

CHAPTER 29 - HAZARDOUS WASTE MANAGEMENT

A. INTRODUCTION.....	1
B. CHAPTER-SPECIFIC ROLES AND RESPONSIBILITIES.....	1
1. Directors.....	1
2. Hazardous Waste Coordinators (HWC)	1
3. Supervisors	2
4. Employees.....	3
5. Office of Safety, Health, and Environmental Management (OSHEM).....	3
C. IDENTIFICATION OF HAZARDOUS WASTE.....	3
D. HAZARD CONTROLS.....	4
E. TRAINING	5
F. REPORTING AND RECORDKEEPING.....	6
G. REFERENCES.....	6

[Attachment 1 - Summary of Federal Requirements for Generators of Hazardous Waste.](#)

[Attachment 2 - Smithsonian Institution Hazardous Waste Management Plan Guidance](#)

[Attachment 3 - Hazardous Waste Management Plan](#)

[Attachment 4 - Instructions for the "Location of Waste Activities/Materials" form](#)

[Attachment 5 – Location of Waste Activities/Materials](#)

[Attachment 6 - Instructions for the "Regulated Waste ID Log" form](#)

[Attachment 7 - Regulated Waste ID LOG](#)

[Attachment 8 - Instructions for the "Satellite Accumulation Area Inspection" form](#)

[Attachment 9 - Satellite Accumulation Area Inspection Form](#)

[Attachment 10 - Central Accumulation Area Inspection Form](#)

[Attachment 11 - Hazardous Waste Satellite Accumulation Areas](#)

[Attachment 12 - Characteristic wastes and listed wastes codes](#)

[Attachment 13 - Hazardous Waste Weekly Inspection Checklist](#)

CHAPTER 29 - HAZARDOUS WASTE MANAGEMENT

A. INTRODUCTION

1. This Chapter applies to all Smithsonian Institution (SI) facilities, laboratories, and projects that generate hazardous wastes and establishes policy for hazardous waste (HW) management by identifying the requirements necessary to ensure the protection of human health and the environment.
2. It is the policy of the SI to conduct work in an environmentally sustainable manner, practice pollution prevention (P2), comply with federal, state and local regulations, and continuously evaluate activities for the purpose of reducing potential environmental impacts and ecological footprints.
3. This Chapter focuses on Federal regulations that address the management of hazardous waste. State and local regulations, which are based on Federal regulations and which are often broader in scope and more stringent, are not addressed in this Chapter. Those individuals responsible for the management of HW in SI facilities must be familiar with the state and local regulations that affect their geographic location. Internet links to state HW management regulations are provided at the end of this Chapter.

B. CHAPTER-SPECIFIC ROLES AND RESPONSIBILITIES

1. **Directors** shall:
 - a. Ensure that a qualified responsible person is appointed to coordinate hazardous waste management in their facility.
 - b. Ensure adequate funding is provided for personnel, equipment, materials, training and monitoring required to comply with recognized best management practices for hazardous waste management within their facility.
 - c. Ensure that all facility activities comply with current Federal, State, and local hazardous waste management requirements.
2. **Hazardous Waste Coordinators (HWC)** shall:
 - a. Coordinate with facility supervisors to identify all hazardous waste (HW) generation points within the facility.
 - b. Develop facility protocols for the management of HW by developing and implementing the Hazardous Waste Management Plan (HWMP) in [Attachment 3](#), and by utilizing the assistance of supervisors and OSHM.
 - c. Ensure compliance with labeling, accumulation times and applicable container management standards in the Central Accumulation Area (CAA).

- d. Establish procedures for timely removal of accumulated HW from the CAA.
 - e. Serve as the point-of-contact for all HW regulatory environmental inspections.
 - f. Maintain regulatory compliance documentation that records all HW activities related to the generation, storage, transportation, and disposal of HW.
 - g. Review and submit the annual or biennial HW report to the EPA and State environmental regulatory agency, as required, and ensure payment of appropriate Federal, State, and local fees related to HW generation.
 - h. Program and request budget for personnel, equipment, materials, training, and monitoring necessary to comply with HW management requirements.
 - i. Ensure that coordination occurs as appropriate with the Safety Coordinators in matters relating to the management of HW.
 - j. Ensure that facility hazardous chemical emergency spill and leak procedures are current, distributed throughout their facility and reviewed with staff on a regular basis.
 - k. Ensure that OSHEM is notified when there is a release or other event that impacts the environment or compliance status of the facility
3. **Supervisors** shall:
- a. Assist the HWC by identifying hazardous waste generation points under their supervision, and approximate quantities generated, using the facility HWMP.
 - b. Complete and maintain the Regulated Waste ID Log form, HWMP-2 ([Attachment 7](#)). Provide copies of completed forms to the HWC.
 - c. Ensure the HWMP-2 form is updated whenever there is a change in processes or activities in areas under their authority.
 - d. Ensure that all employees handling hazardous waste are properly trained within six months of employment and yearly thereafter and that documentation of this training is maintained.
 - e. Ensure compliance with labeling, accumulation, and applicable container management standards prior to waste disposal.
 - f. Maintain weekly inspection records for any CAA under their supervision. [Attachment 10](#) or [Attachment 13](#) may be used, as appropriate.
 - g. Establish a procedure to ensure timely removal of accumulated HW from work areas in coordination with the HWC.
 - h. Ensure that all hazardous waste spills/incidents are immediately reported to OPS and the facility HWC.

- i. Program and request budget for personnel, equipment, materials, training, and monitoring necessary to comply with HW management requirements.
4. **Employees** shall:
- a. Immediately notify their supervisor of any incident involving the uncontrolled release or spill of a hazardous material.
 - b. Handle hazardous wastes only after appropriate training has been obtained.
 - c. Notify their supervisor of any activity or changes in work processes that may result in the generation of hazardous waste.
 - d. Ensure compliance with proper HW labeling, accumulation times, and applicable container management standards prior to waste disposal.
5. **Office of Safety, Health, and Environmental Management (OSHEM)** shall:
- a. Develop directives and policy as needed to implement SI HW policy that governs HW management.
 - b. Assist with SI cooperation and compliance with Federal, State, and local agencies with regard to HW regulations by providing technical assistance to facilities and through the METR process.
 - c. Assist in resolving disputes with Federal, State, and local, regulatory agencies as required.
 - d. Coordinate the notification of appropriate US EPA Regional Administrators, and/or State and Local authorities in the event of incidents where reporting thresholds are exceeded.
 - e. Provide support to SI facilities by interpreting Federal, State, and local HW regulatory requirements and by uniformly applying SI policy as set forth in this *Manual*.
 - f. Provide training, training materials, compliance verification checklists, and guidelines in the area of hazardous waste management
 - g. Provide oversight to ensure that only properly permitted transporters are used for the offsite transport of HW and that the HW is disposed at a properly permitted treatment, storage, and disposal facility in accordance with Federal and State HW rules and regulations.

C. IDENTIFICATION OF HAZARDOUS WASTE

1. Waste with properties that make it dangerous or potentially harmful to human health or the environment is called Hazardous Waste (HW). Hazardous wastes can be liquids, solids, contained gases, or sludges. They can be the by-products of a production or testing process or simply discarded commercial chemical products. Hazardous wastes are regulated by the

Resource Conservation and Recovery Act (RCRA) Subtitle C in the Code of Federal Regulations (40 CFR 260-279).

