

# SCK•CEN Academy training courses



## Radiation protection

Since the early discoveries by Marie Curie, Becquerel, Röntgen and many others, a deep insight into the risks and benefits of applying radioactivity in daily research and commercial practice has been build up.

The scientific world of radiological protection is in constant motion, triggered by new research as well as by developments and events in the industrial and medical sectors. In addition, national and international standards, regulations and guidelines are intended to direct daily practice and procedures that guarantee the protection of workers, patients, the public and the environment.

The SCK•CEN Academy offers several training modules in topics that are essential parts of radiation protection science and applications.

Theoretical classes are complemented by hands-on exercises and technical visits to several SCK•CEN laboratories.

Professionals can even bring their own measuring equipment to improve their skills.

### Available modules

#### Background modules

- Basic principles of nuclear physics
- Interaction of radiation with matter
- Radiation and dose measurements (personal and environmental dosimetry)
- Biological effects of ionizing radiation
- Alpha, beta and gamma spectrometry
- Standards and legislation
- ALARA and safety culture

#### Advanced modules

- Transport of radioactive materials
- Radon and elevated natural radioactivity
- Ethical aspects of the radiological risk
- Management of radioactive waste
- Internal dosimetry assessment from bioassay measurements
- Quality assurance in nuclear safety
- Decommissioning and dismantling techniques
- Organization of emergency planning
- Misuse of radioactive materials: prevention and response (safeguards)
- Radiochemistry

#### Practical modules

- Good safety practice in controlled areas
- Using measuring equipment (in interventions)

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## Technical visits

- Dosimetry and nuclear calibration laboratories
- Anthropogammametry laboratory
- Alpha, beta and gamma spectroscopy laboratory
- Radioactive decontamination wing of the medical services
- Emergency planning & follow-up room
- Research reactors (controlled areas) BR1, BR2 and BR3 (in decommissioning)
- Radio- and microbiology laboratories
- Radioecology laboratories
- Hot cells in the Laboratory for High and Medium Activity

## Methodology

All courses are tailored to the needs of the customer:

- The programme consists of one or more of the available modules;
- Topics that are not listed above but that are SCK•CEN R&D subjects can also be offered;
- The level is adapted to the target audience;
- Courses are given in English, French or Dutch;
- Courses are given preferably at SCK•CEN's premises in Mol (Belgium) because of the availability of the specialized laboratories, and possibilities for field exercises. Alternatively, if only theoretical classes are involved courses can also be given at the customer's premises.

## Lecturers

Courses are given by top-level SCK•CEN scientists and engineers with solid expertise in their research domain. Furthermore, they have followed learning facilitator training sessions and can thus transfer their theoretical knowledge and practical experience to the course participants efficiently and effectively.

## Target audience

Our courses offer insight in both theory and practice to all students and professionals working in the nuclear industry, healthcare, governmental and research organizations who deal with or involved in the protection of radiation workers, generic protection of the public and environment, or protection of an individual patient.

## References

*Governmental* - FANC/AFCN, BelV, NIRAS/ONDRAF, Ministries of Defense and Internal Affairs

*Industry* - ENGIE, Belgoprocess, Belgonucleaire, ECS, Transnubel, Applus

*Medical* - Philips, Toshiba, UNAMEC

*International* - EuropeAid, IAEA

*Universities* - Belgian RPE course, several collaborators have a professorship at a university