



Radioactive Waste Management and Nuclear Decommissioning Training: Classification to Disposal



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Introduction:

Radioactive waste management and nuclear decommissioning training, from classification to disposal, is a 5-day course for staff who generate, condition, store and plan the disposal of radioactive waste, ending with a Radioactive Waste Management and Decommissioning Plan for a case organisation. Waste accumulates without a route when streams are poorly classified, characterisation records are thin and end-of-life planning starts too late. Nominees already handle sources, waste drums or facility records, and learn through case studies built on inventories and waste data. CoreConcept Training Center delivers this radioactive waste management course.

Course Objectives:

- Classify radioactive waste streams from hospitals, industry, NORM operations and reactors into the six IAEA GSG-1 waste classes
- Characterise waste packages using gamma spectrometry, sampling plans and scaling factors to build defensible nuclide inventories
- Select treatment and conditioning routes such as compaction, incineration, cementation and vitrification for each waste stream
- Manage disused sealed radioactive sources and interim stores through package inspection, labelling and retrievability checks
- Compare near-surface, borehole and geological disposal options against waste acceptance criteria and clearance levels
- Draft a Radioactive Waste Management and Decommissioning Plan with an end state, waste volume estimate and dismantling strategy

Target Audience:

- Staff responsible for radiation protection supervision of waste collection, segregation and storage areas
 - Staff responsible for operating waste treatment, conditioning and packaging equipment
 - Environmental staff responsible for NORM residues, effluent records and site clearance surveys
 - Hospital and laboratory staff responsible for decay storage and disused sealed source returns
 - Facility engineering staff responsible for end-of-life planning, radiological characterisation and dismantling estimates
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Course Outline:

Day 1: Radioactive Waste Sources, Classes and Inventory Baseline

- Radioactive Waste Streams From Hospitals, Industry, NORM and Reactors
- IAEA GSG-1 Classification Into Six Radioactive Waste Classes
- Half-Life, Activity Concentration and Heat Output as Class Drivers
- Waste Hierarchy Principles of Minimisation, Segregation and Reuse
- Site Waste Inventory Register and Current-State Gap Review

Day 2: Predisposal Framework, Characterisation and Waste Acceptance Criteria

- Predisposal Step Sequence From Pretreatment to Conditioning and Storage
- Gamma Spectrometry and Scaling Factors for Waste Characterisation
- Sampling Plans and Nuclide Vectors for Drummed Waste Records
- Waste Acceptance Criteria Derived From Disposal Facility Safety Cases
- Clearance and Exemption Levels for Releasing Material From Control

Day 3: Treatment, Conditioning, Sealed Sources and Interim Storage Practice

- Compaction, Incineration and Ion Exchange for Volume Reduction
- Cementation, Bitumen Encapsulation and Vitrification of Conditioned Waste
- Disused Sealed Radioactive Source Return, Recycling and Conditioning Routes
- Waste Package Specification, Labelling and Quality Records
- Interim Store Monitoring, Package Inspection and Retrievability Checks

Day 4: Disposal Options, Decommissioning Strategies and Problem Waste

- Near-Surface Trench and Engineered Vault Disposal Concepts
- Borehole Disposal of Sealed Sources and Deep Geological Repositories
- Decay Storage Routines for Very Short Lived Hospital Waste
- Immediate Versus Deferred Dismantling Strategy Selection Criteria
- Decontamination Techniques, Legacy Waste and Orphan Material Problem Cases

Day 5: Case Study and the Radioactive Waste Management and Decommissioning Plan

- Case Hospital and NORM Site Inventory Classification Exercise
 - Case Research Reactor Radiological Characterisation and Waste Volume Estimate
 - Treatment, Storage and Disposal Route Selection Matrix for Case Streams
 - Decommissioning End State, Funding Provision and Schedule Drafting
 - Radioactive Waste Management and Decommissioning Plan Completion
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Skills You Will Gain:

- Radioactive Waste Classification
- Nuclide Inventory Characterisation
- Waste Conditioning Route Selection
- Sealed Source End-of-Life Handling
- Interim Store Surveillance
- Disposal Option Appraisal
- Decommissioning Strategy Planning
- Waste Volume Estimating

Why Attend This Course:

- Deliver a Radioactive Waste Management and Decommissioning Plan to the radiation protection lead and facility manager for the case organisation
- Decide whether a waste stream goes to decay storage, clearance, conditioning or a disposal route based on its class and inventory
- Avoid unconditioned drums, untraceable sealed sources and decommissioning estimates that understate waste volumes and storage needs
- Brief technicians and storekeepers on segregation rules, package labelling and store inspection using the course checklists

Conclusion:

Back at work, the participant hands the radiation protection lead and facility manager a Radioactive Waste Management and Decommissioning Plan for one site. Waste handlers use its classification table and route matrix to segregate, condition and store each stream, while engineers use its end state and waste volume estimate to set dismantling priorities and funding provisions. After the first year of use, the unit should compare stored volumes, unresolved sealed sources and characterisation gaps with the baseline inventory and revise routes that did not move waste forward.

Frequently Asked Questions FAQ:

What should participants know before the radioactive waste management and nuclear decommissioning course?

Participants should already handle radioactive sources, waste containers or facility records and understand basic dose and activity units. No nuclear engineering degree is needed. Bringing an anonymised waste inventory or sealed source list helps them apply the case work to their own site.

How does radioactive waste management and nuclear decommissioning training differ from a radiation safety course?

This course follows waste from generation to final disposal and plans the end of life of facilities. Radiation safety courses focus on dose control, monitoring and emergency response during daily source use, and nuclear licensing courses cover legal frameworks; both appear here only where they shape waste decisions.

Why are radioactive waste classes important in radioactive waste management?

Waste classes link each stream to a feasible end point. Activity concentration, half-life and heat output decide whether waste can decay and be cleared, needs near-surface disposal, or must go to a deeper repository, which in turn sets treatment, packaging and storage needs.

What do participants take back from the radioactive waste management and nuclear decommissioning course?

Participants take back a Radioactive Waste Management and Decommissioning Plan for a case organisation, with a classified inventory, a treatment and disposal route matrix, a sealed source register, an end state and a waste volume estimate ready to adapt to their own facility.
