



# Goddard Procedural Requirements (GPR)

**DIRECTIVE NO.** GPR 8500.3H

**EFFECTIVE DATE:** June 12, 2019

**EXPIRATION DATE:** August 6, 2023

**APPROVED BY Signature:** Original Signed By

**NAME:** David A. Reth

**TITLE:** Director Of Management Operations

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## COMPLIANCE IS MANDATORY

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**Responsible Office:** 250/Medical and Environmental Management Division

**Title:** Waste Management

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## PREFACE

### P.1 PURPOSE

This directive defines the Waste Management Program at the Goddard Space Flight Center (GSFC). It describes how GSFC integrates its environmental goals and requirements with the regulatory requirements pertaining to the management of solid wastes, including hazardous wastes and recyclable materials. This GPR also outlines the procedures and responsible organizations to manage the program effectively.

### P.2 APPLICABILITY

- a. This GPR applies to all GSFC personnel, facilities, and permanent and temporary activities at Greenbelt and Wallops Flight Facility (WFF). It also applies to tenant organizations, contractors, grantees, clubs, and other persons operating under the auspices of GSFC or on GSFC property, as required by law and as directed by contracts, grants, and other agreements.
- b. Managers of GSFC locations remote from Greenbelt and WFF shall ensure that an adequate waste management program is established, documented, and implemented in organizational-level directives or controlled documents to achieve compliance with regulatory, agency, and GSFC requirements.
- c. In this directive, all document citations are assumed to be the latest version unless otherwise noted.
- d. In this directive, all mandatory actions (i.e., requirements) are denoted by statements containing the term “shall.” The terms “may” or “can” denote discretionary privilege or permission; “should” denotes a good practice and is recommended but not required; “will” denotes expected outcome; and “are/is” denotes descriptive material.

### P.3 AUTHORITIES

- a. National Aeronautics and Space Administration (NASA) Policy Directive 8500.1, NASA Environmental Management.

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b. Goddard Policy Directive 8500.1, Environmental Policy and Program Management.

**P.4 APPLICABLE DOCUMENTS AND FORMS**

- a. 40 CFR Part 261, Identification and Listing of Hazardous Waste
- b. 40 CFR Part 262, Standards Applicable to Generators of Hazardous Waste
- c. 40 CFR Part 266, Standards for the Management of Specific Hazardous Wastes and Specific Types of Hazardous Waste Management Facilities
- d. 40 CFR Part 761, Requirements for Authorization of State Hazardous Waste Programs
- e. 40 CFR Part 273, Standards for Universal Waste Management
- f. NASA Procedural Requirement (NPR) 4100.1, NASA Materials Inventory Management Manual
- g. NPR 4300.1, NASA Personal Property Disposal Procedural Requirements
- h. Goddard Procedural Requirement (GPR) 1860.1, Ionizing Radiation Protection
- i. GSFC Form 23-54, Hazardous Waste Disposal Inventory (HWDI) Form
- j. GSFC Form 23-63, Generator’s Inspection Record, Satellite Accumulation Area
- k. GSFC Form 23-66, Inspection Record, Satellite Accumulation Area
- l. Code of Maryland Regulations (COMAR) Title 26, Maryland Department of the Environment (MDE)

**P.5 CANCELLATION**

GPR 8500.3F Waste Management

**P.6 SAFETY**

Personal Protective Equipment (PPE) – Appropriate PPE shall be used for handling hazardous waste. PPE is selected based on the hazards presented by the material.

**P.7 TRAINING**

See section 3 – Training (listed in the Procedures section)

**P.8 RECORDS**

<b>Record Title</b>	<b>Record Custodian</b>	<b>Retention</b>
Hazardous Waste Manifests (see Note 1)	RMMO, LMD, and MEMD	*NRRS_8/23A9 Cut off annually. Destroy with concurrence of Center or NASA Counsel’s Office 75 years after cutoff or when no longer needed, whichever is later.

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Certificates of Disposal (see Note 1)	MEMD	*NRRS 8/23A9 Cutoff annually. Destroy with concurrence of Center or NASA Counsel's Office 75 years after cutoff or when no longer needed, whichever is later.
Biennial Hazardous Waste Report (see Note 1)	MEMD	*NRRS 8/23A5_Cut off annually. Destroy after 25 years or when no longer needed, whichever is later.
Inspection Record, Less-Than-90-Day Staging Facility	MEMD	*NRRS 8/23A8 Cutoff annually. Destroy with concurrence of Center or NASA Counsel's Office 75 years after cutoff or when no longer needed, whichever is later.
Hazardous Waste Disposal Inventory (HWDI) (GSFC Form 23-54)	MEMD	WFF only - Handle as permanent pending retention approval.
Waste Characterization Records (see Note 1)	MEMD	*NRRS 8/23.5A1 – Cutoff annually, destroy 10 years after cutoff or when no longer needed whichever is later
Medical Waste Records	MEMD Health Unit	Handle as permanent pending retention approval
Training Records	SATERN	*NRRS 3/33B1 Destroy when no longer needed or when 3 years old, whichever is sooner.
OB/OD Operating Records	SRPO	Handle as permanent pending retention approval
PCB Annual Report	MEMD	*NRRS 8/43C4 Destroy 5 years after stopping use or storing of PCBs. [AUTHORITY: 40 CFR/ 761.180]
Solid Waste Management & Disposal Records	FMD	*NRRS 8/43A1 Retain on site for 5 years and then destroy unless there is an earlier destruction authorized either in this handbook by specific record series; citation in the code of federal regulation (CFR); or some other appropriate regulatory authority or specific state agency governing such records.

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Recycling Records	FMD, LMD	*NRRS 8/43A1 Retain on site for 5 years and then destroy unless there is an earlier destruction authorized either in this handbook by specific record series; citation in the code of federal regulation (CFR); or some other appropriate regulatory authority or specific state agency governing such records.
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\*NRRS – NASA Records Retention Schedules (NPR 1441.1)

*Note 1: For rocket motors, the records custodian is the Sounding Rocket Program Office.*

**P.9 MEASUREMENT/VERIFICATION**

- a. Compliance and verification with the requirements of this directive is conducted every three years by the NASA Headquarters’ Environmental Management Division. Non-compliance findings are reported to the Center Director and resolved by the responsible organization.
- b. MEMD annually verifies compliance with the hazardous waste requirements of this directive. Non-compliance findings are reported to the responsible organization for resolution, and are discussed during annual hazardous waste management training with hazardous waste generators.

**PROCEDURES**

1. ROLES AND RESPONSIBILITIES

The following defines the roles and responsibilities for waste management at GSFC.

1.1 The Center Director shall:

- a. Maintain a Waste Management Program to ensure compliance with applicable regulations and GSFC Environmental Policy.
- b. Ensures, through delegation to MEMD and other appropriate offices for offsite locations, that the following statement, printed on each hazardous waste manifest, is true and certified by the delegate:

*“I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name and are classified, packaged, marked, and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national government regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment confirm to the terms of the attached EPA Acknowledgment of Consent.”*

*“I certify that the waste minimization statement identified in 40 CFR 262.27(a)(if I am a large quantity generator) or (b)(if I am a small quantity generator) is true.*

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## 1.2 Directors of:

- a. Ensure that environmental program documents and records associated with directorate operations are maintained; and
- b. Ensure that directorate operations have sufficient resources to act in accordance with this directive and applicable permits and regulations;

## 1.3 Supervisors:

- a. Shall ensure that hazardous waste generated by their organization are managed in accordance with all applicable regulations;
- b. Ensure that employees have sufficient resources to conduct operations in compliance with this directive and applicable regulations, requirements, and permit conditions;
- c. Ensure the immediate reporting of spills of any known or suspected hazardous wastes/materials by dialing 911 from any internal phone on Center. From a cellular phone: at Greenbelt dial 301.286.9111; at WFF dial 757.824.1333;
- d. Ensure timely responses and appropriate corrective or remedial actions, as required, to address identified environmental deficiencies;
- e. Request the assistance of MEMD to determine if a process generates hazardous waste;
- f. Ensure control of environmental program documents and records associated with operations;
- g. Submit data to MEMD in accordance with data calls necessary to meet regulatory reporting requirements;
- h. Pursue and support pollution prevention efforts to minimize the generation of waste;
- i. Ensure that appropriate employees receive hazardous waste management training annually;
- j. Ensure that proper chemical safety practices (e.g., PPE, containers, storage and handling procedures) are followed;
- k. Ensure that their employees are aware of emergency procedures;
- l. Notify MEMD of any new activity or changes to existing activities that generate waste, in order that environmental considerations can be included early in the planning phase of the project; and
- m. For each satellite accumulation area (SAA) within the organization, appoint a primary and alternate point of contact (POC) and ensure that the responsibilities of the SAA POCs listed in section 1.4.1 are followed.

