

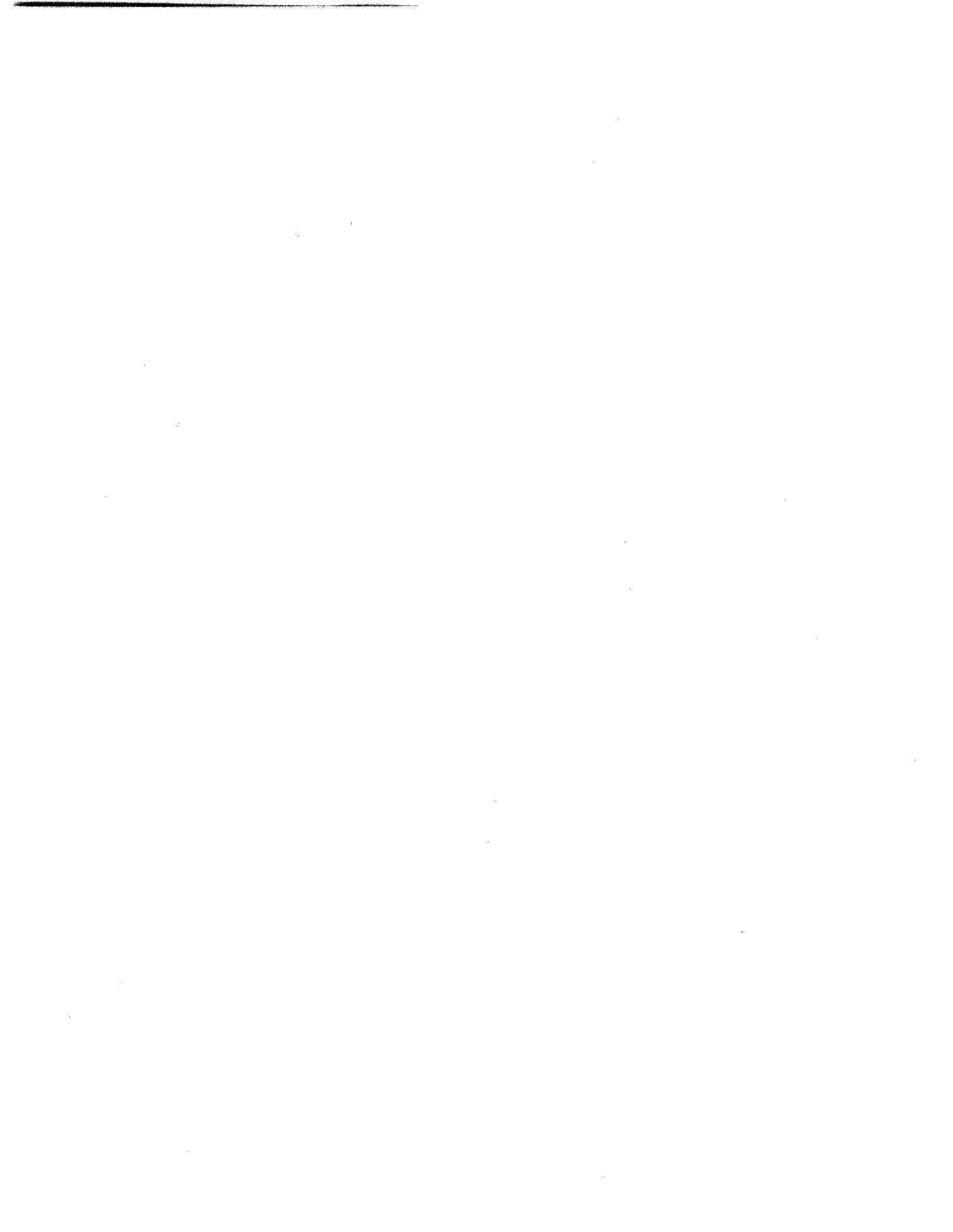
Waste Isolation Pilot Plant

Compliance Certification Application

Reference 182

DOE (U.S. Department of Energy), 1988.

DOE Order 5820.2A Radioactive Waste Management, U.S. Department of Energy,
Washington, D.C. Washington, D.C.



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

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ORDER

DOE 5820.2A

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SUBJECT: RADIOACTIVE WASTE MANAGEMENT

1. PURPOSE. To establish policies, guidelines, and minimum requirements by which the Department of Energy (DOE) manages its radioactive and mixed waste and contaminated facilities.
2. CANCELLATION. DOE 5820.2, RADIOACTIVE WASTE MANAGEMENT OF 2-6-84.
3. SCOPE. The provisions of this Order apply to all DOE elements and, as required by law and/or contract and as implemented by the appropriate contracting officer, all DOE contractors and subcontractors performing work that involves management of waste containing radioactivity and/or radioactively contaminated facilities for DOE under the Atomic Energy Act of 1954, as amended (Public Law 83-703).
4. EXCLUSION. This Order does not apply to the management by the Department of commercially generated spent nuclear fuel or high-level radioactive waste, nor to the geologic disposal of high-level waste produced by the Department's activities and operations. Such materials are managed by the Office of Civilian Radioactive Waste Management under the requirements of the Nuclear Waste Policy Act of 1982, as amended (Public Law 97-425).
5. POLICY. Radioactive and mixed wastes shall be managed in a manner that assures protection of the health and safety of the public, DOE, and contractor employees, and the environment. The generation, treatment, storage, transportation, and/or disposal of radioactive wastes, and the other pollutants or hazardous substances they contain, shall be accomplished in a manner that minimizes the generation of such wastes across program office functions and complies with all applicable Federal, State, and local environmental, safety, and health laws and regulations and DOE requirements.
6. REFERENCES. (See Attachment 1.)
7. DEFINITIONS. (See Attachment 2.)
8. RESPONSIBILITIES.
 - a. Assistant Secretary for Defense Programs (DP-1) has authority for establishing policy for the management of DOE waste and assuring that DOE waste generated by operations and activities under DP-1 cognizance, or any other waste within the purview of DP-1, is managed according to the requirements of this Order. DP-1 also has general responsibility for assuring that

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- (2) Managing waste generated by DOE enrichment operations and disposed at sites located at the Oak Ridge, Portsmouth, and Paducah gaseous diffusion plants;
 - (3) Managing any greater than Class C low-level waste, as defined in Section 3(b)(1)(D) of Public Law 99-240, which may be accepted by the Department for disposal in cooperation with DP-1;
 - (4) Developing and implementing alternative technologies and processes to support storage and disposal of waste or spent fuel generated by NE-1 operations;
 - (5) Managing NE-1 contaminated facilities, including those that are surplus to program needs, and waste storage/disposal sites;
 - (6) Developing and implementing commercial applications for waste byproducts;
 - (7) Assuring that environmental, safety, health, transportation, quality assurance, unusual occurrence, construction project management, real estate management, and facility design requirements set forth in DOE Orders, are implemented for NE-1 waste management programs;
 - (8) Conducting independent health, safety, and quality assurance audits of field waste management operations in cooperation with EH-1 to assess compliance with the requirements of this Order; and
 - (9) Supporting the information needs of the Integrated Data Base program on civilian nuclear program activities in cooperation with DP-1 and RW-1 (see Attachment 1, page 3, paragraph 23).
- e. Assistant Secretary for Environment, Safety and Health (EH-1) is responsible for providing an independent overview of DOE radioactive waste management and decommissioning programs to determine compliance with DOE environment, safety, and health requirements and applicable Environmental Protection Agency (EPA) and state regulations. Specific responsibilities include:
- (1) Advising the Secretary of the status of Departmental compliance with the requirements of this Order and applicable provisions of DOE 5480.1B, and EH Orders.
 - (2) Conducting independent appraisals and audits of DOE waste management and decommissioning programs consistent with the requirements of DOE 5482.1B.
 - (3) Reviewing site Waste Management Plans and Decommissioning Project Plans with regard to compliance with DOE environment, safety, and health requirements.