2. To determine if a waste is regulated by RCRA, a generator may either apply knowledge of the material and process that produces the waste, or test the waste using EPA approved test methods as specified in 40 CFR 262.11.
3. A RCRA regulated hazardous waste is a waste that: exhibits at least one of four characteristics—ignitability, corrosivity, reactivity, or toxicity; **or** appears on one of the four hazardous wastes lists—F-list, K-list, P-list, or U-list. See Attachment 2 for details on waste identification.

D. HAZARD CONTROLS

1. The basic controls for the management of hazardous wastes are pollution prevention/waste minimization and compliance with applicable regulations through the development of a Hazardous Waste Management Plan (HWMP).
2. Pollution Prevention/Waste Minimization.
 - a. SI policy is to reduce the quantity of HW requiring disposal by using the pollution prevention hierarchy of reduction, recycling, treatment, and disposal. The highest priority should be placed on reduction of HW generation at the source.
 - b. Federal and State regulations require all HW generators to certify (on each Uniform HW Manifest, EPA Form 8700-22) that a program exists to minimize the volume and toxicity of HW generated, insofar as economically feasible.
 - c. It is imperative that SI facilities strive to achieve continuous reduction of HW generation through pollution prevention initiatives, best management practices, and best demonstrated available technology.
3. Regulatory Requirements
 - a. SI facilities must comply with all Federal, State, and local regulatory requirements relating to HW. Compliance with all aspects of an EPA-approved State HW management program is deemed to be in compliance with all Federal requirements. However, if a State has a program that is not approved by the EPA, the SI facilities and tenants in that state must comply with both the State and Federal program requirements. ***Each facility is responsible for knowing and complying with their State and local HW regulations.*** State programs may be accessed at:
<http://www.epa.gov/epahome/state.htm>
 - b. This Chapter addresses the federal regulations only. Attachment 1 provides a summary of the federal requirements for HW generators. Additionally, the link below provides access to a more comprehensive but user friendly reference guide for the federal HW

generator regulations:

http://www.epa.gov/epaoswer/osw/gen_trans/tool.pdf

4. Hazardous Waste Management Plans (HWMP)
 - a. A HWMP is a tool designed to be used to ensure minimal compliance with regulations and provide documentation that a facility has a program in place.
 - b. Each facility shall develop a HWMP that will identify and implement HW management activities required by RCRA and/or by authorized State HW programs.
 - (1) Individual operational units within each SI facility must provide input to the Hazardous Waste Coordinator for inclusion of their portion of the plan.
 - (2) The plan must be signed by the senior SI management official at each facility
 - (3) The HWMP must be provided to all personnel who accumulate, generate, transport, treat, store, or dispose of HW.
 - (4) The HWMP must be maintained to reflect current facility and tenant organization responsibilities and current regulatory requirements.
 - (5) It must be reviewed and updated whenever there are facility conditions or operations that affect HW accumulation, generation, transportation, treatment, storage, or disposal change.
 - c. A generic HWMP template has been provided in [Attachment 3](#).

E. TRAINING

1. The HWC shall successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with applicable environmental regulations. This training shall include but not be limited to:
 - a. Identification of HW (40 CFR 261)
 - b. HW accumulation rules for packaging, labeling, and storage (40 CFR 262.34)
 - c. Manifest (262.20-.23) and Recordkeeping and Reporting requirements (40 CFR 262.40)
 - d. Implementation of Contingency/Spill Response Plans (40 CFR 265)
 - e. Personnel training (40 CFR 265)
 - f. A detailed description of the training requirements for HWC can be found in [Attachment 3](#), HWMP Section 13.3.

2. Personnel handling HW shall be trained by a person trained in hazardous waste management procedures. The training must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed. (40 CFR 265.16)
3. All personnel must receive training within 6 months of employment in a position that involves handling hazardous wastes, and must not work unsupervised until such training has been completed. Facility personnel must take part in an annual review of the training.

F. RECORDS AND REPORTS

1. Reporting and recordkeeping requirements may vary in different jurisdictions. Consult state and local regulatory agencies for more stringent reporting and recordkeeping requirements.
2. Federal reporting requirements include but are not limited to:
 - a. RCRA Subtitle C Site Identification Form
 - b. Uniform HW Manifests
 - c. Manifest Exception Reports
 - d. Biennial HW Reports
 - e. Land Disposal Restriction (LDR) Notification or Certification
 - f. Waste Profiles or Waste Analysis forms
 - g. Satellite and Central Accumulation Area inspection Forms
 - h. Contingency/Spill Response Plans
 - i. Employee training records
3. Further details concerning reporting and recordkeeping are found in [Attachment 3](#), Section 14 of the HWMP.

G. REFERENCES

1. Resource Conservation and Recovery Act of 1976 (42 U. S. C. 6901 et seq.)
2. Federal Facility Compliance Act of 1992 (Public Law 102-386)
3. Hazardous Materials Transportation Act of 1975 (49 U. S. C. 5101 et seq.)
4. Smithsonian SD-419
5. Hazardous Waste Generator Regulations: A User-Friendly Reference Document Version 2: May 2007.

Summary of Federal Requirements for Generators of Hazardous Waste

	CESQGs	SQGs	LQGs
Quantity Limits	≤100 kg/month ≤1 kg/month of acute hazardous waste ≤100 kg/month of acute spill residue or soil §§261.5(a) and (e)	Between 100 - 1,000 kg/month §262.34(d)	≥1,000 kg/month >1 kg/month of acute hazardous waste >100 kg/month of acute spill residue or soil Part 262 and §261.5(e)
EPA ID Number	Not required §261.5	Required §262.12	Required §262.12
On-Site Accumulation Quantity	≤1,000 kg ≤1 kg acute ≤100 kg of acute spill residue or soil §§261.5(f)(2) and (g)(2)	≤6,000 kg §262.34(d)(1)	No limit
Accumulation Time Limits	None §261.5	≤180 days or ≤270 days (if greater than 200 miles) §§262.34(d)(2) and (3)	≤90 days §262.34(a)
Storage Requirements	None §261.5	Basic requirements with technical standards for tanks or containers §§262.34(d)(2) and (3)	Full compliance for management of tanks, containers, drip pads, or containment buildings §262.34(a)
Sent To:	State approved or RCRA permitted/interim status facility §§261.5(f)(3) and (g)(3)	RCRA permitted/interim status facility §262.20(b)	RCRA permitted/interim status facility §262.20(b)
Manifest	Not required §261.5	Required §262.20	Required §262.20
Biennial Report	Not required §261.5	Not required §262.44	Required §262.41
Personnel Training	Not required §261.5	Basic training required §262.34(d)(5)(iii)	Required §262.34(a)(4)
Contingency Plan	Not required §261.5	Basic plan §262.34(d)(5)(i)	Full plan required §262.34(a)(4)
Emergency Procedures	Not required §261.5	Required §262.34(d)(5)(iv)	Full plan required §262.34(a)(4)
DOT Transport Requirements	Yes (if required by DOT)	Yes §§262.30-262.33	Yes §§262.30-262.33

*From "RCRA, Superfund and EPCRA Call Center Training Module: [Introduction to Generators \(PDF\)](#) (23 pp, 362 K, [About PDF](#))

SMITHSONIAN INSTITUTION HAZARDOUS WASTE MANAGEMENT PLAN GUIDANCE

The document that follows provides a “boiler-plate” approach to establishing a written Hazardous Waste Management Plan (HWMP) for Smithsonian Institution facilities. Completing the steps in this guidance assists the Hazardous Waste Coordinator (HWC), along with input from Supervisors, in organizing waste management activities, creating a structured plan for facility personnel to follow, and producing documentation for regulatory compliance purposes. It is not feasible to create a one-size-fits-all guidance document because SI facilities are engaged in diverse activities and subject to different regulatory requirements based on the jurisdiction in which they are located. Facility-specific HWMPs can therefore deviate from this boiler-plate, but all must follow EMS protocols outlined in [Chapter 28 “Environmental Management Systems”](#), of this *Manual* and adopt policies that include pollution prevention, regulatory compliance, and continual improvement strategies.

