



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*

# **Technical Meeting on Innovation, Advances and Developments in the Water Chemistry of Pressurized Water Reactors**

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

**22-26 April 2024**

**Ref. No.: EVT2302790**

## **Information Sheet**

### **Introduction**

The safe operation of Pressurized Water Reactors (PWR) and water-water energetic reactors (VVER) requires among others an appropriate and effective water chemistry programme. The main goals of a water chemistry programme are to contribute to the reactivity management, to minimize all forms of corrosion, to preserve the integrity of the fuel and, to reduce the build-up of radioactive material enabling. On the long-term perspective, excellence in water chemistry prevents unplanned and earlier-than-expected replacements of major plant components and, therefore, contributes to the control of operational expenses within the defined overall plant business plan. It is also an element of a Plant Life-cycle Management (PLiM) programme and a key ingredient to achieve safe and cost-effective operation of existing plants that had transitioned to Long-Term Operation (LTO).

In a context of continuous research efforts and of the rise of big data technologies, an expert group was convened in April 2022 to prepare a TECDOC publication on innovations, advances and, developments in water chemistry of existing PWR and VVER that have led or significantly contributed to visible and tangible performance improvement in nuclear safety and asset value.

## Objectives

The purpose of the event is to review the draft IAEA Technical Document provisionally entitled "Innovation, Advances and Developments in Water Chemistry of Pressurized Water Reactors" and to share the latest insights on innovations with a wider panel of experts.

The objectives of the event are to:

- Provide a forum for the international exchange of information and experience related to:
  - Innovations, advances and, new developments in water chemistry of primary, secondary and, auxiliary systems of PWR and VVER. Where relevant, on-going research efforts will be also discussed;
  - Technological transformations at PWR and VVER in areas such as simulation modelling, on-line/automated monitoring methods and techniques, digitalisation of processes;
- Review and comment the draft IAEA TECDOC publication on “Innovation, Advances and Developments in the Water Chemistry of Pressurized Water Reactors”;
- Advise on technical conclusions and generic lessons to the Member States in the area of water chemistry of PWR and VVER that could be included in the draft IAEA TECDOC mentioned above.

## Target Audience

Station chemists and experts from nuclear power plants, operating organisations and, technical support organisations with PWR and VVER from all around the world.

## Working Language(s)

English.

## Expected Outputs

- Shared presentation materials on innovations, advances, new developments, on-going research efforts and technological transformations in water chemistry of primary, secondary and, auxiliary systems of PWR and VVER in the participating Member States.
- Revised draft IAEA TECDOC publication on “*Innovation, Advances and Developments in the Water Chemistry of Pressurized Water Reactors*” that incorporates written comments, suggested technical conclusions and, suggested generic lessons raised by the Member States beforehand.

## Topics

Typical topics of interest for the event are as follows:

- Primary system water chemistry: advance on the use of enriched boron, advances on H<sub>2</sub> management for controlling reduction, developments in removing chemical compounds with low solubility (e.g. silica when zinc is injected), control of source terms, developments in controlling parameters and discharges in commissioning or when entering LTO or flexible operations, development in optimising chemistry for shutdowns and outages;
- Secondary system water chemistry: advances on changing pH control agents (e.g. ammonia to dimethylamine), advances on replacing reducing agent hydrazine and use of film-forming products, developments in optimising start-up chemistry incl. after steam generator replacement, developments in chemical soft cleaning/lancing and use of dispersants, innovations in modelling such as use of digital twins;
- Auxiliary system water chemistry: innovation in biocidal dosing and developments in using biofilm growth detectors in cooling water systems, developments in Electro-DeIonization (EDI), Reverse Osmose (RO) and nano-filtration in water treatment systems, advances on pH control and modelling in stator cooling systems;
- Advances in sampling / measuring parameters (pH at high temperature, concentration of Li, B, metallic ions, corrosive impurities, etc.) or in modelling effects of corrosive impurities;
- Developments in On-Line Monitoring (OLM), Digitalisation of Processes and, Chemistry Information Systems, including use of Artificial Intelligence and Pattern Recognition methods.

## 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 **c**. 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.

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 **23 February 2024**, 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](mailto:InTouchPlus.Contact-Point@iaea.org));
- 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 **23 February 2024**.

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](mailto: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 organisations that falls under the objectives and topics listed above.

Participants who wish to give presentations are requested to submit it electronically to Mr Laurent Bourdonneau, the Scientific Secretary of the event (see contact details below) at least three weeks before the event.

The IAEA encourages participants to share in written the comments, suggested technical conclusions and, suggested generic lessons related to the draft IAEA TECDOC publication at least one week before the event.

## 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 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 **23 February 2024**.

## Venue

The event will be held at the Vienna International Centre (VIC), 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.

The virtual component of the event will be held via Microsoft Teams for a limited number of participants.

## Visas

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.

# IAEA Contacts

## Scientific Secretary

### **Mr Laurent Bourdonneau**

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AUSTRIA

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## Administrative Secretary

### **Ms Inessa Kovalenko**

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International Atomic Energy Agency  
Vienna International Centre  
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Tel.: +43 1 2600 22801

Fax: +43 1 26007

Email: [I.Kovalenko@iaea.org](mailto:I.Kovalenko@iaea.org)

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

# Participation Form

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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](mailto: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 (Email: [L.Bourdonneau@iaea.org](mailto:L.Bourdonneau@iaea.org)), and to the Administrative Secretary (Email: [I.Kovalenko@iaea.org](mailto:I.Kovalenko@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: 23 February 2024**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms
Institution:		
Full address:		
Tel. (Fax):		
Email:		
Nationality:	Representing following Member State/non-Member State/entity or invited organization:	
Do you intend to submit a presentation?                      Yes <input type="checkbox"/> No <input type="checkbox"/> Title: I plan to attend virtually:    Yes <input type="checkbox"/> No <input type="checkbox"/>		

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.

# Grant Application Form

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**Deadline for receipt by IAEA through official channels: 23 February 2024**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms:
Mailing address:	Tel.:	
	Fax:	
	Email:	
Date of birth (yy/mm/dd):	Nationality:	
I plan to attend virtually:	Yes <input type="checkbox"/> No <input type="checkbox"/>	

### 1. Education (post-secondary):

Name and place of institution	Field of study	Diploma or Degree	Years attended from	to

### 2. Recent employment record (starting with your present post):

Name and place of employer/ organization	Title of your position	Type of work	Years worked from	to

### 3. Description of work performed over the last three years:

### 4. Institute's/Member State's programme in field of event:

Date: Signature of applicant: \_\_\_\_\_

Date: Name, signature and stamp of Ministry of Foreign Affairs, Permanent Mission to the IAEA or National Atomic Energy Authority \_\_\_\_\_