IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Technical Meeting on Advanced Techniques for Radioactive Waste Characterization

Hosted by the
Government of France

through the
French Alternative Energies and Atomic Energy Commission
(Commissariat à l'énergie atomique et aux énergies alternatives - CEA)

Aix-en-Provence

6–10 October 2025

Ref. No.: EVT2404741

Information Sheet

Introduction

Radioactive waste arises from diverse sources, including the operation of nuclear power plants, nuclear fuel cycle facilities, and the application of radionuclides in research, healthcare, accelerators, and various industrial sectors. The waste differs significantly in its radiological, physical, and chemical properties depending on its origin. Characterizing this waste involves determining these properties and plays a crucial role in its safe management across all stages—from generation to disposal. An equally important aspect is interpreting these properties to ensure that radioactive waste is managed safely for both humanity and the environment throughout its lifecycle.

Characterization supports decisions on appropriate treatment or conditioning methods, provides vital information for process control, and ensures that waste forms or packages meet waste acceptance criteria for storage, transport, and disposal. Safe management and disposal depend heavily on accurate and quality-

assured waste characterization, utilizing both non-destructive and destructive methods to assess radionuclide inventories.

Over decades, expert laboratories in Member States with mature nuclear programs have developed and refined procedures, standards, and laboratory practices for waste characterization. However, Member States with emerging nuclear programs often face significant challenges due to limited facilities and expertise. For these nations, establishing comprehensive waste characterization programs and effectively interpreting results is a demanding technical challenge that requires both intellectual and financial investment.

The overarching goal of waste characterization is to provide verified and documented information about the waste's radiological, physical, and chemical properties. This data forms the foundation for determining necessary management actions, including processing and disposal. Accurate characterization ensures that waste forms and packages meet acceptance criteria at every stage of their lifecycle. By obtaining quality-assured data, programs can minimize risks, support decision-making, and optimize cost-efficiency.

Importantly, waste characterization is typically more straightforward and cost-effective in the early stages of the lifecycle. For example, certain waste properties that are easily measurable in raw waste can become obscured after treatment or conditioning, potentially complicating later analyses. Proper planning at the earliest stages—including segregation, containerization, and temporary storage—can significantly simplify future characterization efforts.

Effective planning is vital to identifying characterization requirements for all lifecycle phases. Planning should precede waste generation to ensure that collection, segregation, and storage activities align with the characterization strategy. Well-implemented planning minimizes risks, supports cost-efficient programs, and allows for the collection of accurate data at the necessary levels of precision. Properly segregated waste streams can lead to simpler and more stable waste categories, while poor segregation can increase complexity and costs.

To address these challenges and promote global best practices, the IAEA organizes events under the International Network of Laboratories for Nuclear Waste Characterization (LABONET). This initiative facilitates the exchange of international experience and promotes the use of proven, quality-assured practices in waste characterization. By sharing knowledge and best practices, LABONET aims to strengthen public and regulatory confidence in the safe, responsible storage and disposal of radioactive waste.

Through collaborative efforts, the network seeks to optimize the operation of waste characterization laboratories and ensure that Member States benefit from global expertise. These activities are expected to enhance the technical quality and efficiency of radioactive waste management programs worldwide, fostering safer practices and sustainable solutions.

Objectives

The purpose of the event is to provide a forum for sharing experiences and expertise in the development and implementation of advanced techniques for radioactive waste characterization. The event will focus on sharing advancements in characterization techniques, methodologies, and technologies; discussing the applicability and challenges of implementing innovative techniques; and identifying areas for improvement. The meeting seeks to facilitate discussions on emerging trends, share good practices, and

identify potential solutions for improving the understanding, assessment, and management of radioactive waste, ultimately contributing to safer and more efficient waste characterization practices worldwide.

An additional purpose is to receive feedback on ongoing activities of LABONET and IAEA related activities in waste characterization and seek proposals for new activities, particularly those reflecting Member States' needs in this area.

Target Audience

The meeting is intended for representatives from laboratories or organizations within Member States who are responsible for characterizing low- and intermediate-level radioactive waste and associated waste packages. These participants should be actively involved in the planning, enhancement, or operation of laboratories that support radioactive waste management. Additionally, they should have a commitment to engaging in the collaborative activities organized by LABONET.

The event is expected to gather around 50 participants, including delegates from the invited countries and organizations, as well as members of the LABONET Steering Committee, aiming to foster collaboration, share technical expertise, and promote advancements in radioactive waste characterization and management practices across participating Member States.

Working Language(s)

English.

Expected Outputs

The event will serve as a platform for exchanging information and fostering discussions on good practices, recent advancements, challenges, and future directions in the field of radioactive waste characterization. It will also introduce state-of-the-art technical methods and technologies, benefiting a wide range of stakeholders, including planners, managers, and technicians of characterization laboratories, as well as designers, operators, and regulators involved in radioactive waste management across Member States.

