MERCURY

Radiation Safety and NORM Management Training Course

6 – 10 December 2026
Manama (Bahrain)



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Radiation Safety and NORM Management Training Course

Ref: 51_1082793 **Date:** 6 – 10 December 2026 **Location:** Manama (Bahrain) **Fees:** 4900 Euro

The Radiation Safety and NORM Management Training Course is a one-week course for radiation protection officers, industrial hygiene specialists, and asset integrity engineers responsible for ionizing radiation safety and radiological waste controls. Working with contamination survey data, activity concentration logs, and exposure registers, you assemble an operational Radiation Protection and NORM Control Dossier. Mercury Training Center delivers this course to develop reliable radiation safety and NORM management capabilities.

About This Course

Uncontrolled scale deposits, misidentified contamination hazards, and non-compliant radioactive waste handling expose field personnel to ionizing radiation and breach statutory clearance thresholds. To follow this course, you must already understand basic industrial hazards, interpret technical inspection reports, and carry out standard field safety assessments. Through practical data sets and monitoring logs, you practice contamination mapping, clearance evaluation, and exposure control.

Who It Is For

- Radiation protection officers responsible for supervising site radiological boundaries, surveying equipment, and enforcing field barrier protocols.
- Industrial hygiene and occupational health specialists responsible for assessing workplace radiation hazards, monitoring worker doses, and selecting respiratory protection.
- Asset integrity and turnaround engineers responsible for scheduling decontamination, inspecting vessel internals, and managing scale extraction during plant shutdowns.
- Environmental compliance and waste supervisors responsible for categorizing radioactive residues, preparing transport manifests, and auditing disposal pathways.

This course is not for medical radiographers and clinical dosimetry technicians, who require diagnostic radiology qualifications, nor is it for nuclear reactor core physicists, who need nuclear engineering and reactor kinetics programs.

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Competencies You Will Build

- Radiological Hazard Identification: Detecting alpha, beta, gamma, and neutron radiation sources across industrial processing equipment and extraction streams.
- NORM Activity Quantification: Evaluating radionuclide concentrations against the statutory clearance threshold of 1 Bq/g for uranium and thorium series and 10 Bq/g for Potassium-40.
- Workplace Radiation Monitoring: Operating calibrated survey meters, conducting surface contamination wipe tests, and delineating controlled radiation work boundaries.
- Occupational Dose Management: Implementing the ALARA framework, personal dosimetry tracking, and records transmission into the National Dose Registry for Occupational Exposure.
- Radioactive Residue Handling: Establishing containment, respiratory protection, and decontamination procedures for hazardous scales, sludges, and contaminated hardware.
- Compliant Material Transport: Packaging, labeling, and manifesting radioactive consignments in alignment with NRRC-R-15-SR01 transport safety standards.

What You Will Be Able to Do

By the end of the course you will be able to:

- From gamma survey meter readings and background measurements, determine radiation dose rate contours around operating production manifolds and process vessels.
- Given laboratory radiometric assay data, calculate specific activity concentrations to confirm clearance or non-radiological exemption under NRRC-R-01-SR01.
- Using facility inspection blueprints and turnaround schedules, draft a controlled area radiation protection plan conforming to SAEP-358 and GI 150.003.
- From unsealed contamination records, define appropriate respiratory protection factors and personal protective equipment donning protocols conforming to GI 150.007.
- Given industrial radiography project scopes, verify boundary barricades, warning beacons, and exposure limitations under SAEP-1141 requirements.
- Using radioactive consignment characteristics, prepare packaging manifests and placarding documentation that satisfy NRRC-R-15-SR01 technical guidelines.

Course Content

Day 1: Principles of Ionizing Radiation and Regulatory Frameworks

- Radiation Physics, Decay Chains, and Interactions with Matter under IAEA GSR Part 3
- Biological Effects of Ionizing Radiation, Stochastic Risks, and Deterministic Harm
- The ICRP System of Protection: Justification, ALARA Optimization, and Dose Limitations
- Regulatory Responsibilities and Notification Protocols under NRRC-R-01 and NRRC-R-02
- Statutory Clearance Limits and Exemption Thresholds under Technical Regulation NRRC-R-01-SR01

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Day 2: NORM Characterization and Industrial Standards

- Origins of Technologically Enhanced Naturally Occurring Radioactive Material in Fluid Extraction
- Uranium-238 and Thorium-232 Decay Series Dynamics in Scale, Sludge, and Produced Water
- Corporate Governance and NORM Management Procedures under SAEP-358
- Contamination Control Protocols for Unsealed Radioactive Sources under Aramco GI 150.007
- Umbrella Ionizing Radiation Protection Governance and Field Compliance under GI 150.003

