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**DOE-STD-1159-2026
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DOE STANDARD

WASTE MANAGEMENT FUNCTIONAL AREA QUALIFICATION STANDARD

DOE Defense Nuclear Facilities Technical Personnel



**U.S. Department of Energy
Washington, D.C. 20585**

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APPROVAL

The Federal Technical Capabilities Panel (FTCP) is responsible for reviewing and approving Functional Area Qualification Standards (FAQSs) for Department-wide application. Approval of this FAQS from the FTCP is indicated by the signature below.

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TABLE OF CONTENTS

APPROVAL	iii
ACKNOWLEDGMENT	v
ACRONYM LIST	6
PURPOSE.....	8
APPLICABILITY	8
IMPLEMENTATION.....	9
EVALUATION CRITERIA.....	9
INITIAL QUALIFICATION AND CONTINUING TRAINING	10
DUTIES AND RESPONSIBILITIES	10
BACKGROUND AND EXPERIENCE	11
REQUIRED PERFORMANCE COMPETENCIES.....	11
APPENDIX A	18
INITIAL QUALIFICATION TRAINING RECOMMENDATIONS	18
APPENDIX B	19
CONTINUING TRAINING RECOMMENDATIONS.....	19

DOE-STD-1159-2026

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ACRONYM LIST

AEA	Atomic Energy Act
ARP V	Accelerated Retrieval Project V
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CWA	Clean Water Act
CFR	Code of Federal Regulations
DOE	Department of Energy
DOECAP	DOE Consolidated Audit Program
DSA	Documented Safety Analysis
EPA	Environmental Protection Agency
EPCRA	Emergency Planning and Community Right to Know Act
eTQP	electronic Technical Qualifications Program
FAQS	Functional Area Qualification Standard
FFCA	Federal Facility Compliance Act
FTC	Federal Technical Capabilities
FTCP	Federal Technical Capabilities Panel
G	Guide
GTB	General Technical Base
GTCC	Greater than Class C
HLW	High Level Waste
HW	Hazardous Waste
LFRG	Low-Level Waste Disposal Facility Federal Review Group
LLW	Low-Level Waste
LLWRPAA	Low-Level Radioactive Waste Policy Amendments Act
MAR	Material at Risk
MPA	Mandatory Performance Activity
M&TE	Measuring and Testing Equipment
NDA	Non-destructive assay
NDAA	National Defense Authorization Act
NDE	Non-destructive examination
NOV	Notice of Violation
NRC	Nuclear Regulatory Commission
NTC	National Training Center
NWPA	Nuclear Waste Policy Act
O	Order
PPA	Pollution Prevention Act
QO	Qualifying Official
QS	Qualification Standard
RCRA	Resource Conservation and Recovery Act
RWMB	Radioactive Waste Management Basis

SDWA	Safe Drinking Water Act
SWDA	Solid Waste Disposal Act
SWMU	Solid Waste Management Units
TQP	Technical Qualification Program
TRI	Toxic Release Inventory
TRU	Transuranic Waste
TSCA	Toxic Substances Control Act
WAC	Waste Acceptance Criteria
WIPP	Waste Isolation Pilot Plant
WIR	Waste Incidental to Reprocessing

U.S. DEPARTMENT OF ENERGY FUNCTIONAL AREA QUALIFICATION STANDARD

Waste Management Oversight

PURPOSE

Functional area qualification standards (FAQSs) establish common performance competencies in key nuclear facility functional areas for personnel in the U.S. Department of Energy (DOE) Technical Qualification Program (TQP).

This FAQS establishes performance competencies to ensure designated personnel possess the technical knowledge and skills necessary to perform the duties and responsibilities of a waste management oversight professional.

The content of this FAQS should be referenced and used, as appropriate, to develop vacancy announcements, interview questions, and other criteria associated with the recruitment, selection, and placement of personnel assigned to this FAQS.

APPLICABILITY

The DOE Order (O) 426.1, *Department of Energy Federal Technical Capabilities*, requires FAQS to be developed for DOE employees whose duties and responsibilities could affect the safe operation of defense nuclear or high-hazard facilities to support DOE program, field offices, and sites with implementation of their organization-specific TQP.

