

Field: RADIATION PROTECTION AND WASTE MANAGEMENT

Topic: REGULATION OF RADIATION PROTECTION IN MEDICAL APPLICATIONS

Course type: TRAINING

Date: 2-6 October 2023

Duration: One week

Location: Kuala Lumpur, Malaysia

**Working language
of the course:** English

Objective and learning outcomes:

This course offers fundamental technical knowledge and introduces regulatory approaches and practices through which trainees can improve their competences and skills needed in review and assessment, authorization and inspection of radiation protection processes, procedures and documentation used in medical applications (radiotherapy, nuclear medicine and radiology).

Outline of course content

- Interpretation of the international (e.g. IAEA) and European Union regulation on radiation protection.
- 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 (medical physicists, physicians, radiation therapy technologists) in determining dose target values – DRL. Interpretation of public dose constraints for medical facilities.
- Nuclear measurements techniques in medical application and personal dosimetry.
- Radiation protection of medical staff. Planning of protective actions, shielding, and applications of remotely controlled equipment. Regulatory inspection of radiation sources and radiation protection methods in medical facilities. Role of radiation protection officers (RPOs) and radiation protection experts (RPEs), qualified medical physicist (QMP) and medical physics expert (MPE) at medical facilities.
- Introduction the modern technologies used in radiotherapy, nuclear medicine and radiology.
- Nuclear medicine – Production of radiopharmaceutical and medical materials in irradiation facilities and isotope laboratories. D-values in medical applications, transportation, applications (SPECT, PET, therapy), waste management.
- Diagnostic Radiology – protection of the member of staff, patient and workers, caregivers for the different fields (mammography, computer tomography, interventional radiology, dental, etc).
- Radiation Therapy – protection of patient and staff (external therapy and brachytherapy, proton therapy)
- Visit to a major medical facility providing various diagnostic and therapeutically services to patients with radioactive material and ionization radiation. Introduction of local documentation and record keeping, methods for dose exposure determination of medical staff, patients, careers and comforters. Measurement procedures and equipment.

Technical schedule and delivery methods

The course consists of one module taking a working week (i.e. 5 workdays).

- **Classroom lectures** take about 4 days with morning and afternoon sessions, consisting of lectures tentatively of 45 minutes each, and with time allocated for discussions and appropriate breaks.
- About half-day **technical visits** to a major medical facility providing various diagnostic and therapeutically services to patients with radioactive material.

Target audience

This course is intended for experts and professionals of Nuclear Regulatory Authorities (NRAs) and Technical Support Organisations (TSOs), with responsibilities and experience in radiation protection, preferably related to medical applications.

Target number of participants: 15 – 25

Prerequisites and requirements for participants

Participants should have basic radiation protection knowledge and an adequate level of knowledge in English (at least an 'Independent user' level defined by the [CEFR](#)). A university degree with nuclear specialization OR at least 1-2 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. Regional connections to the course location are prioritized and efforts are made to ensure gender equality, so these aspects may also be taken into account as selection criteria.

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 Organisations (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 project website <https://training.ek-cer.hu/>.

Costs

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

Application

Application via the project 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.

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