## 1.4 Individuals Working at GSFC:

- a. Shall comply with all GSFC environmental requirements and follow applicable organizational procedures and work instructions;
- b. Shall dispose of waste in compliance with GSFC policies and procedures;
- c. Shall not transport hazardous waste around Center;
- d. Shall not handle the following specific hazardous or regulated substances without obtaining the specific training, certification and/or registration requirements: ozone depleting substances (ODSs) and substitute ODSs, pesticides, asbestos, explosives, and radioactive materials;

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- e. Immediately report spills of known or suspected hazardous wastes/materials by dialing 911 from any internal phone on Center. From a cellular phone: at Greenbelt dial 301.286.9111; at WFF dial 757.824.1333;
- f. Attend environmental training (i.e. Integrated Contingency Plan, Storm Water Pollution Prevention Plan, Hazardous Waste Management Training) if required for a specific task and maintain proof of training;
- g. Minimize waste disposal through source reduction, product substitution, and/or recycling;
- h. Request the assistance of MEMD to determine if a process generates hazardous waste; and
- i. Contact MEMD prior to hazardous waste generation and from a new process for which containers have not been issued by MEMD.

1.4.1 Employees who generate hazardous waste and Satellite Accumulation Area (SAA) Points of Contact (POCs):

- a. Shall follow GSFC's hazardous waste management procedures;
- b. Shall maintain the SAAs in accordance with GSFC's procedures for SAAs;
- c. Shall request a hazardous waste pickup by MEMD prior to accumulation of the SAA limit of hazardous waste or acute hazardous waste (see section 2.4.3.1);
- d. Take Hazardous Waste Management Training annually (at Greenbelt available during Safety Awareness Camping, and thru SATERN; GSFC-Hazardous Waste Management Training);
- e. Be able to recognize a hazardous waste;
- f. Request proper containers and labels for hazardous waste to MEMD prior to generating hazardous waste. Once a container has been issued by MEMD to a SAA, that container MUST be utilized to store only that specific waste;
- g. Be responsible for placing waste into the proper SAA container;
- h. Ensure that any special procedures necessary for the proper management and operation of the SAA, supplemental to the requirements of this directive, are developed, implemented, and controlled;
- i. Follow proper chemical safety practices (e.g., PPE, storage and handling procedures);
- j. Be familiar with emergency procedures;
- k. Minimize the volume and toxicity of hazardous waste;
- l. Contact MEMD prior to generating a new waste or starting a new waste generating process;
- k. Conduct and document monthly SAA inspections (weekly inspections for construction SAAs);
- l. Ensure that proper containers and labels for waste are used; and
- m. Request a hazardous waste pickup using the Management Operations Services and Information (MOSI) system at <https://mosi.ndc.nasa.gov/>. At WFF, attached a complete Hazardous Waste Disposal Inventory (HWDI), GSFC Form 23-54 to the MOSI request.

1.5 Medical and Environmental Management Division (MEMD):

- a. Shall determine if a waste is a hazardous waste;
- b. Shall maintain Center permits and waste management records;
- c. Shall complete Federal, state, local, and Agency reporting requirements;

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- d. Shall arrange for offsite disposal of waste prior to accumulation time limits;
- e. Shall, through the GSFC MEMD Health Unit, safely store, dispose, and complete reporting requirements for medical waste;
- f. Assist generators and SAA POCs in complying with GSFC's hazardous waste management requirements by answering questions and providing site assistance;
- g. Provide labeled waste containers to waste generators to be used for hazardous and universal waste accumulation;
- h. Inspect SAAs for compliance with this directive at least annually;
- i. Remove regulated waste from SAAs and throughout the facility, as requested;
- j. Manage the recycling of batteries, used oil, used oil filters, hydraulic fluid, and fluorescent light tubes;
- k. At Greenbelt, manage the recycling of antifreeze, and non-PCB light ballasts;
- l. Safely transport waste or recyclable material to the designated staging facility;
- m. Manage the Less-Than-90-Day Facilities;
- n. Notify the State of new Less-Than-90-Day Facilities;
- o. Designate persons authorized to sign hazardous waste manifests (this designation requires approval/signature of the MEMD Division Chief);
- p. Sample and analyze hazardous wastes, and at WFF, soil, water, and debris from the Open Burn (OB) area as required;
- q. Serve as the Center's environmental representative to the Environmental Protection Agency, state and local agencies, and NASA Headquarters;
- r. Review new plans and projects with regard to waste generation and pollution prevention;
- s. Manage the Chemical Reuse Program; and
- t. Define requirements for training and certification.

#### 1.6 Facilities Management Division (FMD):

- a. Shall administer a solid (non-hazardous) waste management program with contracts, procedures and record keeping. Administer a single stream recycling program for drink and food containers of all types (i.e. plastic, glass, aluminum, and steel), and all types of paper (i.e. mixed papers such as color, glossy, and newspaper as well as office white paper). Cardboard is also to be collected as well as laser toner cartridges and stored properly for collection. At WFF, ILMD is responsible to recycle toner and laser cartridges.
- b. Shall provide response to data calls necessary for regulatory reporting requirements;
- c. Coordinate any environmental permit requirements with MEMD;
- d. Monitor the proper use of receptacles and dumpsters through inspection of the contents of containers and area surrounding containers;
- e. Develop and monitor the use of procedures which describe the trash segregation responsibilities of the custodial staff;
- f. For construction contracts, ensure contract requirements are in place that require contractors to coordinate construction hazardous waste management and disposal with MEMD prior to starting the work;

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- f. At Greenbelt, request a labeled container to accumulate construction hazardous waste and provide funding source using the MOSI system at <https://mosi.ndc.nasa.gov/>;
- g. At WFF, approve asbestos abatement plans;
- h. Provide a copy of waste shipment records received from construction contracts to MEMD immediately upon receipt; and
- i. For non-hazardous construction and demolition (C&D) waste, develop and monitor procedures for recycling of waste and collect waste handling and recycling reports.

#### 1.7 Information & Logistics Management Division (ILMD):

- a. Shall maintain guidelines to ensure that property (e.g., transformers) or cooling equipment (e.g., electrical or refrigeration equipment) is free of environmental concerns (e.g., PCBs, ODSs, oils, chemicals) prior to property disposal;
- b. Shall manage precious metals disposition in compliance with environmental regulations;
- c. Shall provide response to data calls necessary for regulatory reporting requirements;
- d. Shall, at WFF, transport waste in accordance with the hazardous waste transporter permit requirements;
- e. Coordinate any environmental permit requirements with MEMD (e.g., scrap tires);
- f. Manage scrap metal recycling activities;
- g. Ensure the inclusion of environmental considerations in the administration of property disposal procedures and arrange for the recycling of other bulk items as needed (these items typically include but are not limited to products for resale, electronics equipment and tires);
- h. Maintain records for volume of waste disposed or recycled, as appropriate;
- i. At WFF, recycle toner and laser cartridges, antifreeze, and packaging material; and
- j. When requested, pick up empty containers from organizations around the Center. Empty containers shall meet the definition of an empty container (See Appendix A - Definitions) before being handled as solid waste.

#### 1.8 Protective Services Division:

Maintain and operate the Greenbelt Security Operations Center and the WFF Dispatch to ensure that appropriate procedures are in place for receiving and reacting to 911 calls reporting releases to the environment.