This FAQS establishes common performance competencies for DOE personnel who perform the duties and responsibilities of a waste management oversight professional. For ease of transportability of qualifications between DOE elements, program and field offices must use this FAQS without modification or addition to the competency requirements.

Satisfactory and documented attainment of the competencies in this FAQS ensures personnel possess the minimum requisite knowledge and skills to perform waste management oversight duties and tasks. To supplement this FAQS, DOE O 426.1 requires organization-specific qualification standards to establish unique organization (headquarters, field element, site, or facility) level competencies.

IMPLEMENTATION

This FAQS, derived from a waste management oversight professional job task analysis (JTA), is comprised of performance competencies based on task performance. Each performance competency includes knowledge requirements and, if necessary, mandatory performance activities (MPAs). The objective of the MPA(s) is to demonstrate the competency has been met by requiring the participant to apply the related knowledge to satisfactorily perform the associated job task.

An evaluation guide has been developed for this FAQS detailing the expected level of knowledge required to obtain qualification and to assist the Qualifying Officials (QOs) responsible for verifying the attainment of the knowledge. The evaluation guide is available through the National Training Center (NTC) FTCP SharePoint site at: <https://ntc.doe.gov/sites/tqp/SitePages/Home.aspx>.

For initial qualification, participants assigned this FAQS must demonstrate attainment of the knowledge in the “Required Performance Competencies” section.

The MPAs listed in this FAQS must be satisfactorily performed and documented once. If any of the evaluation criteria are not satisfactorily met, the designated QO may require the participant to reperform the MPA. Some MPAs may be duplicated in other qualification standards. In these cases, the designated QO must verify and document the satisfactory completion of each MPA required by the applicable standards in electronic Technical Qualification Program (eTQP.)

Participants should perform the MPAs in their assigned work area(s). When participants cannot perform the MPAs as written in their assigned work area(s) or within the required qualification timeframe, supervisors may use other options to facilitate completion, such as options including, but not limited to, performance in a simulated environment or making minor accommodations to either the MPA or the evaluation criteria. Justification(s) for the accommodation(s) must be documented by the QO, with approval of the supervisor and the FTCP Agent.

EVALUATION CRITERIA

Attainment of the performance competency knowledge requirements and MPAs listed in this FAQS must be documented in accordance with the qualifying organization TQP plan (or policy) and the requirements in DOE O 426.1.

Each performance competency includes knowledge requirements and/or MPAs designed to demonstrate attainment of the competency. The QO verifies the evaluation criteria, including organization-specific requirements, were satisfactorily met during observation of the MPA and/or review of the MPA results. Attainment of competency knowledge or MPAs must be verified by a

designated QO using one (or a combination) of the following methods listed in DOE O 426.1:

- Satisfactory completion of a written examination
- Satisfactory completion of an oral evaluation
- Documented evaluation of equivalencies
- Completion of approved training courses that confirm attainment of specific knowledge requirements

Satisfactory attainment of the competency knowledge requirements and MPAs contained in this FAQs must be documented in the electronic Technical Qualification Program (eTQP) at <https://etqp.ntc.doe.gov>.

Once the performance competency knowledge requirements and the MPAs in this FAQs have been attained by the candidate and verified by a QO, the participant must satisfactorily complete the final qualification activity requirements identified in DOE O 426.1 (and/or any applicable organization-specific requirements) before being designated as a qualified waste management oversight professional.

INITIAL QUALIFICATION AND CONTINUING TRAINING

Appendix A, *Initial Qualification Training Recommendations*, includes a list of NTC and external training courses that support the attainment of the required performance competencies for waste management oversight professional participants.

Appendix B, *Continuing Training Recommendations*, outlines courses for waste management professionals to participate in as part of the continuing training program.

DUTIES AND RESPONSIBILITIES

The following are typical duties and responsibilities expected of waste management oversight professional:

- Review and evaluate contractor waste management programs to determine their adequacy to protect the environment, the workers, and members of the general public.
- Interface with project and program management staff and regulatory agencies to determine whether the program complies with applicable codes, standards, guides, regulations, orders, and accepted practices.
- Review and track waste shipments and validate compliance with federal regulations.
- Review and evaluate waste characteristics to meet facility requirements.
- Inspection of waste facilities to meet DOE directives and federal laws.
- Evaluates, oversees, and provides emergency preparedness and emergency response support related to waste management incidents in conjunction with contractor, Federal, State and local officials, as required.

