



# Hybrid Technical Meeting on the Established and Emerging Technologies for Irradiated Graphite Waste Processing

**Room: M 7**

**IAEA Headquarters, Vienna, Austria**  
and virtual participation via Microsoft Teams

**05-09 August 2024**

**Ref. No.: EVT2304219**

## Information sheet

### Introduction

Graphite has been used as a moderator and reflector of neutrons in more than 100 nuclear power plants and in many research and plutonium-producing reactors, in quantities ranging from a few kilograms to more than 3000 tonnes depending upon the design. In reactor designs it is also used as a fuel-sleeve material, leading to the generation of large amounts of less-irradiated but still significantly radioactive material. The current resurgence of interest in the high temperature reactor concept in certain Member States has made it important to demonstrate that the totality of the carbon materials present in the reflectors and in the spent fuel itself must appropriately managed throughout the graphite life cycle.

Many of the older reactors have now been shut down, with more approaching the end of their lives, and some 250 000 tonnes of radioactive graphite (irradiated graphite, or 'i-graphite') have now accumulated worldwide. While there is progress towards the development of disposal solutions, increasing amounts of i-graphite reside in 'temporary' storage facilities awaiting its final destiny. There is an increasing sense of urgency now to make substantial progress in Member States where it is government policy to commence reactor dismantling in the near future, and this is driving international efforts to further explore the detailed characterization of this nuclear waste material (i-graphite) as well as potential processing.

The International Atomic Energy Agency (IAEA) has paid a great deal of attention to the problems arising from the need to dispose of i-graphite competently and safely. Options for the disposal of the i-

graphite worldwide were last reviewed at a conference held in Manchester, UK (March 2007), held in collaboration with the IAEA, on “Solutions for Graphite Waste: A Contribution to the Accelerated Decommissioning of Graphite Moderated Nuclear Reactors”. The collected submitted papers, along with records of the discussion sessions, were published as an IAEA Technical Document entitled Progress in Radioactive Graphite Waste Management (IAEA-TECDOC-1647) in 2010. The IAEA has also organized a coordinated research project entitled “Treatment of Irradiated Graphite to Meet Acceptance Criteria for Waste Disposal” (T21026), which was conducted from 2010 to 2014. The IAEA Technical Document Processing of Irradiated Graphite to Meet Acceptance Criteria for Waste Disposal (IAEA TECDOC-1790), which contains the results from that CRP, was published in 2016.

In order to further support Member States in resolving i-graphite management issues up to the industrial implementation of processing technologies, the IAEA launched in 2016 the International Project on Irradiated Graphite Processing Approaches (GRAPA), with four Technical Meetings under the project taking place in 2016, 2017 and 2019 in Vienna and 2018 in Vilnius. During the final meeting in Vienna in March 2020, a TECDOC with Annexes (consisting of individual reports) was generated representing the successful completion of the current project phase.

In 2020 the IAEA initiated a project on addressing irradiated graphite in decommissioning that focused on the programme and strategy definition for decommissioning of graphite reactors. For the time being, the IAEA is drafting the report on “Strategic roadmap for decommissioning of graphite reactors”. The last Technical Meeting was organised in October 2023 on site of the “Graphite Reactor Decommissioning Demonstrator” constructed by the EDF-DP2D close Chinon, France.

In 2021, the IAEA started developing a draft IAEA NE Series Technical Publication on the disposal of irradiated graphite that describes plans in progress in terms of graphite waste disposal worldwide. This publication reflects practices from Member States of Austria, Canada, France, Korea, Lithuania, Spain, UK, Russian Federation, USA, and Ukraine.

To support Member States regarding irradiated graphite management, the IAEA is organising dedicated Technical Meeting on established and emerging technologies for irradiated graphite waste processing exploring innovative solutions.

## **Objectives**

The purpose of the event is to facilitate the exchange of knowledge, expertise, and good practices in processing technologies for irradiated graphite waste, while addressing the associated challenges and exploring innovative solutions.

## **Target Audience**

The event is targeted at representatives of MS with a programme or project regarding the processing of irradiated graphite. In order to maximize the exchange of information, individuals attending should be from nuclear facilities NPPs, or from non-governmental or international organizations that represent such programmes regionally or worldwide.

## **Working Language**

The working language of the meeting will be English with no interpretation provided. All communications, abstracts and papers must be submitted in this language.

## **Expected Outputs**

The meeting will facilitate the sharing of national and international experiences, lessons learned as well as innovative solutions under research. Information will be summarised to aid future discussions regarding the management of waste presented by irradiated graphite (i.e., WATEC and /or TWG on RWM).

