



IAEA

International Atomic Energy Agency

Atoms for Peace and Development

**International Conference on the Management of
Spent Fuel from Nuclear Power Reactors:
Meeting the Moment**

IAEA Headquarters

Vienna, Austria

10–14 June 2024

Organized by the

International Atomic Energy Agency (IAEA)

In cooperation with the

**Nuclear Energy Agency of the Organisation for Economic Co-operation
and Development**

European Commission

World Nuclear Association

World Nuclear Transport Institute

Announcement and Call for Papers

A. Background

Nuclear power can help address the twin challenges of ensuring reliable energy supplies and curbing greenhouse emissions. Today more than 400 nuclear power reactors in operation in 31 countries supply over 10% of the world's total electricity and a quarter of all low-carbon power. Nuclear power will continue to play a key role in the world's low-carbon energy mix for the decades to come.

The safe, secure, and sustainable management of spent fuel from nuclear power reactors is key to the future of nuclear energy. It is a complex undertaking, covering many technological aspects related to the storage, transportation and disposal of the spent nuclear fuel (SNF) and the high level waste (HLW) generated from reprocessing activities for recycling. Furthermore, research and development have established the feasibility of advanced energy systems (advanced reactors and associated fuel cycles) to extract additional energy from spent nuclear fuel, which has the potential to further reduce the impact of nuclear waste and better utilize natural resources.

The implementation of SNF management strategies can take decades, and national strategies must be flexible enough to accommodate potential future options and new technologies that will enhance the safety and sustainability of nuclear power. Allocating the necessary resources to implement a strategy is often difficult.

There is a lack of clarity regarding spent fuel storage durations, due in part to the long lead time to develop, and obtain societal support and license for, deep geological repositories. This subsequently impacts the handling and transportation of spent fuel, as well as downstream steps, in the long term. In this context, the availability of future technologies (including recycling options), underground disposal facilities and suitable financial, regulatory, and political frameworks need to be ensured for the coming generations. The needed knowledge management and knowledge transfer over multiple generations of experts is a particular challenge. This will be important to ensure that the service life of storage systems can continue to be extended to cover the necessary timeframes until SNF final disposition is implemented.

It is paramount to take an integrated view of the nuclear fuel cycle to ensure that all stages of the nuclear fuel cycle are clearly identified and understood, enabling effective decision making for the back end of the fuel cycle.

The last IAEA International Conference on the Management of Spent Fuel from Nuclear Power Reactors, held in June 2019 under the theme "Learning from the Past, Enabling the Future", covered all management stages for spent fuel from past, present, and future nuclear power technologies, and how they can be affected by decisions taken throughout the nuclear fuel cycle.

The Conference in 2019 highlighted, among other aspects:

- The need to make available sufficient spent fuel storage capacity to bridge the gap between the generation of spent fuel and the foreseen commissioning and operation of disposal facilities
- The impacts of a selected fuel cycle on disposal and vice versa, especially with uncertainties on the requirements and acceptance criteria for disposal
- The development of multirecycling technologies for thermal reactors, which can provide a sustainable solution for the transition period from once-through recycling to a fully closed fuel cycle with fast reactors
- The importance of learning lessons from the past and developing robust, integrated strategies for managing spent fuel from its discharge from the reactor until all wastes are disposed of
- The recognition of the value of enhancing and fostering international collaborations
- The concern on the part of many countries over costs and a potential lack of sustainable funding
- The need for knowledge management, records preservation, and for efforts in developing the young generation to continue safe, secure, and sustainable fuel cycle management

- The importance of developing and maintaining appropriate stakeholder involvement from an early stage of SNF management programmes, as understanding is paramount for the public as well as for policy and decision makers

During recent years, increasing attention has been paid to the development and upcoming deployment of small modular (SMR) and micro reactors. SMRs represent a new generation of reactors designed to generate electric power typically up to 300 MW(e) and for non-electrical industrial applications (e.g., water desalination and heat generation for industrial processes). While much focus has been given to certain aspects of SMR deployment such as reactor concepts, engineering, economics, infrastructure, safety, etc., the fuel cycle, and in particular the management of spent fuel, appears to have had limited consideration.

In this context, the IAEA is organizing the International Conference on the Management of Spent Fuel from Power Reactors, in Vienna, from 10 June 2024 to 14 June 2024, under the theme “Meeting the Moment”.

The scope of the conference covers the management of spent fuel from nuclear power reactors and the steps being taken to enable the safe and effective deployment of new reactor technologies.