#### 1.9 Contracting Officer Representatives (CORs) from Program/Project/Institutional Offices:

For contracts involving onsite work that is not a construction-type contract:

- a. In coordination with the MEMD, shall ensure that statements of work or other contract requirements documents provided to Procurement in support of acquisitions for onsite work/services require compliance with this directive and proper management of hazardous and non-hazardous waste.

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- b. Shall ensure that statements of work or other contract requirements documents provided to Procurement require all contractor operations to be performed in accordance with this directive and all applicable permits and regulations.
- c. Ensure that statements of work or other contract requirements documents provided to Procurement require Contractors to have an acceptable work plan in place to reduce the volume and toxicity of their hazardous waste or are following a Government-provided plan;
- d. Ensure that statements of work or other contract requirements documents provided to Procurement require Contractors who generate hazardous waste on Center attend Hazardous Waste Management Training annually and comply with applicable regulations; and Contractors support GSFC's regulatory reporting requirements.

For contracts involving onsite construction activities:

- a. In coordination with the MEMD, shall ensure that statements of work or other contract requirements documents provided to Procurement in support of acquisitions for onsite work/services require compliance with this directive and proper management of hazardous waste, including the designation of the contractor as responsible for management of hazardous and non-hazardous waste generated by their activities.
- b. Ensure that statements of work or other contract requirements documents provided to Procurement in support of acquisitions for onsite work/services require that hazardous waste generated on GSFC property be coordinated with MEMD prior to starting the work and that hazardous waste manifest is signed by a designated person by MEMD;
- c. Ensure that statements of work or other contract requirements documents provided to Procurement in support of acquisitions for onsite work/services require the contractor submits copies of waste shipment records to MEMD within 5 business days of transport to a recycling facility;
- d. Ensure that statements of work or other contract requirements documents provided to Procurement in support of acquisitions for onsite work/services require the contractor submits reports of all materials covered by Toxic Release Inventory requirements [as defined in the Emergency Planning and Community Right-to-Know Act of 1986, §§ 312 and 313 (42 USC §§ 11022 and 11023)] used or disposed of by the contractor, by March 1 of each year and at the completion of contractor activities; and
- e. Ensure that statements of work or other contract requirements documents provided to Procurement in support of acquisitions for onsite work/services require the contractor submits reports of solid waste disposal activities (weight disposed/recycled), and the procurement and use of EPA-designated items containing recycled content, and USDA biobased products to MEMD by October 31 of each year (report for fiscal year) and at the completion of the contract.

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1.10 Contracting Officers (COs) shall:

- a. For contracts involving onsite work that is not a construction-type contract shall ensure that, based on requirements provided by CORs from Program/Project/Institutional offices, solicitations and contracts contain the appropriate provisions to require compliance with this directive, as applicable.
- b. For contracts involving onsite construction activities shall ensure that, based on requirements provided by CORs from Program/Project/Institutional offices, solicitations and contracts contain the appropriate provisions to require compliance with this directive, as applicable.

1.11 The Office of Human Capital Management:

- a. In consultation with MEMD, coordinate Hazardous Waste Management Training, at least annually, for all SAA POCs, hazardous waste generators, and persons who sign hazardous waste manifests; and
- b. Ensure that records that provide the documentation necessary to meet regulatory requirements for the Hazardous Waste Management Training are generated and available.

1.12 Sounding Rocket Program Office (SRPO) at WFF:

- a. Shall generate hazardous waste manifests in coordination with MEMD when waste rocket motors are shipped from WFF Main Base to WFF Island;
- b. Coordinate the shipping dates for excessed materials of rocket motors or reactive materials with RMMO and ILMD personnel;
- c. Notify MEMD prior to shipping of rocket motors or reactive materials to OB area; and
- d. Update inventory records when shipment of rocket motors or reactive materials to OB area occurs.

1.13 Range and Mission Management Office (RMMO) at WFF:

- a. Shall operate and maintain the OB area in accordance with permit requirements;
- b. Notify MEMD of new permit conditions prior to operation of the OB area;
- c. Notify MEMD a minimum of 5 working days prior to a scheduled burn; and
- d. Retain the hazardous waste manifests in coordination with MEMD when waste rocket motors are shipped from WFF Main Base to WFF Island.

2. WASTE MANAGEMENT

2.1 Solid Waste

2.1.1 Non-hazardous Solid Waste

- a. All non-hazardous solid waste generated at GSFC shall be disposed of in appropriate trash receptacles (trash cans) and dumpsters. Recyclables should be placed in appropriate bins.
- b. To reduce vermin and feral animal activity, solid waste dumpsters shall be kept closed at all times. FMD periodically checks the contents of dumpsters to monitor adherence with this directive and to identify new recycling opportunities.
- c. Records documenting container inspections, cost of solid waste disposal, and weight of solid waste disposed are kept by FMD and reported annually to MEMD.

### 2.1.2 Prohibitions

The following items shall never be placed in a work area trash receptacle or a solid waste dumpster:

- a. Trash generated offsite from GSFC such as personal trash from home or waste from a non-GSFC construction site;
- b. Hazardous waste, universal waste, regulated asbestos-containing materials, lead based paint chips, aerosol cans, and medical waste;
- c. Liquids;
- d. Radioactive waste;
- e. Closed drums or other closed cans;
- f. Improperly cleaned/prepared containers such as paint cans and pesticide containers; and
- g. Industrial process waste or sewage sludge that has not been specifically approved for disposal.

## 2.2 Recyclable Material

- a. Various items are recycled at GSFC's Greenbelt and WFF locations. Managers at other GSFC facilities should contact appropriate authorities at their facility for recycling assistance. Recyclable material should be placed in appropriate containers and should not be placed in trash receptacles or dumpsters. In all cases, recycled material should be accumulated in a manner that prevents releases to the environment or the harborage of vermin.
- b. Records of quantity of material recycled and dollar amount received from the sale of recycled material are kept by FMD. This data shall be reported annually in accordance with NASA and regulatory reporting requirements.
- c. At WFF, contact the HELP desk at extension 4357 for pickup of recyclable material and visit the Environmental website at [http://sites.wff.nasa.gov/code250/pollution\\_prevention.html](http://sites.wff.nasa.gov/code250/pollution_prevention.html) for recycling information. At Greenbelt, visit <http://recycle.gsfc.nasa.gov> for recycling information.

### 2.2.1 Paper Products

Paper products including cardboard, white paper, mixed paper and newspaper are recycled at GSFC. Paper and newspaper collection containers are located in each building. Flattened cardboard boxes should be placed in cardboard collection containers or placed behind the container.

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### 2.2.2 Beverage and Food Containers

Aluminum cans, glass, plastics (#1 and #2 only at WFF) and steel beverage and food containers are recycled at GSFC. Containers are located in each building to collect these empty, rinsed recyclables.

### 2.2.3 Toner and Laser Cartridges

At Greenbelt, toner and laser cartridges are packaged and marked for recycling for custodians to collect. At WFF, Konica Minolta toner and laser cartridges are placed in the recycling bin located next to the copier.

### 2.2.4 Equipment and Bulk Items

Scrap metal, scrap tires (Greenbelt only), and certain items of electronics equipment are recycled at GSFC. Bulk items are excessed through property disposal processes managed by ILMD. At Greenbelt, wood pallets are collected by FMD custodial staff for recycling; at WFF, usable pallets are reuse by WFF personnel, and unusable wooden pallets are discarded and hauled away.

### 2.2.5 Packaging Material

At Greenbelt, plastics including bubble wrap are bagged and placed in single stream recycling bins. At WFF, packaging peanuts and bubble wrap are recycled. These items can be dropped off to Shipping and Receiving.

### 2.2.6 Petroleum Products/Used Oil

- Used oil, hydraulic fluid, and oil filters are recycled. Oil filters shall be hot drained; specific requirements are listed in 40 CFR 261.4 (b)(13). It is important that no other material be mixed with this oil, including hazardous waste.
- Containers shall remain closed and upright prior to disposal and labeled USED OIL or USED OIL FILTERS, as appropriate. The containers should be inspected by the facility's owning organization, similar to SAA inspections, and documented using GSFC Form 23-63.
- Request an universal waste pickup using the MOSI system at <https://mosi.ndc.nasa.gov/>; at WFF, attached a complete Hazardous Waste Disposal Inventory (HWDI), GSFC Form 23-54 to the MOSI request.
- Antifreeze is recycled in-house by the ILMD. At Greenbelt, antifreeze that cannot be recycled in-house is recycled offsite.

