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COURSE BROCHURE

Radiation Protection and NORM Management Training Course

14 – 18 June 2027
Dar es Salaam

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Registered in the United Kingdom and Saudi Arabia

Radiation Protection and NORM Management Training Course

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Radiation Protection and NORM Management Training Course is a 1-week training course for health, safety and environmental managers, process safety superintendents and asset integrity engineers, built around an operational radiation protection and NORM control plan. Industrial facilities handling hydrocarbon streams, mineral processing ores and industrial water face accumulating radioactive residues that threaten worker safety, asset maintenance and waste compliance. Radiation Protection and NORM Management is delivered by Jupiter Prime Training.

Why Radiation Protection and NORM Management Matters Now

Naturally occurring radioactive material, or NORM, concentrates silently within production tubing, separators, water treatment facilities and mineral processing circuits. Three forces demand rigorous operational control today: ageing process infrastructure that requires invasive vessel entries and pipework decontamination; heightened international scrutiny over environmental releases and transboundary waste transport; and the tightening of radiation dose constraints for industrial workers. Organisations that miscalculate radiological risk face asset shutdowns, contamination spread and protracted waste impasses, while those with sound oversight run turnaround activities safely and manage residues predictably. The course rests on International Atomic Energy Agency Safety Standards IAEA GSR Part 3 and International Commission on Radiological Protection recommendations ICRP Publication 103.

Who Gains Most from Radiation Protection and NORM Management

- HSE professionals accountable for industrial radiation safety, monitoring programmes and regulatory exposure records
- Operations and turnaround managers responsible for vessel entry, equipment decommissioning and piping maintenance
- Process and production engineers who track sludge, scale and filter residue accumulation across operating circuits
- Waste management and environmental specialists responsible for residue characterisation, storage and licensed disposal
- Asset integrity engineers evaluating internal scale deposition, spool decontamination and pipe replacement schedules

Joint asset operations and environmental health teams gain most when technical specialists, maintenance leaders and safety superintendents attend together to agree on unified contamination thresholds and turnaround protocols.

Radiation Protection and NORM Management Capabilities

Participants build practical operational competence to detect, quantify and control radiological hazards across industrial facilities without disrupting essential process operations.

- Assess radiological risks across hydrocarbon and mineral processing streams — operational risk profiling for asset managers
- Specify surface contamination and gamma dose rate monitoring protocols — radiation protection supervisors
- Design engineering controls and containment systems for vessel turnarounds — turnaround planning teams
- Classify radioactive scales, sludges and produced water residues — environmental compliance officers
- Establish respiratory protection and personal dosimetry regimes — occupational health managers
- Calculate transport and clearance limits for scrap equipment — commercial salvage and recycling leaders

Key Radiation Protection and NORM Management Terms

- NORM — Naturally occurring radioactive material containing radionuclides such as uranium, thorium, radium and their decay products concentrated during industrial processing.
- TENORM — Technologically enhanced naturally occurring radioactive material whose radiological concentration has increased through deliberate or incidental human industrial activities.
- ALARA Principle — As Low As Reasonably Achievable, an optimisation concept ensuring radiation exposure remains minimal, balancing economic, societal and operational factors.
- Radionuclide Decay Chain — A series of sequential radioactive transformations from a parent isotope to a stable daughter element, releasing characteristic ionising radiation.
- Surface Contamination Fraction — The activity of loose or fixed radioactive deposits per unit area on equipment surfaces, expressed in becquerels per square centimetre.
- Clearance Level — A regulatory threshold of radiological activity concentration at or below which materials are released from statutory radiological controls.

Radiation Protection and NORM Management Day by Day

Day 1: Radiological Fundamentals and Operational NORM Occurrence

- IAEA GSR Part 3 Safety Fundamentals — Establishing Justified Dose Limits and Radiation Protection Boundaries
- Uranium and Thorium Decay Series Dynamics — Predicting Isotope Accumulation in Hydrocarbon and Mineral Systems
- Deposition Mechanisms in Process Equipment — Identifying Scales, Sludges, Sands and Water Effluent Accumulations
- Radiological Exposure Pathways — Differentiating External Gamma Irradiation from Internal Inhalation and Ingestion
- Radiological Baseline Site Surveys — Defining Contamination Zones and Background Reference Radiation Values