Technical support duties are dependent on the organizational needs and the participant's level of subject-matter expertise and are not addressed by the competencies in this FAQS. Position-specific duties and responsibilities for Waste Management Oversight Professional are contained in organization-specific qualification standards and position descriptions.

BACKGROUND AND EXPERIENCE

The preferred education and experience for waste management oversight professionals are as follows:

1. **Education:** Bachelor of Science degree in engineering or physical science.

And/or

2. **Experience:** Two or more years of related experience that provides a background in waste or environmental management.

The knowledge requirements and associated MPAs identified in this FAQS were developed with the supposition that participants have the above preferred education and experience. The supervisor and QO will determine if participants assigned this FAQS need additional developmental assignments and supporting training.

REQUIRED PERFORMANCE COMPETENCIES

Each competency defines the expected level of knowledge and performance the participant must attain. The performance competencies contained in this FAQS include additional knowledge requirements that are distinct from the knowledge requirements contained in the General Technical Base (GTB) Part A and B Qualification Standard (QS). Prior to (or in parallel with) the initial qualification to this FAQS, participants must satisfy the requirements of the GTB Part A and GTB Part B QS.

Note 1: When regulations, DOE directives, or other industry standards are referenced in this FAQS, the most recent revision should be used. However, waste management oversight professionals and QOs should also refer to the versions of requirements included in the local contract during qualification. Applicable knowledge requirements in predecessor documents not included in this FAQS should be included in the organization-specific QS or the continuing training program.

Note 2: If specific evaluation criteria are not identified for any of the MPAs in this FAQS, the following generic evaluation criteria should be used in conjunction with local requirements:

Generic MPA evaluation criteria:

- Identify criteria for the specific activity.

- Compare results to the criteria and document conclusions.
- Document identified issues or recommendations.
- Discuss, if applicable, how to communicate results to appropriate Federal and/or contractor personnel.

Waste Management Fundamentals

1. A waste management oversight professional shall demonstrate an understanding of waste management fundamentals.

Knowledge Requirements:

- A. Discuss the characteristics and hazards for the following Nuclear Regulatory Commission (NRC) radioactive wastes:
 1. Class A
 2. Class B
 3. Class C
 4. Greater than Class C (GTCC)
 5. Spent nuclear fuel

- B. Define the characteristics and hazards for the following DOE radioactive wastes:
 1. Low level waste (LLW)
 2. Transuranic waste (TRU)
 3. High level waste (HLW)
 4. Mixed waste

- C. Describe the processes that result in the generation of the following DOE radioactive wastes:
 1. Low level waste (LLW)
 2. Transuranic waste (TRU)
 3. High level waste (HLW)
 4. Mixed waste

- D. Discuss the DOE's strategy for management of the following wastes:
 1. Low level waste (LLW)
 2. Transuranic waste (TRU)
 3. High level waste (HLW)
 4. Mixed waste
 5. Hazardous waste (HW)
 6. Non-hazardous waste

- E. Discuss the purpose and characteristics of the Waste Isolation Pilot Plant (WIPP.)

- F. Differentiate between remote handled and contact handled radioactive waste.

- G. Describe a process used to make non-high-level waste determinations.

- H. Discuss the following concepts with waste generation planning:
 - 1. Lifecycle planning
 - 2. Data quality objectives
 - 3. Waste characterization
 - 4. Consolidation
- I. Discuss methodologies used in the characterization of waste:
 - 1. Non-destructive examination techniques
 - 2. Sampling and analysis
 - 3. Waste determination
- J. Describe aspects of DOE's Conduct of Operations that are important to waste management.
- K. Discuss the causal factors associated with the February 2014 Waste Isolation Pilot Plant waste container event and the April 2018 event at the Idaho National Laboratory Accelerated Retrieval Project V.
- L. Discuss the following fundamentals of nuclear safety as they apply to waste management:
 - 1. Criticality
 - 2. Emergency management
 - 3. Fissile materials
 - 4. Material at risk (MAR)
 - 5. Radiation protection
 - 6. Release
- M. Discuss the requirements for selecting shipping containers for waste management.
- N. Discuss the following terms applicable to the role of waste management oversight:
 - 1. Authorized limits
 - 2. Certification
 - 3. Consolidation
 - 4. Contamination
 - 5. Dose
 - 6. Exposure
 - 7. Free release
 - 8. De-minimus
 - 9. Minimization
 - 10. No path to disposal
 - 11. Recycling of formerly contaminated material
 - 12. Segregation
 - 13. Source term
 - 14. Waste variance process

