Regional Training Course on Reference Dosimetry for External Beam Radiotherapy (TRS-398) and Brachytherapy (TRS-492), and the Role of Independent Dosimetry Audits.

Hosted by

IAEA Dosimetry Lab
Seibersdorf, Austria

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Information Sheet

Purpose

The objective of the regional training course is to strengthen knowledge of reference dosimetry and the role of independent dosimetry audits in external beam radiotherapy and brachytherapy among radiation metrologists and clinical medical physicists. The course will equip the participants with knowledge and skills necessary to perform reference dosimetry for MV photons, electrons, low and medium energy x-rays, cobalt 60 treatment units and HDR brachytherapy. The training course will be composed of lectures and practical sessions and will cover IAEA Code of Practice TRS-398 and TRS-492.

Working Language(s)

The working language of the event will be **Russian**.

Scope and Nature

The expected output of the training is:

- Participants to gain an understanding on how to establish and disseminate calibration quantity for absorbed dose to water;
- Participants to gain an understanding on how to establish and disseminate calibration quantity for brachytherapy;
- Participants to gain an understanding on how to use the calibration provided by the calibration laboratory to perform their dosimetry measurements in the hospitals for brachytherapy applications;
- Participants to gain an understanding on how to use the calibration provided by the calibration laboratory to determine absorbed dose in external beams;
- Participants to gain an understanding of the international measurement system supporting the traceability of measurements for ionising radiation;
- Participants to learn about independent dosimetry audits and their value in clinical environments.

Background Information

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. 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 code of practice is addressed to both SSDLs and hospitals and is based on the use of well-type re-entrant ionization chambers. 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. It applies to all brachytherapy sources with intensities measurable by these detectors.

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.

Code of Practices, TRS-398 and TRS-492, are important documents that member states rely on for their dosimetry it is crucial to host this training for their implementation. This course will aim to transfer this knowledge and good practices to relevant professionals in this sub-region.

Participation

The meeting is open to participants from Russian speaking countries in RER6043. There will be a maximum of 24 participants.

Each country is invited to nominate **two participants** who must match the profile described in the corresponding paragraph, indicating the order of priority. However, the IAEA reserves the right to finally decide the number of participants.

Participants' Qualifications and Experience

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 radiation therapy level (X ray and Co-60) and/or brachytherapy (reference air kerma rate).

The second intended audience is a qualified medical physicist working in a hospital that is already treating patients using brachytherapy high dose rate and/or linear accelerators.

As the event will be conducted in Russian, participants should have sufficient proficiency to follow lectures and express themselves in this language 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://websso.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. Search for the relevant technical cooperation event (**EVT2600096**) 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.

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 regarding 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 American Express, or a travel grant, or they will be reimbursed travel by car/bus/train in accordance with IAEA rules for non-staff travel.

Occupational Exposure to Radiation

This event may involve occupational exposure to radiation. Therefore, candidates are required to duly complete and return the Occupational Exposure History (OEH) form upon applying for the event. The IAEA will provide selected participants in due course with a dosimeter to monitor their occupational exposure during this event.

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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