The regulatory compliance references used in this guidance are the federal Resource Conservation and Recovery Act (RCRA) regulations in effect at the time this document was created. The procedural approach in compiling this guidance was to utilize protocols deemed as best management practices for achieving compliance with RCRA regulations at a minimum. The HWC is responsible for becoming knowledgeable of current applicable state and local HW management regulations that may be broader in scope or more stringent than the federal regulations.

The steps in this guidance can be summarized as identifying every area in the facility that generates a hazardous waste, creating a paper trail of what is done with that waste, and making sure someone is assigned responsibility for handling that waste; Identify, Document, and Delegate!

Identifying Activities that Produce Wastes (EMS Aspect)

1. The first step in developing a HWMP is to identify *every* area in the facility where activities occur that produce a waste.
 - b) Supervisors are asked to assist in this step by completing the “*Location of Waste Activities/Materials*” form HWMP-1, provided in [Attachment 5](#), and returning the form to the HWC. Supervisors will use this form to identify **all** areas under their supervision where there is any activity that produces a waste. This may include, but not be limited to:
 - i) Activities that:
 - use a product requiring a Material Safety Data Sheet (MSDS). Consider both *Manual* and automated processes.
 - use oils of any type (e.g., petroleum, animal, or vegetable);
 - use batteries (e.g., lead acid, NiCad, Lithium);
 - use mercury-containing (e.g., fluorescent) or high intensity discharge (HID) lamps;

ii) Areas:

- that are used for holding or storing waste materials,
 - where automated equipment discharges spent chemicals into containers or drains.
- b) Supervisors are cautioned not to eliminate areas because of small quantities of waste materials, infrequent activities, or periodic maintenance that creates a regulated waste. Also, identify materials that may not be subject to RCRA regulation but still pose a threat if mishandled or improperly disposed, and items that are prohibited from disposal in the municipal landfill (regular trash).
- c) Upon receipt of the completed HWMP-1 forms from the Supervisors, the HWC reviews the information to determine the RCRA regulatory status of the waste activities and materials that have been identified by the Supervisors. Items identified as requiring management utilizing RCRA procedures will be documented and tracked using this formal process. Also, materials determined to pose a threat to human health or the environment may be managed as non-hazardous wastes using the RCRA management system and should be evaluated for inclusion in this process. OSHM can assist the HWC with this evaluation.
- d) The HWC must separate the activities, materials, and/or areas that are determined to require management under RCRA from the lists submitted by the Supervisors and create a final list of the waste activities and/or materials that will be regulated under the HWMP. A copy of the final list is also to be distributed to all Supervisors. This final separated list becomes the facility's official record for compliance tracking purposes.

Documenting Facility Activities

The next step in creating the HWMP is to establish and organize a paperwork trail (documentation). The HWC is the main point of contact for **all** records associated with hazardous waste management at the facility. This means the HWC is also responsible for knowing the location of any record relating to the management of hazardous waste even if that record is not in their possession or under their direct control. The following discussion pertains to records associated with waste identification and initial collection efforts, a more detailed discussion of records is found in Section 14 of the HWMP instructions.

The HWC is to assemble and organize information and records for the activities and/or materials that have been identified in step one above. In addition to the HWMP-1 form created above, the following are other documents that the HWC should seek out when assembling records:

- The most current "RCRA Subtitle C Site Identification Form"
- Uniform HW Manifests and Manifest Exception Reports for the past three (3) years.
- Biennial HW Activity Reports, or annual HW compliance certifications if required by the state regulations
- Documentation of recycling for oil, lamps (light bulbs), batteries, electronics, scrap metal, etc. Records associated with any materials that are transported

off site for recycling or disposal. This can be bills of lading, contracts for routine pick-ups, or receipts. *Any material that leaves the facility should have a record documenting where it goes.*

- The *current* facility Hazardous Chemicals Emergency Spill and Leak Procedures document.
- Permits for any system designed to treat water, or air, for the purpose of removing harmful substances or pollutants. If no permits exist, there is still a requirement to be able to demonstrate the RCRA regulatory status of effluent, filters, or media prior to disposal. Inspection, testing, and maintenance records may be helpful for the purpose of demonstrating compliance. Examples are acid traps on sink drains and filters from spray paint booths or other systems designed to remove contaminants.

The collected records can assist in providing a historical perspective of items that have been regulated in the past; they may also help in identifying areas that were overlooked during the current survey.

When reviewing the assembled paperwork for each waste activity and/or material (EMS Aspect), ask:

- *Do I know the final fate of every regulated material used at the facility?*
- *Can I produce/provide a document that proves what happened to the material?*

Each RCRA regulated hazardous waste identified on form HWMP-1 is *required* to be represented by a corresponding waste code on the RCRA Subtitle C Site identification form and appear on a previous or recent hazardous waste manifest showing it was shipped offsite. Universal wastes and used oils are also *required* to have a physical record showing when, where, and by whom they were shipped offsite.

Delegation

The third step is delegation. The HWC coordinates with Supervisors to ensure that all waste activities and/or materials (EMS Aspects) identified by the HWC as requiring regulation, are handled properly while in the Supervisor's area of authority. On-going compliance monitoring does not become an additional job if it is assigned to the person who is routinely involved in the activity that produces the regulated material. Delegating responsibility reinforces the concept that environmentally responsible material handling is a critical part of everyone's job (EMS Policy). It takes little effort for the person that routinely handles a container to ensure that the container has a label, is dated, and is kept in the proper place. Three forms have been developed to assist facility staff and further facilitate this process:

1. Regulated Waste ID Log form, HWMP-2, [Attachment 7](#) (see instructions). Supervisors and the HWC work together to complete this form. The HWC uses information provided on the HWMP-1 to identify wastes that are going to be regulated by the HWMP protocols and placed in the "Process" column on form HWMP-2. Supervisors are to complete the remaining columns on form HWMP-2 and provide a copy to the HWC. The "90-day Amount" column is to be used to coordinate a schedule with the HWC that ensures that waste is removed from the generation point in order to meet the facility's disposal time restrictions. The HWMP-2 form shall be updated whenever there is a change in processes or activities in

areas under the authority of the Supervisor. Copies of the form are to be maintained by both the HWC and Supervisors and be readily available for compliance inspection purposes.

2. Satellite Accumulation Area Inspection form, HWMP-3, [Attachment 9](#). Supervisors are to provide this form to an individual who is to be held accountable for waste accumulation containers or areas. This individual may be the same Contact Person identified on the HWMP-2 form but it is not mandatory. A separate form should be completed for each waste accumulation container and/or area. The Supervisor will have to decide how often to use this form, but the recommended best management practice (BMP) is once per month, at a minimum.
3. Central Accumulation Area Inspection form, either [Attachment 10](#) or [Attachment 13](#), as appropriate. A central accumulation area (CAA) is any space that holds waste that was generated in another area. In many facilities, there will be only one CAA that is under the control of the HWC. Other facilities will have areas that are used by several different individuals generating waste; any area that collects waste from a location other than where the waste was produced is a CAA. Weekly inspections are *required* for CAA! It is usually convenient to have a notebook or folder at the CAA location to record the inspections. Supervisors who have CAA in their areas of authority must provide copies of the inspection checklist to the HWC. Coordinate with the HWC to establish a schedule for providing copies; the BMP for Supervisors to give copies to the HWC is every 12 months (yearly).

