



# **Regional Training Course on Tritium Analysis and Applications in Hydrological Studies**

**Hosted by**

**The Government of Hungary**

**through the**

**Hun-REN Institute for Nuclear Research (ATOMKI)**

**Debrecen, Hungary**

**29 June to 3 July 2026**

**Ref. No.: TN-RER7017-2601577**

## **Information Sheet**

### **Purpose**

The purpose of the event is to train participants on tritium analysis and its applications in isotope hydrology.

Tritium is a key environmental tracer in hydrological studies, widely used for investigating water cycle processes and understanding groundwater dynamics. As a radioactive isotope of hydrogen that is directly incorporated into the water molecule, tritium provides unique information on the origin, age, and renewal rates of water resources. Tritium is particularly valuable for dating young groundwater and surface waters, allowing the assessment of recharge processes and groundwater–surface water interactions. Its concentration in water reflects both natural inputs, mainly from cosmogenic production in the atmosphere, and anthropogenic contributions related to nuclear activities. By analyzing tritium, it is possible to quantify groundwater residence times over timescales of years to decades. One key application of tritium analysis is in groundwater resource management, where it supports the identification of modern recharge, evaluation of aquifer vulnerability, and assessment of sustainability under changing land use and climate conditions. Tritium also plays an important role in investigating mixing processes, leakage from surface water bodies, and the impact of human activities on water systems. Through these applications, tritium analysis provides essential information for evidence based water management and the development of effective protection and mitigation strategies.

## **Working Language(s)**

The working language(s) of the event will be English.

## **Deadline for Nominations**

Nominations received after **29 April 2026** will not be considered.

## **Project Background**

The project builds on the achievements of RER7013, "Evaluating Groundwater Resources and Groundwater-Surface-Water Interactions in the Context of Adapting to Climate Change", which provided a first overview of groundwater and surface water resources, including transboundary water resources, in 27 participating Member States and sought to improve the capacity and self-reliance of participating Member States to introduce isotope hydrology in water resources planning, management, and development at national and transboundary levels. The phase two project seeks to increase coverage and capacity of the regional network in the European TC (TCEU) region, which was consolidated during RER7013, for the monitoring and evaluation of water resource quality and quantity using isotope techniques. In order to promote greater regional cooperation, the project continues to encourage participating countries to work together to improve the characterization of shared aquifers, address identified data gaps and facilitate the use of isotope hydrology for the formulation of water-related policies. This third aspect is outlined as a new component of the project, given the need and interest of several participating countries. Ultimately, the project aims to enhance evidence-based decision-making for integrated water management to improve water security in Member States of Europe and Central Asia.

## Scope and Nature

The aim of the training course is to develop both theoretical understanding and practical skills in isotope hydrology with a focus on applying tritium to concrete hydrological projects. Participants will acquire competencies that can be used to apply tritium techniques and to develop relevant case studies during project implementation. The specific objectives of the training course are as follows:

- a) Gain theoretical knowledge on the principles and applications of tritium in isotope hydrology.
- b) Learn sampling protocols for tritium and associated parameters in water.
- c) Improve skills in designing and developing hydrological studies that incorporate tritium as a tracer.
- d) Receive training on sample preparation techniques for tritium analysis in water.
- e) Obtain an overview of analytical methods used for tritium determination in water samples.

## Participants' Qualifications and Experience

Participants should have a diploma with a technical/scientific profile that attests to the experience with the use of hydrological, hydrogeological or hydrochemical techniques, and/or their involvement in water resources monitoring, assessment and/or management. They should preferably have a good understanding of water-related/hydrogeological issues and work on the case studies with the isotope hydrology applications.

As the course will be conducted in English language, participants should have sufficient English language proficiency to follow the training and express themselves without difficulty.

## Application Procedure

Candidates wishing to apply for this event should follow the steps below:

1. Access the InTouch+ home page (<https://intouchplus.iaea.org>) using the candidate's existing Nucleus username and password. If the candidate is not a registered Nucleus user, she/he must create a Nucleus account (<https://webso.iaea.org/IM/UserRegistrationPage.aspx>) before proceeding with the event application process below.
2. On the InTouch + platform, the candidate must:
  - a. Finalize or update her/his personal details, provide sufficient information to establish the required qualifications regarding education, language skills and work experience ('Profile' tab) and upload relevant supporting documents;
  - b. Download and complete the [Designation of Beneficiary and Emergency Contact Form](#), and upload to InTouch+ ('Profile' tab under the personal section) specifying the document name.

If already provided, kindly discard this step; and

- c. Search for the relevant technical cooperation event (EVT2601577) under the 'My Eligible Events' tab, answer the mandatory questions and lastly submit the application to the required authority.

**NOTE:** Completed applications need to be approved by the relevant national authority, i.e. the National Liaison Office, and submitted to the IAEA through the established official channels by the provided designation deadline.

For additional support on how to apply for an event, please refer to the [InTouch+ Help page](#). Any issues or queries related to InTouch+ can be addressed to [InTouchPlus.Contact-Point@iaea.org](mailto:InTouchPlus.Contact-Point@iaea.org).

Should online application submission not be possible, candidates may download the nomination form for the training course from the [IAEA website](#).

**NOTE:** A medical certificate signed by a registered medical practitioner dated not more than four months prior to starting date of the event must be submitted by candidates when applying for a) events with a duration exceeding one month, and/or b) all candidates over the age of 65 regardless of the event duration.

## **Administrative and Financial Arrangements**

Nominating authorities will be informed in due course of the names of the candidates who have been selected and will at that time be informed of the procedure to be followed with regard to administrative and financial matters.

Selected participants will receive an allowance from the IAEA sufficient to cover their costs of lodging, daily subsistence and miscellaneous expenses. They will also receive either a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the duty station through the IAEA's travel agency AX Travel Management, or a travel allowance, or they will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

## **Disclaimer of Liability**

The organizers of the event do not accept liability for the payment of any cost or compensation that may arise from damage to or loss of personal property, or from illness, injury, disability or death of a participant while he/she is travelling to and from or attending the course, and it is clearly understood that each Government, in approving his/her participation, undertakes responsibility for such coverage. Governments would be well advised to take out insurance against these risks.

## **Note for female participants**

Any woman engaged by the IAEA for work or training should notify the IAEA on becoming aware that she is pregnant.

The Board of Governors of the IAEA approved new International Basic Safety Standards for Protection against Ionizing Radiation and for the Safety of Radiation Sources. The Standards deal specifically with the occupational exposure conditions of female workers by requiring, inter alia, that a female worker should, on becoming aware that she is pregnant, notify her employer in order that her working conditions may be modified, if necessary. This notification shall not be considered a reason to exclude her from work; however, her working conditions, with respect to occupational exposure shall be adapted with a view to ensuring that her embryo or foetus be afforded the same broad level of protection as required for members of the public.

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