

# NUCLEAR TECHNOLOGY EDUCATION CONSORTIUM

## N23 RADIOLOGICAL ENVIRONMENTAL IMPACT ASSESSMENT

The module aims to:

- Explain the purpose of radiological environmental impact assessment (REIA) and identify the circumstances in which theoretical (predictive) and measurement-based assessments are required.
- Understand the physical and chemical behaviour of radionuclides released into atmospheric and marine environments.
- Use 'state-of-the-art' models effectively and intelligently to analyse the dispersion of radionuclides through the atmospheric, terrestrial and marine environments.
- Develop and apply dosimetric models to analyse the radiological impact of discharges on critical groups and the population as a whole by estimating individual and collective doses.
- Explain the special circumstances pertaining to C-14 and tritium (H-3) discharges and develop and apply specialist models to estimate the radiological impact of such emissions.
- Explain the methods used to measure environmental radiation and devise appropriate monitoring strategies for different types of discharge.
- Undertake a critical appraisal of actual radioactive discharges and associated impact assessments and undertake cost-benefit analyses for various discharge abatement proposals.
- Describe the UK regulatory framework pertaining to radioactive discharges and explain how international treaty obligations will impact on future regulatory requirements.

### Syllabus

- Overview of REIA Requirements, Basic Concepts
- Atmospheric Dispersion Modelling
- Deposition Processes
- Exposure Pathways I Airborne and Deposited Activity
- Exposure Pathways II Foodstuffs
- Team-Based Assignment using PC-CREAM 08
- Marine Dispersion Modelling
- Exposure Pathways III Marine Pathways
- Environmental Radiation Monitoring
- Laboratory-based Exercise Environmental Assay
- Radioactive Discharges in the UK – a Perspective
- Regulatory Issues and International Perspectives