- O. List internal and external partners you may interact with in your waste management duties at your site.
- P. Describe the purpose and elements of waste acceptance criteria (WAC).
- Q. Define risk assessment, risk management, and risk communication as they relate to waste management.

Mandatory Performance Activity (MPA)

MPA 1.1: Using approved site processes, develop lines of inquiry, perform and document a walkthrough of a waste management area to evaluate the following are in compliance with regulatory and/or contract requirements:

- Container labeling
- Spacing
- Proper packaging and storage
- Secondary confinement
- Closure
- Time limits

MPA 1.2: Using approved site processes, identify and track a waste management package found in MPA above.

Waste Management Regulatory Requirements

- 2. A waste management oversight professional shall demonstrate knowledge of requirements for implementing a waste management program in accordance with applicable federal laws, regulations, and DOE directives.

Knowledge Requirements:

- A. Discuss the purpose and scope of the following regulations and their applicability to Waste Management:
 - 1. Clean Water Act (CWA)
 - 2. Toxic Substances Control Act (TSCA)
 - 3. Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) including:
 - a. Superfund Amendments and Reauthorization Act
 - 4. Safe Drinking Water Act (SDWA)
 - 5. Emergency Planning and Community Right to Know Act (EPCRA) including:
 - a. Toxic Release Inventory (TRI) within EPCRA
 - 6. Federal Facility Compliance Act (FFCA), including key required documents

- B. Discuss the following authorizing regulations for DOE pertaining to waste management including purpose, scope, and applicability:
1. Nuclear Waste Policy Act (NWPA)
 2. Pollution Prevention Act (PPA)
 3. Low-Level Radioactive Waste Policy Amendments Act (LLWRPAA)
 4. Solid Waste Disposal Act (SWDA)
- C. Discuss DOE's self-regulatory authority as described in the Atomic Energy Act (AEA).
1. Describe how DOE implements its self-regulatory authority for the management of radioactive waste.
- D. Discuss the following concepts of the Resource Conservation and Recovery Act (RCRA):
1. Large and small quantity generators
 2. Chemical compatibility
 3. Solid waste
 4. Solid waste management units (SWMU)
 5. Hazardous waste facility permit
 6. Land disposal restrictions
 7. RCRA waste codes
 8. Satellite accumulation
 9. Staging
 10. Storage
 11. Mixed waste inventory report
 12. RCRA treatment
 13. RCRA Subtitle C, *Landfill Design Requirements*
- E. Discuss the requirements related to the transportation of waste as found in 49 CFR 171-180, *Hazardous Materials Regulations*.
- F. Discuss the following regulatory partners and their involvement in DOE waste management at your site:
1. Nuclear Regulatory Commission (NRC)
 2. United States Environmental Protection Agency (EPA)
 3. State/Local Regulators
- G. Describe the applicability of the following DOE Directives to waste management oversight professionals.
1. DOE O 435.1, *Radioactive Waste Management*
 2. DOE O 458.1, *Radiation Protection of the Public and the Environment*
 3. DOE O 460.1, *Hazardous Materials Packaging and Transportation Safety*
 4. DOE O 460.2, *Departmental Materials Transportation Management*
 5. DOE O 414.1, *Quality Assurance*
 6. DOE O 226.1, *Implementation of DOE Oversight Policy*
 7. DOE O 422.1, *Conduct of Operations*

8. DOE O 420.1, *Facility Safety*
 9. DOE O 232.2, *Occurrence Reporting and Processing of Operations Information*
- H. Discuss the enforcement of environmental statutes under civil and criminal authorities in waste management activities, including the role of legal counsel.
- I. Discuss Notice of Violations (NOV) and how they apply to and impact Department waste management programs.