B. Purpose and Objectives

The purpose of the conference is to provide a forum for the exchange of information on national SNF management strategies and on how the management of spent fuel will support the role that nuclear energy could play in a changing energy mix. Whether countries are moving toward nuclear energy to mitigate climate change and meet their national energy goals or moving away from nuclear energy and are concerned about the legacy of its use, the world has reached a pivotal moment. Those who manage spent nuclear fuel must rise to the challenge of **meeting the moment**.

Following on the theme of the 2019 conference, this new edition aims to illustrate the benefits of an integrated approach to the nuclear fuel cycle on the management of spent fuel from power reactors, and the potential impact of the deployment of advanced reactors (e.g., SMRs) with new fuel types, considering technological developments, regulatory requirements, safety, security, safeguards, economics, etc.

The conference will also allow for the evaluation of advances in the management of spent fuel from power reactors to overcome current issues and will identify strategies and anticipated challenges to be addressed in preparation for the future.

C. Themes and Topics

The IAEA welcomes high quality contributions that fall under the umbrella of the seven topics listed here below.

Each individual topic may cover the following cross-cutting aspects: technology (operational and research and development), safety, security, and safeguards with attention to their interfaces, economics, stakeholder involvement, regulatory framework, knowledge management as well as collaborative options.

This conference covers SNF management from current and future power reactors of all sizes and types, including damaged and degraded fuels, with a particular focus on the integration of these fuels into SNF management systems. To that end, it considers the following in all topics:

- Fuels used in current power reactors
- Evolutionary fuels intended for current power reactors
- New fuels arising from large and small reactors of types not currently deployed for power production

Topic 1. National strategies for spent fuel management of countries with established nuclear power programmes, countries phasing out nuclear power and embarking countries, including integration of advanced energy systems with an emphasis on:

- Stakeholder involvement in decision making, including civil society (engagement with local and indigenous communities), international good practices, lessons learned, energy/environmental justice
- Multinational or regional approaches for sharing infrastructure
- Managing spent fuel to enhance nuclear energy and environmental sustainability
- Status of programmes for SNF and HLW disposal
- Knowledge management and skills preservation (e.g., competences, data management, human resources, training, etc.)

Topic 2. Storage of SNF and vitrified HLW and subsequent transportability:

- Behaviour of SNF during storage (wet and dry)
- Service life extension and ageing management of SNF storage systems (wet and dry)
- Ageing management of HLW and related storage systems
- Demonstrating post-storage transportability of SNF/HLW and SNF/HLW packages, including multipurpose canisters
- Storage considerations for new fuel types from current and advanced reactors (e.g., ATFs, spent fuel from all envisaged SMR technologies and innovative reactors)

Topic 3. Transportation in the back end of the fuel cycle:

- Transportation operating experiences, achievements and lessons learned (including planning, cask testing and maintenance, emergency response, risk assessment, and decommissioning of casks and other transport equipment)
- Evolution of international and national regulations for transportation
- Optimization of transportation systems, including cost implications
- Transportation considerations for higher burnup fuel, advanced technology fuel (ATF), damaged fuel, recycling materials and new fuel types for advanced reactors (e.g., all envisaged SMR technologies and innovative reactors, etc.)
- Transportable reactors (e.g., SMRs, microreactors, transportable nuclear power plants): challenges, emerging issues, operational considerations, etc

Topic 4. Recycling of spent fuel:

- Industrial operating experiences and lessons learned:
 - Fuel and recycling products (RepU and Pu management)
 - U and Pu co-management
- Developments in U and Pu multirecycling
- Recycling of fuels from advanced reactors including management and recycling of minor actinides

- Opportunities to recycle spent fuel from existing reactors as feedstock for advanced reactors (e.g., SMRs, High Temperature Gas-cooled Reactors (HTGRs), Liquid Metal Fast Reactors (LMFRs), Molten Salt Reactors (MSRs), etc.)
- Thorium fuel cycles
- Management of waste forms resulting from recycling activities

Topic 5. Disposal of SNF, HLW and other waste forms in Deep Geological Repositories (DGR):