HWCs are to perform weekly inspections of CAAs for which they have responsibility. The HWC is to use a comprehensive checklist such as the HWMP-4 form, Attachment 10. HWCs are required to maintain copies of the inspection checklists for a minimum of three (3) years.

MEETING OBJECTIVES

The term “objective”, as used in the EMS, refers to a process of bringing an activity and/or material (Aspect) under control by developing and implementing operational procedures. This guidance document provides an example of putting the EMS concept of an objective into effect. The information presented up to this point served to establish the foundation upon which the HWC will now build a HWMP document. The way in which the remaining information is presented not only serves to create a physical record of a management plan, but it is also an instructional tool in that it identifies the basic components of a hazardous waste compliance strategy. Both Supervisors and employees are encouraged to read through the HWMP to get an understanding of the SI expectations of the facility for the handling of hazardous waste.

You may direct any questions or comments about this document to:

Smithsonian Institution
Office of Safety, Health & Environmental Management
600 Maryland Avenue SW Suite 7106
MRC 514, P.O. Box 3702
Washington, DC 20013-7012
(202) 633-2530

Hazardous Waste Management Plan

Hazardous Waste Management Plan
for
Insert Name of Facility

Table of Contents

1. Introduction	15
2. Regulatory Authority	15
3. Hazardous Waste Management Plan Organization	15
4. Plan Introduction	16
5. Hazardous Waste Determination	16
5.1. Determination Process	16
5.2. Non-Hazardous Waste	17
5.3. Universal Waste	19
5.4. Waste Oil	
5.5. Waste Code Designation	20
6. Generator Status	20
6.1. Large Quantity Generator (LQG)	20
6.2. Small Quantity Generators (SQG)	20
6.3. Conditionally Exempt CESQG	20
7. USEPA Identification Numbers	20
8. Accumulation Requirements	
8.1. Generator Accumulation	21
8.1.1. Satellite Accumulation Area	21
8.1.1.2 CAA Inspections	22
8.1.2. Central Accumulation Areas	22
8.1.2.1. CAA Inspections	23
9. Container Management	23
10. Labeling	23
10.1. Satellite Accumulation Areas	23
10.2. Central Accumulation Area	23
11. Transportation Protocols	23
11.1. Satellite Accumulation Area	23
11.2. Central Accumulation Area	23
11.3. Off-site Disposal	24
11.4. Disposal Transportation	24
11.5. Disposal Facility	24
11.6. Reporting and Record keeping	24
12. Waste Minimization	25
13. Training	25
13.1. Introduction	25
13.2. Training Requirements- General	26
13.3. Hazardous Waste Training - Resource Conservation and Recovery Act (RCRA)	26
13.3.1. Introduction	26
13.3.2. RCRA Training Records	26
13.4. OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER)	26
14. Record Keeping and Reporting	26
14.1. Introduction	27
14.2. Records Administration and Storage	27

Attachment 3

14.2.1. Hazardous Waste Manifests	27
14.2.2. Land Disposal Notification/Certifications	27
14.2.3. Exception Reports	27
14.2.4. Profiles/Waste Analyses Results	27
14.2.5. Satellite and Central Accumulation Areas Inspections	27
14.3. Reporting	28
14.3.1 Biennial Reports	28
14.4.2. SQG Self-Certification	28
15. Emergency Preparedness and Response / Contingency Plan	29
15.1. Introduction	29
15.2. Emergency Coordinators	29
15.3. Emergency Equipment	29
15.4. Posted Emergency Action Information	29
15.5. Notification and Reporting	30
Appendix	

You will need to adjust this Table of Contents to reflect the composition of your final document.

1.0 Introduction

Safe and environmentally sound management of hazardous waste is an integral part of the Smithsonian Institution (SI) mission. *Insert name of facility* is committed to meeting the stringent federal, state, and local regulations pertaining to the management of hazardous waste. The SI has developed this Hazardous Waste Management Plan to communicate the methods *Insert name of facility* will use to properly manage hazardous waste and has committed the resources necessary to ensure compliance with this plan and applicable regulations.

Insert name of HW Coordinator is responsible for directing Hazardous Waste Management activities at *Insert name of facility*. Their responsibilities include managing the collection, processing, and disposal of chemical waste and providing assistance for other hazardous waste and environmental compliance responsibilities. For the purposes of this program, the term *waste* refers to chemical material that is unusable or unwanted by the person controlling the material. Determinations of whether a material *is* hazardous waste, reusable material, recyclable material, or any one of several regulatory defined materials or processes, will be made by trained personnel under the direction of the Hazardous Waste Coordinator. Whenever there is a question about the regulatory status of a material it will be handled and managed as if it were a hazardous waste.

The purpose of this HWMP is to provide information and guidance on hazardous waste generation, storage, packaging, record development/maintenance and general management of hazardous and non-hazardous chemical wastes. To assist *Insert name of facility* in providing a safe and environmentally sound operation, each department within a facility is expected to review and comply with this plan. For further information or for guidance in complying with this document, please contact, *Insert name of HW Coordinator* at *Insert phone number*, or the OSHM, Environmental Management Division at (202) 633-2530.

2.0 Regulatory Authority

Management of hazardous waste is regulated by the United States Environmental Protection Agency (USEPA) and by the *Insert name of State/Local Environmental Regulatory Agency*. The respective regulations can be found in 40 CFR 260-268 and *Insert State/Local Code*. The State of *Insert name of State* is an authorized state, meaning the State of *Insert name of State* has been given authority by the USEPA to administer hazardous waste regulations. State regulations may be more stringent than the requirements set out by the USEPA, therefore it shall be the policy of this facility to comply with the most stringent regulations in effect.

3.0 Hazardous Waste Management Plan Organization

A Hazardous Waste Management Plan (HWMP) provides overall guidance for the safe and compliant management of hazardous wastes at *Insert name of facility*. Additional guidance may be provided by State and Local Environmental Regulatory Agencies, OSHM, or the facility Hazardous Waste Coordinator. Reviewing the HWMP is the first step in understanding methods to minimize potential liabilities associated with the handling of hazardous waste and for ensuring compliance with applicable hazardous waste regulations. Additional information and guidance is provided through training and access to internal as well as external contractor-provided resources. Please contact, *Insert name of HW Coordinator* the Hazardous Waste Coordinator, at *Insert phone number of HW Coordinator* if your responsibilities involve generation, handling, or other hazardous waste management activities.

4.0 Plan Introduction

This Hazardous Waste Management Plan summarizes the processes and steps *Insert name of facility* follows to effectively, efficiently and safely manage hazardous wastes, and comply with applicable regulations. Each section presented below outlines the basic actions necessary to comply with general hazardous waste management regulatory principles and manage hazardous waste to minimize liabilities

and prevent releases to the environment. Please contact *Insert name of HW Coordinator* for guidance with implementing these guidelines or for additional information.

5.0 Hazardous Waste Determination

The first step in the management of hazardous waste is to determine whether a material is a waste and if it should be regulated as hazardous. Subsequent steps, normally performed by an outside contractor, are used to properly classify the waste and determine the action necessary for proper management of the waste.

Materials are usually considered "waste" when the generator has determined that the material has no further use and will be discarded. Hazardous waste regulations apply to **any** material that will be discarded, or is likely to be discarded. (The latter point is important because materials that have no further use and will eventually be discarded may be considered hazardous waste by regulatory agencies even though there are no current plans to discard the material. Therefore, it is imperative that the appropriate supervisor or Hazardous Waste Coordinator be consulted if materials will be stored for long periods without use or if the use of a material is not anticipated for extended periods.)