### 2.2.7 Chemicals for Reuse

Code 200 provides a service whereby excess, unused, or unneeded chemicals may be made available to potential users. Call 6.4667 at Greenbelt or 1718 at WFF to find out what materials are available.

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Chemical containers shall be unopened or tightly closed, in date (no expired), in excellent condition, and labeled.

### 2.2.8 Ozone Depleting Substances (ODSs) and substitute ODSs

ILMD coordinates with FMD for the reclaiming of ODSs and substitute ODSs from all out-of-service equipment prior to disposal. Only certified personnel (see Section 3.2) shall handle ODSs and substitute ODSs. Defective or partially used compressed gas cylinders containing an ODS should be returned to the manufacturer when possible, coordinating returns with the manufacturer or ILMD. Disposal of cylinders that cannot be returned to the manufacturer should be coordinated with MEMD.

### 2.2.9 Universal Waste

Batteries (other than alkaline), fluorescent light tubes (and other mercury-containing lamps), mercury-containing articles, and (at Greenbelt only) PCB-containing light ballasts are recycled by MEMD. These items are managed under the Universal Waste regulations of 40 CFR 273. Containers holding these items are labeled USED or UNIVERSAL WASTE, followed by contents (examples: UNIVERSAL WASTE – BATTERIES or USED BATTERIES, or USED LAMPS). The date that the first universal waste item is placed in the container shall be entered onto the label. Universal waste container requirements:

- a. Structurally sound;
- b. Adequate to prevent damage to the container's contents that could result in a release of hazardous constituents;
- c. Compatible with the contents;
- d. Kept closed except when adding or removing waste; and
- e. Free of evidence of leakage, spillage or damage that could cause leakage.

### 2.2.10 Precious Metals

Disposal of precious metals, solutions and materials containing precious metals is coordinated with the ILMD Property Disposal Officer. All materials shall be managed in accordance with NPR 4100.1, NASA Materials Inventory Management Manual, and NPR 4300.1, NASA Personal Property Disposal. The Defense Logistics Agency - Disposition Services provides support to NASA to effect the recovery of precious metals from solutions containing low concentrations of precious metals, and receive turn-ins of scraps, film, electronic equipment, and other precious metals-bearing materials.

## 2.3 Specific Management Requirements for Construction and Demolition (C&D) Debris and Landscape Wastes

### 2.3.1 C&D Debris

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C&D debris shall be managed in accordance with permits, plans and requirements of contract and design documents for individual projects. The following requirements apply to C&D debris:

- a. C&D materials meeting the definition of hazardous waste shall be managed in coordination with MEMD and in accordance with hazardous waste management requirements;
- b. C&D concrete, recycled concrete aggregate and similar materials are PROHIBITED for use as fill on site unless specifically approved by and coordinated with MEMD. Stormwater and/or groundwater can come into contact with the materials and produce high pH leachate, impacting downstream water quality.
- c. Erosion and sediment controls shall be provided to prevent storm water runoff of debris (e.g., soil stockpiles, loose materials, etc.) for storage of C&D debris areas;
- d. Do not dispose or abandon C&D debris at GSFC;
- e. Get approval, in writing, by FMD for storage location of C&D debris;
- f. Post the name of the responsible organization or company, a contact name and phone number, and an identification of the associated project at the C&D debris areas; and
- g. Return C&D debris storage areas to their original condition at the completion of the storage activity.

### 2.3.2 Landscaping Waste

Do not dispose landscaping wastes at GSFC except for those wastes specifically approved and in locations identified by FMD.

### 2.3.3 Outside Waste

No waste from outside GSFC shall be disposed of on GSFC property.

## 2.4 Hazardous Waste

Hazardous waste is defined by regulation and is not always obvious to the untrained person. All materials that may be considered chemicals, hazardous materials or in any way dangerous is evaluated by MEMD before disposal. The following list cites typical examples of hazardous wastes generated at GSFC. These hazardous and regulated wastes shall be managed and disposed of in accordance with this directive:

- a. Aerosol cans;
- b. Pesticides;
- c. Fuels and oil;
- d. Spent solvents, acids, and bases;
- e. Solvent wipes;
- f. Epoxy;
- g. Antifreeze;
- h. Toxic materials;

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- i. Heavy metals;
- j. Solder waste;
- k. Reactive waste;
- l. Corrosive and flammable materials; and
- m. Paints and Paint-related Materials (e.g., thinners, paint-contaminated rags).

#### 2.4.1 One-time Hazardous Waste Generators

Operations that generate very small quantities of hazardous waste on an infrequent basis (defined as one time in a year) shall maintain the waste at the point of generation. Coordinate with MEMD prior to waste generation and for a hazardous waste pickup in accordance with Section 2.4.6.2. Removing the waste as soon as the container(s) are filled will prevent the need for an SAA. Infrequent hazardous waste generators meet the training, container, and labeling requirements of hazardous waste generators. Do not bring hazardous waste directly to a Less-Than-90-Day Facility.

#### 2.4.2 Construction Projects Managed by FMD

Construction projects managed by FMD shall incorporate the waste management requirements of Section 1.9 in the contracts. FMD should ensure that contractors meet these requirements.

#### 2.4.3 Satellite Accumulation Area (SAA) Management

Work areas that regularly generate hazardous waste have a designated SAA for storing hazardous waste from nearby point(s) of generation. MEMD will designate SAAs in coordination with the generators. Each SAA is managed by a single designated POC and alternate POC. The POC and alternate is designated by the responsible managing organization. SAAs shall meet the following requirements:

- a. Accommodate the necessary equipment to safely store and segregate the hazardous waste;
- b. Be under the control of the hazardous waste generator;
- c. Be at or near the point(s) of hazardous waste generation;
- d. Serve point(s) of generation that allow for coordination of pickups without exceeding the quantity limits specified in 2.4.3.1;
- e. Coordinate with MEMD for waste pickup when quantities approach the limits specified in 2.4.3.1;
- f. Do not move waste from one SAA to another SAA;
- g. At the end of each work shift, the container shall be placed in the SAA; and
- h. Keep containers in the SAA while awaiting pickup.

##### 2.4.3.1 SAAs Quantity Limits

- b. For volumes expected to exceed SAA limits, arrangements shall be made with MEMD prior to hazardous waste generation.

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#### 2.4.3.2 Container Requirements

Empty containers shall meet the definition of an empty container (See Appendix A - Definitions) before being handled as solid waste. Empty containers with a yellow label are turned in to ILMD using the MOSI system at <https://mosi.ndc.nasa.gov/> to ensure an accurate inventory and environmental reporting. Aerosol cans are not considered empty containers. Container requirements include:

- a. Be in good condition with no leaks or materials on the outside;
- b. Be made of, or lined with, a material compatible with the hazardous waste to be stored;
- c. Be properly marked and labeled. If the container has been reused, mark our all information which does not accurately describe the container's contents;
- d. Be closed and "wrench tight," except when adding or removing waste;
- e. Allow for head space of 3 inches in 55-gallon drums and 1 inch in 1-gallon containers;
- f. Not be handled or stored in a manner to rupture the container or cause it to leak;
- g. Be protected from extreme temperatures and weather elements; and
- h. Meet safety and fire protection requirements.

#### 2.4.3.3 Labeling Requirements

- a. Labels shall clearly state Hazardous Waste, an indication of the hazards of the contents, and identify the contents (WFF only); and
- c. Containers shall be dated as soon as they are moved to the Less-Than-90-Day Facility.