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- f. Director, Naval Nuclear Propulsion Program: Executive Order 12344, statutorily prescribed by PL 98-525 (42 USC 7158 note), establishes the responsibilities and authority of the Director, Naval Nuclear Propulsion Program (who is also the Deputy Assistant Secretary for Naval Reactors within the Department) over all facilities and activities which comprise the Program, a joint Navy-DOE organization. The policy principle promoted by these executive and legislative actions is cited in the Executive Order as "...preserving the basic structure, policies and practices developed for this Program in the past...". Accordingly, The Naval Propulsion Program is exempt from the provisions of this Order. The Director shall maintain an environmental protection program to assure compliance with applicable environmental statutes and regulations. The Director and EH-1 shall exchange information and cooperate as appropriate to facilitate exercise of their respective responsibility.
- g. Directors of other Headquarters Program Organizations are responsible for implementing the requirements of this Order for all DOE waste generated by their programs until it is transferred to a DOE or licensed storage/disposal site. For all contaminated facilities under their jurisdiction, they are responsible for assuring that their programmatic decisions include waste management considerations, as appropriate, and for implementing the requirements of other applicable DOE Orders for their waste management programs.
- h. Office of General Counsel (GC-1) provides legal advice to program organizations regarding DOE waste management and decommissioning activities involving DOE-owned and privately owned sites; renders legal opinion on DOE authority to undertake remedial action and other waste management activities; and renders legal opinions on, and concurs in, program actions to comply with the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act, and other legal authorities in conjunction with proposed waste management and decommissioning activities.
- i. Assistant Secretary, Management and Administration (MA-1) is responsible for providing contractual and business advice to program organizations regarding DOE waste management activities, including use of DOE management and operating contractors in such activities.
- j. Heads of Field Organizations are responsible for all activities that affect the treatment, storage, or disposal of waste in facilities under their jurisdiction regardless of where the waste is generated. Heads of field organizations with treatment, storage or disposal facilities responsibility have the authority for establishing waste management requirements at that facility (e.g., setting waste acceptance criteria, waste certification, verification of contents of waste shipped or to be shipped, concurring in waste reduction plans). In addition, they are responsible for assuring that the day-to-day waste management and surplus facility

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- (b) Leak detection systems (e.g., conductivity probes) shall be designed and operated so that they will detect the failure of the primary containment boundary, the occurrence of waste release, or accumulated liquid in the secondary containment system.
- (c) A method for periodically assessing waste storage system integrity (e.g., coupons for corrosion testing, photographic and periscopic inspections, leak detectors, liquid level devices) shall be established, documented, and reported as required in the Waste Management Plan.
- (d) Electrical monitoring and leak detection devices essential to safe operations shall be provided with backup power, as appropriate, to ensure operability under emergency conditions.
- (e) Surface water systems associated with the high-level waste storage area shall be monitored according to applicable National Pollution Discharge Elimination System permits and EH Order requirements.
- (f) A system of ground water or vadose zone monitoring wells meeting the Resource Conservation and Recovery Act requirements per 40 CFR 264 shall be installed, as a minimum, around clusters of liquid waste storage tanks.

(4) Contingency Actions.

- (a) A tank or secondary containment system from which there has been a leak or a spill to the surrounding soil, or which is otherwise unfit for use, shall be removed from service until conditions can be evaluated fully.
- (b) Upon detection of released radioactive materials, steps shall be taken to prevent further migration of the release to soil or surface water. Major contamination in the soil shall be removed or stabilized unless compliance with this requirement would cause greater harm to human health or the environment.
- (c) If a release results from a spill and the integrity of the system is not damaged, the system may be returned to service as soon as action to correct the condition is completed.
- (d) For emergency situations involving liquid high-level waste, spare capacity with adequate heat dissipation capability shall be maintained to receive the largest volume of liquid contained in any one tank. Adequate transfer pipelines also shall be maintained in operational condition. Interconnected tank farms with adequate transfer capabilities and spare capacity may be considered as a single tank farm for purposes of this requirement.

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- (e) A schedule and procedure shall be developed for monitoring, surveillance, and calibration checks. The frequency of these activities shall be based on the potential rate of equipment deterioration and the possibility of an environmental or human health incident, assuming that a malfunction from equipment failure or human error is not detected between checks. Schedules, procedures, and performance requirements shall be documented in the operating and maintenance documentation.
- (f) Each high-level waste facility shall have response procedures for credible emergencies, as identified in the Safety Analysis Reports.

(5) Training.

- (a) Operator training and qualification standards shall be developed and an up-to-date record of training status shall be maintained.
- (b) Worker safety training must comply with the requirements of DOE 5480.1B and applicable EH Orders.

- (6) Quality Assurance. Consistent with DOE Order 5700.6B, high-level waste operations shall be conducted in accordance with applicable requirements of the American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 and other appropriate national consensus standards. (See Attachment 1, page 5, paragraph 48).

(7) Waste Treatment and Minimization.

- (a) For the purpose of economy and enhancing the safety of high-level waste storage, processing programs shall be developed and implemented at the generating site to reduce the quantity of waste being sent to storage, and techniques (e.g., evaporation) shall be implemented to reduce further the waste volume in storage.
- (b) Programs should be developed and implemented to treat high-level waste in storage to prepare it for eventual conversion to suitable disposal forms, as such forms are developed. This may include separation of high-level waste into other waste categories, such as transuranic waste or low-level waste.
- (c) The chemistry of liquid high-level waste shall be adjusted to control corrosion within design limits for the storage system.
- (d) Treatment reagents shall not be placed in a tank system without proven effective mitigative action if they could cause the tank, its ancillary equipment, or the containment system to rupture, leak, or otherwise fail.

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- (e) Waste generation and waste management systems that significantly change the chemical and physical forms of the waste shall be technically assessed to assure compatibility and retrievability.

c. Storage Operations - Singly Contained Tank Systems.

- (1) Waste Characterization. The contents of singly contained tank systems shall be characterized consistent with radiation protection requirements and the needs associated with safe storage to determine its hazardous components consistent with 40 CFR 261, 40 CFR 264, and State requirements. Characterization may reflect knowledge of waste generating processes, laboratory testing results, and/or the results of periodic sampling and analysis.

- (2) Storage and Transfer Operations.

- (a) Singly contained tank systems shall not be used to store fresh high-level waste from fuel reprocessing operations except under emergency conditions as determined by the Operations Office Manager.
- (b) Storage and transfer operations shall be conducted within the limits defined in the Safety Analysis Reports according to DOE 5481.1B.
- (c) Engineered systems shall be incorporated to provide waste volume inventory data, consistent with the nature of the specific waste stored in singly contained tanks. Examples are surface level sensing devices and interstitial liquid level sensing devices.
- (d) Singly contained pipelines: (see paragraph 3b(2)(b)).
- (e) Where active ventilation is required, systems shall be provided to maintain radionuclide releases at the point of discharge within the guidelines specified in applicable EH Orders for offsite concentrations and DOE 5480.1B for onsite dose commitment considerations.
- (f) Nuclear criticality safety (see paragraph 3b(2)(i)).
- (g) Each facility shall use remote maintenance features and other appropriate techniques to maintain personnel radiation exposure as low as reasonably achievable.
- (h) Electrical power loss (see paragraph 3b(2)(k)).

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(3) Monitoring, Surveillance, and Leak Detection.

- (a) Monitoring and surveillance capability shall exist to provide liquid volume, waste inventory data, and identification of failed containment.
- (b) A method for periodically assessing waste storage tank integrity (e.g., coupons, photographic inspections, leak detectors, liquid level devices) shall be established and documented.
- (c) Emergency power (see paragraph 3b(3)(d)).
- (d) Monitoring wells (see paragraph 3b(3)(f)).

(4) Contingency Action.

- (a) A contingency action plan shall be maintained to respond to spills or leaks and other credible emergencies as identified in the Safety Analysis Reports.
- (b) Leak mitigation (see paragraph 3b(4)(b)).
- (c) For emergency situations involving pumpable liquid in singly contained tanks, appropriate equipment (e.g., pumps) shall be maintained to provide removal of liquid.

(5) Training. (see paragraphs 3b(5)(a) and (b)).

(6) Quality Assurance. (see paragraphs 3b(6)(a)).

- d. Disposal. New and readily retrievable waste shall be processed and the high-level waste fraction disposed of in a geologic repository according to the requirements of the Nuclear Waste Policy Act of 1982 (Public Law 97-425) as amended. Options for permanent disposal of other waste, such as single shell tank waste, shall be evaluated and include such methods as in-place stabilization as well as retrieval and processing, as required for new and readily retrievable waste. Analytic predictions of disposal system performance shall be prepared and incorporated in the National Environmental Policy Act process.

(1) New and Readily Retrievable. New and readily retrievable existing high-level waste shall be processed to a final immobilized form in facilities such as the Defense Waste Processing Facility and the Hanford Waste Vitrification Plant preparatory to permanent disposal in a deep geologic repository.