The event aims to:

- Highlight innovative methods and technological advancements for radioactive waste characterization.
- Provide actionable insights to enhance the effectiveness of characterization laboratories.
- Facilitate dialogue among participants to address shared challenges and explore forward-looking solutions.

The anticipated outcomes of the event include:

— *Sharing International Expertise:* Participants will present their experiences and best practices in characterizing radioactive waste streams, promoting a global exchange of knowledge.
— *Capacity Building for Emerging Programs:* The event will strengthen support for organizations and Member States with less advanced radioactive waste characterization programs. This will be achieved by sharing relevant skills, managerial strategies, and expertise from Member States with well-established and operational characterization laboratories.

By bridging the gap between mature and developing programs, the event aims to elevate the technical capabilities of Member States, ensuring that all participants are better equipped to address the complexities of radioactive waste characterization and management.

Structure

The event will feature presentations from participants, who will share their experiences and discuss challenges faced by Member States regarding the topics listed below. Each participant is asked to specify their chosen topic and the title of their presentation in the Participation Form (Form A). Once accepted, participants are required to submit an abstract of their presentation no later than two weeks before the event.

In addition to presentations, the event will host roundtable discussions/breakout sessions aimed at exploring relevant issues and topics of shared interest. These discussions will provide an open forum for participants to exchange insights, address common challenges, and collaborate on best practices within the field.

During the meeting, a technical tour of dedicated facilities of CEA Cadarache for characterization of waste, for storage of legacy and current waste will take place :

- Destructive and non destructive characterization of Waste at the CHICADE Facility
- The transportable system used for non destructive characterization named TOMIS
- An intermediate storage facility at CEA Cadarache.

Topics

The meeting will facilitate comprehensive exchanges on practices, innovations, and emerging trends in radioactive waste characterization, addressing key areas of interest. Discussions will cover a diverse range of topics, including:

— *Quality Management Systems (QMS):* Ensuring reliability and accuracy in instrumentation and equipment used for radioactive waste characterization.

— *Deployable Characterization Solutions:* Development of a Portable System for On-Site Non-Destructive Characterization of Radioactive Waste.

— *Characterization for Clearance:* Examining the infrastructure, limits, compliance requirements, and procedural frameworks needed to support waste clearance efforts.

— *Scaling Factors for Non-NPP Operational Wastes*: Developing methodologies to characterize waste streams beyond those generated by nuclear power plant operations.

— *Radiochemical Characterization Challenges:* Identifying gaps, obstacles, and recent advancements in performing radiochemical analyses for radioactive waste.

— *Characterization for National Inventories:* Understanding the critical role of waste characterization as a foundational input for establishing and maintaining national radioactive waste inventories.

— *Research and Development (R&D):* Exploring updates on international and European R&D projects, networks, and the pivotal role of research in advancing waste characterization methodologies and technologies.

By addressing these topics, the meeting aims to provide a broad spectrum of insights and foster collaboration among participants to enhance radioactive waste characterization practices globally.

Participation and Registration

All persons wishing to participate in the event have to be designated by an IAEA Member State or should be members of organizations that have been invited to attend.

In order to be designated by an IAEA Member State or invited organization, participants are requested to submit their application via the InTouch+ platform (https://intouchplus.iaea.org) to the competent national authority (Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or organization for onward transmission to the IAEA by **15 August 2025**, following the registration procedure in InTouch+:

1. Access the InTouch+ platform (https://intouchplus.iaea.org):
   - Persons with an existing NUCLEUS account can sign in to the platform with their username and password;
   - Persons without an existing NUCLEUS account can register here.

2. Once signed in, prospective participants can use the InTouch+ platform to:
   - Complete or update their personal details under 'Complete Profile' and upload the relevant supporting documents;
   - Search for the relevant event under the 'My Eligible Events' tab;
   - Select the Member State or invited organization they want to represent from the drop-down menu entitled 'Designating Authority' (if an invited organization is not listed, please contact InTouchPlus.Contact-Point@iaea.org);
   - If applicable, indicate whether a paper is being submitted and complete the relevant information;
   - If applicable, indicate whether financial support is requested and complete the relevant information (this is not applicable to participants from invited organizations);
   - Based on the data input, the InTouch+ platform will automatically generate the Participation Form (Form A) and/or the Grant Application Form (Form C);

- Submit their application.

Once submitted through the InTouch+ platform, the application, together with the auto-generated form(s), will be transmitted automatically to the required authority for approval. If approved, the application, together with the applicable form(s), will automatically be sent to the IAEA through the online platform.

NOTE: The application for financial support should be made, together with the submission of the application, by **15 August 2025**.

For additional information on how to apply for an event, please refer to the InTouch+ Help page. Any other issues or queries related to InTouch+ can be sent to InTouchPlus.Contact-Point@iaea.org.

Selected participants will be informed in due course on the procedures to be followed with regard to administrative and financial matters.