#### 2.4.3.4 Storage Requirements

Appropriate storage aids (e.g., flammable cabinets, acid cabinets, shelving) shall be used to comply with applicable Occupational Safety and Health Administration requirements and National Fire Protection Association codes. Guidelines for the storage of hazardous chemicals are posted on the Safety 1st web site at <https://safety1st.gsfc.nasa.gov/Chemical-Safety-Program>. These guidelines specifically address hazardous chemicals. Storage requirements include:

- a. Means of emergency communications (e.g., phone);
- b. Segregation of non-compatible wastes;
- c. Segregate unused product from waste;
- d. Supply secondary containment to containers with liquid materials (see Section 2.4.3.5) in the event of a leak;
- e. Keep drums and containers away from floor drains unless the drains are plugged or filled;
- f. Ventilate hazardous waste storage areas; and
- g. Meet safety and fire protection requirements.

#### 2.4.3.5 Secondary Containment

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- a. Provide separate secondary containment (e.g., drip pans, dike areas) for each group of compatible materials;
- b. The secondary containment minimizes the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment ; and
- c. Report spills in secondary containment.

#### 2.4.3.6 Signage

SAAAs are posted with signage identifying the SAA, responsible organization, and POC including contact phone numbers. Appropriate safety signage are posted such as “Flammable Liquid Storage Area,” “No Smoking, Eating, or Drinking.”

#### 2.4.3.7 Inspection

SAA POCs should inspect SAAAs periodically, at least monthly, when hazardous waste containers are present; weekly for construction SAAAs. The POC or other designated individual shall check the containers to see that they are in accordance with this directive and do not display signs of corrosion. Record the inspection on GSFC Form 23-66 and maintained on file for the current calendar year at the facility (MEMD will maintain inspection records for construction SAAAs). MEMD will also inspect all SAAAs at least yearly (weekly for construction SAAAs; monthly for new building construction SAAAs) and maintain records of these inspections using Form 23-66.

#### 2.4.3.8 Safety Data Sheets (SDSs)

A SDS and a waste profile (see Appendix A - Definitions) that most closely describes the hazardous waste are available for each hazardous waste generated.

#### 2.4.3.9 Spills

Spills are releases of petroleum products, antifreeze, chemicals or any harmful substance to the environment (i.e. on the floor, on the ground, down a drain).

- a. All spills, including oil leaks from traveling vehicles on Center (personal, contractor or government vehicle), and water leaks that overflow to hazardous materials/waste storage areas or any other areas of concern, must be reported immediately by dialing 911 from a Center phone. From a cellular phone: at Greenbelt dial 301.286.9111; at WFF dial 757.824.1333.
- b. Protect yourself and those in the vicinity from the release.
- c. Spill response procedures should be posted near the SAA; MEMD will provide the proper signs to the SAAAs POCs.

#### 2.4.3.10 Housekeeping

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SAs should be kept clear of excess combustible materials. Containers should be stored in a stable and orderly manner. Do not store trash and debris near an SAA.

#### 2.4.3.11 Supplies

Supplies such as labels, signs, appropriate spill materials, storage cabinets, containers, etc., are the responsibility of the owning organizations.

#### 2.4.4 Less-Than-90-Day Facility for Hazardous Waste

MEMD is responsible for managing the primary Less-Than-90-Day Facilities. Weekly inspections of these facilities are required. Inspection records are maintained by MEMD.

#### 2.4.5 Transferring and Handling of Hazardous Waste

When placing hazardous waste in containers at the SAs or a Less-Than-90-Day Facility, it is important to follow safe work practices. Engineering controls and safe work practices are the first steps toward preventing exposure and spills. Safety requirements include:

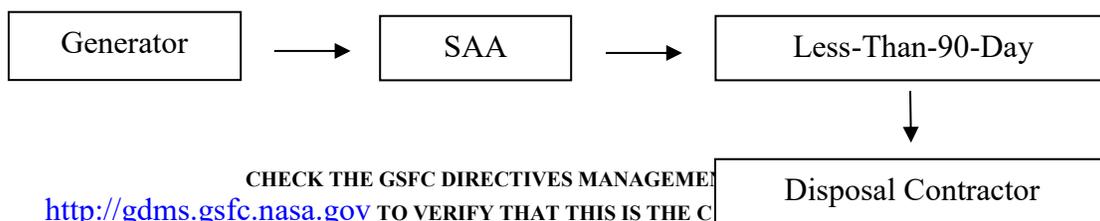
- a. Always use a funnel when transferring liquid hazardous waste;
- b. Transfer areas will be adequately ventilated for the materials involved;
- c. Sources of heat, flames, and sparks are prohibited near hazardous waste;
- d. Ground everything that comes in contact with flammable hazardous waste when transfers occur.
- e. Never mix two hazardous wastes; and
- f. Use appropriate PPE when handling hazardous waste.

#### 2.4.6 Disposal of Hazardous Waste

Hazardous waste shall be properly disposed of. Disposal of all hazardous waste at GSFC is coordinated by MEMD.

##### 2.4.6.1 Hazardous Waste Disposal Procedures

The following process and procedures apply to GSFC Greenbelt and WFF:



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- a. Accumulate hazardous waste in the designated SAA;
- b. Notify MEMD for a waste pickup before the SAA accumulates its quantity limits (see section 2.4.3.1);
- c. Request a hazardous waste pickup using the MOSI system at <https://mosi.ndc.nasa.gov/>. At WFF, attached a complete Hazardous Waste Disposal Inventory (HWDI), GSFC Form 23-54 to the MOSI request;
- d. Provide SDSs to MEMD at pick up upon request; and
- e. MEMD will transfer hazardous waste to a Less-Than-90-Day Facility and manage the collected information.

#### 2.4.6.2 Waste Removal from Areas Other Than an SAA

The infrequent generator shall request MEMD to pick up hazardous waste from the point of generation. Bringing hazardous waste directly to a Less-Than-90-Day Accumulation Facility is prohibited. Infrequent generators meet the training, container, quantity, and labeling requirements of a waste generator. The generator will request pickup directly from the point of generation if:

- a. The hazardous waste is placed in a container that impedes work in the production area/process;
- b. The hazardous waste is not part of the SAA approved wastes;
- c. The hazardous waste is not compatible with other hazardous waste at the SAA;
- d. It is safer if MEMD comes directly to the point-of-generation for turn-in.

#### 2.4.6.3 Treatment of Hazardous Waste

- a. Treatment of hazardous waste is prohibited. Coordinate with MEMD any treatment of hazardous waste before starting treatment operations.
- b. The Range and Mission Management Office (RMMO) operates an OB area at WFF Island for the thermal treatment of rocket motors. Manifests are generated by SRPO in coordination with MEMD when waste rocket motors are shipped from WFF Main Base to WFF Island. The record custodians for the generated manifest, a multi-copy form, are the Range and Mission Management Office for TSDf copy, ILDM for the Transporter copy, and MEMD for the Generator copy. Other records associated with rocket motors, including waste sampling analyses, the permit, the ICP, monitoring reports, and other operating records, inspections, and waste reports, are kept at the OB Area office by RMMO with duplicates provided to MEMD.

#### 2.4.7 Waste Minimization

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Generators should reduce the volume and toxicity of waste whenever possible. Efforts to achieve waste reduction should concentrate on the source rather than taking an end-of-pipe approach. Suggestions to accomplish this include:

- a. Evaluate hazardous material substitution with environmentally friendly materials and coordinate with ILMD for the acquisition of possible substitutes;
- b. Turn in unused and non-expired materials to MEMD for reuse (see section 2.2.7);
- c. Minimize shelf-life loss by ordering materials only in the quantities and container sizes needed;
- d. Pursue environmentally friendly systems to implement process changes and equipment modification;
- e. Acquire material recycling systems;
- f. Perform regular maintenance and good housekeeping to avoid equipment leaks and materials spills;
- g. Purchase recycled products; and
- h. Segregate non-hazardous wastes from hazardous wastes to prevent cross-contamination.

## 2.5 Other Regulated Wastes

### 2.5.1 Asbestos

Asbestos removal shall be performed by a licensed asbestos removal professionals and is typically disposed of by the removal contractor. An approved Asbestos Abatement Plan is approved by the Safety Division (SD) for Greenbelt, and the FMD for WFF prior to any asbestos removal and disposal is accomplished.

