

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

This section describes the requirements for the identification, safe handling, packaging and movement of municipal solid waste (MSW), construction and demolition (C&D), hazardous, and radioactive wastes at PPPL. This section also addresses waste minimization. This document does not specifically address all federal, state, and local requirements; the Environmental Services Division (ESD) should be consulted for any detailed questions as they maintain current versions of applicable parts of the Code of Federal Regulations (CFRs), including 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 the 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. This section encompasses all ongoing consumables, durable goods, and materials used during facility alterations as defined in this section.

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”) in 40 CFR 261.33 (e).
- 3.2 **Compostable Waste** – Biodegradable material that is diverted from traditional waste streams including food, paper products, waxed paper products and other organic items sent to an off-site composting facility.
- 3.3 **Construction & Demolition (C&D)Waste** – Waste materials from facility renovation, refits, additions, and new construction including, but not limited to: studs, insulation, door, windows, panels, drywall, trim, ceiling panels, carpet, flooring material, adhesives, sealants, paints, and coatings.
- 3.4 **Durable Goods** – Items with a useful life of 2 years or more that are replaced infrequently or may require capital program outlays. Examples include but are not limited to: office equipment (such as computers, monitors, printers, copiers, and fax machines), appliances (refrigerators, dishwashers, and water coolers), janitorial equipment, external power adaptors, televisions, other audio-visual equipment, and furniture.
- 3.5 **Hazardous Waste** – Any waste material regulated as an EPA hazardous waste defined under 40 CFR 261.3; *Definition of Hazardous Waste*. See procedure EWM-001.
- 3.6 **Life-Cycle Planning** – A process by which, the entire life of a particular material is evaluated from use through disposal prior to generation.

- 3.7 **Safety Data Sheet (SDS)** – 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 SDS and chemical information.
- 3.8 **Ongoing Consumables** – Items with a low cost per unit that are regularly used and replaced in the course of daily business. Examples include but are not limited to: toner cartridges, binders, batteries, notebooks, envelopes, sticky notes, paper clips, and desk accessories.
- 3.9 **Radioactive Material (in transportation)** – Material containing radionuclides for which the Activity Concentration Limit for Exempt Material (ACEM) or Activity Limit for Exempt Consignment (ALEC) values are greater than 1.0 (>1.0) per 49 CFR 173.433 and 173.436. ESD personnel determine compliance with these requirements during the packaging and shipping of radioactive waste.
- 3.10 **Radioactive Waste** - Radioactive material that is no longer considered useful.
- 3.11 **Recyclable Materials** – Materials that are reused and or collected for recycling at PPPL include, but are not limited to, the following: ongoing consumables such as compostable and food items; single stream recyclables including paper, cardboard, cans, plastic containers (#s 1 through 5 and 7, plastic hardhats, and glass bottles. Other recyclable items include toner cartridges, magnetic media, transparencies, packing peanuts, scrap metal, and binders; durable goods such as computers, office electronics, office furniture, equipment, and appliances; building materials such as copper, steel, aluminum, wire, yard waste, wood, concrete, asphalt, roofing ballast, and clean soil; and other items requiring special handling such as batteries, fluorescent lamps and lamp ballasts.
- 3.12 **Satellite Accumulation** – The practice in which one generator collects up to fifty-five (55) gallons of one compatible hazardous waste stream or one quart of acute hazardous waste at or near the site where the waste is generated for subsequent disposal. See procedure EWM-004.
- 3.13 **Satellite Accumulation Areas (SAA)** – Areas at various locations at the Laboratory that Waste Management has designated for satellite accumulation.
- 3.14 **Trash** – Municipal garbage/rubbish and other non-regulated, non-recyclable or non-compostable materials.
- 3.15 **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.
- 3.16 **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 SAAs 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, radioactive, or otherwise regulated waste generated through processes under their jurisdiction.
- 4.4 **Waste Management Technicians** – Are responsible for screening waste material for restricted items, packaging approved materials per PPPL procedures, 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 and radioactive management programs at PPPL, including hazardous waste SAA program. The Waste Management Engineer is also responsible for assuring that waste packages, data, and waste shipments comply with the designated burial facility's Waste Acceptance Criteria. Responsible for the removal of all Government Personal Property tags and for submitting a copy of form 115 to Property Administration for retirement of accountable Government Personal Property, if applicable.
- 4.6 **Buildings & Grounds Supervisor** –Is responsible for the coordination of trash, compostable, and recyclable materials collection throughout the Laboratory. 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, recycling, composting and disposal. Coordinates as required with subcontractors to facilitate the collection, recycling, composting and disposal of waste from their activities. Maintains waste disposal and recycling records and forwards data to the Environmental Sustainability Coordinator for reporting to Laboratory management and DOE. Works with the 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 the DOE. Promotes reutilization, recycling, waste minimization and other sustainable environmental practices at the Laboratory.
- 4.8 **Excess Property Coordinator** – Is responsible for the collection and internal reutilization of excess property. Coordinates the GSA Personal Property Disposal Process, and proper disposition of excess Government 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 *Environmental Services Division (ESD) Procedures*
- 5.6 DOE O 435.1, *Radioactive Waste Management*
- 5.7 Solid Waste Collection, Recycling and Disposal Subcontract
- 5.8 Scrap Metal Sale and Recycling Subcontract
- 5.9 Policy P-014, Waste Minimization
- 5.10 DOE Order 436.1, *Departmental Sustainability*
- 5.11 Executive Order 13693, *Planning for Federal Sustainability in the Next Decade*
- 5.12 Procedure EWM-001, Hazardous Waste Management
- 5.12 Procedure EWM-004, Satellite Accumulation Areas
- 5.13 Procedure OP-AD-115, Transfer of Radioactive Materials to/from D Site

