

PPPL	PRINCETON PLASMA PHYSICS LABORATORY ES&H DIRECTIVES		
	ES&HD 5008 SECTION 7 Waste Management		
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ES&HD 5008 Section 7 – Waste Management

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1.0 INTRODUCTION

The purpose of this section is to assure the safety of personnel, equipment, and the public during the handling and movement of municipal solid waste (MSW), construction and demolition (C&D), hazardous, and radioactive wastes at the Department of Energy's Princeton Plasma Physics Laboratory (DOE-PPPL). This section addresses safety requirements and procedure references for the identification, handling and packaging of hazardous and radioactive wastes as well as the minimization of all wastes including municipal, non-hazardous, C&D, radioactive, and hazardous wastes. This document does not specifically address all federal, state, and local requirements as they apply to hazardous and radioactive waste management and is not inclusive of other applicable parts of these regulations. The Materiel and Environmental Services (M&ES) Division maintains current versions of applicable parts of the Code of Federal Regulations (CFRs), including the Environmental Protection Agency (EPA), U.S. Department of Transportation (DOT), and applicable state waste management regulations.

2.0 SCOPE

The provisions of this section apply to all classification, handling, sorting, diversion, packaging, transportation, and disposal of wastes at PPPL including MSW, C&D, hazardous and radioactive wastes. The provisions of this section are applicable to both Laboratory personnel and outside subcontractors. Hazards associated with hazardous and radioactive wastes are discussed below along with the precautions necessary to avoid injury or property loss.

3.0 DEFINITIONS

- 3.1 **Acute Hazardous Waste** – any waste that is, or contains a material listed as an acutely hazardous waste (denoted by the letter “H”) as listed in 40 CFR 261.33 (e).
- 3.2 **Hazardous Waste** – any waste material regulated as an EPA hazardous waste defined under 40 CFR 261.3; *Definition of Hazardous Waste*.
- 3.3 **Life-Cycle Planning** – a process by which, prior to generation, the entire life of a particular material is evaluated from use through disposal.
- 3.4 **Material Safety Data Sheet (MSDS)** – Forms that contain hazard communication information on materials found in the workplace. Refer to Section 8, Chapter 12 of this manual for further information on MSDS and chemical information.
- 3.5 **Package Certifiers** – Waste Management Technicians or Engineers responsible for signing Package Certification Labels and Container Inventory sheets.
- 3.6 **Package Certification Labels** – Labels which may be required for particular burial facilities (e.g., Nevada Test Site) used to demonstrate shippers certification of the contents of a waste container.
- 3.7 **Radioactive Material** – The Department of Transportation defines radioactive material characterized by a specific activity equal to or greater than 0.02 $\mu\text{Ci/g}$ (70 Bq/g).

- 3.8 **Radioactive Waste** - Radioactive material that is no longer considered useful.
- 3.9 **Refuse** – Municipal garbage/rubbish such as food, food wrappers, and other non-regulated, non-recyclable materials.
- 3.10 **Recyclable Materials** – Materials that are recycled at PPPL include, but are not limited to, the following: ongoing consumables such as paper/cardboard, cans/plastic/glass, toner cartridges, magnetic media, transparencies, batteries, packing peanuts, metals, fluorescent lamps, and binders; durable goods such as computers, office electronics, office furniture, equipment, and appliances; building materials such as copper, steel, aluminum, wire, lamp ballasts, wood, concrete, asphalt, roofing ballast, and clean soil.
- 3.11 **Satellite Accumulation** - The practice of collecting up to fifty-five (55) gallons of one compatible hazardous waste stream or one quart of acute hazardous waste at or near the waste generating process which is under the control of one generator for subsequent disposal.
- 3.12 **Satellite Accumulation Areas (SAA)** – Areas throughout the Laboratory, designated for satellite accumulation by Waste Management.
- 3.13 **Waste Acceptance Criteria** – A documented program established by a particular disposal facility to specify authorized (shippable) materials as well as other site-specific programmatic requirements.
- 3.14 **Waste Certification Official** – A designated individual, Waste Management Engineer or designee, in the Waste Management program who is responsible for ensuring radioactive waste packages, data, and waste shipments comply with the designated burial facility's Waste Acceptance Criteria.
- 3.15 **Waste with No Identified Path to Disposal** – Materials that, under certain operating scenarios, have no viable disposal outlet due to high cost, lack of available technologies, etc.