Participants are hereby informed that the personal data they submit will be processed in line with the Agency's Personal Data and Privacy Policy and is collected solely for the purpose(s) of reviewing and assessing the application and to complete logistical arrangements where required. The IAEA may also use the contact details of Applicants to inform them of the IAEA's scientific and technical publications, or the latest employment opportunities and current open vacancies at the IAEA. These secondary purposes are consistent with the IAEA's mandate. Further information can be found in the Data Processing Notice concerning IAEA InTouch+ platform.

Papers and Presentations

The IAEA encourages participants to give presentations on the work of their respective institutions that falls under the topics listed above.

Participants who wish to give presentations are requested to submit an abstract of their work. The abstract will be reviewed as part of the selection process for presentations. The abstract should be in A4 page format, should extend to no more than two pages (including figures and tables). It should be sent electronically to Ms Felicia Nicoleta Dragoici, the Scientific Secretary of the event (see contact details below), not later than **15 August 2025**. Authors will be notified of the acceptance of their proposed presentations by **25 August 2025**.

Submission of a paper should be confirmed, together with the submission of the main application via the InTouch+ platform, by **15 August 2025**.

Expenditures and Grants

No registration fee is charged to participants.

The IAEA is generally not in a position to bear the travel and other costs of participants in the event. The IAEA has, however, limited funds at its disposal to help meet the cost of attendance of certain participants. Upon specific request, such assistance may be offered to normally one participant per country, provided that, in the IAEA's view, the participant will make an important contribution to the event.

The application for financial support should be made, together with the submission of the application, by **15 August 2025**.

Venue

The meeting is being hosted by the French Alternative Energies and Atomic Energy Commission (CEA) and will be held at the « Arts et Métiers Paris Tech » in Aix-en-Provence. Participants must make their own travel and accommodation arrangements. Further Information and the meeting agenda will be provided prior to the meeting.

Visas

Participants who require a visa to enter France should submit the necessary application as soon as possible to the nearest diplomatic or consular representative of France.

IAEA Contacts

Scientific Secretary:

Ms Felicia Nicoleta Dragolici
Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 26097
Email: F.N.Dragolici@iaea.org

Administrative Secretary:

Ms Marina Tolstenkova
Division of Nuclear Fuel Cycle and Waste Technology
Department of Nuclear Energy
International Atomic Energy Agency
Vienna International Centre
PO Box 100
1400 VIENNA
AUSTRIA

Tel.: +43 1 2600 26108
Email: M.Tolstenkova@iaea.org

Subsequent correspondence on scientific matters should be sent to the Scientific Secretary/Secretaries and correspondence on other matters related to the event to the Administrative Secretary.

Event Web Page

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

www.iaea.org/events/EVT2404741

IAEA
International Atomic Energy Agency
Atoms for Peace and Development

Form B
EVT2404741

Form for Submission of a Paper

Technical Meeting on Advanced Techniques for Radioactive Waste Characterization

Aix-en-Provence

6 to 10 October 2025

To be completed by the participant and sent to the competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA, or National Atomic Energy Authority) of his/her country for subsequent transmission to the International Atomic Energy Agency (IAEA) either by email to: Official.Mail@iaea.org or by fax to: +43 1 26007 (no hard copies needed). Please also send a copy by email to the Scientific Secretary (F.N.Dragolici@iaea.org) and to the Administrative Secretary (M.Tolstenkova@iaea.org).

Participants who are members of an invited organization can submit this form to their organization for subsequent transmission to the IAEA.

Deadline for receipt by IAEA through official channels: 15 August 2025

Title of the paper:		
If applicable: Abstract ID in IAEA-INDICO:		
Family name(s) and first name(s) of all author(s): e.g. Smith, John	Scientific establishment(s) in which the work has been carried out	City/Country
1.		
2.		
3.		
Family name and first name(s) of author presenting the paper: e.g. Smith, John	Mr/Ms:	
Mailing address:		
Tel. (Fax):		
Email:		

I hereby agree to assign to the International Atomic Energy Agency (IAEA):

the copyright; or

the non-exclusive, worldwide, free-of-charge licence (this option is only for those authors whose parent institution does not allow them to transfer the copyright for work carried out in that institution) granting the IAEA world rights to present the aforementioned material online via iaea.org or through INDICO, and for the use of the aforementioned material in IAEA publications, including any future editions, in all languages, and in all formats available now, or to be developed in the future (digital formats, hard copy etc.).

Please note: If granting the licence mentioned above, please supply any copyright acknowledgement text required.

Furthermore, I herewith declare:

that the material submitted to the IAEA is original, except for such excerpts from copyrighted works as may be included with the permission of the copyright holders thereof, has been written by the stated authors, has not been published before, and is not under consideration for publication by another entity;

that any permissions and rights to publish required for third-party content, including but not limited to figures and tables, have been obtained, that all published material is correctly referenced; and

that the material submitted to the IAEA does not contain any libellous or other unlawful statements and does not contain any materials that violate any personal or proprietary rights of any person or entity.

Date: **Signature of main author:**