6.0 Hazardous Waste Administration

6.1 90-Day Hazardous Waste Storage

- 6.1.1 The Environmental Services Division's (ESD) Waste Management group maintains a 90-day Hazardous Waste Storage Facility (HWSF) pursuant to federal regulations.
- 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 hazardous waste 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 that the waste generator believes to be hazardous wastes.
 - 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 ESD has established a limited number of Satellite Accumulation Areas (SAAs) at various locations throughout the Laboratory (see procedure EWM-004).
- 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, an 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 Be located 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 Ensure 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” AND with other words that adequately identify the contents of the containers;
- 6.2.3.7 Contact Waste Management for waste collection within three days of reaching 55-gallon capacity..

6.3 Hazardous Waste Identification Tags (HWID)

- 6.3.1 The Waste Management group provides identification tags to label 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, and container type (e.g., 15-gallon drum, 5-gallon carboy, etc.).
- 6.3.3 Generators shall notify Waste Management to collect the material upon completing the HWID tag waste and shall follow the following procedures:
 - 6.3.3.1 Remove the top, original copy of the HWID tag, attach a valid SDS (available through Industrial Hygiene), and mail it to Waste Management.
 - 6.3.3.2 Affix 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 the appropriate disposal of hazardous, non-municipal, and other regulated wastes.
- 6.4.2 Contact Waste Management Engineer for assistance whenever the matrix and/or constituents of the waste material are unknown.
- 6.4.3 Maintain adequate storage of waste materials prior to collection so as to minimize the risk of spills, inadvertent contact with personnel, or other release to the environment.
- 6.4.4 Prevent the illegal or uncontrolled disposal (dumping) of regulated or potentially regulated materials.
 - 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 ESD Waste Management and Environmental Compliance.

- 6.4.4.2 Trash and Recycling Containers – Waste must be segregated into appropriate receptacles. If an individual is unsure of the regulatory status of a waste material he or she should refrain from placing it into trash and recycling containers. For example, glass and metal beverage cans, paper, and cardboard are recyclable and therefore must not be placed in trash bins.
- 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 ESD maintains the RWHF for the handling, storage and packaging of radioactive wastes as well as the storage of radioactive material for future use.
- 7.1.2 All routine radioactive waste packaging is performed in the RWHF by qualified ESD personnel.
 - 7.1.2.1 Liquid scintillation vials are collected and processed in the RWHF for shipment to an off-site permitted treatment facility.
 - 7.1.2.2 Compactable radioactive materials (e.g., plastic bags, rags, etc.) are compressed 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 in drums and metal boxes, as appropriate.
- 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 retrieval.

