

Field: RADIATION PROTECTION

Topic: REGULATION OF RADIATION PROTECTION IN MEDICAL APPLICATIONS

Course type	TUTORING	Objective and learning outcomes This course provides trainees with theoretical background and practical skills and introduces good regulatory practices in radiation protection concerning medical applications (radiotherapy, nuclear medicine and radiology) and in the protection of healthcare staff and patients, so that the tutees can improve their competences and skills in reviewing, assessing, authorizing and inspecting processes, procedures and documentation of the radiation protection of medical applications.
Host institute	Centre for Energy Research Budapest, Hungary	
Co-host institute	National Institute of Oncology Budapest, Hungary	
Date	06 November – 01 December 2023	
Duration	Four weeks	
Working language	English	

Outline of course content

Theoretical training

- Introduction to radiation protection principles in medicine.
- International guidance and national solutions for the dose limitations of medical staff members as part of the occupational dose control system. Exclusive nature of patient doses: perception of individual risk, responsibility of medical staff, such as of medical physicists, physicians, radiation therapy technologists in determining dose target values (DRL). Interpretation of public dose constraints for medical facilities.
- Introduction of the modern technologies used in radiotherapy, nuclear medicine and radiology.
- Introduction to radioactive sources and their medical application, and to radiation protection related issues of safe transport of radioactive materials and radioactive waste management.
- Review of quality assurance, monitoring and reporting.

Practical work

- Tabletop exercises:
 - Development of Radiation Protection Plan of a medical facility.
 - Development of the inspection plan of some typical medical application.
 - Description and applicability of different quality assurance/quality control (QA/QC) procedures.
- Laboratory activities and hands-on trainings:
 - Reporting of the sources, introduction about the source inventory code according to the governmental decree in force in the host country. Radioactive source exploration at indoor and outdoor training sites. Application of orphan source exploration methods.
 - Measurement procedures and equipment in radiation medicine.
 - HDR brachytherapy treatments and quality control measurements
 - Permanent prostate seed implantation – source managements
 - Radiotherapy treatment - use of the Varian Eclipse treatment planning system,
 - Dosimetric measurement of linear accelerators and CT equipment.
- Technical visits:
 - Visit to a major medical facility providing various diagnostic and therapeutically services to patients with radioactive material and ionizing radiation.
 - Introduction of local documentation and record keeping, methods for dose exposure determination of medical staff, patients and caregivers.

Technical schedule and delivery methods

The course consists of classroom lectures, tabletop exercises, laboratory activities, hands-on trainings and technical visits during the 4 working weeks (i.e. 4 × 5 workdays).

- **Classroom lectures** will take 7 days with 2 units per a day (tentatively morning and afternoon sessions with 2 lectures of 90 minutes each, with time allocated for discussions and appropriate breaks).
- **Exercises, laboratory activities, hands-on trainings** will take 7 days with morning and afternoon sessions.
- **Technical visits** will take 6 days.

Target audience

This course is intended to experts and professionals of Nuclear Regulatory Authorities (NRAs) and Technical Support Organizations (TSOs) having responsibilities in radiation protection, particularly concerning medical applications.

Target number of participants: 2

Prerequisites and requirements for participants

Participants should have an adequate level of knowledge in English (at least an 'Independent user' level defined by the [CEFR](#)). A university degree and at least 3 years of professional experience in functions relevant to the content of the course is also a prerequisite.

Relevancy of the course topic in the work and institutionally justified interest in participating will be considered as well as the need and opportunity for filling competence gaps. Efforts are made to ensure gender equality.

Terms of participation

The project is implemented under the European Union (EU) external assistance programme, called the European Instrument for International Nuclear Safety Cooperation (INSC), and aims to support the National Nuclear Regulatory Authorities (NRAs) and their Technical Support Organizations (TSOs) in non-EU countries in strengthening their capabilities with regard to their regulatory tasks and responsibilities in the field of nuclear safety and radiation protection.

Employees of the NRAs or their TSOs in the Beneficiary Countries are eligible for financially supported participation in the T&T courses. Beneficiary Countries of the project are published on the website <https://training.ek-cer.hu/>.

Costs

Travel and accommodation costs and subsistence allowances (including the international and national travel tickets, shuttle services, insurance and visa costs, per diems) for participants will be covered from the project budget.

Application

Application via the website <https://training.ek-cer.hu/>, according to the process and deadlines indicated there.

Examination

Technical and linguistic tests will be written as part of the application and selection process to assess the underlying knowledge and preparedness of applicants. Knowledge and development of selected participants will be assessed through technical tests throughout the course.

Work reports will be prepared to allow for progress monitoring and determining the final development through acquisition of knowledge, practical experience and expertise, as well as task completions.

Participants attending the full course will be issued with attendance certificates. Successful participants will receive certificates confirming their knowledge achieved and skills acquired.
