Industrial Radiation Safety Officer Professional Training Course



26 - 30 Oct 2026

Cape town

4600 € (Per Person)

Ref: #HSE1255_276850

Course Introduction / Overview:

This comprehensive course is designed to equip participants with the essential knowledge and practical skills required to excel as a Radiation Protection Officer (RPO) or Radiation Safety Officer (RSO) in diverse industrial settings. The program delves deep into the principles of radiation protection, regulatory compliance, and the safe management of ionizing radiation sources. As emphasized by the renowned health physicist Dr. Herman Cember in his foundational text, "Introduction to Health Physics," a robust understanding of both the science and the practical application of safety protocols is paramount. This training moves beyond theoretical concepts to provide actionable strategies for developing and implementing an effective radiation protection program. Participants will learn to conduct thorough risk assessments, manage radioactive materials, and ensure a safe working environment in compliance with national and international standards. At BIG BEN Training Center, we are committed to fostering a culture of safety by empowering professionals to confidently handle the responsibilities of an RPO, safeguarding personnel, the public, and the environment from the potential hazards of industrial radiation applications.

Target Audience / This training course is suitable for:

- Aspiring and current Radiation Protection Officers (RPOs).
- Radiation Safety Officers (RSOs).
- Health, Safety, and Environment (HSE) Managers and Professionals.
- Industrial Radiographers and Technicians.
- Quality Assurance and Quality Control (QA/QC) Personnel.
- Operations and Maintenance Supervisors in industries using radiation.
- Regulatory Affairs Specialists.
- Emergency Response Team Members.

Target Sectors and Industries:

- Oil and Gas Exploration and Production.
- Non-Destructive Testing (NDT) and Inspection Services.
- Manufacturing and Industrial Processing.
- Construction and Engineering.
- Aerospace and Aviation.
- Power Generation, including Nuclear Facilities.
- Mining and Mineral Processing.
- Governmental bodies and regulatory agencies.
- Research and Development facilities.

Target Organizations Departments:

- Health, Safety, and Environment (HSE).
- Quality Assurance / Quality Control (QA/QC).
- Operations and Production.
- Maintenance and Engineering.
- Regulatory Compliance and Legal.
- Project Management.
- Research and Development (R&D).
- Emergency Response and Management.

Course Offerings:

By the end of this course, the participants will have able to:

- Develop, implement, and manage a comprehensive radiation protection program.
- Ensure full compliance with relevant national and international radiation safety regulations.
- Apply the principles of ALARA (As Low As Reasonably Achievable) in all industrial operations.
- Conduct effective radiation surveys, monitoring, and contamination control procedures.
- Manage the lifecycle of sealed and unsealed radioactive sources securely.
- Perform detailed radiation hazard assessments for various industrial applications.
- Develop and execute robust emergency response plans for radiation incidents.
- Maintain accurate records for dosimetry, source inventory, and regulatory reporting.
- Provide effective radiation safety training and guidance to other personnel.

Course Methodology:

The training methodology at BIG BEN Training Center is centered on creating an immersive and practical learning experience that bridges theory with real-world application. This course utilizes a blended approach, combining expert-led presentations with highly interactive sessions. Participants will engage in detailed case studies of actual industrial radiation incidents, analyzing root causes and preventative measures in collaborative group discussions. Practical exercises will simulate key RPO responsibilities, such as using radiation survey meters, performing leak tests on sealed sources, and planning a response to a simulated emergency scenario. The curriculum is designed to foster critical thinking and problem-solving skills essential for a competent Radiation Protection Officer. Open Q&A sessions are integrated throughout the course to ensure all concepts are clearly understood. Our instructors provide continuous feedback and facilitate a dynamic learning environment where participants can share experiences and learn from both the trainers and their peers, ensuring they leave with the confidence and competence to manage radiation safety effectively in their workplace.

Course Agenda (Course Units):

Unit One: Fundamentals of Radiation Physics and Protection

- Introduction to Atomic and Nuclear Physics.
- Types of Ionizing Radiation and Their Properties.

Units of Radioactivity, Exposure, and Dose.

- Interaction of Radiation with Matter.
- Biological Effects of Ionizing Radiation.
- Core Principles of Radiation Protection (Time, Distance, Shielding).
- The ALARA (As Low As Reasonably Achievable) Principle.

Unit Two: Regulatory Framework and RPO Responsibilities

- Overview of International Standards (IAEA, ICRP).
- National Radiation Protection Regulations and Legislation.
- The Role, Duties, and Legal Responsibilities of a Radiation Protection Officer.
- Developing and Documenting a Radiation Protection Program (RPP).
- Licensing and Registration of Radioactive Sources.
- Record Keeping, Reporting, and Regulatory Inspections.
- Establishing a Strong Radiation Safety Culture.

Unit three: Radiation Monitoring and Dosimetry

- Principles and Operation of Radiation Detection Instruments.
- Selection and Use of Survey Meters and Contamination Monitors.
- Techniques for Performing Area Radiation and Contamination Surveys.
- Personal Dosimetry and Bioassay Programs.
- Calibration, Maintenance, and Quality Control of Monitoring Equipment.
- Management and Interpretation of Dosimetry Results.
- Workplace and Environmental Monitoring Strategies.

Unit Four: Control of Radioactive Sources in Industry

- Management and Security of Sealed Radioactive Sources.
- Procedures for Leak Testing and Inventory Control.
- Safe Handling of Unsealed Sources and Contamination Control.
- Shielding Design and Calculation for Industrial Sources.
- Radiation Safety in Industrial Radiography.
- Safety with Fixed Nuclear Gauges and Well Logging Sources.
- Classification and Labeling of Radioactive Areas.

Unit Five: Emergency Preparedness and Transportation

- Developing a Comprehensive Radiation Emergency Plan.
- Classification of Radiation Incidents and Accidents.
- Emergency Response Procedures and Equipment.
- Decontamination of Personnel, Equipment, and Areas.
- Incident Investigation and Root Cause Analysis.
- Regulations for the Safe Transport of Radioactive Materials.
- Course Review, Final Assessment, and Open Forum.

FAQ:

Qualifications required for registering to this course?

There are no requirements.

How long is each daily session, and what is the total number of training hours for the course?

This training course spans five days, with daily sessions ranging between 4 to 5 hours, including breaks and interactive activities, bringing the total duration to 20 - 25 training hours.

Something to think about:

Reflection Question: Beyond regulatory compliance, how can an RPO proactively cultivate a pervasive safety culture that minimizes human error in high-risk industrial environments?

What unique qualities does this course offer compared to other courses?

This course distinguishes itself by focusing intensely on the practical, decision-making aspects of the Radiation Protection Officer's role within an industrial context. While many programs cover regulatory theory, our curriculum is built around real-world industrial scenarios, case studies, and problem-solving exercises that challenge participants to think like an RPO. We move beyond simple compliance to explore the nuances of implementing a robust radiation protection program from the ground up, addressing the specific challenges found in sectors like NDT, manufacturing, and oil and gas. The training emphasizes the development of a proactive safety culture, a critical element often overlooked, teaching participants how to lead, train, and influence others to adopt safe work practices. Rather than just presenting information, this course, guided by the expert facilitators at BIG BEN Training Center, is structured to build competence and confidence, ensuring that graduates are not only knowledgeable about regulations but are also fully prepared to manage day-to-day operations, respond effectively to emergencies, and champion radiation safety within their organizations.