Waste materials can be solid, liquid, semi-solid or compressed gas. All such materials must be evaluated to determine if the hazardous waste regulations apply.

5.1 Determination Process

Simply defined, a hazardous waste is a material with properties that make it dangerous or capable of harming humans or the environment if not properly managed. Making the determination of whether a waste is hazardous is complicated and requires an extensive understanding of such information as the waste constituents, how it was generated, the material's chemical and physical characteristics, an understanding of USEPA and State regulations and experience in classifying waste products.

A material is considered to be a hazardous waste if the USEPA or the State specifically lists it as a hazardous waste or if it exhibits a hazardous characteristic. Two methods are used to determine if a waste exhibits hazardous characteristics; testing or applying generator knowledge.

- Testing must be done following strict regulatory protocols established by the USEPA.
- Generator knowledge involves applying an understanding of the hazardous nature or characteristics of the waste based on the materials or processes used to generate the waste.

This facility is required to have written documentation regardless of which method is used. Final determination of whether a waste is hazardous or non hazardous will be made by the Hazardous Waste Coordinator or a contracted Hazardous Waste Specialist.

5.2 Non-Hazardous Waste

If a waste is not listed as a USEPA or State hazardous waste or does not exhibit any of the hazardous waste characteristics, it is a non-hazardous waste. Please contact the Hazardous Waste Coordinator, OSHM or the contracted Hazardous Waste Specialist for guidance in disposal of non-hazardous chemical wastes. Remember that many so called non-hazardous wastes may still cause harm to the body or the environmental if improperly handled, stored, or discarded. Non-hazardous does not necessarily mean non-regulated or safe to put in the regular trash. Empty gas cylinders and bulk liquids are examples of materials that are prohibited at regular trash facilities.

5.3 Universal Waste

Universal waste (UW) is a category of hazardous waste that is deemed to pose less of a risk to human health and the environment if managed according to guidelines. According to Federal regulatory requirements, universal wastes may include lamps, batteries, intact mercury containing devices, and some pesticides. Federal regulatory requirements are based on the total amount of all types of

universal waste that is accumulated at a given facility however *Insert name of facility* will use the following guidelines to manage universal waste:

5.3.1 UW may be accumulated for up to year from the date the universal waste became a waste. The amount of time that a universal waste has been accumulated must be demonstrated, in one of the following ways:

1. direct marking of the universal waste with the date that the universal waste became a waste;
2. marking the container the waste is in with the earliest date that waste began accumulating in that container;
3. marking a designated accumulation area with the earliest date that waste began accumulating in that area;
4. keeping an inventory that identifies the date that each universal waste became waste or
5. keeping an inventory that identifies the earliest date that a universal waste became waste in a designated accumulation area.

5.3.2 UW may be accumulated for longer than a year from the date that the universal waste became a waste, provided the sole purpose of accumulation of such quantities is necessary to facilitate proper recovery, treatment, or disposal. If this is the case, *Insert name of facility* must provide proof from the destination facility, through a letter or contract, confirming that accumulation beyond a year is necessary.

5.3.3 General Requirements for All UW Types

1. Universal Waste Handlers will not dispose of universal waste;
2. Universal Waste Handlers will not dilute or treat universal waste, except when responding to releases;
3. UW will be managed in a way that prevents a release of any component of the universal waste;
4. If containment of a UW is required, the container will be (a) closed at all times except when adding or removing waste (b) compatible with the universal waste and it's contents, and (c) free of defects, design characteristics or damage that would lead to leakage, spillage or other environmental releases;
5. UW stored outside must be covered, to prevent precipitation from coming into contact with the waste.
6. EPA requires large quantity handlers of UW to obtain an identification number.
A facility that does not already have an EPA identification number must notify the USEPA or State Environmental Agency prior to accumulating more than 5,000 kilograms of universal waste.

5.3.4 Requirements for UW Batteries

A battery becomes universal waste on the date that it is removed from service, either because it is no longer operable or because it is no longer wanted or needed. The following management activities are allowed, provided the individual battery cases are not breached, are intact, are closed, except to remove electrolyte, and are immediately closed after electrolyte is removed:

- Battery sorting
- Mixing battery types in one container
- Removing the electric charge by discharging
- Regenerating used batteries
- Disassembling battery packs into individual batteries or cells

- Removing batteries from consumer products
- Removing electrolyte from batteries

Each battery or container of batteries must be labeled with one of the following: *Universal Waste – Battery*, *Waste Batteries*, or *Used Battery(ies)*.

5.3.5 Requirements for UW Mercury Containing Devices

Any used or unused mercury containing device becomes a waste on the date that it is no longer operable or on the date that the handler decides to discard it. To manage a mercury containing device as a universal waste, the following requirements must be met:

1. Mercury containing devices that show any sign of leaking, spilling, or damage that could cause spillage must be stored in a container that is closed, compatible with the waste, and free of defects that could cause leakage.
2. Ampules containing mercury may be removed from a mercury containing device if:
 - The ampule is removed such that breakage does not occur;
 - The ampule is only removed over a containment device
 - A Mercury clean-up system is readily available
 - Any spilled mercury from a broken ampule is immediately transferred to containment
 - The area where the ampule is removed is well ventilated and monitored to ensure compliance with applicable OSHA exposure levels for mercury
 - Employees removing ampules are familiar with proper waste mercury handling and emergency procedures, including transfer of mercury from containment devices to appropriate container
 - Empty ampules are collected and stored in appropriate containers.
3. If any waste is generated from breaking a mercury-containing device or emptying ampules, the waste handler must determine if the device, ampule, or spill clean-up debris, exhibits the characteristic of hazardous waste for mercury. If the waste meets the characteristic, it must be managed as a hazardous waste.

Mercury containing devices, or mercury device storage areas, must be labeled with one of the following: *Universal Waste – Mercury Containing Device(s)*, *Waste Mercury-Containing Device(s)*, or *Used Mercury-Containing Device(s)*.

5.3.6 Requirements for UW Lamps

A lamp becomes a waste on the day that it is removed from service, either because it is burned out or is no longer wanted or needed.

Lamps may not be intentionally crushed or dismantled unless the State or local environmental agency permits such activity. Many States require air quality monitoring and other controls to crush lamps. If lamps are unintentionally broken, the broken lamp and residue must be cleaned up and the area decontaminated. The broken lamps and clean-up debris must be managed as hazardous waste (Refer to State or local regulations).

Lamps or lamp accumulation areas must be marked with the date the lamp is removed from service or the date the first lamp was placed in the storage accumulation area **and** one of the following: *Universal Waste – Lamp(s)*, *Waste Lamp(s)*, or *Used Lamp(s)*.

5.3.7 Requirements for Pesticides

A recalled pesticide will become waste on (a) the date that the manufacturer of the recalled pesticide agrees to participate in the recall **and** the person conducting the recall decides to discard the pesticide, or (b) when the handler decides to discard the unused pesticide.

Universal waste pesticides must be containerized in a container compatible with the waste, or over-packed in a waste container that is compatible.

Universal waste pesticides must be labeled with the original label that accompanied the pesticide at the time of sale or distribution and the words *Universal Waste-Pesticide(s)* or *Waste-Pesticide(s)*.