- (a) Waste acceptance specifications and criteria based upon the requirements outlined in 10 CFR 60.113, 10 CFR 60.131(b)(7), 10 CFR 60.135, 10 CFR 71.87, and 40 CFR 191 shall be developed for

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- (3) Radioactive wastes with quantities of transuranic radionuclides in concentrations of 100 nCi/g of waste or less shall be considered to be low-level waste, and shall be managed according to the requirements of Chapter III of this Order.
- (4) Mixed transuranic waste:
 - (a) Mixed transuranic waste meeting the requirements of the Waste Isolation Pilot Plant-Waste Acceptance Criteria shall be sent to the Waste Isolation Pilot Plant.
 - (b) The Data Package prepared by the generators for the Waste Isolation Pilot Plant shall include information on the kinds and quantities of hazardous components contained in a waste package in accordance with applicable Resource Conservation and Recovery Act regulations.
 - (c) The determination whether the transuranic waste exhibits any hazardous characteristics or contains listed hazardous components may be based on knowledge of the waste generating process when the performance of a chemical analysis would significantly increase the radiation hazard to personnel.

b. Transuranic Waste Generation and Treatment.

- (1) Technical and administrative controls shall be directed to reducing the gross volume of waste generated and/or the amount of radioactivity requiring disposal. Transuranic waste reduction efforts shall be based on the implementation of techniques such as process modification, process optimization, materials substitution, decontamination, assay of suspect waste, and new technology development. Volume reduction techniques, such as incineration, compaction, extraction, and shredding, shall be implemented wherever cost effective and practical. Treatment facilities shall be permitted by the appropriate regulatory authority.
- (2) Transuranic waste shall be assayed or otherwise evaluated to determine the kinds and quantities of transuranic radionuclides present prior to storage. Additionally, hazardous waste components shall be estimated or analyzed, whichever is appropriate.
- (3) Mixed transuranic waste shall be treated, where feasible and practical, to destroy the hazardous waste component.
- (4) Transuranic waste that is classified for security reasons shall be treated to remove or destroy the classified characteristic(s) prior to certification. Declassification should be performed by the generator.

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c. Transuranic Waste Certification.

- (1) Transuranic waste shall be certified, pursuant to the Waste Isolation Pilot Plant-Waste Acceptance Criteria, placed in interim storage, and sent to the Waste Isolation Pilot Plant when it becomes operational.
- (2) Uncertified transuranic waste shall not be sent to the Waste Isolation Pilot Plant except by special permission granted in response to a formal, documented request to the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee and the Waste Isolation Pilot Plant Waste Operations.
- (3) All transuranic waste certification sites shall prepare a certification plan which describes how the waste meets each waste acceptance criterion described in the WIPP-DOE-069 (see Attachment 1, page 3, paragraph 18).
- (4) Each certification plan shall define controls and other measures to ensure that each element of the certification plan is performed adequately as described. Requirements for these quality assurance activities are described in the WIPP-DOE-120 (see Attachment 1, page 2, paragraph 19).
- (5) Certification plans, including associated quality assurance plans, shall be submitted for review, comment, and approval by the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee.
- (6) The Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee shall submit certification and associated quality assurance plans to the state of New Mexico's Environmental Evaluation Group for review and comment prior to granting formal approval of such plans.
- (7) The Environmental Evaluation Groups's comments on certification and associated quality assurance plans shall be resolved between the affected site and the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee prior to granting formal approval of the plans.
- (8) Approved certification and associated quality assurance plans shall be implemented by the generating sites using specific, written operational procedures.
- (9) Certification activities conducted under approved plans and procedures shall be audited periodically, in accordance with a written audit program plan on a continuing basis by the Waste Isolation Pilot Plant-Waste Acceptance Criteria Certification Committee. An Environmental Evaluation Group representative may accompany the Waste Isolation

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any low-level waste treatment, storage, or disposal facility used by the generator are met. Generators and facilities receiving the waste are jointly responsible for assuring compliance with waste acceptance criteria. Generators are financially responsible for actions required due to nonconformance.

- (4) Generator low-level waste certification programs shall be subject to a periodic audit by operators of facilities to which the waste is sent by the generator.
- (5) The waste acceptance criteria for storage, treatment, or disposal facilities shall address the following issues:
 - (a) Allowable quantities/concentrations of specific radioisotopes to be handled, processed, stored or disposed of;
 - (b) Criticality safety requirements (waste forms and geometries);
 - (c) Restrictions regarding low-level waste classified for security reasons;
 - (d) External radiation and internal heat generation;
 - (e) Restrictions on the generation of harmful gases, vapors, or liquids in waste;
 - (f) Chemical and structural stability of waste packages, radiation effects, microbial activity, chemical reactions, and moisture;
 - (g) Restrictions for chelating and complexing agents having the potential for mobilizing radionuclides; and
 - (h) Quantity of free liquids.

f. Waste Treatment.

- (1) Waste shall be treated by appropriate methods so that the disposal site can meet the performance objectives stated in paragraph 3a.
- (2) Waste treatment techniques such as incineration, shredding, and compaction to reduce volume and provide more stable waste forms shall be implemented as necessary to meet performance requirements. Use of waste treatment techniques to increase the life of the disposal facility and improve long-term facility performance, by improved site stability and reduction of infiltrating water, is required to the extent it is cost effective.

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- (3) The development of large scale waste treatment facilities shall be supported by appropriate the National Environmental Policy Act documentation in addition to the following:
 - (a) A document shall be prepared that analyzes waste streams needing treatment, treatment options considered and a rationale for selection of proposed treatment processes;
 - (b) A construction design report including projected waste throughputs and treatment methods, construction and operating cost estimates; and
 - (c) A Safety Analysis Report.
- (4) Operation of waste treatment facilities shall be supported by adequate documentation including the following:
 - (a) Operation and maintenance procedures;
 - (b) Personnel training and qualification procedures;
 - (c) Monitoring and emergency response plans; and
 - (d) Records shall be maintained for each package of low-level waste that enters and leaves the treatment facility.

g. Shipment.

- (1) The volume of waste and number of shipments of low-level waste shall be minimized and the shipments will be conducted based on plans developed by field organizations. Off site shipment of low-level waste shall be in compliance with DOE 1540.1.
- (2) Generators shall provide an annual forecast in the third quarter of the fiscal year to the field organizations managing the off-site disposal facility to which the waste is to be shipped.
- (3) Generators must receive advance approval from the receiving facility and shall certify prior to shipment that waste meets the receiving facility waste acceptance criteria. The certification program shall be auditable and able to withstand independent review.
- (4) Each package of waste must comply with the labeling requirements of DOE 1540.1.

h. Long-Term Storage.

- (1) Low-level waste shall be stored by appropriate methods, to achieve the performance objectives stated in paragraph 3a.

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- (c) The disposal site shall have hydrogeologic characteristics which, in conjunction with the planned waste confinement technology, will protect the groundwater resource.
 - (d) The potential for natural hazards such as floods, erosion, tornadoes, earthquakes, and volcanoes shall be considered in site selection.
 - (e) Site selection criteria shall address the impact on current and projected populations, land use resource development plans and nearby public facilities, accessibility to transportation routes and utilities, and the location of waste generation.
- (8) Disposal Facility and Disposal Site Design.
- (a) Design criteria shall be established prior to selection of new disposal facilities, new disposal sites, or both. These design criteria shall be based on analyses of physiographic, environmental, and hydrogeological data to assure that the policy and requirements of this Order can be met. The criteria shall be also based on assessments of projected waste volumes, waste characteristics, and facility and disposal site performance.
 - (b) Disposal units shall be designed consistent with disposal site hydrology, geology, and waste characteristics and in accordance with the National Environmental Policy Act process.
- (9) Disposal Facility Operations.
- (a) Field organizations shall develop and implement operating procedures for low-level waste disposal facilities that protect the environment, health and safety of the public, and facility personnel; ensure the security of the facility; minimize the need for long-term control; and meet the requirements of the closure/post-closure plan.
 - (b) Permanent identification markers for disposal excavations and monitoring wells shall be emplaced.
 - (c) Operating procedures shall include training for disposal facility operating personnel, emergency response plans, and a system of reporting unusual occurrences according to DOE 5000.3.
 - (d) Waste placement into disposal units should minimize voids between containers.
 - (e) Operations are to be conducted so that active waste disposal operations will not have an adverse effect on filled disposal units.

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j. Disposal Site Closure/Post Closure.

- (1) Field organizations shall develop site-specific comprehensive closure plans for new and existing operating low level waste disposal sites. The plan shall address closure of disposal sites within a 5-year period after each is filled and shall conform to the requirements of the National Environmental Policy Act process. Performance objectives for existing disposal sites shall be developed on a case-by-case basis as part of the National Environmental Policy Act process.
- (2) During closure and post closure, residual radioactivity levels for surface soils shall comply with existing DOE decommissioning guidelines.
- (3) Corrective measures shall be applied to new disposal sites or individual disposal units if conditions occur or are forecasted that could jeopardize attainment of the performance objectives of this Order.
- (4) Inactive disposal facilities, disposal sites, and disposal units shall be managed in conformance with the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act, or, if mixed waste is involved, may be included in permit applications for operation of contiguous disposal facilities.
- (5) Closure plans for new and existing operating low-level waste disposal facilities shall be reviewed and approved by the appropriate field organization.
- (6) Termination of monitoring and maintenance activity at closed facilities or sites shall be based on an analysis of site performance at the end of the institutional control period.

k. Environmental Monitoring.