- Achievements and lessons learned in developing and implementing a DGR
- Licensing and specific regulatory framework for disposal. Retrieval and post-closure considerations
- Assessing the disposability of SNF, HLW and other waste forms in the DGR:
 - Acceptance criteria for disposability
 - SNF and HLW performance/behaviour under repository conditions
 - Influence of plant operating conditions on disposal of current fuel
 - Disposal of new materials associated with SNF and their management routes, (e.g., irradiated graphite and TRU contaminated materials (e.g., Cd from pyroprocessing))
- Comprehensive national and international R&D programmes in support of the development of DGRs
- Characterization of SNF and HLW with regards to disposal
- Packaging SNF and HLW for disposal (e.g., repackaging, encapsulation)
- SNF data management (characterization, knowledge preservation)
- Safeguards of disposed spent fuel (pre- and post-closure)

Topic 6. Impacts of advanced nuclear energy systems on the back end of the fuel cycle:

- Advanced Technology Fuels
- Fuels from advanced reactors (e.g., Small Modular Reactors, HTGRs, LMFRs, MSRs, etc.)

Topic 7. Achieving integrated spent fuel management:

- Achievements and lessons learned in developing and implementing an integrated approach for managing SNF
- Integrating storage, transport, recycling and disposal stages (e.g., acceptance criteria, regulatory requirements, information, etc.)
- Optimization, flexibility, and resilience. Life cycle management and time frame of implementation
- Integrating the management of different spent fuel types:
 - Accident Tolerant Fuels
 - Fuels from advanced reactors (e.g., SMRs, HTGRs, LMFRs, MSRs, etc.)
 - Damaged and degraded fuel
 - Severely damaged fuel and corium
- Drivers and impediments for implementing a back end strategy (e.g., economics, politics, technology, timeframe, stakeholder involvement including public support, resources, etc.)
- Multinational approaches and shared infrastructure. Implications for SNF “Take Back” agreements
- Risk management and decision making with uncertainties

D. Structure

The conference programme will consist of an opening plenary session, technical sessions, poster sessions, panel sessions and a closing plenary session.

E. Expected Outcomes

The Conference aims to:

- Strengthen Member States’ understanding of, and capabilities for addressing, the challenges of an effective and safe storage of their spent nuclear fuels from their nuclear power reactors including the current reactor fleet, innovative reactors, and all SMR technologies, through wet and dry storage technologies.
- Facilitate discussion and information sharing among interested Member States on recent and future developments in fuel recycling technologies and advanced fuel cycle options for current and next generations of nuclear power reactors including all SMR technologies.
- Support Member States in understanding and addressing the issues and challenges related to the safe transportation of spent fuel from the current reactor fleet, innovative reactors, and different SMR technologies including micro-reactors, as well as other radioactive materials used or generated through nuclear fuel cycle activities.
- Facilitate discussion and information sharing among interested Member States on the importance of having an integrated approach to the fuel cycle, including lessons learned and good practices, the challenges of integrating new types of spent fuels in the currently implemented backend programmes as well as of moving forward in the development and implementation of disposal programmes.
- Bridge the gap among generations by fostering the participation of young professionals and improving gender balance in the spent fuel management field.

F. Target Audience

The conference is designed for a broad range of stakeholders from IAEA Member States including technology developers, operators, regulators, governmental authorities, decision makers, and industrial, R&D and waste management organizations among others.

G. Call for Papers

Contributions on the topics listed in Section C are welcome as oral or poster presentations. All submissions, apart from invited papers, must present original work, which has not been published elsewhere.

G.1. Submission of Abstracts

Abstracts (no more than 400 words, may contain any charts, graphs, figures and references) should give enough information on the content of the proposed paper to enable the Programme Committee to evaluate it. Anyone wishing to present at the conference must submit an abstract in electronic format using the conference's file submission system ([IAEA-INDICO](#)), which is accessible from the conference web page (see Section Q). The abstract can be submitted through this system from **11 July 2023** until **29 September 2023**. Specifications for the layout will be available on IAEA-INDICO. The system for electronic submission of abstracts, IAEA-INDICO, is the sole mechanism for submission of contributed abstracts. Authors are encouraged to submit abstracts as early as possible. The IAEA will not accept submissions via email.

In addition, authors must register online using the InTouch+ platform (see Section H). The online registration together with the auto-generated Participation Form (Form A) and Form for Submission of a Paper (Form B) must reach the IAEA no later than **29 September 2023**.

IMPORTANT: The Programme Committee will consider uploaded abstracts only if these two forms have been received by the IAEA through the established official channels (see Section H).

G.2. Acceptance of Abstracts

The Secretariat reserves the right to exclude abstracts that do not comply with its technical or scientific quality standards and that do not apply to one of the topics listed in Section C.