5.3.7.1 Storage requirements for universal waste pesticides are as follows:

1. Universal waste pesticides must be stored on an impervious surface. An impervious surface may be concrete or asphalt (without cracks or holes). Earth, wood, and gravel surfaces are not considered impervious surfaces.
2. Waste pesticides that contain free liquid may not be stored in an area with functional floor drains or manholes unless secondary containment is present. If secondary containment is necessary, it must be sufficient to contain a spill from the largest container in the secondary containment. Containment is not required in areas with functional floor drains or manholes, provided:
 - The waste pesticide contains no free liquid **and**
 - The area is sloped or drained to remove precipitated liquid or containers are elevated or otherwise protected from accumulated precipitation

5.3.7.2 Security Measures

The following security measures must be provided at all outdoor storage areas for universal waste pesticide:

- An artificial or natural barrier that completely surrounds the universal waste pesticide storage area to prevent unauthorized entry by people or livestock
- An entry that is controlled at all times (e.g., a keyed lock or camera surveillance)
- A sign at all entries to the storage area with the legend *Danger – Unauthorized Personnel Keep Out* or other words indicating that only authorized personnel are allowed entry and that the area is potentially dangerous.

5.4 Used Oil

Used oil is defined as any oil that has been refined from crude oil or any synthetic oil that is used, and as a result of such use, is contaminated by physical or chemical impurities. In general, this includes engine crankcase oil, machine lubricating oil, cutting oil, hydraulic oil, heat treating oil, and compressor oil.

"Waste oil" is not the same as used oil. The RCRA Part 279 standards established for used oil management operate under the presumption that used oil will be recycled. Used oil that is not Hazardous Waste, but cannot be managed for recycling under Part 279, must be managed in accordance with 40 CFR Parts 257 and 258.

- Used oil mixed with a listed HW must be managed as a listed hazardous waste.
- Used oil mixed with a characteristic HW is a HW if the mixture exhibits a characteristic.
- Used oil with >1000 ppm halogens is always presumed to be a HW. This is a rebuttable presumption!
- Oily wastewater - If contaminated with de minimis amounts of oil and managed in units regulated under CWA 307 or 402, oily wastewaters are not subject to Part 279

5.4.1 On-site used oil storage

Under 40 CFR 279.22, generators must:

- Store oil in tanks or containers (or units subject to RCRA standards)

- Provide secondary containment for all tanks and containers
- Maintain containers and tanks in good condition, no leaks
- Label containers and tanks with the words "Used Oil" (label fill pipes for USTs)
- Use a transporter with an EPA ID number
- Establish a Spill Prevention, Control and Countermeasures (SPCC) plan if greater than 1,320 gallons are stored aboveground or greater than 42,000 below ground.

5.4.2 Used oil filters - 40 CFR Part 261.4(b)(13)

Used oil filters are NOT regulated as a hazardous waste by federal regulations if managed by one of the following methods:

- Puncturing the filter anti-drain back valve or the filter dome end and hot-draining
- Hot draining and crushing
- Dismantling and hot draining; or
- Any other equivalent hot-draining method which will remove used oil

Since these are Federal regulations some states may not recognize this exemption. Also, filters managed by these methods are still regulated as a solid waste and subject to solid waste management regulations; alternatively, they may be managed for scrap metal reclamation.

{NOTE: Gasoline, diesel, air, transmission or other type filters are NOT included in the used oil filter exclusion. They may be excluded from potential HW regulation only if being recycled as scrap metal. Otherwise, the generator must determine if they meet a HW characteristic}.

5.5 Waste Code Designation

Hazardous wastes are required to be identified by an EPA designated code prior to shipment off site. To minimize errors in designating hazardous waste codes, the classification process is managed by an outside contractor.

6.0 Facility Generator Status

Concurrent with determining whether a regulated hazardous waste is being generated, the facility's generator classification must be determined. The generator classification is based on the total amount of waste generated throughout the entire facility. Knowledge of the facility's generator status is important because regulatory compliance is based on the quantity of waste generated. Each generator category has specific generation, accumulation and storage requirements and corresponding time limits that the waste can be kept on site.

Facilities are generally on either a 90-day or 180-day disposal cycle. However, during any given time period, the facility's generator status may change, causing a corresponding change in the requirements that must be met. It is therefore important to strictly adhere to time limits established by the HWC.

Note: Some states require the generator to notify the State when waste generation or accumulation totals exceed the Small Quantity Generator monthly limitations. The facility must begin to comply with Large Quantity Generator requirements regardless of any requirement to notify.

7.0 USEPA Identification Numbers

USEPA requires all hazardous waste generators to register their generator status by obtaining a USEPA Identification Number. This number is used to track waste from generation to ultimate disposal, and establish a historical record in the event of future unforeseen environmental impacts that result from the management of that waste. SI facilities are required to obtain a USEPA ID number *before* treating, storing, disposing, recycling, transporting, or offering for transport, regulated quantities of hazardous waste. USEPA ID numbers are site-specific numbers assigned to generators, transporters, and treatment,

storage, disposal or recycling facilities (TSDRF), and need only be obtained once. The numbers are specific to the physical location.

8.0 Accumulation Requirements

The term “accumulation” refers to the time during which waste is held at the facility prior to shipment off site. The term “storage” is not used because the word storage has a specific meaning in RCRA and is an activity that requires that the facility obtain a permit. The hazardous waste accumulation guidelines presented in this document are designed to ensure hazardous wastes are accumulated safely to minimize risks to human health or the environmental from releases, regulatory requirements are met, and accumulation time limits are not exceeded. To accomplish these objectives the SI will utilize designated central accumulation areas (CAA) where wastes from several generation points are held, and temporary areas where waste is held near the point of generation. Temporary areas are referred to as satellite accumulation areas (SAA). Both CAAs and SAAs are explained further below.

Regulatory requirements for hazardous waste accumulation involve the selection of proper waste containers, waste identification and labeling, establishment of designated locations (SAA or CAA), meeting specified time limits, and movement from an SAA to the CAA pending shipment off-site to a TSDRF. Proper accumulation of hazardous waste is critical to ensuring personnel safety and regulatory compliance.

8.1 Generator Accumulation

8.1.1 Satellite Accumulation Areas (SAA)

Temporarily keeping containers at or near the point of generation until they are full is known as satellite accumulation. The wastes must be under the direct control, and in the line of sight, of the person and process producing the wastes. The area where this activity occurs is known as a satellite accumulation area (SAA). Temporary accumulation allows wastes to be held at the point of generation for the purpose of minimizing handling risks, increasing disposal efficiency and controlling costs. USEPA and some State regulations permit satellite accumulation; however, the requirements may vary widely from one jurisdiction to another. By complying with the best management practices for satellite accumulation areas, SI facilities endeavor to comply with both USEPA and State regulatory requirements.

It shall be the responsibility of each generation department, section, or location to ensure that full or unneeded waste containers are moved from satellite accumulation areas to the central accumulation area or facility. The best management practice is to have the Contact Person identified on form HWMP-3 make arrangements with the HWC for pick-up.

Satellite accumulation area limits are 55 gallons of hazardous waste, or one quart of acutely hazardous waste, in containers at or near the point of generation. The following requirements must be met:

- Containers are under the control of a “*Contact Person*” for the process generating the waste;
- The “Contact Person” has been trained in accordance with SI hazardous waste training requirements (See Section 13.0);
- Waste is properly labeled either as “Hazardous Waste” or with the container contents;
- Waste is dated with the date that the container becomes full, this is the accumulation start date; (*Some States require dating when the first drop is placed in the container*). Full containers regardless of size, and those that reach the accumulation limits (55 gallons of hazardous waste or one (1) quart of acutely hazardous waste), are moved to the CAA immediately upon reaching the accumulation limit.
- Waste containers with free liquids are provided secondary containment;
- Routine inspections are conducted; and

Ensure full containers that have been relocated to the CAA are shipped off-site within 90/180 days of the accumulation start date. Failure to comply with these provisions may result in a violation of USEPA and State requirements and could result in substantial fines and penalties.