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 The following must be complete prior to transferring radioactive materials to Waste Management:
 - 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 radioactive Material Control and Accountability (MC&A) and Government Personal Property 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 a completed Form 115 per OP-AD-115, *Transfer of Radioactive Materials to/from D Site*.
- 7.3.1.1 Each item request for storage shall be accompanied by a completed Form 115.
 - 7.3.1.2 The Waste Management Technician inspects the accompanying paperwork to ensure it is complete upon receipt.
 - 7.3.1.3 A label characterized by a unique “RM” number (e.g., RM-00-0001) is assigned upon acceptance.
 - 7.3.1.4 The unique number is entered on the 115 form and filed by the technician. Copies of 115 forms for Government Personal Property must be forwarded to Property Administration in the Material Services Division.
 - 7.3.1.5 Periodically, the cognizant individual is queried for continued storage or disposal of the materials. The future disposition is determined and documented and the materials may be packaged for disposal in order to reduce Laboratory and University liability.
- 7.3.2 Waste Management will require the receiving individual’s signature as proof of relinquishment should the Cognizant Individual or designee remove material from the RWHF. Property Administration must be notified of the movement of accountable Government Personal Property.

7.4 Waste Processing

- 7.4.1 All radioactive waste generated within the PPPL facility must be characterized by Health Physics and must be accompanied by Form 115.
- 7.4.2 Waste shall be packaged for pickup per Waste Management and Health Physics directions. If applicable, all Government Personal Property tags must be removed and documented on the 115 form.
- 7.4.3 The waste generator shall assist with 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 is screened through PPPL’s National Environmental Policy (NEPA) evaluation process and may be reviewed by ESD staff in order to identify potential waste generation, pollution prevention and waste minimization opportunities, as well as disposal options.
- 7.5.5 Low-level waste streams with no identified path to disposal shall be generated only with the approval of DOE and in accordance with approved conditions which, at a minimum, shall address:
- (a) The 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

- 8.1 Waste data will be collected from the hauler for record keeping and performance evaluation in accordance with the subcontract.
- 8.2 The ongoing recycling rate, calculated monthly, will be used to measure the success of PPPL's recycling program. The recycling rate is derived by comparing the amount of materials diverted from the landfill to those materials sent to the landfill over a given time period.
- 8.3 The Building & Grounds Supervisor and PPPL's Construction Manager will coordinate with subcontractors to collect waste for reuse/recycling. Amounts shall be tracked and reported as described under 8.4.
- 8.4 Waste/recycling data will be documented with weigh tickets at every pickup for MSW, C&D waste, compost and recyclables. The Buildings & Grounds Coordinator records data from the subcontractor and submits monthly report to the Environmental Sustainability Coordinator. The waste/recycling data are reported regularly to Laboratory management and annually to the DOE. Supplemental data reports are generated as required.
- 8.5 The Material Services Division is responsible for periodically evaluating the effectiveness of PPPL's recycling programs.

9.0 Excess Property, Scrap Metals and Furniture

- 9.1 The disposition of excess Government Personal Property, including electronics and furniture, is managed by the Material Services Division and is coordinated by the Excess Property Coordinator. Excess property is screened internally and through the GSA Personal Property Disposal Process for reutilization prior to being recycled or disposed.
- 9.2 Excess property is managed in accordance with section 1101.2 of the Material Services Policies & Procedures Manual.
- 9.3 The sale of scrap metals for recycling is managed in accordance with section 1101.5 of the Material Services Policies & Procedures Manual.
- 9.4 The Material Services Division will keep records of recycling and reutilization on-site, reutilization off-site and GSA sale data for all Lab-wide property, including electronics, furniture and other miscellaneous items. Material Services submits an annual report to the Environmental Sustainability Coordinator.