

Field: RADIATION PROTECTION

Topic: REGULATION OF RADIATION PROTECTION IN INDUSTRIAL APPLICATIONS

Course type	TUTORING	Objective and learning outcomes This course provides the tutees with information about the regulatory policies and approaches related to radiation protection and radioactive material applications in industrial activities. The course assists the tutees to improve knowledge in technical disciplines and competences related to a regulatory body's functions and processes, including review, assessment and inspection.
Host institute	Centre for Energy Research Budapest, Hungary	
Date	30 October – 24 November 2023	
Duration	Four weeks	
Working language	English	

Outline of course content

Theoretical training

- Introduction to radiation protection principles.
- Interpretation of the international regulations on radiation protection of industrial applications. Introduction of the national regulatory framework, nuclear safety requirements of industrial facilities and the related regulatory activities.
- Overview of requirements and approaches for protection, safety and emergency preparedness and response in planned and emergency exposure situations. Introduction of the management systems, roles and responsibilities, functions for review and assessment.
- Introduction to radioactive sources and their R&D and industrial 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 an industrial facility (Source Cat 1. and Cat 4.),
 - development the inspection plan of some typical industrial application,
 - description and applicability of procedures for evaluating the emergency preparedness report.
- Laboratory activities and hands-on trainings at the host institute:
 - Transportation exercise with the Mobile laboratory.
 - Demonstration of closure test based on the relevant standard.
 - Reporting of the sources, introduction about the source inventory code according to the governmental decree. Radioactive source exploration at indoor and outdoor training sites. Application of orphan source exploration methods. Use of the Virtual radiation source system.
 - Test measurements at the Detector testing laboratory.
 - Dosimetry exercises (personal monitoring and dosimetry activities at industrial gamma irradiation facilities).
 - Shielding design, exposure calculations.
 - Introduction to whole body counting.
- Technical visits to
 - analytical laboratories supporting the regulation of industrial applications (using mostly non-destructive techniques),
 - irradiation facilities in Hungary.

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 10 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).
- The **exercises, laboratory activities, hands-on trainings** will take 8 days with morning and afternoon sessions.
- The **site visits** will take 2 days.

Target audience

This course is intended to experts and professionals of Nuclear Regulatory Authorities (NRAs) and Technical Support Organisations (TSOs) involved in industrial activities using radioactive materials.

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 with nuclear specialization and 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 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 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.