8.1.1.2 SAA Inspections

Satellite Accumulation Areas must be inspected monthly at a minimum. See HWMP-3, Satellite Accumulation Inspection Checklist, to view the SAA inspection criteria. The “*Contact Person*” or designee will inspect each SAA under their control. Copies of the completed SSA inspection checklists shall be maintained by the Supervisor for areas under their authority. Records shall be retained for a minimum of three years.

8.1.2 Central Accumulation Area (CAA)

The establishment and management of the Central Accumulation Area (CAA) is a vital component of the facility compliance strategy. Close scrutiny of this area is important because it is the location where waste from throughout the facility may be held awaiting transportation to a commercial hazardous waste TSDRF. Container management standards are more stringent in CAA than in SAA. Once waste accumulation containers in the SAA are filled, the “*Contact Person*” identified on form HWMP-3, must immediately arrange for transport to the CAA for subsequent holding time and eventual removal from the facility. There are two allowable holding times for CAA based on the total quantity of waste generated throughout the entire facility. The maximum allowable holding times may be either 90 or 180 days. Wastes stored by the facility in the CAA, or any other location, for periods exceeding the 90 or 180 day limits (other than in a properly established and managed SAA) can result in substantial fines and penalties by either the USEPA or the State, or both.

A generator may accumulate waste in a central accumulation area up to the specified time period (90/180 days) provided all of the following requirements are met:

- All hazardous waste must be placed in appropriate containers or tanks and must remain closed at all times except when adding or removing waste;
- All containers must be labeled with the words “Hazardous Waste”;
- All containers must be labeled with an accumulation start date;
- Secondary Containment must be provided for containers holding free liquids;
- All hazardous wastes must be stored on impervious surfaces;
- Hazardous waste must not be stored in areas with functional floor drains, or in or near a sink with functional drains present unless adequate secondary containment is provided;
- Generators must make weekly inspections of all hazardous waste storage areas;
- Facilities must ensure training in hazardous waste management is provided to all personnel handling hazardous wastes;
- Generators must meet general requirements for storing ignitable, reactive, or incompatible wastes;
- Generators must comply with 40 CFR Part 265 Subpart C Preparedness and Prevention, including:
 - a. maintaining spill control equipment and fire control equipment at or near each waste storage area;
 - b. posting ‘No smoking’ signs near ignitable and/or reactive waste and
 - c. maintaining a minimum aisle space to allow unobstructed movement of personnel, fire protection equipment, and/or spill control and decontamination equipment.
- Generators must have a current written contingency plan detailing emergency procedures;
- Generators must post a list of emergency telephone numbers, with a brief description of steps to take if an emergency occurs, at the telephone nearest to each hazardous waste accumulation area; and

- Generators must comply with 40 CFR 265 Subpart J if tanks are used for hazardous waste storage.

Additional Requirements for outside storage:

- Generators must provide an artificial or natural barrier preventing unauthorized entry;
- Generators must provide a means to control entry (e.g., a keyed lock, surveillance, or guard);
- A sign with the legend ‘DANGER- UNAUTHORIZED PERSONNEL KEEP OUT’ must be posted at the entrance, and
- All hazardous waste stored outside must be covered and stored at least 50 feet away from surface water.

8.1.2.1 CAA Inspections

The Central Accumulation Area must be inspected weekly. See HWMP-4, Central Accumulation Area checklist to view the CAA inspection requirements. The Hazardous Waste Coordinator or his alternate is responsible for inspecting the CAA. Copies of the CAA inspection checklists are to be maintained by the HWC for a minimum of three years.

9.0 Container Management

The selection of appropriate containers helps prevent leaks and spills that may result in human exposure or environmental releases during material handling, storage and transport. The selection of appropriate containers at the point of generation is based primarily on the chemical characteristics of the waste being contained and the waste generation rate. Select containers that are compatible with the waste being contained, have secure fitting tops, and are not easily broken. Packaging for transportation off site and final disposal is only to be completed by the Hazardous Waste Coordinator or the contracted Hazardous Waste Specialist.

10.0 Labeling

Waste containers must be properly labeled to ensure that identification of the contents is clearly documented and to communicate information concerning handling hazards. The main concern is to prevent unintentional injury to others that may come into contact with the container. Labeling must be legible and indelible or difficult to remove. Labeling requirements are based on the intended disposition of the container; whether it will be stored on-site in a satellite accumulation area (SAA), in the central accumulation area (CAA) or shipped off site for ultimate disposal at a TSDRF. The labeling requirements for waste managed on site in either SAA or CAA are found below.

10.1 Satellite Accumulation Areas (SAA)

The following label information must appear on all containers located in Satellite Accumulation Areas:

- The words “*Hazardous Waste*” or words that identify the contents of the container (No symbols or abbreviations).

10.2 Central Accumulation Area (CAA)

The following label information is the minimum that must appear on all containers stored in the CAA:

- The words “*Hazardous Waste*”;
- The accumulation start date for the container;

Before transporting or offering waste for transportation off site, waste in the CAA must have:

- Department of Transportation (DOT) labeling pursuant to 49 CFR Part 172.
- Words that identify the contents of the container (no symbols or abbreviations); and
- USEPA and/or State hazardous waste codes;

11.0 Transportation Protocols

Transportation is defined as moving hazardous waste containers between the following locations:

- Satellite Accumulation Area and the Central Accumulation Area; and
- Central Accumulation Area and the off-site Treatment, Storage, Disposal or Recycling facility (TSDRF);

The protocol involves the following items discussed below.

- Scheduling waste pickup and relocation from the SAA to the CAA;
- Scheduling waste pickup from the CAA and shipment to the TSDRF.
- Completion and maintenance of paperwork and records
- Management of certificates of disposal/destruction obtained

11.1 Satellite Accumulation Area

Once waste containers held in the SAA are full, reach the 55-gallon limit, or are no longer needed, they must be relocated to the CAA. This is accomplished by contacting, *Insert name of HW Coordinator*, Hazardous Waste Coordinator at *Insert phone number*, who will coordinate relocation of the filled container(s).

11.2 Central Accumulation Area

During weekly inspection, the Hazardous Waste Coordinator evaluates the status and amount of containers stored in the CAA. The Hazardous Waste Coordinator will arrange for a waste pick-up by a Licensed Hazardous Waste Transporter if any of the following conditions are met:

- there are a sufficient number of containers in the CAA for economic disposal of the waste;
- containers are approaching the 90/180 day storage limit; or
- the CAA area is approaching capacity.

11.3 Off-site Disposal

The HWC is responsible for scheduling off-site transportation of wastes whenever any container being held in the CAA nears the 90/180 day accumulation time limit. The HWC is to allow sufficient lead time to ensure that the pick-up will be completed within the allotted time frame.

11.4 Disposal Transportation

Regulations require that SI use approved hazardous waste transporters to transport shipments of waste to a permitted TSDRF. Transporters must possess a current, valid, hazardous waste transporter permit and/or a valid USEPA Identification Number. It is the facility HWCs responsibility to monitor shipments to assure that vehicles transporting facility wastes are placarded with appropriate warnings and otherwise comply with standard US Department of Transportation and State shipping protocols.