### 2.5.2 Lead

Lead-based paint abatement shall be performed by a licensed lead removal professional and is disposed of by MEMD. The evaluation of suspect lead-containing materials is coordinated with SD at Greenbelt and FMD at WFF. An approved Lead Abatement Plan is approved by SD for Greenbelt, and FMD for WFF prior to any lead-based paint removal and disposal is accomplished.

### 2.5.3 Polychlorinated Biphenyls (PCBs)

PCBs are managed in accordance with the TSCA regulations under 40 CFR 761. If the waste is considered to be a hazardous waste, it shall be managed in accordance with state-specific regulations.

#### 2.5.3.1 PCBs in Maryland

- a. In Maryland, PCBs are managed as hazardous waste. Articles that may contain PCBs cannot be disposed of until tested, except for PCB-containing light ballasts managed as Universal Waste (see section 2.2.9 Universal Waste). Articles containing PCB concentrations of 0-50 parts per million (ppm) are considered to be non-PCB. Most articles with 50-500 ppm PCB are considered PCB-contaminated, and are classified as hazardous waste under Maryland law. Most articles with PCB

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concentrations greater than 500 ppm are considered to be PCB-containing and are classified as acute hazardous waste under Maryland law.

- b. Contaminated soils and other solids recovered from spills or removed from old disposal sites containing PCB at concentrations of less than 50 ppm are not hazardous wastes and can be disposed of at a site approved by MEMD.
- c. Any residue or contaminated soil, water, or other debris mixture containing PCBs at concentrations greater than 50 ppm is classified as hazardous waste. Items having PCB concentration above 500 ppm are classified as acute hazardous waste.
- d. MEMD will sample the fluid from suspected PCB articles to determine the concentration of PCB and assist in the disposal of items containing greater than 50 ppm PCB. PCB articles with no further use at Greenbelt will be managed in accordance with hazardous waste requirements. Out-of-service PCB articles with concentrations greater than 50 ppm are marked indicating that they contain PCB and their placed-in-storage date. Articles with greater than 50 ppm shall be disposed of within 9 months from the placed-in-storage date.

#### 2.5.3.2 PCBs in Virginia

- a. In Virginia, solid wastes containing PCB concentrations between 1 ppm and 50 ppm are restricted to disposal in sanitary landfills or industrial landfills with leachate collection, liners and appropriate groundwater monitoring.
- b. PCB bulk product waste with concentrations greater than 50 ppm shall be reported to the state to determine disposition, and approval will be determined on a case-by-case basis.
- c. PCB articles such as PCB-contaminated electrical equipment, PCB hydraulic machines, or pipes that have previously contained PCB concentrations 50-500 ppm and which have been drained may be disposed of in a sanitary landfill with leachate collection, liners, and groundwater monitoring.
- d. PCB remediation waste (such as soils, sediments, dredged materials, and sludge) with PCB concentrations equal to or greater than 50 ppm may not be disposed of in a sanitary landfill. However, PCB cleanup waste (e.g., non-liquid cleaning materials and personal protective equipment at any concentrations) may be disposed of in a sanitary landfill with liners and a leachate collection system.

#### 2.5.3.3 PCB Reports

The MEMD shall prepare an annual PCB report for file, by July 1 of each calendar year, listing the following PCB activities for the prior year: facility name, calendar year, signed manifests, Certificates of Disposal, weight of PCB wastes, serial number or other identification number, date removed from service, date of transport, date of disposal, and record of conversations to confirm the receipt of PCB wastes.

#### 2.5.4 Explosives

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- a. Any item suspected of containing explosive material or waste are handled by trained individuals. Employees who discover potential Unexploded Ordnance (UXO) or Munitions and Explosives of Concern (MEC) shall not handle them; leave suspected UXO and MEC alone and call 911 from any internal phone on center. From a cellular phone: at Greenbelt dial 301.286.9111; at WFF dial 757.824.1333.
- b. Employees who require disposal of waste containing explosives should coordinate disposal with SD at Greenbelt and with the Explosive Safety Officer at WFF. If a waste contains explosive materials, it shall be properly labeled and stored with like waste materials in an explosive storage building at WFF, managed by the Explosive Safety Officer. MEMD arranges for the disposal of waste containing explosives that are not rocket motors, and coordinates with SRPO for the disposal of rocket motors at the OB Area.
- c. Explosives designated for disposal are classified as hazardous waste. Hazardous waste shall only be transported on public roads by a permitted hazardous waste transporter using a hazardous waste manifest. MEMD will assist in completing the manifest prior to transporting. Manifests are kept on file by SRPO, ILMD, and MEMD.

#### 2.5.5 Radioactive Waste

The GSFC Radiation Protection Officer coordinates the disposal of radioactive materials. Refer to GPR 1860.1, Ionizing Radiation Protection. The Radiation Protection Officer coordinates with the MEMD regarding any suspected mixed waste.

#### 2.5.6 Medical Waste

- a. Any item suspected of containing medical waste is handled only by trained individuals. An employee who sees something suspected of containing medical waste shall leave it alone and call 911 from any internal phone on Center. From a cellular phone: at Greenbelt dial 301.286.9111; at WFF dial 757.824.1333.
- b. Medical waste generated by Center activities shall not be disposed of in work area waste receptacles. All medical waste is segregated and labeled. Disposal of medical waste is coordinated through the MEMD Health Unit. The MEMD Health Unit maintains all required medical waste records.

### 3. TRAINING

#### 3.1 Hazardous Waste Management Training

Hazardous Waste Management Training is required for persons involved in generating hazardous wastes. This training teaches hazardous waste management procedures and familiarizes employees with emergency procedures. Each organization and contractor will maintain training records for each of their individuals who handle hazardous waste. This training is required on an annual basis for the following personnel:

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- a. SAA POCs and alternate POCs;
- b. Personnel responsible for operating the OB area;
- c. Hazardous Waste Generators during construction; and
- d. Persons responsible for signing manifests.

### 3.2 Ozone Depleting Substances (ODS) and substitute ODS Certification

3.2.1 The United States Environmental Protection Agency (EPA) has established a technician certification program for persons ("technicians") who perform maintenance, service, repair, or disposal that could be reasonably expected to release refrigerants into the atmosphere. The definition of "technician" specifically includes and excludes certain activities as follows:

- a. Attaching and detaching hoses and gauges to and from the appliance to measure pressure within the appliance;
- b. Adding refrigerant to (for example "topping-off") or removing refrigerant from the appliance;
- c. Any other activity that violates the integrity of the MVAC-like appliances, and small appliances;
- d. In addition, apprentices are exempt from certification requirements provided the apprentice is closely and continually supervised by a certified technician.

3.2.2 The EPA has developed four types of certification:

- a. For servicing small appliances (Type I).
- b. For servicing or disposing of high- or very high-pressure appliances, except small appliances and MVACs (Type II).
- c. For servicing or disposing of low-pressure appliances (Type III).
- d. For servicing all types of equipment (Universal).

3.2.3 Technicians are required to pass an EPA-approved test (see <http://www.epa.gov/ozone/title6/608/technicians/certoutl.html>) given by an EPA-approved certifying organization (see <http://www.epa.gov/ozone/title6/608/technicians/608certs.html>) to become certified under the mandatory program. Section 608 Technician Certification credentials do not expire.

## 4. UNIDENTIFIED MATERIALS

When unidentified or abandoned materials are found on Center, the proper response is to call MEMD for assessment and disposal/removal. Assessment and disposal/removal of abandoned materials can be an expensive process that can be prevented by responsible handling of materials. The MEMD maintains all waste analyses records.

## 5. PLANNING AND CONSIDERATIONS FOR NEW OR RENOVATED FACILITIES

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To better manage hazardous waste at GSFC, it is important to identify future waste generators. When planning and designing a new or renovated facility it is important to consider hazardous wastes and the processes that will generate them. The best way to control and plan for hazardous waste generation is during the conceptual design stage. Environmental planning and review of proposed actions shall be conducted in accordance with GPR 8500.1, Environmental Planning and Impact Assessment. At a minimum, the following should be considered during planning:

- a. Define who will use chemicals and what type of chemicals will be used;
- b. Determine what processes will generate wastes;
- c. Estimate the volume of waste that will be generated;
- d. Consider alternative chemicals or processes that produce less toxic waste or generate minimal waste;
- e. In coordination with the MEMD, locate the closest existing SAA;
- f. If there is no existing SAA nearby, determine the necessary location and materials needed for proper handling and storage (e.g., storage cabinets, PPE); and
- g. Consider the building and process layout (e.g., drain locations, ventilation, access, security, adjacent operations).