Day 2: Radiation Detection Instrumentation and Field Measurement

- Gas-Filled and Scintillation Detectors — Selecting Appropriate Instruments for Alpha, Beta and Gamma Radiation
- Survey Meter Calibration and Function Testing — Ensuring Verifiable Field Accuracy and Instrument Reliability
- Surface Contamination Wipe Testing Protocols — Distinguishing Between Removable and Fixed Equipment Contamination
- Spectrometric NORM Screening Techniques — Identifying Specific Daughter Radionuclides in Production Sludges
- Measurement Uncertainty and Calibration Factors — Documenting Defensible Radiological Survey Records for Audits

Day 3: Turnaround Controls, Vessel Entry and Containment

- ALARA Engineering and Administrative Controls — Reducing Worker Doses Through Time, Distance and Shielding
- Turnaround Radiological Work Permits — Setting Pre-Entry Conditions for Confined Space Interventions
- High-Pressure Water Jetting Decontamination — Containing Aerosols and Radioactive Waste Slurry Runoff
- Personal Protective Equipment Selection — Matching Powered Air-Purifying Respirators to Airborne Dust Hazards
- Continuous Air Sampling and Dosimetry — Monitoring Internal Worker Inhalation and Occupational External Doses

Day 4: Waste Characterisation, Storage and Transport Logistics

- Radiological Residue Sampling and Chain of Custody — Verifying Activity Concentrations in Bulk Waste Drums
- Clearance and Exemption Thresholds — Segregating Controlled Radioactive Waste from Conventional Industrial Scrap
- Storage Yard Containment Architecture — Preventing Environmental Leaching and Radon Gas Accumulation Risks
- Radioactive Material Consignment Standards — Labelling, Packaging and Manifesting NORM Waste Shipments Lawfully
- Disposal Facility Acceptance Criteria — Selecting Long-Term Burial, Encapsulation or Downhole Injection Routes

Day 5: Practising the Operational Radiation Protection Plan

- Applying Baseline Radiometric Data to Asset Contamination Profiles — Establishing Facility Exposure Baseline Records
- Applying Turnaround Permitting Controls to Confined Vessel Entry — Reviewing High-Exposure Maintenance Intervention Steps
- Applying Activity Concentration Limits to Waste Segregation Protocols — Preventing Uncontrolled Contaminated Scrap Releases
- Applying Emergency Decontamination Protocols to Personal Contamination Incidents — Restricting Uncontrolled Radioactive Spread
- Completing the Operational Radiation Protection and NORM Control Plan — Presenting Actionable Mitigation to Operations Leadership

Applying Radiation Protection and NORM Management After the Course

- Audit facility equipment maintenance logs to identify unmonitored scale accumulations across active separators, pipe racks and disposal pumps
- Execute a non-invasive gamma radiation survey across critical process nodes to establish a current baseline contamination register

Radiation Protection and NORM Management Questions FAQ

What is radiation protection and NORM management and why does it matter now?

It is the systematic practice of identifying, monitoring and mitigating radiological hazards caused by naturally occurring radioactive material in industrial systems. It matters now because ageing assets, complex maintenance interventions and strict environmental standards require defensible radiological controls to protect workers and maintain operational continuity.

Which roles gain most from radiation protection and NORM management training?

Operations managers, HSE engineers, turnaround supervisors and asset integrity professionals gain most. You benefit directly if your duties involve vessel entry, pipeline maintenance, waste handling or setting health and safety standards where mineral scales or hydrocarbon residues accumulate.

How does this course differ from general industrial hygiene or radiation safety programmes?

General radiation courses focus primarily on sealed industrial radiography sources or medical devices. This course concentrates directly on unsealed, naturally concentrated radionuclides within industrial processing assets, addressing real-world scale deposition, containment during decontamination, and bulky residue waste streams.

What does a participant bring back to their organisation from the course?

You return with a complete operational radiation protection and NORM control plan tailored to active plant operations. This includes baseline monitoring protocols, worker exposure control limits, equipment decontamination procedures and clear waste classification workflows that support immediate compliance.

Radiation Protection and NORM Management: The Way Forward

The operational radiation protection and NORM control plan provides the foundation for defensible radiological risk governance across plant operations. Turnaround leaders, maintenance teams and safety specialists use it to manage vessel entries and residue handling without project delays. After its first application during a scheduled plant overhaul, operations teams should review worker dosimetry and residue volumes to refine shielding protocols and waste processing logistics.