



**IAEA**

International Atomic Energy Agency

*Atoms for Peace and Development*

# **Joint IAEA and Argonne National Laboratory Training Activity on Implementation of dosimetry codes of practice for Absorbed dose determination in external beams (TRS-398 Rev.1) and Brachytherapy (TRS-492)**

**Hosted by the**

Government of the United States of America

**through the**

Argonne National Laboratory at MD Anderson Cancer Center

**Houston, TX, United States of America**

**2 – 7 December 2024**

**Ref. No.: EVT2402084**

## **Information Sheet**

### **Introduction**

Dosimetry is fundamental for all radiotherapy including brachytherapy treatment procedures and it has been recognised that harmonising dosimetry internationally is essential. The IAEA has been key in writing international codes of practice for dosimetry, working with various professional societies, to drive the harmonisation of the dosimetry practices. These were mainly published as a technical report series (TRS) and in some instances, as Technical Documents (TECDOC).

In December 2023 the IAEA published TRS-492, dosimetry in brachytherapy- An international code of practice for Secondary Standards Dosimetry Laboratories (SSDL) and hospitals. This is the first code of practice as the IAEA had previously published an IAEA-TECDOC-1274 Guidelines on standardized procedures at Secondary Standards Dosimetry Laboratories (SSDLs) and hospitals. This code of practice is addressed to both SSDLs and hospitals and is based on the use of well-type re-entrant ionization chambers. It applies to all brachytherapy sources with intensities measurable by these detectors. The dosimetry formalism; common procedures for reference dosimetry and for calibration; reference-class instrument assessment; and commissioning of the well-type chamber system are described.

On 01 March 2024 the IAEA published TRS-398, Absorbed Dose Determination in External Beam Radiotherapy, An International Code of Practice for Dosimetry Based on Standards of Absorbed Dose to Water. This is a revision of the previous publication from the year 2000. This publication addresses the need for a systematic and internationally unified approach to the calibration of ionization chambers in terms of absorbed dose to water and to the use of these detectors in the determination of absorbed dose to water for the radiation beams used in radiotherapy — namely low, medium, and high energy photon beams, electron beams, proton beams and heavier ion beams. It is addressed to users provided with calibrations in terms of absorbed dose to water traceable to a primary standards dosimetry laboratory. The SSDL's also implement the formalism and code of practice discussed in this publication.

As most member states rely on these IAEA guidance documents for their dosimetry implementation it is crucial to roll out training for their implementation.

## Objectives

The event will provide the participants with theoretical and practical information on the implementation of the IAEA TRS 398 Rev 1 and IAEA TRS-492.

Specific objectives of this course will be:

- To provide participants with an understanding on how to establish and disseminate calibration quantity for absorbed dose to water;
- To provide participants with an understanding on how to establish and disseminate calibration quantity for brachytherapy;
- To provide the participants with understanding on how to use the calibration provided by the calibration laboratory to perform their dosimetry measurements in the hospitals for brachytherapy applications;
- To provide the participants with understanding on how to use the calibration provided by the calibration laboratory to determine Absorbed dose in external beams;
- To provide the participants with understanding of the international measurement system supporting the traceability of measurements for ionising radiation;
- To provide participants an opportunity to engage and interact and sharing of ideas.

## Target Audience

The first intended audience for this training is scientists working as radiation metrologists, physicists or technicians in a Secondary Standards Dosimetry Laboratory with a background in radiation dosimetry. The candidates should be involved in performing calibrations for brachytherapy.

The second intended audience is a qualified medical physicist working in a hospital that is already treating patients in HDR.

## Working Language(s)

The working language of the meeting will be English. All communications submitted must be in English.

## Expected Outputs

Thirty people from various member states will be trained on the implementation of the IAEA TRS 398 Rev 1 and IAEA TRS 492 equipping them to perform dosimetry in their facilities and training others in their countries and region.

## Structure

The course will consist of lectures, discussions, practical sessions, test, reporting of practical sessions by groups.

## Topics

The main topics of the course will be:

- Framework: International measurement system
- Primary standards for photons, electrons and brachytherapy measurements
- Reference standards for photons, electrons and brachytherapy measurements
- Commissioning of reference standards
- Quantities and units used in the dosimetry for brachytherapy and absorbed dose to water
- Reference dosimetry in radiation therapy for absorbed dose to water determination
  - IAEA TRS 398 Rev 1 implementation for High energy Photons, electrons, low and medium energy X ray
  - Dosimetry formalism
- Reference dosimetry in brachytherapy

- IAEA TRS 398 Rev 1 implementation
- Dosimetry formalism
- Measurement uncertainties in the determination of absorbed dose to water
- Measurement uncertainties in the determination of reference air kerma rate
- Practical sessions for absorbed dose determination following IAEA TRS 398 Rev 1
- Practical sessions for determination of reference air kerma rate following IAEA TRS 492

## 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.

The course will admit up to 30 participants.

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 **7 June 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.

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.

## Expenditures and Grants

No registration fee is charged to participants.

Selected participants will receive a stipend for meals and incidental expenses as well as a contingency allowance from the host organization (Argonne National Laboratory); accommodation costs will be directly paid by Argonne National Laboratory. The participants will also receive a round-trip air ticket based on the most direct and economical route between the airport nearest their residence and the airport nearest the event location.

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 **7 June 2024**.

## **Visas**

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

## **IAEA Contacts**

### **Scientific Secretary**

**Ms Zakithi Msimang**

Division of Human Health

Department of Nuclear Sciences and Applications

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### **Administrative Secretary**

**Ms Simona-Mihaela Ciortan**

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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

## Joint IAEA–Argonne National Laboratory Training Activity on Implementation of Dosimetry Codes of Practice for Absorbed Dose Determination in External Beams (Technical Reports Series No. 398 (Rev.1)) and Brachytherapy (Technical Reports Series No. 492)

**Houston, TX, United States of America**

**2 to 7 December 2024**

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, Ms Zakithi Msimang, Division of Human Health, Department of Nuclear Sciences and Applications (Email: [Z.Msimang@iaea.org](mailto:Z.Msimang@iaea.org)) and to the Administrative Secretary, Ms Simona-Mihaela Ciortan, (Email: [S.M.Ciortan@iaea.org](mailto:S.M.Ciortan@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: 7 June 2024**

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms
Institution:		
Full address:		
Tel. (Fax):		
Email:		
Birthplace and Nationality:	Representing following Member State/non-Member State/entity or invited organization:	
If/as applicable:		
Do you intend to submit a paper?	Yes	No
Would you prefer to present your paper as a poster?	Yes	No
Title:		

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.

# Grant Application Form

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### Deadline for receipt by IAEA through official channels as per Conference Announcement.

Family name(s): (same as in passport)	First name(s): (same as in passport)	Mr/Ms:
Mailing address:	Tel.:	
	Fax:	
	Email:	
Date of birth (yyyy/mm/dd):	Nationality:	

#### 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 attended 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**

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