- (1) Each operational or non-operational low-level waste treatment, storage, and disposal facility shall be monitored by an environmental monitoring program that conforms with DOE 5484.1 and, at a minimum, meet the requirements of paragraph 3K(2) through 3K(4).
- (2) The environmental monitoring program shall be designed to measure:
 - (a) operational effluent releases;
 - (b) migration of radionuclides;
 - (c) disposal unit subsidence; and
 - (d) changes in disposal facility and disposal site parameters which may affect long-term site performance.
- (3) Based on the characteristics of the facility being monitored, the environmental monitoring program may include, but not necessarily be limited to, monitoring surface soil, air, surface water, and, in the subsurface, soil and water, both in the saturated and the unsaturated zones.

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(4) The monitoring program shall be capable of detecting changing trends in performance sufficiently in advance to allow application of any necessary corrective action prior to exceeding performance objectives. The monitoring program shall be able to ascertain whether or not effluents from each treatment, storage, or disposal facility or disposal site meet the requirements of applicable EH Orders.

1. Quality Assurance. Consistent with DOE 5700.6B, the low-level waste operational and disposal practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (See Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

m. Records and Reports.

(1) Each field organization shall develop and maintain a record keeping system that records the following: a historical record of waste generated, treated, stored, shipped, disposed of, or both, at the facilities under its cognizance. The data maintained shall include all data necessary to show that the waste was properly classified, treated, stored, shipped, and/or disposed of. The data maintained in the system shall be based on the data recorded on waste manifests.

(2) Waste Manifest. Records shall be kept and accompany each waste package from generator through final disposal. The manifest shall contain data necessary to document the proper classification, and assist in determining proper treatment, storage, and disposal of the waste. Waste manifests will be kept as permanent records. At a minimum, the following data will be included:

(a) Waste physical and chemical characteristics,

(b) Quantity of each major radionuclide present,

(c) Weight of the waste (total of waste and any solidification or absorbent media),

(d) Volume of the waste (total of waste and any solidification or absorbent media), and

(e) Other data necessary to demonstrate compliance with waste acceptance criteria.

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CHAPTER IV

MANAGEMENT OF WASTE CONTAINING AEA 11e(2) BYPRODUCT MATERIAL AND NATURALLY OCCURRING AND ACCELERATOR PRODUCED RADIOACTIVE MATERIAL

1. PURPOSE. To establish policies and guidelines for managing DOE waste containing byproduct material, as defined by section 11e(2) of the Atomic Energy Act of 1954, as amended, and Naturally Occurring and Accelerator Produced Radioactive Material.
2. POLICY. DOE waste containing naturally occurring and accelerator produced radioactive material or byproduct material as defined by section 11e(2) of the Atomic Energy Act, as amended, or similarly contaminated residues derived from DOE remedial actions, shall be stored, stabilized in-place, and/or disposed of consistent with the requirements of the residual radioactive material guidelines contained in 40 CFR 192. Small volumes of DOE waste containing 11e(2) byproduct material or naturally occurring and accelerator produced radioactive material may be managed as low-level waste in accordance with the requirements of Chapter III of this Order. If the waste is classified as mixed waste, management also must be in compliance with the requirements of the Resource Conservation and Recovery Act.
3. REQUIREMENTS.
 - a. Waste Management.
 - (1) Waste covered under this chapter in quantities too large for acceptance at DOE low-level waste disposal sites shall be managed according to the requirements of 40 CFR 192, and disposed of at specially designated DOE sites or tailing disposal sites established under the Uranium Mill Tailings Radiation Control Act of 1978 (Public Law 95-604). These disposal sites should be identified and developed as needed in support of DOE remedial actions, and will normally be located in the State in which the wastes are generated.
 - (2) With the approval of the appropriate field organization, small volumes of 11(e) byproduct material and naturally occurring and accelerator produced radioactive material waste may be disposed of at DOE low-level waste sites in accordance with the requirements of Chapter III of this Order.
 - (3) All DOE waste containing:
 - (a) Naturally occurring and accelerator produced radioactive material mixed with the Resource Conservation and Recovery Act hazardous chemicals shall be managed as hazardous waste under the Resource Conservation and Recovery Act.

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- (b) Byproduct 11e(2) (or a combination of 11e(2) byproduct and naturally occurring and accelerator produced radioactive material) mixed with the Resource Conservation and Recovery Act hazardous chemicals, shall be managed consistent with both the Resource Conservation and Recovery Act and 40 CFR Part 192.
- b. Quality Assurance. Consistent with DOE 5700.6B, waste management practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (reference 48) and other appropriate national consensus standards.

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CHAPTER V

DECOMMISSIONING OF RADIOACTIVELY CONTAMINATED FACILITIES

1. PURPOSE. To establish policies and guidelines for the management, decontamination, and decommissioning of radioactively contaminated facilities under DOE ownership or control.
2. POLICY. Radioactively contaminated facilities for which DOE is responsible shall be managed in a safe, cost-effective manner to assure that release of, and exposure to, radioactivity and other hazardous materials comply with Federal and State standards. Facilities, equipment, and valuable materials shall be recovered and reused when practical.
3. REQUIREMENTS. DOE organizations shall develop and document their programs to provide for the surveillance, maintenance, and decommissioning of contaminated facilities. The decommissioning programs shall be implemented as follows:
 - a. General.
 - (1) Each field organization shall prepare and maintain a complete list of contaminated facilities both operational and excess under its jurisdiction. A continuous record of jurisdictional program responsibility for all contaminated facilities shall be maintained by the cognizant field organization for use in assigning decommissioning responsibility.
 - (2) Operational records (e.g., facility design drawings and modifications, characterization data on contamination levels, prior decontamination activities, and incident reports required by DOE Orders) for all contaminated facilities shall be maintained by the cognizant field organization for use in preparing decommissioning plans.
 - (3) Planning for facility decommissioning shall be initiated during the design phase for new facilities and prior to termination of operations for existing operational facilities. Such plans shall consider the 2-year budget cycle to assure adequate funding availability.
 - (4) Program offices shall be responsible for placing the facility in a safe storage condition, providing surveillance and maintenance, and decommissioning the facilities under their jurisdiction when they become excess to programmatic needs, or for finding another programmatic sponsor for them. For multiple user facilities, the program office shall determine decommissioning liability for user program offices based on each program's overall contribution to the contamination or some other mutually acceptable basis. This cost sharing formula may be applied when the facility is placed in safe storage or during surveillance and maintenance, when appropriate.

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- (5) Responsibility for contaminated facilities may be transferred from one program organization to another by mutual agreement of the programs involved. The program organization to which a facility is transferred shall accept full responsibility for surveillance, maintenance, and decommissioning of the facility according to the requirements of this Order. Agreements to transfer facilities for functional purposes shall be in writing and shall identify explicitly the concurrent transfer of responsibility for surveillance, maintenance, and decommissioning.
 - (6) The DP and NE decommissioning programs exist for the primary purpose of managing and decommissioning the contaminated facilities currently assigned to them. Other contaminated facilities that have no programmatic sponsor, or that are excess to program needs and have a current sponsor, shall be assigned to the DP and NE programs for management and decommissioning with the approval of the program secretarial officers involved or their designees.
 - (7) Decommissioning expertise gained by DOE and its contractors is available at most major DOE facilities, and should be utilized by DOE programs. A computerized Decommissioning Technology data base is maintained at the Richland Operations Office. Published reports on nuclear facility decommissioning may be obtained from the Remedial Action Program Information Center at Oak Ridge National Laboratory.
- b. Facility Design. Facilities in which radioactive or other hazardous materials are utilized shall be designed to simplify decontamination and decommissioning and/or increase the potential for reuse. Features and procedures that simplify and facilitate decommissioning shall be identified during the planning and design phase based upon a proposed decommissioning method or conversion to other use. Examples of features to be incorporated are identified in DOE 6430.1.
- c. Post-Operational Activities.
- (1) DOE Program organizations shall identify contaminated facilities under their jurisdiction, document the potential for reuse and recovery of materials and equipment, and develop schedules for decommissioning them. Projects consisting of one or more facilities shall be identified as appropriate, and priorities shall be developed based on:
 - (a) Maintaining employee and public health and safety,
 - (b) Protection of the environment,
 - (c) Compliance with the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act,

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the Superfund Amendments and Reauthorization Act, and other contractual or legal requirements,

(d) Cost effective program management (e.g., maintaining manpower pools, selecting economical decommissioning alternatives), and

(e) Future site plans.