## **Structure**

The meeting will be structured as set of lectures to present national and international projects, activities and initiatives addressed to development of the techniques to process graphite waste, including Q&A sessions such as panel discussion about “Processing of irradiated graphite to optimize disposal solutions”. An overview of ongoing IAEA projects on decommissioning of graphite reactors and disposal solutions for irradiated graphite will be presented, as well.

## **Topics**

The main topic to be discussed during the meeting will be addressed to the established and emerging technologies for processing of irradiated graphite. In addition to this, Current established and emerging technologies for irradiated graphite waste management processes and the following topical areas will be considered, as well:

- Definition of strategies for decommissioning / dismantling of graphite reactors;
- Characterisation;
- Removal and retrieval;
- Processing;
- Package and storage options;
- Disposal options;
- Solutions alternative to disposal (if any);
- Safety, legislative and financial aspects.

## Papers and Presentations

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

In addition, participants have to submit the abstract together with the Participation Form (Form A) and the attached Form for Submission of a Paper (Form B) to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) or their organization for onward transmission to the IAEA not later than 12 July 2024.

## 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, participants are requested to send the Participation Form (Form A) to their competent national authority (e.g. Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority) for onward transmission to the IAEA by 12 July 2024. Participants who are members of an organization invited to attend are requested to send the Participation Form (Form A) through their organization to the IAEA by the above deadline.

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

Please note that the IAEA is in a transition phase to manage the entire registration process for all regular programme events electronically through the new InTouch+ (<https://intouchplus.iaea.org>) facility, which is the improved and expanded successor to the InTouch platform that has been used in recent years for the IAEA's technical cooperation events. Through InTouch+, prospective participants will be able to apply for events and submit all required documents online. National authorities will be able to use InTouch+ to review and approve these applications. Interested parties that would like to use this new facility should write to: [InTouchPlus.Contact-Point@iaea.org](mailto:InTouchPlus.Contact-Point@iaea.org)

## Collaboration Tools

This project will make extensive use of online collaboration tools. The Agency will setup a SharePoint site for the project; access will be granted only by request to the Scientific Secretary. The SharePoint site will serve as the document repository for all documents. Meeting will be done via the Microsoft Teams platform (the Agency will facilitate this).

Familiarisation and training on the tools to be used will be provided, in advance, upon request to Ms. Marina Tolstenkova [M.Tolstenkova@iaea.org](mailto:M.Tolstenkova@iaea.org)

## 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 [or, in the case of some event.

The application for financial support should be made using the **Grant Application Form (Form C)**, which has to be stamped, signed and submitted by the competent national authority to the IAEA together with the **Participation Form (Form A)** by 12 July 2024.

## Venue

The event will be held at the Vienna International Centre (VIC), Room: M 7, where the IAEA's Headquarters are located. Participants must make their own travel and accommodation arrangements.

General information on the VIC and other practical details, such as a list of hotels offering a reduced rate for IAEA participants, are listed on the following IAEA web page:

[www.iaea.org/events](http://www.iaea.org/events).

Participants are advised to arrive at Checkpoint 1/Gate 1 of the VIC one hour before the start of the event on the first day in order to allow for timely registration. Participants will need to present an official photo identification document in order to be admitted to the VIC premises.

## Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria in advance. 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.

## Organization

Official correspondence regarding the technical aspects of the meeting should be addressed to the Scientific Secretaries:

### **Willie Meyer**

Division of Nuclear Fuel Cycle and Waste Technology

Department of Nuclear Energy

Tel.: +43 1 2600 22607

Fax: +43 1 26007

Email: [W.Meyer@iaea.org](mailto:W.Meyer@iaea.org)

### **Karina Lange**

Division of Nuclear Fuel Cycle and Waste Technology

Department of Nuclear Energy  
Tel.: +43 1 2600 22607  
Fax: +43 1 26007  
Email: [K.Lange@iaea.org](mailto:K.Lange@iaea.org)

**Tetiana Kilochytska**  
Division of Nuclear Fuel Cycle and Waste Technology  
Department of Nuclear Energy  
Tel.: +43 1 2600 25679  
Fax: +43 1 26007  
Email: [T.Kilochytska@iaea.org](mailto:T.Kilochytska@iaea.org)

Official correspondence regarding administrative issues should be addressed to the Administrative Secretary:

**Marina Tolstenkova**  
Division of Nuclear Fuel Cycle and Waste Technology  
Department of Nuclear Energy  
Vienna International Centre  
PO Box 100  
1400 VIENNA  
AUSTRIA  
Tel.: +43 1 2600 21968  
Fax: +43 1 26007  
Email: [M.Tolstenkova@iaea.org](mailto: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.