4.0 RESPONSIBILITIES

- 4.1 **Department Heads/Division Heads** – are responsible for assuring the implementation of this section within their administrative and functional areas.
- 4.2 **Satellite Accumulation Area Managers** – are responsible for assuring SAA's are maintained in accordance with this section and EWM-004 - *Satellite Accumulation Areas*.
- 4.3 **Waste Generator** – is responsible for assuring proper characterization and disposal of hazardous, or otherwise regulated waste generated through processes under their cognizance.
- 4.4 **Waste Management Technicians** – are responsible for screening waste material for restricted items, packaging approved materials per PPPL procedure, sealing containers, and marking and labeling per the direction of a Waste Management Engineer.
- 4.5 **Waste Management Engineer** – is responsible for maintaining the hazardous, radioactive, and mixed waste management programs at PPPL. In addition, responsible for assuring that waste packages, data, and waste shipments comply with the designated burial facility's Waste Acceptance Criteria.

- 4.6 **Buildings & Grounds Supervisor** – is responsible for the coordination of trash and recyclable materials collection throughout the facility. Ensures that waste containers are clearly marked to identify waste type and owner and that they are maintained in good condition. Oversees the waste management subcontract for MSW collection/disposal and recycling. Maintains waste disposal and recycling records and forwards data to Environmental Sustainability Coordinator for reporting to Laboratory management and DOE. Works with Environmental Sustainability Coordinator to promote recycling efforts at the laboratory.
- 4.7 **Environmental Sustainability Coordinator** – is responsible for the collection, analysis and reporting of waste management and recycling data to DOE's Pollution Prevention Tracking and Reporting System (PPTRS). Promotes reutilization, recycling, waste minimization and other sustainable environmental practices at the laboratory.
- 4.8 **Excess Property Coordinator** – is responsible for the collection, screening, reutilization, and proper disposition of excess equipment and personal property. Serves as laboratory point of contact for excess property reutilization with other Federal facilities and state agencies. Oversees the scrap metal recycling subcontract.

5.0 REFERENCES

- 5.1 Code of Federal Regulations, Title 40, Parts 260-299 (40 CFR 260-299)
- 5.2 Code of Federal Regulations, Title 49, Parts 170-179 (49 CFR 170-179)
- 5.3 Code of Federal Regulations, Title 40, Part 761 (40 CFR 761)
- 5.4 N. J. Administrative Code, Title 7, Chapters 1E, 14B, 26, 26E, and 26G
- 5.5 *M&ES Division Procedures*
- 5.6 DOE O 435.1, *Radioactive Waste Management*
- 5.7 HNF-EP-6300, *Hanford Waste Acceptance Criteria*, latest revision.
- 5.8 DOE/NV-325, *Nevada Test Site Waste Acceptance Criteria*, latest revision.
- 5.9 Solid Waste Collection, Recycling and Disposal Subcontract.
- 5.10 Scrap Metal Sale and Recycling Subcontract.
- 5.11 PPPL Policy P-014, Waste Minimization
- 5.12 DOE Order 450.1A, Environmental Protection.
- 5.13 Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management
- 5.14 Executive Order 13514, Federal Energy, Environmental and Economic Leadership.

6.0 HAZARDOUS WASTE ADMINISTRATION

- 6.1 **90-Day Hazardous Waste Storage**
- 6.1.1 The Waste Management group maintains a 90-day Hazardous Waste Storage Facility (HWSF) pursuant to federal regulation.

- 6.1.2 Waste Management is obligated to collect, package and ship for disposal all generated hazardous waste within 90 days of generation to maintain EPA generator status.
- 6.1.3 PPPL's HWSF is operated and maintained in accordance with: 40 CFR 262 Subpart C Pre-Transport Requirements, 40 CFR 262 Subpart D *Recordkeeping and Reporting*, 40 CFR 265 Subpart I *Use and Management of Containers*, 40 CFR 265 Subpart D, *Containment Buildings*.
- 6.1.4 Waste Management must be notified immediately of hazardous wastes, or materials believed to be hazardous wastes by the waste generator.
 - 6.1.4.1 The generator shall properly tag the waste with an appropriate Hazardous Waste Identification Tag (see section 6.3).
- 6.2 **Satellite Accumulation**
 - 6.2.1 M&ES has established a limited number of Satellite Accumulation Areas (SAAs) throughout the Laboratory.
 - 6.2.2 The SAA program is run by Waste Management for the convenience of waste generators.
 - 6.2.3 SAAs are established and maintained pursuant to 40 CFR 262.34, *Accumulation Time*. That is, in order to comply with federal regulation, a SAA must:
 - 6.2.3.1 Accumulate no more than 55-gallons of hazardous waste or one quart of acutely hazardous waste;
 - 6.2.3.2 Reside at or near the point where the waste is generated, or initially accumulated;
 - 6.2.3.3 Be under the control of the operator generating the waste;
 - 6.2.3.4 Be inspected, at least weekly, for leaks, bulges, or deterioration associated with SAA containers;
 - 6.2.3.5 Assure that the waste containers are always closed, except when it is necessary to add waste material;
 - 6.2.3.6 Label or in some way mark waste containers with the words "Hazardous Waste" or with other words that adequately identify the contents of the containers;
 - 6.2.3.7 Within three days of reaching 55-gallon capacity, contact Waste Management for waste collection.
- 6.3 **Hazardous Waste Identification Tags (HWID)**
 - 6.3.1 The Waste Management group provides identification tags for purposes of labeling hazardous waste containers for collection (i.e., transfer to 90-day storage).
 - 6.3.2 Generators of hazardous waste must complete all applicable information to the best of their ability including generator name, division, telephone extension, location of waste (building, floor, room), description of waste material, quantity, container type (e.g., 15-gallon drum, 5-gallon carboy, etc.).