(2) Program organizations shall assure that, prior to initiation of decommissioning activities, adequate surveillance and maintenance is performed for their surplus facilities to meet applicable radiation protection (DOE 5480.1B), hazardous chemical and safety standards, to maintain physical safety and security, and to reduce potential public and environmental hazards. All high-level waste and stored hazardous materials should be removed by the operator as part of the last operational activities prior to entering into the decommissioning phase.

d. Decommissioning Project Activities.

- (1) Characterization. Baseline data for each project shall be collected to support a thorough physical, chemical, and radiological characterization to fulfill the requirements of the National Environmental Policy Act reviews, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act preliminary assessment/site investigations, and detailed engineering. The baseline data shall include:
- (a) Drawings, photographs, and other records reflecting the as-built and as-modified condition of the facility and grounds;
 - (b) The condition of all structures, existing protective barriers, and systems installed to ensure public, occupational, and environmental safety;
 - (c) The type, form, quantity, and location of hazardous chemical and radioactive material from past operations at the site; and
 - (d) Information on factors that could influence the selection of decommissioning alternatives (safe storage, entombment, dismantlement) such as potential future use, long-range site plans required by DOE 4300.1B, facility condition, and potential health, safety, and environmental hazards.
- (2) Environmental Review Process. The Comprehensive Environmental Response, Compensation, and Liability Act, the Superfund Amendments and Reauthorization Act and/or the Resource Conservation and Recovery

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Act status of each project shall be identified and a remedial investigation/feasibility study performed if required. Based on the results of the remedial investigation/feasibility study and any additional data deemed necessary by the responsible field organization, an appropriate environmental review shall be performed according to the requirements of the National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act. Candidate decommissioning alternatives shall be identified, assessed, and evaluated, and a preferred decommissioning alternative selected based on the results of the environmental review.

- (3) Engineering. Technical engineering planning for each project shall be conducted during the environmental review process to assure that alternative actions and associated environmental issues are identified and assessed, and to support preparation of environmental documentation. Detailed engineering will be initiated after a preferred alternative is selected. A Decommissioning Project Plan shall be prepared for approval by the appropriate program office in compliance with DOE 4700.1. The Plan shall include the following:
- (a) Physical, chemical, and radiological characterizational data or references to such data;
 - (b) A summary evaluation of decommissioning alternatives for the facility including the preferred alternative;
 - (c) Plans for meeting requirements from the environmental review process (National Environmental Policy Act, the Resource Conservation and Recovery Act, the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act) and all necessary permits;
 - (d) Radiological criteria to be used (modifications, if any, to guidance presented in applicable EH Orders must be approved by the Headquarters program organization and EH-1);
 - (e) Projections of occupational exposure;
 - (f) Estimated quantities of radioactive waste to be generated; and
 - (g) Detailed administrative, cost, schedule, and management information.

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(4) Decommissioning Operations.

- (a) The decommissioning project shall be conducted in accordance with guidance from Headquarters program offices and the Decommissioning Project Plan. Significant deviations shall be approved by the responsible field organization in consultation with the appropriate program office.
- (b) Approval of MA-22 (Office of Project and Facilities Management) shall be obtained before initiating activities to demolish a DOE-owned facility, per the requirements of DOE 4300.1B.
- (c) Status reports on project activities shall be prepared in accordance with the requirements of DOE 1332.1A or 4700.1, as appropriate.
- (d) Information on waste generation shall be provided to the Integrated Data Base Program, as required.
- (e) Decommissioning operations shall be considered a waste generator and shall meet generator requirements contained in the previous chapters of this Order.

(5) Post Decommissioning Activities.

- (a) After decommissioning operations have been completed, a final radiological and chemical survey report (or an independent verification survey report, at remote sites) and a project final report shall be prepared. The final report shall include a description of the project, the final status of the property, and the lessons learned from the project.
- (b) The responsible field organization shall compile a Project Data Package consisting of, as a minimum: the Record of Completion; the final radiological and chemical survey report; the Project Final Report; and for remote sites, an independent verification survey report, Certification Docket, and appropriate public notices. The Project Data Package shall be retained permanently in the field organization archives.
- (c) The responsible program organization shall assure that any necessary long-term maintenance and surveillance or other safety controls are provided for the decommissioned property.
- (d) The decommissioned property may be released from DOE ownership according to the requirements of DOE 4300.1B, if the responsible program organization, in consultation with the Office of the Assistant Secretary EH-1, certifies that the property meets

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applicable release criteria for residual radioactivity and hazardous chemicals, and the property is identified properly by notation in the legal land records of the local government entity.

- (e) The decommissioned property may be reused for other program activities that may or may not involve radioactivity or hazardous chemicals. If appropriate release criteria are not met, the property may be reused for other program activities that may or may not involve radioactivity or hazardous chemicals provided that adequate safety controls are maintained.

e. Quality Assurance. Consistent with DOE 5700.68, waste management practices shall be conducted in accordance with applicable requirements of American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1 (Attachment 1, page 5, paragraph 48) and other appropriate national consensus standards.

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CHAPTER VI

WASTE MANAGEMENT PLAN OUTLINE

1. PURPOSE. To provide guidance on the development and maintenance of a waste management plan for each site that generates, treats, stores, or disposes of DOE waste.
2. DISCUSSION. The Order for radioactive waste management emphasizes accountable operational requirements set forth in a prescriptive style. Each site that generates, treats, stores, or disposes of DOE radioactive waste, or decommissions contaminated facilities, is responsible for complying with these requirements in terms of how operations are conducted and how these activities are documented. The documentation serves as the written word that the actual operations are being conducted within the framework of the Order.

The primary purpose of the Waste Management Plan is to compile and consolidate an annual report on how waste management operations are conducted, what facilities are being used to manage wastes, what forces are acting to change current waste management systems, and what plans are in store for the coming fiscal year. The scope of the plan includes the management of both radioactive and hazardous constituents in the Department's waste, whether these are separated or mixed. The body of the Waste Management Plan should not include descriptions of Environmental Restoration activities, as this information is provided under a separate program. However, several documents prepared with Environmental Restoration funding may be cited in Attachment VI-1 to the Waste Management Plan; this preserves consistency in accounting for documentation. Also, the Waste Management Plan includes the management of the DOE's liquid low-level waste which is not governed specifically by this Order.

The waste management plan provides a vehicle to report current waste management practices and plans for the coming year. It serves as the core document in the site's waste management operations and should reference supporting documentation as appropriate. The attachment to the Waste Management plan allows sites to account for major documentation as required by the Order.

3. FORMAT FOR WASTE MANAGEMENT PLANS.
 - a. Executive Summary. An Executive Summary is mandatory for each Waste Management Plan.
 - (1) As a rule of thumb, limit the length of the executive summary to 10 percent or less of the length of the Waste Management Plan. Summarize the past year in waste management including the principal regulatory/environmental issues and the degree to which planned activities were accomplished.

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- (2) Provide a forecast of the coming year and discuss project startups, facility modifications, regulatory issues, and the waste management budget.

b. General Site Information.

- (1) Organization and Administration. Indicate the DOE field organization(s) and contractor(s) responsible for managing waste treatment, storage and disposal operations; discuss approval authorities, and clarify DOE/contractor interfaces. Include relationships between contractor's operations if multiple contractors are involved.
 - (a) Use charts to enhance text descriptions of organizational structure. Describe lead responsibilities of functional groups including the organization responsible for preparing this plan.
 - (b) Show the relationships, in a separate section, between documents that guide and support the waste management program at the site. Identify the organization responsible for maintaining up-to-date copies of all reference documents at the field organization level.
- (2) Site Description. Include a brief description of site location, demography size, geographic features, climate, geologic and hydrogeologic conditions, and primary mission where waste management operations are conducted.

- c. Radioactive and Mixed Waste Management. This section of the plan describes radioactive and mixed waste management operations at the site and includes descriptions of the waste management systems and facilities, the characteristics of wastes managed, and discussion of the problems, recommendations, and the future direction of the site operations. The top-level divisions of this section should be by waste type; i.e., high-level, transuranic, and low-level. These categories should be subdivided further by waste phase, liquid, solid, or gaseous (where appropriate).

(1) System and Facility Descriptions.

