account of the inventory of the wastes (including the long-lived radionuclides), the proposed waste handling operations and evolution of the engineered and natural barriers. International collaboration is actively being undertaken on many aspects, including safety case methodologies, approaches to institutional control and demonstrating continued safety even in the event of human intrusion after closure.

The session will address the following points:

- Developing the safety case for VLLW and LLW disposal
- Specific safety aspects and technological solutions for disposal of VLLW and LLW containing long-lived radionuclides e.g. uranium, radium bearing waste
- Regulatory aspects: expectations for demonstration of safety, inspections, decisions, and actions upon non-compliance
- Monitoring and institutional control
- Consideration of human intrusion in the safety case
- Site selection process and screening criteria
- Challenges of adapting overseas concepts and designing for local conditions
- Lessons learned from operation of facilities
- Approaches the management of existing facilities which do not comply with current safety standards (e.g. historical facilities)
- Experiences with the use of international guidance

### **Disposal of Intermediate Level Waste**

The disposal of intermediate level waste (ILW) differs mainly from the disposal of LLW by the need for a greater level of isolation and containment for safe disposal. As a consequence, the safety of disposal rather relies on a combination between the properties of the natural barrier and the engineered barriers. In line with the need for a greater level of containment and isolation, and according to the characteristics of the waste, the depth of disposal of ILW should be adapted to ensure the appropriate level of safety.

The session will address the following points:

- Developing the safety case for ILW disposal
- Specific safety aspects and technological solutions for disposal of ILW (e.g. gas generation, optimization of depth of disposal, time frames for safety assessment, long-lived radionuclides)

- Regulatory aspects: expectations for demonstration of safety, inspections, decisions, and actions upon non-compliance
- Monitoring and institutional control
- Consideration of human intrusion in the safety case
- Site selection process and screening criteria
- Challenges of adapting overseas concepts and designing for local conditions
- Lessons learned from the operation of facilities
- Experiences with the use of international guidance

### **Disposal of Disused Sealed Radioactive Sources**

Once declared as radioactive waste, a disused sealed radioactive source (DSRS) has to be managed according to the national legal framework and in line with international standards for the management of radioactive waste. While the end point solution remains disposal, in the interim it is essential that DSRSs be appropriately and safely conditioned and stored.

For some situations (e.g. small programmes, small volumes of sources) specific disposal solutions can be implemented in line with international standards. Their implementation requires an appropriate governmental, legal and regulatory framework and a licensing process including the development of a safety case.

The session will address the following points:

- Developing the safety case for the disposal of DSRSs
- Specific safety aspects and technological solutions for the disposal of DSRSs
- Regulatory aspects: expectations for demonstration of safety, inspections, decisions, and actions upon non-compliance
- Dedicated disposal solutions and challenges in their implementation

### **Disposal of High Level Waste, Including Spent Nuclear Fuel Declared as Waste**

Technical solutions for the disposal of HLW (including spent nuclear fuel if declared as waste) exist and safety cases supporting licence applications have been developed in some countries. Also, some countries are progressing in the development of geological disposal programmes, mainly for the siting process, while one Member State recently granted the authorization for construction of a geological disposal facility for spent nuclear fuel. However, for different reasons (e.g. public acceptance, political commitment) many countries are not showing such progress in the development and implementation of geological disposal for HLW.

Experience shows that the successful implementation of a safe geological disposal facility requires initiating such a process as early as possible as part of a nuclear programme. The implementer has the prime responsibility for developing a safe disposal concept. Within this process and even during the pre-licensing phase, the involvement of the regulator is essential for ensuring that safety and radiological criteria are appropriately taken into account both in the long term and during operation.

The session will address the following points:

- Experience in developing and reviewing safety cases for the disposal of HLW (operational and long term safety)
- Experience from the siting process, including the role of, and interactions between, the various interested parties (implementer, regulator, government, public, etc.)
- Specific safety aspects and technological solutions for the disposal of HLW (e.g. monitoring and role to support decision-making, reversibility/retrievability, scenario development, knowledge management and memory keeping)
- Flexibility of geological disposal facilities to accommodate the evolution of inventories and characteristics of waste
- Experience and challenges for operators and regulators in moving from development to the construction and operation of the disposal facility (industrialization, regulatory authorization, etc.)
- Using the safety case for prioritization of research and development
- Challenges for Member States contemplating shared disposal facilities (e.g. responsibilities, decision-making, public involvement and acceptance, etc.)
- Experiences with the use of international guidance

### **Post-Accident Waste Management: Lessons Learned and Preparedness**

Events at Fukushima and elsewhere have demonstrated that accidents can happen and that Member States should be prepared for such eventualities and have in place structures and frameworks to cover post-accident waste management. This will require consideration to be given to waste management strategies and to the roles and responsibilities of the various parties, including operator, regulator, emergency services, local and national decision-makers, etc. Lessons learned suggest that these issues should be planned for in advance and that there should be flexibility (if needed) in the application of regulatory criteria to facilitate optimized waste management.

The scope of this session is intended to address the management of waste and not the remediation of sites and will address the following points:

- Experience of post-accident waste management (e.g. management of large amounts of waste (generally low activity) or damaged fuel, characterization of waste, etc.), including:
  - Strategies for identifying and developing storage sites, conditioning techniques, and disposal concepts
  - Establishment of radiological protection criteria for post-accident conditions
- Lessons learned — Member States' planning for post-accident waste management and the necessary organizational and regulatory framework, including:
  - Scenarios to consider for evaluating and selecting appropriate waste management strategies
- Licensing process for post-accident waste management activities and facilities

- Public involvement e.g. in the preparation and implementation of post-accident waste management strategies

## **D. Contributed Abstracts and Papers**

Papers on issues falling within the topics outlined in Section C above may be submitted as contributions to the conference. All papers, apart from invited papers, must present original work and should not have been published elsewhere.