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## APPENDIX A - DEFINITIONS

A.1 Acute Hazardous Waste - A hazardous waste which is specifically listed in Environmental Protection Agency (EPA) regulations 40 CFR 261.33(e), or in state-specific regulations COMAR 26.13.02.09A(2) and 9 VAC-20-60-261.

A.2 Apprentice - Any person who is currently registered as an apprentice in service, maintenance, repair, or disposal of appliances with the U.S. Department of Labor's Bureau of Apprenticeship and Training (or a State Apprenticeship Council recognized by the Bureau of Apprenticeship and Training).

A.3 Asbestos - A generic term applying to a number of naturally occurring mineral silicates that separate into fibers when crushed or processed. All forms of asbestos have a tendency to break into a dust of tiny fibers that suspend in the air and can be inhaled and swallowed.

A.4 Certificate of Disposal - A document, provided to the MEMD by a Treatment, Storage, and Disposal Facility, that details the final disposal or destruction of a hazardous waste.

A.5 Construction and Demolition Debris - Waste building materials, packaging, and rubble resulting from construction, renovation, repair, and demolition operations on buildings, structures, pavements, etc. Construction and demolition debris meeting the definition of hazardous waste shall be managed in accordance with hazardous waste management requirements (e.g., asbestos-containing materials, materials with lead-based paint coatings, lighting wastes containing mercury or polychlorinated biphenyls (PCBs), electrical components containing oil or PCBs, and appliances and other equipment containing potentially hazardous materials such as Freon).

A.6 Corrosivity - The waste characteristic that renders aqueous wastes (solid wastes dissolved in water) hazardous. Corrosive aqueous wastes have a pH less than or equal to 2 (acidic) or greater than or equal to 12.5 (alkaline). Corrosive liquid wastes readily corrode or dissolve metal or other materials, and/or injure flesh.

A.7 Management Operations Services and Information (MOSI) System - Code 200's web-based work request system used to request most facilities, security, environmental, and logistics services.

A.8 Empty Container - A container or liner from which all wastes have been removed by using the practices commonly employed to remove material from that type of container, and no more than 1 inch of residue remains on the bottom for containers of 110 gallons or less, or no more than 3 % by weight of the capacity remains for containers of 110 gallons or less, or no more than 0.3 % by weight of the capacity remains for containers greater than 110 gallons. A hazardous waste compressed gas container is empty when the pressure in the container approaches atmospheric. All aerosol cans are never considered to be empty and are collected by MEMD. A container or liner that contained an acute hazardous waste is empty when the container or liner has been triple-rinsed or cleaned by another tested equivalent method.

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A.9 Explosives - Materials capable of causing an explosion or releasing poisonous fumes when exposed to air, water, or other chemicals.

A.10 Hazardous Waste - A solid waste (gas, liquid, or solid state) whose properties pose a threat to human health or the environment. A solid waste is classified as hazardous if it is specifically listed in 40 CFR 261, or in state-specific regulations COMAR 26.13.02 or 9 VAC 20-60-261 or if it exhibits ignitability, corrosivity, reactivity, and/or toxicity characteristics.

A.11 Hazardous Waste Generator - Any person whose act or process produces a hazardous waste that is identified or listed in 40 CFR 261, or in COMAR 26.13.02. In 9 VAC 20-60-261, a generator is a person whose act first causes a hazardous waste to become subject to regulation.

A.12 Hazardous Waste Manifest - A Hazardous Waste Manifest is a shipping document that tracks hazardous waste from the point of generation to ultimate disposal.

A.13 Ignitability - The hazardous waste characteristic that identifies wastes that can readily catch fire and sustain combustion as defined in 40 CFR 261.21, or in state-specific regulations COMAR 26.13.02.11 or 9 VAC 20-60-261. These wastes have a flash point of less than or equal to 140 degrees Fahrenheit (60 degrees Centigrade), or are classified as an oxidizer in 49 CFR 173.151.

A.14 Integrated Contingency Plan (ICP) - A document that consolidates multiple emergency plans, each required by a different set of regulations, into one functional emergency response plan. ICPs are typically site- or facility-specific. There are separate ICPs for Greenbelt and WFF, both controlled by MEMD.

A.15 Landscaping Waste - Solid organic materials of a natural origin typically produced during landscaping and grounds maintenance operations. These wastes include bushes, trees, limbs, collected leaves, grass clippings, wood chips from grinding of trees and limbs, and like materials.

A.16 Less-Than-90-Day Facility - Facilities at Greenbelt and WFF operated by MEMD for staging wastes picked up from Satellite Accumulation Areas pending disposal.

A.17 Listed Waste - A waste that is listed and therefore hazardous because it appears on any one of the hazardous waste lists contained in 40 CFR 261.30 through 40 CFR 261.33, or in state-specific regulations COMAR 26.13.02.15 through COMAR 26.13.02.19 and/or 9 VAC 20-60-261.

A.18 Medical Waste - Any special medical waste as defined in state regulations COMAR 26.13.11.02 and solid waste as defined in state regulations 9 VAC 20-120-140 and 9 VAC 20-120-150. Medical waste is not regulated at the Federal level.

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A.19 Mixed Waste - Waste that contains both: 1) Resource Conservation and Recovery Act (RCRA) hazardous waste, and 2) source, special nuclear, or byproduct material subject to the Atomic Energy Act of 1954 as defined in 40 CFR 266.210, or in state-specific regulations COMAR 26.13.02, COMAR 26.15.02 or 9 VAC 20-60-266.

A.20 MVAC-like appliance - Mechanical vapor compression, open-drive compressor appliances used to cool the driver's or passenger's compartment of a non-road vehicle, including agricultural and construction vehicles. This definition excludes appliances using HCFC-22.

A.21 Open Burning (OB) Area - A permitted facility for treating obsolete munitions and waste energetic materials (e.g., propellants and explosives) to remove the reactivity characteristic.

A.22 Ozone Depleting Substances (ODS) - Any substance containing chlorofluorocarbons, chlorinated solvents, and/or having characteristics of depleting tri-atomic oxygen.

A.23 Polychlorinated Biphenyls (PCB) - Chlorinated hydrocarbons having a heavy oil-like consistency, a high boiling point, a high degree of chemical stability, low flammability, and low electrical conductivity, as defined in accordance with 40 CFR 761.3, or in state-specific regulations COMAR 26.13.02.19. Virginia provides simplified definitions of certain PCB items in 9 VAC 20-80-650, but these definitions do not alter requirements included in 40 CFR 761. PCBs and PCB byproducts are highly toxic and persistent. PCB is found in electrical equipment such as transformers, capacitors, and fluorescent tube ballasts. In Maryland, PCB-contaminated oil is a listed hazardous waste if it contains 50-500 ppm of PCBs and an acute hazardous waste if it contains over 500 ppm of PCBs.

A.24 Point of Generation - The work area (e.g., laboratory fume hood) where wastes initially accumulate.

A.25 Precious Metals - The metals silver, gold, platinum, palladium, rhodium, ruthenium, iridium, and osmium.

A.26 Radioactive Waste - Waste materials that spontaneously emit ionizing radiation and are regulated by the Nuclear Regulatory Commission or a state authority as a radioactive material. Radioactive waste sorts into six general categories: spent nuclear fuel from nuclear reactors; high-level radioactive waste from the reprocessing of spent nuclear fuel; transuranic radioactive waste resulting mainly from manufacture of nuclear weapons; uranium mill tailings from the mining and milling of uranium; low-level radioactive waste, generally in the form of radioactively contaminated industrial or research waste; and naturally occurring radioactive material.

A.27 Reactivity - The hazardous waste characteristic that identifies wastes that readily explode or undergo violent reactions. Wastes that are normally unstable, react violently with water, form potentially explosive mixtures with water, form toxic gases when mixed with water, are capable of

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detonation or explosive reaction, or are a forbidden Class A or Class B explosive would be classified as hazardous based on their reactivity.