- (a) Overview. For each of the categories of waste provide an overview of the systems that treat, store, and dispose of these wastes. Use flowcharts to indicate waste sources, intermediate processing steps, and ultimate disposition of waste streams. Identify which waste streams are classified as mixed waste.
- (b) Facility Descriptions. Identify the facilities that comprise the waste management systems according to waste type and waste phase and describe the facilities in the following order: Treatment Facilities; Storage Facilities; and Disposal Facilities. Detailed descriptions of facility operations are not required, but enough explanation should be given to support the discussion of planned

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activities. Examples of appropriate information include location maps, radiological and chemical characteristics of waste treated/stored/disposed, facility operating parameters, unique or special equipment used, and status of permitting activities. Include facility layout drawings and flow sheets where appropriate.

- (2) Current and Future Plans. This section is used to document the planning efforts at the site and indicate the direction of radioactive and mixed waste management activities. It should be organized to reflect site-specific situations. In general, it should: define problems with, and/or new requirements for, waste management systems; cite specific recommendations and strategy for making improvements; identify actions to achieve compliance with regulations; and discuss plans to modify current waste management systems such as construction of new facilities, plant upgrades, facility decommissioning/closure. Remedial actions should indicate how the findings of system performance assessments were factored into recommendations and plans. They should clearly indicate the driving forces behind their stated plans, such as: to achieve disposal of waste currently in storage; to enhance systems performance; to meet regulatory requirements; and to increase worker protection/safety.
- (3) Implementation Requirements. This section is used to document the implementation status by updating the "Implementation Summary Table" from the Implementation Plan. It should present these data in similar tabular format. It should also report progress realized during the past year, remaining actions to complete, remaining costs, and estimated completion dates. In addition it should indicate any variances from original cost and schedule projections in the Implementation Plan, and discuss reasons for variances.

d. Hazardous Waste Management (DP Facilities).

(1) System and Facility Descriptions.

- (a) Overview. Provide an overview of the system used to treat, store, and dispose of hazardous wastes at the site. Use flow sheets and location maps where appropriate.
- (b) Facility Description. Organize according to treatment facilities, storage facilities, and disposal. Describe the combination of facilities used to manage hazardous wastes at the site and include a discussion of current methods of disposal. Indicate the kinds of hazardous wastes generated and their sources. (Facility drawings and location maps should be included as appropriate.) Indicate status of permitting activities and other actions to achieve compliance with the Resource Conservation and Recovery Act

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and the Comprehensive Environmental Response, Compensation, and Liability Act, and the Superfund Amendments and Reauthorization Act.

- (2) Current and Future Plans. Indicate recent and planned changes in waste management practice as well as actions to minimize hazardous waste generation; e.g., materials substitution and treatment to render waste nonhazardous. Identify plans for new facility construction, modifications, upgrades, or closures.
- e. Schedule and Cost Summary. Show current FY costs and operational schedule for the waste management program. In a separate set of tables, show a 5-year (FY + 4) cost and schedule projection and indicate major milestones to be accomplished during that period.
- f. Environmental Monitoring Programs. Describe the status of environmental monitoring that supports waste management operations, with discussion of monitoring installations, media sampled, and constituents analyzed. (This section of the plan should focus on the environmental monitoring systems installed to meet regulatory compliance at the individual waste management facilities. It is not necessary to describe the site-wide monitoring program that reports directly to EH.) Provide descriptions of planned system upgrades and modifications and key these to applicable discussions in paragraphs 3c and d. Include facility maps where appropriate.
- g. Related Subjects. Use this section to report on related topics of significant interest to waste management planning efforts at the site. Examples include preparation/review of major National Environmental Policy Act documentation; personnel training; quality assurance; technology demonstrations; and decommissioning projects.

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WASTE MANAGEMENT DOCUMENTATION REQUIREMENTS

DISCUSSION. To identify principal documentation requirements as identified, sites are required to list and describe (where appropriate) the waste management documentation indicated below. Each of the following paragraphs refer to specific sections of this Order that require the preparation of waste management documentation. Reporting is limited to documents issued in the previous FY, unless the most recent revision of an existing document was issued earlier. Where possible, this Attachment should retain a standard bibliographical format.

(1) Chapter I - High-Level Waste.

- (a) Paragraph 3a. List titles and dates of issue of Safety Analysis Reports. Forecast schedule for preparation and issue date of planned Safety Analysis Reports.
- (b) Paragraph 3b(3)(c). List titles and dates of documents supporting the periodic assessment of waste storage tank integrity.
- (c) Paragraph 3b(4). Cite documentation of contingency actions of the past year. List schedule for completion of corrective actions.

(2) Chapter II - Transuranic Waste.

- (a) Paragraph 3c(3). Cite the Transuranic Waste Certification Plan and date of issue. If not issued, give schedule for preparation.
- (b) Paragraph 3g(2)(h). Cite the closure plan for interim storage facilities. If not issued, give schedule for preparation.
- (c) Paragraph 3(i). Index major documentation developed under the Buried Transuranic - Contaminated Waste Program. Show schedule for preparation of documents in the current fiscal year.

(3) Chapter III - Low-Level Waste.

- (a) Paragraph 3b(1). Cite documentation on radiological performance assessment of disposal facilities. If not issued, provide schedule for preparation in paragraph 3 of the Waste Management Plan.
- (b) Paragraph 3e(1). Cite Waste Acceptance Criteria for each low-level waste treatment storage and disposal facility. List anticipated additions to this list for the current fiscal year.
- (c) Paragraph 3e(3). Report the status of audits of certification activities by operators of disposal facilities. Report status of follow-up reports.

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- (d) Paragraph 3g(2). List document(s) forecasting waste to be shipped by generators to off-site disposal facilities.
 - (e) Paragraph 3i(4)(d). List reports justifying on-site disposal of waste exceeding Class C limits. Such disposal cases anticipated for the next year should be forecast.
 - (f) Paragraph 3i(8). Cite major National Environmental Policy Act documentation (e.g., Environmental Impact Statement, Environmental Assessment) supporting selection of any new disposal sites. Give schedule of preparation for appropriate documentation for the next year.
 - (g) Paragraph 3j(1). Cite closure plans for low-level waste disposal sites and dates of issue. Give schedule of preparation for anticipated reports.
- (4) Decommissioning of Radioactively Contaminated Facilities.
- (a) Paragraphs 3a(1). Cite field organization documentation where the complete listing and the jurisdictional program responsibility for all contaminated facilities is recorded.
 - (b) Paragraph 3c(1). Cite the post-operational documentation that records the potential for reuse and recovery of materials and equipment and the schedule for decommissioning contaminated facilities.
 - (c) Paragraph 3d(3). List Decommissioning Project Plans and dates of issue. Show a schedule for preparation of Plans in the current fiscal year.
 - (d) Paragraph 3d(5). List final radiological and chemical survey reports and project final reports, and show dates of issue. Show anticipated additions to this list for the coming year.

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REFERENCES

1. DOE 1332.1A, UNIFORM REPORTING SYSTEM, of 10-15-85, establishes the content and format of plans and reports to be obtained from the Department's contractors and stipulated as a contract requirement.
2. DOE 1430.1A, MANAGEMENT OF THE DEPARTMENT'S SCIENTIFIC AND TECHNICAL INFORMATION, of 9-10-86, which establishes the policy that scientific and technical information developed during work supported by DOE shall be promptly and fully reported to the Technical Information Center (MA-28), located in Oak Ridge, Tennessee, for inclusion in the Department's information data base.
3. DOE 1540.1, MATERIALS TRANSPORTATION AND TRAFFIC MANAGEMENT of 5-3-82, establishes the Department's policies for management of materials transportation activities.
4. DOE 1540.2, HAZARDOUS MATERIAL PACKAGING FOR TRANSPORTATION ADMINISTRATIVE PROCEDURES of 9-30-86, establishes administrative procedures for the certification and use of radioactive and other hazardous materials packaging by the Department of Energy.
5. DOE 2110.1, PRICING OF DEPARTMENTAL MATERIALS AND SERVICES of 2-16-84, which establishes the Department's policy for establishing prices and charges for materials and services provided to outside persons and organizations.
6. DOE 4300.1B, REAL PROPERTY AND SITE DEVELOPMENT PLANNING of 7-1-87, establishes Department policies and procedures for planning the development and utilization of sites and their facilities and for the acquisition, use, inventory, and disposal of real property or interests therein.
7. DOE 4700.1, PROJECT MANAGEMENT SYSTEM, of 3-6-87, establishes the DOE Project Management System (PMS), provides implementing instructions, formats and procedures and sets forth requirements which govern the development, approval and execution of DOE's outlay program acquisition as embodied in the PMS.
8. DOE 5000.3, UNUSUAL OCCURRENCE REPORTING SYSTEM of 11-7-84, establishes the Department's policy and provides instructions for reporting, analyzing, and disseminating information on programmatically significant events.
9. DOE 5400.2, ENVIRONMENTAL COMPLIANCE ISSUE COORDINATION, of 8-13-87, establishes DOE requirements for coordination of significant environmental compliance issues.
10. DOE 5440.1C, NATIONAL ENVIRONMENTAL POLICY ACT of 4-9-85, establishes the Department's policy for implementation of the National Environmental Policy Act of 1969 (Public Law 91-190).