Mandatory Performance Activity (MPA)

MPA 2.1: Observe a waste shipping activity. Evaluate and document the activity in relation to the regulatory requirements found in 49 CFR 171-180 or RCRA.

Waste Management Program Implementation & Oversight

3. A waste management oversight professional shall evaluate the site contractor's implementation of key elements of the waste management program.

Knowledge Requirements:

- A. Discuss the following documents associated with radioactive waste management basis (RWMB):
1. documented safety analysis (DSA)
 2. hazard analysis
 3. performance assessments
 4. composite analysis
 5. change control
 6. monitoring plan
 7. maintenance plan
 8. closure plan
- B. Discuss measuring and testing equipment (M&TE) as applicable to waste management.
- C. Discuss the application of a contractor conduct of operations program implementation plan in the waste management process.
- D. Discuss the following concepts with waste generation planning:
1. Lifecycle planning
 2. Data quality objectives
 3. Waste characterization
 4. Consolidation
- E. Discuss the generators' waste certification program as found in DOE M 435.1.

- F. Discuss the purpose and the implementation of the DOE Consolidated Audit Program (DOECAP).
- G. Discuss key concepts associated with waste packaging including verifying waste profiles, prohibited items, and container closure requirements.

Mandatory Performance Activity (MPA)

MPA 3.1: Using your site processes, perform and document oversight of a characterization activity to evaluate compliance with contract requirements.

MPA 3.2: Using your site processes, perform and document oversight of Measuring and Testing Equipment (M&TE) activities to evaluate compliance with appropriate standards.

MPA 3.3: Using your site processes, observe and document a waste management activity to evaluate effectiveness of Conduct of Operations elements to evaluate compliance with contract requirements.

MPA 3.4: Using your site processes, perform and document oversight of a waste receipt and inspection activity to evaluate compliance with contract requirements.

MPA 3.5: Using your site processes, evaluate and document the Contractor's approved radioactive waste management basis (RWMB) in accordance with the requirements of DOE M 435.1.

Waste Management Life Cycle

4. A waste management oversight professional shall demonstrate an understanding of the waste management life cycle and related activities.

Knowledge Requirements:

- A. Based on your primary waste management oversight role, discuss the key concepts, regulations, required documents and records (including records management), and personnel for no more than two of the following life cycle elements:
 - Waste generation planning
 - Waste characterization
 - Waste generation
 - Packaging & shipping
 - Receiving/acceptance
 - Treatment
 - Storage/staging
 - Emplace/dispose
 - Closure

APPENDIX A

INITIAL QUALIFICATION TRAINING RECOMMENDATIONS

Technical education and/or training may include courses/training provided by the DOE, other government agencies, outside vendors, or local educational institutions. Training topics should also address identified weaknesses in the knowledge and/or skills of the participant and current technical issues related to the associated FAQs.

Table 1: Initial Qualification Training Recommendations	
DOE Order 435.1 Radioactive Waste Management Training	Hazardous Waste Operations and Emergency Response (HAZWOPER)
DOE Plain Language Course	RCRA Hazardous Waste Training/ Refresher Course
Site specific radiation worker safety training	Department of Transportation (DOT) Hazardous Materials (HAZMAT) Training
Accident Investigation Overview	DOT Radioactive Material Shippers Training

APPENDIX B

CONTINUING TRAINING RECOMMENDATIONS

Waste management oversight professional shall participate in a continuing training and qualification programs that include the following elements:

1. Continuing technical education and/or training on topics directly related to waste management oversight as determined by management. This may include courses/training provided by DOE, other government agencies, outside vendors, or local educational institutions.
2. Continuing training topics should address identified weaknesses in the participant's knowledge or skills.
3. Specific continuing training requirements shall be documented in individual development plans.
4. Continuing training may include observation and participation in on- or off-site assessments.
5. The following are training courses that can benefit waste management oversight professionals:
 - a. Department of Energy Order 435.1 Radioactive Waste Management Training
 - b. RCRA Hazardous Waste Training/ Refresher
 - c. Advanced or Basic Radioactive Shipper
 - d. Oversight Assessments Course
 - e. Establishing and Inspecting Waste Management Areas Training