Day 3: Radiation Detection, Contamination Surveys, and Field Monitoring

- Operating Principles of Gas-Filled Survey Meters, Scintillation Probes, and Personal Dosimeters
- Calibration Verification, Instrument Response Checks, and Geometry Factors in the Field
- Surface Contamination Wipe Testing Protocols and Direct Measurement Methodologies
- Pre-Turnaround Baseline Facility Mapping and Confined Space Entry Radiological Screening
- Radiological Survey Protocols for Industrial Radiography Work Zones under SAEP-1141

Day 4: Occupational Exposure Control and NORM Waste Management

- External Hazard Controls: Calculating Time, Distance, and Shielding Attenuation Profiles
- Internal Hazard Prevention: Engineering Controls, HEPA Containment, and Respiratory Selection
- Worker Dose Recording, TLD Administration, and Reporting to the National Dose Registry
- NORM Scale Removal, Equipment Decontamination Methods, and Water Jetting Containment
- Waste Segregation, Storage Engineering, and Transport Placarding under NRRC-R-15-SR01

Day 5: Practical Radiological Evaluation and Dossier Assembly

- Exercise on Facility Radiological Mapping and Controlled Work Area Barricading
- Exercise on Activity Concentration Clearance Evaluation against NRRC-R-01-SR01 Thresholds
- Exercise on Confined Space Decontamination Planning and Waste Packaging Manifests
- Exercise on Radiography Site Perimeter Auditing and Emergency Response Simulation
- Final Assembly and Review of the Radiation Protection and NORM Control Dossier

Case Studies and Exercises

These suggested activities provide practical application of radiation safety principles and waste governance decisions across different operating sectors:

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- Case study: A planned turnaround on an offshore separation vessel in the energy extraction sector, where you evaluate gamma survey data showing heavy radium scale, define safe vessel entry limits, and formulate sludge containment steps.
- Case study: A mineral sand refining facility in the chemical manufacturing sector, where you assess thorium and uranium particulate levels, evaluate workplace dust samples against clearance thresholds, and specify HEPA respiratory gear.
- Exercise: A pipe storage yard inspection in the industrial services sector, where you screen tubulars for internal radioactive scale, isolate tubulars exceeding 1 Bq/g, and prepare manifest paperwork for transport to an authorized treatment site.
- Exercise: An emergency boundary breach drill during industrial pipeline radiography in the construction sector, where you recalculate exclusion zone perimeters, confirm dosimeter readouts, and document corrective actions.

What You Take Back

The Radiation Protection and NORM Control Dossier provides standardized field survey calculation sheets, clearance evaluation matrices, decontamination checklists, and regulatory reporting templates for your immediate operational use. You will apply it during your first month back at work to verify survey measurements, audit boundary barricades, and manage radioactive waste streams.

- Standardized radiological survey log sheets and contamination wipe calculation tools
- NORM activity concentration assessment matrices and clearance verification checklists
- Decontamination, waste segregation, and consignment transport manifest templates
- Occupational dose tracking registers aligned with national reporting standards

Quick Answers FAQ

What background is required before attending the Radiation Safety and NORM Management Training Course?

You should have foundational industrial safety experience, familiarity with basic physical sciences, and the ability to interpret technical inspection data. Basic mathematical skills are needed to calculate dose rates, inverse square relationships, and activity concentrations during the practical exercises.

How does this course differ from an advanced health physics course?

An advanced health physics course focuses on theoretical quantum mechanics, mathematical radioisotope dispersion modeling, and internal organ dose algorithms. This course concentrates on field contamination monitoring, industrial NORM waste handling, turnarounds, and statutory compliance.

What concentration defines material as regulated NORM waste?

Under specific technical regulation NRRC-R-01-SR01, materials containing radionuclides in the uranium or thorium decay chains exceeding 1 Bq/g, or Potassium-40 exceeding 10 Bq/g, are subject to regulatory control and require formal handling, tracking, and authorized disposal.

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What documentation do you bring back to your company?

You return with the completed Radiation Protection and NORM Control Dossier, containing survey record sheets, decontamination checklists, transport manifest models, and exposure registry templates ready for field implementation.

For Your Manager

Your team member will return prepared to survey operating equipment, evaluate radioactive scale deposits, enforce safe controlled boundaries, and manage hazardous NORM residues safely. Using the Radiation Protection and NORM Control Dossier completed during the course, they will immediately audit field shielding, verify clearance records, and ensure facility work practices align with statutory standards.