A.28 Resource Conservation and Recovery Act - The Resource Conservation and Recovery Act (RCRA) is the public law that creates the framework for the proper management of hazardous and non-hazardous solid waste. The law describes the waste management program mandated by Congress that gave EPA authority to develop the RCRA program. The term RCRA is often used interchangeably to refer to the law, regulations and EPA policy and guidance.

A.29 Safety Data Sheet (SDS) - A document designed to provide workers and emergency personnel with the proper procedures for storing and handling various chemicals. The SDS provides information in sixteen areas: Chemical/Product Identification, Hazard Identification, Composition/Information on Ingredients, First Aid Measures, Fire Fighting Measures, Accidental Release Measures, Handling and Storage, Exposure Controls/Personal Protection, Physical and Chemical Properties, Stability and Reactivity, Toxicological Information, Ecological Information, Disposal Considerations, Transport Information, Regulatory Information, Other Information.

A.30 Technician - Any person who performs maintenance, service, or repair that could reasonably be expected to release class I (CFC) or class II (HCFC) substances from appliances, except for MVACs, into the atmosphere. Technician also means any person performing disposal of appliances, except for small appliances, MVACs, and MVAC-like appliances that could be reasonably expected to release class I or class II refrigerants from appliances into the atmosphere.

A.31 Satellite Accumulation Area (SAA) - An area designated by MEMD to be a staging area for hazardous waste until proper disposal is arranged with MEMD.

A.32 Solid Waste - Any solid, liquid, or contained gaseous material that is no longer used, and is either recycled, thrown away, or stored until sufficient quantities are accumulated for treatment or disposal.

A.33 Spent Materials - Materials that have been used and can no longer serve the purpose for which they were produced without processing. Examples are solvents, acids, or bases that are no longer suitable for their intended purpose.

A.34 Toxicity - The hazardous waste characteristic that identifies wastes that are likely to leach dangerous concentrations of any of the toxic chemicals listed in 40 CFR 261.24, or in state-specific regulations COMAR 26.13.02.14 and 9 VAC 20-60-261, above specified levels.

A.35 Treatment, Storage, and Disposal Facility (TSDF) - A facility having a state permit to treat hazardous waste, dispose of hazardous waste, or store hazardous waste for more than 90 days.

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A.36 Universal Waste - Batteries, pesticides, thermostats, or lamps managed under the universal waste requirements of 40 CFR 273, or in state-specific regulations COMAR 26.13.10.06-.25 and 9 VAC-20-60-273.

A.37 Waste Profile - A description of the physical and chemical properties of a material, taking into account the process from which the waste was generated.

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## APPENDIX B - ACRONYMS

C&D	Construction and Demolition
CFR	Code of Federal Regulations
COMAR	Code of Maryland Regulations
DEQ	Department of Environmental Quality
EPA	Environmental Protection Agency
FMD	Facilities Management Division
GPR	Goddard Procedural Requirements
GSFC	Goddard Space Flight Center
HWDI	Hazardous Waste Disposal Inventory
ICP	Integrated Contingency Plan
ILMD	Information & Logistics Management Division
MEMD	Medical and Environmental Management Division
MOSI	Management Operations Services and Information
OB	Open Burning Area
ODS	Ozone Depleting Substances
SD	Safety Division
PCBs	Polychlorinated Biphenyls
POC	Point of Contact
PPE	Personal Protective Equipment
ppm	parts per million
RCRA	Resource Conservation and Recovery Act
RMMO	Range and Mission Management Office
SAA	Satellite Accumulation Area
SATERN	System for Administration, Training, and Educational Resources for NASA
SDS	Safety Data Sheet
SRPO	Sounding Rocket Program Office
TSCA	Toxic Substance Control Act
TSDF	Treatment, Storage, and Disposal Facility
USC	United States Code
VAC	Code of Virginia

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### CHANGE HISTORY LOG

Revision	Effective Date	Description of Changes
Baseline	04/26/04	Initial Release
A	02/15/05	Changes made to update document references and clarify all requirements to clearly distinguish them from supporting text in accordance with the NASA rules review. Changed to GPR template.
B	05/22/08	Changes made to update the requirements for recycling, the change in 911 transfer to the Security Division and added hyperlinks.
C	03/10/10	Administratively revised to show Safety and Environmental Division (S&E) changed to Medical and Environmental Management Division (MEMD) due to reorganization.
D	08/05/13	<ul style="list-style-type: none"> <li>• Some grammatical corrections throughout the document.</li> <li>• Format change to comply with new GPR template.</li> <li>• Updated record retention requirements.</li> <li>• Updated manifest statement.</li> <li>• Added statement to ensure construction hazardous waste in pre-coordinated with MEMD.</li> <li>• Labeled containers to accumulate hazardous waste in now provided by MEMD.</li> <li>• At Greenbelt, waste pickups and empty container pickups are requested using the eMOD system.</li> <li>• Removed requirement to coordinate recycling of Halon with Kennedy Space Center (KSC).</li> <li>• Re-define infrequent hazardous waste generator.</li> <li>• Remove requirement for spill kits on SAAs.</li> <li>• Added requirement for weekly SAA inspections for construction SAAs.</li> <li>• Added requirement for Hazardous Waste Notebook at Greenbelt.</li> <li>• Added new requirements for lead.</li> <li>• Slightly changed requirements for management of explosives and radioactive materials.</li> <li>• Define ODS certification requirements.</li> </ul>
E	04/07/14	Added clarification to Section 2.4.3.7 about construction of new building and frequency of SAA inspection by MEMD: monthly for new building construction SAAs.
F	01/14/15	Change language in section 2.4.3.2 Labeling Requirements to comply with Federal and State regulations by combining a. and c.; also deleted d. because it is not required.

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G	08/06/18	<ul style="list-style-type: none"> <li>• Globally changed eMOD to MOSI and added link.</li> <li>• Globally corrected grammar and punctuation errors.</li> <li>• Globally changed Security to Protective Services Division; Occupational Safety and Health for Safety Division.</li> <li>• Globally deleted the word “staging” from Less-than-90-Facility.</li> <li>• Globally reevaluated the used of “shall” and changed as appropriate. As a result, the order of requirements changed and the phrasing also changed.</li> <li>• Globally changed formatting to ensure every paragraph is numbered.</li> <li>• Combined 1.4.1 with 1.5, now 1.4.1.</li> <li>• P.8 - deleted GSFC Form 22-66, not required by regulation.</li> <li>• P.8 - changed “Waste Analysis” to “Waste Characterization Records” and added retention schedule.</li> <li>• P.9 - changed to reflect current methods of measurement/verification.</li> <li>• 1.3 - m. changed “accomplished” to “followed”.</li> <li>• 1.4 - i. (previously h.) added “from a new process for which containers have not been issued by MEMD.”</li> <li>• 1.8 (previous 1.9) - changed to include WFF.</li> <li>• 1.9 - added responsibilities for COR.</li> <li>• 1.10 - changed responsibilities.</li> <li>• Previous 1.12 - deleted section.</li> <li>• 1.13 (previous 1.14) - c. added “a minimum of”.</li> <li>• 2.2.4 - added procedure for WFF.</li> <li>• 2.2.7 - deleted “accompanied by a SDS”.</li> <li>• 2.2.8 - added “and substitute ODSs” to title and content.</li> <li>• 2.3.1 - deleted “temporary” from section; b. reworded section to make it clearer.</li> <li>• 2.3.2 - deleted last sentence.</li> <li>• 2.4 - deleted “considered hazardous waste until” and added “before disposal” from second sentence.</li> <li>• 2.4.1 - changed “SAA POCs” to “hazardous waste generators”.</li> <li>• Appendix A - corrected numbering; added “MOSI” and “RCRA” definition; deleted “Unpermitted or Reportable Release” definition, the section was retitled “Spills” and is defined in section 2.4.3.9.</li> <li>• Appendix B - Acronyms, updated.</li> </ul>
H	06/12/19	Admin Revision: Added 2.3.1.b to clarify restriction on use of crushed concrete as backfill material.

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