- 6.3.3 Upon completing the HWID tag waste generators shall notify Waste Management to collect the material.
 - 6.3.3.1 Removing the top, original copy of the HWID tag, attaching a valid **MSDS** (available through Industrial Hygiene), and mailing it to Waste Management.
 - 6.3.3.2 Affixing the bottom (rigid portion) copy of the HWID tag to the waste container (e.g., bag, bottle, drum, etc.).
- 6.4 **Waste Generator Responsibilities**
 - 6.4.1 Evaluate all waste material to assure appropriate disposal of hazardous, non-municipal, and other regulated wastes.
 - 6.4.2 Whenever the matrix and/or constituents of the waste material are unknown, contact Waste Management for assistance.
 - 6.4.3 Maintain adequate storage of waste materials prior to collection so as to minimize the risk of spills, inadvertent personnel contact, or other release to the environment.
 - 6.4.4 Prevent inappropriate disposal of regulated or potentially regulated materials. That is, prevent illegal, uncontrolled dumping.
 - 6.4.4.1 Laboratory Sinks – **No** liquid wastes shall be disposed via sanitary or storm sewers (i.e., sink, floor drains, etc.) without prior approval by M&ES Waste Management and Environmental Compliance.
 - 6.4.4.2 Refuse and Recycling Containers – Waste must be segregated into appropriate receptacles. If a person is unsure of the regulatory status of a waste material they should refrain from placing it into refuse and recycling containers. For example, all glass and metal beverage cans are recyclable and therefore must not be placed in refuse cans.
 - 6.4.4.3 Evaporative Release via Fume Hoods – **No** liquid wastes shall be placed within fume hoods for the sole purpose of evaporating unwanted material.
 - 6.4.5 Complete a HWID tag and notify Waste Management promptly upon generating hazardous or otherwise regulated material.

7.0 RADIOACTIVE WASTE ADMINISTRATION

- 7.1 **Radioactive Waste Handling Facility (RWHF)**
 - 7.1.1 The Waste Management group of the M&ES Division maintains the RWHF for the purpose of handling radioactive wastes as well as radioactive material to be stored for future use.
 - 7.1.2 All routine radioactive waste packaging is performed in the RWHF by qualified Waste Management staff.

- 7.1.2.1 Liquid scintillation vials are collected and stored in the RWHF for processing at an off-site permitted treatment facility.
- 7.1.2.2 Compactable radioactive materials (e.g., plastic bags, rags, etc.) are compressed by 10:1 via a hydraulic drum press. Alternatively, compactable materials may be used as void space filler in drums and metal boxes used to package non-compactable radioactive wastes.
- 7.1.2.3 Non-compactable radioactive wastes (e.g., large pieces of steel, wood, etc.) are packaged into drums and metal boxes.
- 7.1.3 All radioactive materials, stored for future use are housed in the RWHF. A computer database is used to inventory the materials for later acquisition.
- 7.2 **Radioactive Material Transfer Sheets (Form 115)**
- 7.2.1 All radioactive materials that are to be sent for storage or disposal as radioactive waste must be accompanied by Attachment 1 to OP-AD-115, *Transfer of Radioactive Materials to/From D Site*, **Form 115**.
- 7.2.2 Prior to transfer of radioactive materials to Waste Management, the following must be complete:
 - 7.2.2.1 All information listed as the responsibility of the Cognizant Individual (e.g., physical description of material, chemical description, etc.) must be completed.
 - 7.2.2.2 All Health Physics information must be completed.
 - 7.2.2.3 When applicable, all Material Control and Accountability (MC&A) information must be completed.
- 7.3 **Stored Radioactive Material**
- 7.3.1 All radioactive materials to be stored for future on-site use must be accompanied by RMIDS as per OP-AD-115, *Packaging of Radioactive Materials*.
 - 7.3.1.1 Each item request for storage shall be accompanied by a completed Form 115.
 - 7.3.1.2 Upon receipt, the Waste Management Technician inspects the accompanying paperwork to ensure it is complete.
 - 7.3.1.3 Upon acceptance a label characterized by a unique "RM" number (e.g., RM-00-0001) is assigned.
 - 7.3.1.4 The unique number is entered on the 115 form and filed by the technician.
 - 7.3.1.5 Materials will be stored for a period of one calendar year when the Form 115 is accompanied by Division Head signature.