### **D.1. Submission of Abstracts**

Persons wishing to present a paper at the conference — either orally or in the form of a poster — must submit an abstract of between 250 and 400 words **in electronic format** directly to the IAEA. Instructions on how to upload the abstract to the conference's web browser-based file submission system (IAEA-INDICO) are available on the IAEA conference web page (see Section M).

The abstracts **must** be submitted through this system. No other form of submission will be accepted.

The abstract should give enough information on the contents of the proposed paper to enable the Programme Committee to evaluate it. Authors should state to which of the topics outlined in Section C their contribution relates. The accepted abstracts will be reproduced unedited in the *Book of Abstracts* which will be distributed to all participants at the conference.

Authors must further submit the following two forms to their appropriate official authority (see Section E) for transmission to the IAEA. These forms must be received by the IAEA no later than **15 April 2016**:

- Participation Form (Form A)
- Form for Submission of a Paper (Form B)

### **D.2. Acceptance of Papers for Oral or Poster Presentation**

Authors will be notified by email by **20 June 2016** as to whether, on the basis of the electronically received abstract, their paper has been accepted, and whether it is accepted for oral presentation or for poster presentation.

Authors of accepted abstracts will be requested to provide a full length paper (4 pages max.) by **15 September 2016** using the IAEA proceedings template. This paper must also be submitted through the IAEA-INDICO system. The Conference Secretariat reserves the right to exclude papers that do not comply with its quality standards and/or that do not apply to one of the topics outlined in Section C above.

### **D.3. Proceedings**

The proceedings of the conference will be published by the IAEA as soon as possible after the conference.



## E. Participation

The IAEA organizes international conferences on the safety of radioactive waste management on a regular basis and these are meant to bring together participants from the waste management community, including policymakers and representatives of governmental organizations, regulatory bodies, industry, technical support organizations and spent fuel and waste management organizations.

All persons wishing to participate in the conference are requested to register online in advance through the conference web page (see Section M). In addition, they are required to send a completed Participation Form (Form A) and, if applicable, the Form for Submission of a Paper (Form B) and the Grant Application Form (Form C) to their competent national authority (e.g. Ministry of Foreign Affairs or National Atomic Energy Authority), or to one of the organizations invited to participate, for subsequent electronic transmission to the IAEA ([Official.Mail@iaea.org](mailto:Official.Mail@iaea.org)).

A participant will be accepted only if the Participation Form is transmitted through the competent national authority of a Member State of the IAEA or by an organization invited to participate.

Participants whose official designations have been received by the IAEA will receive from the IAEA further information approximately four months before the conference. This information will also be posted on the conference web page (see Section M).

## F. Expenditures

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of designated participants in the conference. The IAEA has, however, limited funds at its disposal to help cover the cost of attendance of selected participants. Generally not more than one grant may be awarded to any one country.

If Governments wish to apply for a grant on behalf of one of their specialists, they should address specific requests to the IAEA to this effect. Governments should ensure that applications for grants are:

1. Submitted by **15 April 2016**;
2. Accompanied by a completed and signed Grant Application Form (Form C); and
3. Accompanied by a completed Participation Form (Form A).

Applications that do not comply with the above conditions cannot be considered.

Approved grants will be issued in the form of a lump sum payment that usually covers only part of the cost of attendance.

## **G. Distribution of Documents**

A preliminary programme will be posted on the IAEA conference web page as soon as possible. The final programme and the *Book of Abstracts* will be available free of charge upon registration at the conference.

## **H. Working Language**

The working language of the conference will be English. All communications and papers must be sent to the IAEA in English.

## **I. Venue and Accommodation**

The conference will be held at the IAEA's Headquarters in Vienna, Austria. Participants must make their own travel and accommodation arrangements. Hotels which are offering a reduced rate for conference participants will be listed on the conference web page (see Section M). Please note that the IAEA is not in a position to assist participants with hotel bookings, nor can the IAEA assume responsibility for paying cancellation fees or for re-booking and no shows.

## **J. Visas**

Designated participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria at least four weeks before they travel to Austria. Since Austria is a Schengen State, persons requiring a visa will have to apply for a Schengen visa. In States where Austria has no diplomatic mission, visas can be obtained from the consular authority of a Schengen Partner State representing Austria in the country in question.

## **K. Key Deadlines**

Submission of Form for Submission of a Paper (Form B) and abstract:	<b>15 April 2016</b>
Submission of Grant Application Form (Form C):	<b>15 April 2016</b>
Notification of acceptance of papers:	<b>20 June 2016</b>
Submission of accepted full paper (4 pages max.):	<b>15 September 2016</b>

## L. Conference Secretariat

### General contact details of the Conference Secretariat:

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Subsequent correspondence on scientific matters should be sent to the Scientific Secretaries of the conference and correspondence on administrative matters to the IAEA Conference Services Section.

## **M. Conference Web Page**

Please visit the following IAEA web page regularly for new information regarding this conference:

<http://www-pub.iaea.org/iaeametings/50807/International-Conference-on-the-Safety-of-Radioactive-Waste-Management>