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11. DOE 5480.1B, ENVIRONMENTAL SAFETY, AND HEALTH PROGRAM FOR DEPARTMENT OF ENERGY OPERATIONS of 9-23-86, establishes an overall framework of program requirements for safety, environmental, and health protection, including criteria for radiation exposure and radioactive effluent releases for operating facilities and sites.
12. DOE 5480.3, SAFETY REQUIREMENTS FOR THE PACKAGING AND TRANSPORTATION OF HAZARDOUS MATERIALS, HAZARDOUS SUBSTANCES AND HAZARDOUS WASTES, of 7-9-85, establishes requirements for the packaging and transportation of hazardous materials, hazardous substances, and hazardous wastes.
13. DOE 5481.1B, SAFETY ANALYSIS AND REVIEW SYSTEM of 9-23-86, establishes uniform requirements for the preparation and review of safety analyses of DOE operations.
14. DOE 5482.1B, ENVIRONMENT, SAFETY AND HEALTH APPRAISAL PROGRAM of 9-23-86, establishes an environment safety and health appraisal program for DOE.
15. DOE 5484.1, ENVIRONMENTAL, SAFETY, AND HEALTH PROTECTION INFORMATION REPORTING REQUIREMENTS of 2-24-81, establishes requirements and practices for reporting environmental, health, and safety information for DOE operations.
16. DOE 5700.6B, QUALITY ASSURANCE of 9-23-86, sets forth principles and assigns responsibilities for establishing, implementing, and maintaining programs of plans and actions to assure quality achievement in the Department's programs.
17. DOE 6430.1, GENERAL DESIGN CRITERIA of 12-12-83, establishes general design criteria for use in acquisition of the Department's facilities and to establish responsibilities and authorities for the development and maintenance of those criteria.
18. WIPP-DOE-069, rev. 2, of 9-85, "Transuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant" of 9-81, as updated, specifies basic requirements for disposal of contact-handled and remote-handled transuranic waste at the Waste Isolation Pilot Plant. Copies of this and other DOE Waste Isolation Pilot Plant reports may be obtained from the Albuquerque Operations Office.
19. WIPP-DOE-120, rev. 1, of 1-83, "Quality Assurance" establishes the Quality Assurance requirements to ensure that each site's transuranic waste certification program will perform satisfactorily.
20. WIPP-DOE-157 rev. 1, of 9-85, "Data Package Format for Certified Transuranic Waste for the Waste Isolation Pilot Plant" specifies the arrangement of data which are required to be reported to the Waste Isolation Pilot Plant for transuranic waste to be received.

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21. DOE/LLW-63T of 9-87, "Guidance for Conduct of Waste Management Systems Performance Assessment" provides information on meeting the systems performance requirement of Chapter III 3b(2) of DOE 5820.2A.
22. DOE-JIO-025 of 9-87, "Comprehensive Implementation Plan for the DOE Defense Buried Transuranic-Contaminated Waste Program," describes long term management alternatives for all DOE sites with buried transuranic waste.
23. DOE/RW-0006, rev. 3, "Integrated Data Base for 1987: Spent Fuel and Radioactive Waste Inventories, Projections, and Characteristics" of 9-87, with annual updates, summarizes data in the Integrated Data Base program on all domestic spent fuel and radioactive waste. Copies may be obtained from the Office of Nuclear Energy, Germantown, or the Technical Information Center, Oak Ridge.
24. DOE/DP/0020/1 "An Evaluation of Commercial Repository Capacity for the Disposal of Defense High Level Waste," of 6-85, evaluates the use of civilian repository capacity for the disposal of high level waste resulting from Defense activities, and provided to the President as one analytical input for his evaluation as required under the Nuclear Waste Policy Act.
25. Nuclear Waste Policy Act of 1982, as amended, (Public Law 97-425) provides for the development of repositories for the disposal of high-level waste and spent nuclear fuel.
26. Uranium Mill Tailings Radiation Control Act of 1978 (Public Law 95-604) establishes national policy for control of uranium mill tailings.
27. Energy Reorganization Act of 1974 (Public Law 93-438), in Section 202, assigns licensing and related regulatory authority to the Nuclear Regulatory Commission for facilities authorized for the express purpose of long-term storage of defense high-level waste.
28. Department of Energy National Security and Military Applications of Nuclear Energy Authorization Act of 1980 (Public Law 96-164), Section 213(a) authorizes the Waste Isolation Pilot Plant.
29. Low-Level Radioactive Waste Policy Amendments Act of 1985 (Public Law 99-240) makes the Federal Government responsible for disposal of commercially generated greater than class C waste as defined in Section 3(b)(1)(D) of the Act.
30. Resource Conservation and Recovery Act of 1976, as amended, (Public Law 94-580) establishes safe and environmentally acceptable management practices for solid wastes.

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31. Comprehensive Environment Response, Compensation, and Liability Act of 1980, as amended, (Public Law 96-510) to provide for liability, compensation, cleanup, and emergency response for hazardous substances released into the environment, and the cleanup of inactive hazardous waste disposal sites.
32. The Superfund Amendments and Reauthorization Act of 1986 (Public Law 99-270) provides for a fund (Superfund) which may be utilized by the Environmental Protection Agency, State, and local governments to clean up hazardous waste sites listed on the National Priorities List.
33. National Environmental Policy Act of 1969 (Public Law 91-190) requires the preparation of a statement which considers environmental impacts, alternatives, and resource commitments for any major Federal action that significantly affects the quality of the human environment.
34. Title 5 CFR 1320, Controlling Paperwork Burdens on the Public serves as the implementing regulation for Public Law 96-511, Paperwork Reduction Act of 1980 and directs the identification and clearance of information collections levied on the public, including contractors, State and local government units, and persons who perform services for the Department on an individual basis.
35. Title 10 CFR Part 60, of 2-25-81, Disposal of High-Level Wastes in Geologic Repositories, prescribes rules governing the licensing of the Department of Energy to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area.
36. Title 10 CFR Part 61, of 12-27-82, Licensing Requirements for Land Disposal of Radioactive Waste, establishes technical requirements for the land disposal of commercial low-level waste including site selection, site design, and facility operation and closure.
37. Title 10 CFR Part 71, of 8-5-83, Packaging and Transportation of Radioactive Material, establishes (1) requirements for packaging, preparation for shipment, and transportation of licensed material and (2) procedures and standards for NRC approval of packaging and shipping procedures for fissile material and for a quantity of other licensed material in excess of a Type A quantity.
38. Title 10 CFR Part 962, of 5-1-87, Radioactive Waste; Byproduct Material establishes the policy that all DOE radioactive waste which is hazardous under the Resource Conservation and Recovery Act will be subject to regulation under both the Resource Conservation and Recovery Act and Atomic Energy Act.
39. Title 40 CFR Part 61, of 7-1-87 National Emission Standards for Hazardous Air Pollutants, establishes standards for atmospheric emissions of hazardous air pollutants and radionuclides.

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40. Title 40 CFR Part 191, of 9-19-85, Environmental Radioactive Protection Standards for Management and Disposal of Spent Nuclear Fuel, High-Level and transuranic Radioactive Waste, establishes radiation protection standards governing the management and storage of spent nuclear fuel or high-level or transuranic wastes at any disposal facility operated by DOE.
41. Title 40 CFR Part 192, of 1-5-83, Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings, concerns the control of residual radioactive material at designated processing or disposal sites.
42. Title 40 CFR Part 261, of 5-19-80, Identification and Listing of Hazardous Waste identifies those solid wastes that are subject to regulation as hazardous waste.
43. Title 40 CFR 262, of 5-19-80, Standards Applicable to Generators of Hazardous Waste, establishes manufacturing, packaging, labeling, record keeping, and reporting requirements for generators of hazardous waste.
44. Title 40 CFR Part 263, of 5-19-80, Standards Applicable to Transporters of Hazardous Waste, establishes manufacturing, record keeping, spill reporting and cleanup requirements for transporters of hazardous waste.
45. Title 40 CFR Part 264, of 5-19-80, Standards for Owners and Operators of Hazardous Waste Treatment, Storage and Disposal Facilities, establishes minimum national standards defining the acceptable management of hazardous waste.
46. Title 40 CFR Part 265, of 5-19-80, Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities, establishes minimum national standards that define the acceptable management of hazardous waste during the period of interim status and until certification of final closure.
47. Title 49 CFR Parts 100-178, of 10-1-86, Other Regulations Relating to Transportation: Chapter I-Research and Special Programs Administration, Department of Transportation, prescribes the requirements of the DOT governing the transportation of hazardous material and the manufacture and testing of packaging and containers.
48. ANSI/ASME NQA-1 "American National Standards Institute/American Society of Mechanical Engineers Nuclear Quality Assurance-1," sets forth requirements for the establishment and execution of quality assurance programs for the design, construction, operation, and decommissioning of nuclear facilities.
49. Atomic Energy Act of 1954, as amended 42 U.S.C. § § 2011-2292 (1982) which authorizes and directs the Atomic Energy Commission to produce special nuclear material in its own facilities to produce atomic weapons or atomic weapons parts and to research and develop military applications of atomic energy.