- 7.3.1.6 Upon expiration (i.e., after one year of storage), a second copy of the Form 115 will be circulated for renewal and associated Division Head signature.
- 7.3.1.7 In instances of non-renewal, a notice of “Intent to Dispose” will be sent to the Cognizant Individual, as well as the appropriate Department and Division Heads. After a period of one-month post notice, materials will be packaged for disposal in order to reduce Laboratory and University liability.
- 7.3.2 Should the cognizant individual or designee remove material from the RWHF, Waste Management will require the receiving individual’s signature as proof of relinquishment.
- 7.4 **Waste Processing**
- 7.4.1 All radioactive waste generated within the PPPL facility must be characterized by Health Physics and be accompanied by a Form 115.
- 7.4.2 Waste shall be packaged for pickup as per Waste Management and Health Physics direction.
- 7.4.3 The waste generator shall assist the packaging and characterization of any and all wastes generated by providing “process knowledge” information on materials present, activation products, contamination levels, etc.
- 7.5 **Life-Cycle Planning**
- 7.5.1 Each new activity, as identified via the PPPL NEPA Evaluation Process, shall be reviewed by the Environmental Services staff in order to identify potential waste generation, pollution prevention and waste minimization opportunities, as well as disposal options.
- 7.5.2 Low-level waste streams with no identified path to disposal shall be generated only with the approval of Headquarters and in accordance with approved conditions which, at a minimum, shall address:
 - (a) Programmatic need to generate the waste;
 - (b) Characteristics and issues preventing the disposal of the waste;
 - (c) Safe storage of the waste until disposal can be achieved; and
 - (d) Activities and plans for achieving final disposal of the waste.

8.0 MUNICIPAL SOLID WASTE AND CONSTRUCTION/DEMOLITION WASTE ADMINISTRATION

- 8.1 Waste data shall be collected from the hauler for record keeping and performance evaluation in accordance with subcontract.
- 8.2 The ongoing recycling rate, calculated monthly, will be used to measure the success of this policy. The recycling rate is derived by comparing the amount of consumables diverted from the landfill to those consumables sent to the landfill over a given time period. The initial performance metric will be to achieve the reuse, recycling and/or composting of:
- 50% of the ongoing consumable waste stream (by weight or volume)
 - 80% of discarded batteries
 - 100% of fluorescent bulbs
 - 75% of durable goods
 - 50% of waste generated by facility alterations and additions
- 8.3 Waste/recycling data will be documented with weigh tickets at every pickup for MSW, C&D waste and recyclables. Buildings & Grounds Coordinator records data from subcontractor and submits monthly report to the Environmental Sustainability Coordinator. The waste/recycling data are reported quarterly to laboratory management and annually to DOE and the EPA Waste-Wise program. Supplemental data reports are generated as required. .
- 8.4 The Maintenance & Operations Division and Environmental Services Group will periodically evaluate the success of the policy. A municipal solid waste audit will be conducted annually to monitor and assess program success. The waste audit report will identify quantity diverted from landfill, gross savings earned, net savings earned, recycling rates achieved and the environmental benefits derived from the laboratory's recycling efforts.

9.0 EXCESS PROPERTY AND SCRAP METALS

- 9.1 The disposition of excess government personal property is managed by the Materiel Services group and is coordinated by the Excess Property Coordinator. Excess property is screened for reutilization by Federal, state or local agencies, offered for public sale, offered for donation to qualified non-profit or educational institutions before being either recycled or disposed.
- 9.2 Excess property is managed in accordance section 1101.2 of the Materiel Services Policies & Procedures Manual.
- 9.3 The sale of scrap metals for recycling is managed in accordance with section 1101.5 of the Materiel Services Policies & Procedures Manual.