Authors will be informed by **6 December 2023** as to whether their submission has been accepted, either orally or as a poster, for presentation at the conference.

G.3 Submission of Full Papers

Authors of accepted abstracts will be requested to submit a full paper in Word format, of about **5 to 10** pages in length. A compilation of full papers (in electronic format) will be made available to participants at registration.

Full papers must also be submitted through the [IAEA-INDICO](#) file submission system in Word format. Submitting the paper in the indicated electronic format is mandatory. Specifications for the layout and electronic format of the contributed papers and for the preparation of posters will be made available on IAEA-INDICO.

The IAEA reserves the right to exclude papers that do not comply with its quality standards and those that do not apply to one of the topics outlined in Section C above and those that do not meet the expectations based on the information in the abstract.

The deadline for electronic submission of the full papers as Word files is **2 February 2024**. The IAEA will not accept papers submitted after the deadline.

The IAEA will notify authors of its completed review process of the full papers by **22 March 2024**. The deadline for revised papers to be submitted through IAEA-INDICO is **3 May 2024**.

IMPORTANT: The system for electronic submission of papers, IAEA-INDICO, is the sole mechanism for submission of contributed papers. Authors are encouraged to submit papers as early as possible. The IAEA will not accept submissions via email.

G.4 Proceedings

Following the conference, the IAEA will publish a summary report. The proceedings will be made available to read online.

H. Participation and Registration

All persons wishing to participate in the event must be designated by an IAEA Member State or should be a member of an organization that has been invited to attend.

Registration through the InTouch+ platform:

1. Access the InTouch+ platform (<https://intouchplus.iaea.org>):

- Persons with an existing NUCLEUS account can [sign in here](#) 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 ‘Basic Profile’ (if no financial support is requested) or under ‘Complete Profile’ (if financial support is requested) and upload the relevant supporting documents;
- Search for the relevant event (**EVT2300039**) 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 Conference.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 Participation Form (Form A), Form for Submission of a Paper (Form B) and/or 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 form(s) will automatically be sent to the IAEA through the online platform.

NOTE: Should prospective participants wish to submit a paper or request financial support, the application needs to be submitted by the specified deadlines (see section O).

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.

If it is not possible to submit the application through the InTouch+ platform, prospective participants are requested to contact the IAEA’s Conference Services Section via email: Conference.Contact-Point@iaea.org.

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. Further information can be found in the [Data Processing Notice](#) concerning IAEA InTouch+ platform.

I. 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 conference. The IAEA has, however, limited funds at its disposal to help cover 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 conference.

If participants wish to apply for a grant, they should submit applications to the IAEA using the InTouch+ platform through their competent national authority (see Section H). Participants should ensure that applications for grants are:

1. Submitted by **29 September 2023**;
2. Accompanied by Grant Application Form (Form C); and
3. Accompanied by 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**.

J. Distribution of Documents

A preliminary and final programme will be made available on the conference web page (see Section Q) prior to the start of the conference. The electronic compilation of the full papers will be accessible free of charge to participants registered for the conference.

K. Working Language

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

L. Venue and Accommodation

The conference will be held at the Vienna International Centre (VIC), where the IAEA's Headquarters are located. 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.

Participants must make their own travel and accommodation arrangements. Hotels offering a reduced rate for participants are listed on <https://www.iaea.org/events>. Please note that the IAEA is not in a position to assist participants with hotel bookings, nor can the IAEA assume responsibility for paying fees for cancellations, re-bookings and no-shows.

M. Visas

Participants who require a visa to enter Austria should submit the necessary application to the nearest diplomatic or consular representative of Austria as early as three months but not later than 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.

For more information, please see the Austria Visa Information document available on <https://www.iaea.org/events>.

N. Key Deadlines and Dates

Submission of abstracts through IAEA-INDICO	29 September 2023
Submission of Form B (together with Form A) through the InTouch+ platform	29 September 2023
Submission of Form C (together with Form A) through the InTouch+ platform	29 September 2023
Notification of acceptance of abstracts for oral or poster presentation	6 December 2023
Electronic submission of full papers through IAEA-INDICO	2 February 2024
Notification of review of full papers	22 March 2024
Deadline for submission of revised full papers submitted through IAEA-INDICO	3 May 2024
Submission of Form A only (no paper submission, no grant request) through the InTouch+ platform	4 June 2024

O. Conference Secretariat

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

P. Conference Web Page

Please visit the IAEA conference [web page](#) regularly for new information regarding this conference.