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50. Nuclear Waste Policy Amendments Act of 1987 (part of the Budget Reconciliation Act for FY 1988 Public Law 100-203), of December 22, 1987, streamlines and focuses the high level waste management program established by the Nuclear Waste Policy Act.

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DEFINITIONS

1. Below Regulatory Concern. A definable amount of low-level waste that can be deregulated with minimal risk to the public.
2. Buffer Zone. The smallest region beyond the disposal unit that is required as controlled space for monitoring and for taking mitigative measures, as may be required.
3. Byproduct Material. (Attachment 1, pages 4 and 5, paragraphs 38 and 49.)
 - a. Any radioactive material (except special nuclear material) yielded in, or made radioactive by, exposure to the radiation incident or to the process of producing or utilizing special nuclear material. For purposes of determining the applicability of the Resource Conservation and Recovery Act to any radioactive waste, the term "any radioactive material" refers only to the actual radionuclides dispersed or suspended in the waste substance. The nonradioactive hazardous waste component of the waste substance will be subject to regulation under the Resource Conservation and Recovery Act.
 - b. The tailings or waste produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content. Ore bodies depleted by uranium solution extraction operations and which remain underground do not constitute "byproduct material."
4. Certified Waste. Waste that has been confirmed to comply with disposal site waste acceptance criteria (e.g., the Waste Isolation Pilot Plant-Waste Acceptance Criteria for transuranic waste) under an approved certification program.
5. Closure.
 - a. Operational Closure. Those actions that are taken upon completion of operations to prepare the disposal site or disposal unit for custodial care, (e.g., addition of cover, grading, drainage, erosion control).
 - b. Final Site Closure: Those actions that are taken as part of a formal decommissioning or remedial action plan, the purpose of which is to achieve long-term stability of the disposal site and to eliminate to the extent practical the need for active maintenance so that only surveillance, monitoring, and minor custodial care are required.
6. Contact-Handled Transuranic Waste. Packaged transuranic waste whose external surface dose rate does not exceed 200 mrem per hour.
7. Decommissioning. Actions taken to reduce the potential health and safety impacts of DOE contaminated facilities, including activities to stabilize, reduce, or remove radioactive materials or to demolish the facilities.

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8. Decontamination. The removal of radioactive contamination from facilities, equipment, or soils by washing, heating, chemical or electrochemical action, mechanical cleaning, or other techniques.
9. Department of Energy Waste. Radioactive waste generated by activities of the Department (or its predecessors), waste for which the Department is responsible under law or contract, or other waste for which the Department is responsible. Such waste may be referred to as DOE waste.
10. Disposal. Emplacement of waste in a manner that assures isolation from the biosphere for the foreseeable future with no intent of retrieval and that requires deliberate action to regain access to the waste.
11. Disposal Facility. The land, structures, and equipment used for the disposal of waste.
12. Disposal Site. That portion of a disposal facility which is used to dispose of waste. For low-level waste, it consists of disposal units and a buffer zone.
13. Disposal Unit. A discrete portion (e.g., a pit, trench, tumulus, vault, or bunker) of the disposal site into which waste is placed for disposal.
14. DOE Reservation. A location consisting of a DOE-controlled land area including DOE-owned facilities (e.g., the Oak Ridge Reservation) in some cases referred to as a Site, such as the Nevada Test Site, the Hanford Site; or as a Laboratory, such as the Idaho National Engineering Laboratory; or as a Plant, such as Rocky Flats Plant; or as a Center, such as the Feed Materials Production Center.
15. Free Liquids. Liquids which readily separate from the solid portion of a waste under ambient temperature and pressure.
16. Engineered Barrier. A man-made structure or device that is intended to improve the performance of a disposal facility.
17. Hazardous Wastes. Those wastes that are designated hazardous by EPA regulations (40 CFR 261).
18. High-Level Waste. The highly radioactive waste material that results from the reprocessing of spent nuclear fuel, including liquid waste produced directly in reprocessing and any solid waste derived from the liquid, that contains a combination of transuranic waste and fission products in concentrations requiring permanent isolation.
19. Institutional Control. A period of time, assumed to be about 100 years, during which human institutions continue to control waste management facilities.

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20. Low-Level Waste. Waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or 11e(2) byproduct material as defined by this Order. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 nCi/g.
21. Monitoring. The making of observations and measurements to provide data to evaluate the performance of a waste management operation.
22. Mixed Waste. Waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act, respectively.
23. Natural Barrier. The physical, chemical, and hydrological characteristics of the geological environment at the disposal site that, individually and collectively, act to retard or preclude waste migration.
24. Naturally Occurring and Accelerator Produced Radioactive Material. Any radioactive material that can be considered naturally occurring and is not source, special nuclear, or byproduct material or that is produced in a charged particle accelerator.
25. Near Surface Disposal. Disposal in the upper 30 meters of the earth's surface, (e.g. shallow land burial).
26. Performance Assessment. A systematic analysis of the potential risks posed by waste management systems to the public and environment, and a comparison of those risks to established performance objectives.
27. Pyrophoric Material. A material which under normal conditions is liable to cause fires through friction, retained heat from manufacturing or processing, or which can be ignited readily and when ignited burns so vigorously and persistently as to create a serious transportation, handling or disposal hazard.
28. Quality Assurance. All those planned and systematic actions necessary to provide adequate confidence that a facility, structure, system, or component will perform satisfactorily and safely in service. Quality assurance includes quality control, which comprises all those actions necessary to control and verify the features and characteristics of a material, process, product, or service to specified requirements.
29. Radioactive Waste. Solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended and of negligible economic value considering costs of recovery.
30. Remedial Action. Activities conducted at DOE facilities to reduce potential risks to people and/or harm to the environment from radioactive and/or hazardous substance contamination.

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31. Remote-Handled Transuranic Waste. Packaged transuranic waste whose external surface dose rate exceeds 200 mrem per hour. Test specimens of fissionable material irradiated for research and development purposes only and not for the production of power or plutonium may be classified as remote-handled transuranic waste.
32. Repository. A facility for the permanent deep geologic disposal of High Level or Transuranic Waste.
33. Spent Nuclear Fuel. Fuel that has been withdrawn from a nuclear reactor following irradiation, but that has not been reprocessed to remove its constituent elements.
34. Storage. Retrievable retention of waste pending disposal.
35. Storage Facility. Land area, structures, and equipment used for the storage of waste.
36. Storage Unit. A discrete part of the storage facility in which waste is stored.
37. Surplus Facility. Any facility or site (including equipment) that has no identified or planned programmatic use and is contaminated with radioactivity to levels that require controlled access.
38. Transuranium Radionuclide. Any radionuclide having an atomic number greater than 92.
39. Transuranic Waste. Without regard to source or form, waste that is contaminated with alpha-emitting transuranium radionuclides with half-lives greater than 20 years and concentrations greater than 100 nCi/g at the time of assay. Heads of Field Elements can determine that other alpha contaminated wastes, peculiar to a specific site, must be managed as transuranic waste.
40. Treatment. Any method, technique, or process designed to change the physical or chemical character of waste to render it less hazardous, safer to transport, store or dispose of, or reduced in volume.
41. Treatment Facility. The specific area of land, structures, and equipment dedicated to waste treatment and related activities.
42. Waste Container. A receptacle for waste, including any liner or shielding material that is intended to accompany the waste in disposal.
43. Waste Management. The planning, coordination, and direction of those functions related to generation, handling, treatment, storage, transportation, and disposal of waste, as well as associated surveillance and maintenance activities.

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44. Waste Package. The waste, waste container, and any absorbent that are intended for disposal as a unit. In the case of surface contaminated, damaged, leaking, or breached waste packages, any overpack shall be considered the waste container, and the original container shall be considered part of the waste.