11.5 Disposal Facility

Liability for damages resulting from the mishandling of hazardous waste is retained by the generator of the waste. Therefore, selection of a reputable disposal company is critical. OSHEM assists the facility by evaluating and selecting an EPA permitted TSDRF. However, as the on-site SI representative, the facility HWC has oversight of container labeling, manifest documents, land disposal restriction forms, transportation placards, and other appropriate waste handling requirements prior to off site shipment.

11.6 Reporting and Record keeping

Reporting and record keeping documents are integral and vital to demonstrating compliance and limiting liability. *Insert name of facility* is committed to ensuring compliance by maintaining all appropriate documentation, reports and records as specified in Section 14.0, Record Keeping and Reporting. For more information contact the Hazardous Waste Coordinator, *Insert name of HW Coordinator*, at *Insert phone number*.

12.0 Waste Minimization

It is the policy of the SI to make every effort to minimize the generation of hazardous waste, maintain a sound environmental program, control liability, and minimize costs. To accomplish this objective, SI facilities embrace a Waste Minimization Strategy designed to identify and develop opportunities to control chemical use and reduce waste generation. Various methods have been identified and encouraged. These include such actions as:

- Purchasing control - Review of chemical purchases to ensure that appropriate materials and quantities are purchased. This helps to prevent purchasing too much of a material or material of the wrong type that could become a regulated waste.
- Periodic Inventory Evaluation - Evaluation of laboratory reagents for current use, transfer to other SI users or disposal.

As new strategies are identified, evaluated and implemented, this section will be updated to reflect methods currently available and in use. Contact the Hazardous Waste Coordinator, *Insert name of HW Coordinator*, *Insert phone number*, or OSHEM at (202) 633-2530 to provide ideas or obtain information on waste minimization strategies.

13.0 Training

13.1 Introduction

Appropriate training is provided to ensure that individuals involved in hazardous waste generation and handling understand regulatory requirements and methods to minimize hazards and risks associated with the management of hazardous waste. This training may include instruction in USEPA, OSHA and USDOT requirements.

13.2 Training Requirements - General

Due to differing hazardous waste generator status, the SI is required to provide various training programs to ensure that hazardous waste is effectively and safely managed. Therefore, SI either conducts or makes available training programs to comply with the appropriate requirements of the following regulations:

- US EPA's Resource Conservation and Recovery Act (RCRA)
- United State's Department of Transportation (USDOT) Hazardous Material Transportation Act (HMTA) HM 181/126 F
- OSHA Hazardous Waste Operations and Emergency Response, 29 CFR1910.120

13.3. Hazardous Waste Training - Resource Conservation and Recovery Act (RCRA)

13.3.1 Introduction

Under USEPA and State hazardous waste regulations, employees who handle hazardous waste must be familiar with proper waste handling and emergency procedures (including contingency plan implementation) relevant to their responsibilities. See 40 CFR 265.16. As part of this facility's Hazardous Waste Management Plan, individuals involved with handling hazardous waste will receive appropriate training to ensure compliance with RCRA requirements. The Hazardous Waste Coordinator, *Insert HWC name*, will document the training program.

If supervisors, safety coordinators, or someone else keeps records, indicate that here.

Individuals with the following responsibilities will be included in the RCRA training program:

Add or remove job titles as appropriate!

- Art Technicians;
- Auto Repair Technicians;
- Chemists;
- Engineering Technicians;
- The Coordinator of Hazardous Waste;

- Hazardous Waste Specialists;
- Facilities Maintenance Coordinators;
- Heating Plant Maintenance Mechanics;
- HVAC Technicians;
- Horticulture Technicians
- Laboratory Technicians;
- Medical Laboratory Technicians;
- Research Associates;
- Research Scientists;
- Research Technician;
- Staff Photographers;
- Maintenance Supervisors;
- Select Graduate/Undergrad Students and
- Select Faculty

Either classroom instruction and/or on-the-job training may be provided in-house or by an outside contractor. Personnel must successfully complete the training program within six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees who have not received this training must not work in unsupervised positions until they have completed the training requirements of this section.

13.3.2 RCRA Training Records

Federal regulations require training records be maintained for the duration of employment and retained for a minimum of three (3) years after an employee leaves the position. (40 CFR 265.16(e)) These records include:

- The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job.
- A written job description for each job title. This description must include the requisite skill, education, and/or other qualifications, and the duties of the personnel assigned to each position.
- A written description for the type and amount of both introductory and continuing training that will be given to each person filling a position.
- Records that document that the training or job experience has been given to and completed by the facility personnel.

13.4 OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER)

SI policy is that all employees are First Responders at the Awareness Level [29 CFR 1910.120(q)] ONLY! First responders at the awareness level are individuals who are likely to witness or discover a hazardous substance release and who have been trained to initiate an emergency response sequence by notifying the proper authorities of the release. They would take no further action beyond notifying the authorities of the release. Refresher training is required annually.

14.0 Record Keeping and Reporting

14.1 Introduction

Hazardous waste generators are required to create, provide and maintain records that track waste from generation to ultimate disposal. The purpose of obtaining, maintaining and preserving these documents is to ensure that waste is properly managed and regulatory compliance requirements are met. Both USEPA and States specify record keeping requirements. These requirements include, but are not limited to:

- Copy of Notification
- Copies of Manifests including Land Disposal Restriction (LDR) Notification/Certifications (3 years)
- Universal waste or recycling shipping documentation logs, bills of lading, invoices, or certificates of recycling that verify quantity requirement to ship at least 75% of yearly generation totals
- Copies of Annual or Biennial Hazardous Waste Reports, State Self Certification Forms
- Contingency Plan or Emergency/Spill Response Plan
- Employee Training Records
- Waste accumulation area weekly inspection checklists (CAA and SAA).

14.2 Records Administration and Storage

The following outlines how *Insert name of facility* meets the reporting requirements as well as how records are organized and maintained. Required records and profiles are maintained by the Hazardous Waste Coordinator. Federal regulations require hazardous waste records to be kept a minimum of three years, however, a prudent management practice is to maintain records permanently, but separately, for records older than the prior three years.

The record keeping system will function in the following manner:

- Annual, Biennial Hazardous Waste Activities Reports, State Self Certifications are organized chronologically
- Waste profiles are organized by designated facility and waste profile number and kept as long as the waste stream is generated at the facility and three years following cessation of generation.
- Manifests, Land Disposal Restrictions, and packing lists are organized chronologically in the HWC files.

14.2.1 Hazardous Waste Manifests

Handlers of waste (generators, or treatment, storage or disposal facilities) must obtain forms from a [source](#) that has been approved by the [EPA Manifest Registry](#) to print and distribute the form. A number of States have additional [State requirements](#) regarding the use of the Uniform Hazardous Waste Manifest. Some States require copies to be submitted to the State, and/or have State-specific waste codes in addition to the federal hazardous waste codes required to be entered on the manifest.

The HWC must review manifest documents to ensure receipt of the disposal facility copies of the manifests. A signed copy must be received from the designated TSDRF within 45 days from the date the initial transporter signed the manifest. If after 35 days *Insert name of facility* has not received the signed TSDRF copy, the HWC will contact the TSDRF to determine the status of the shipment. If the signed copy is not received within 45 days, the HWC must coordinate with OSHM to submit an Exception Report to the State.

The SI must keep manifest copies for three (3) years from the date the waste was accepted by the initial transporter. Manifests should be kept with the applicable Land Disposal Notification/Certification forms.

14.2.2 Land Disposal Notification/Certifications

All waste streams with treatment standards indicated in 40 CFR 268.40 or 268.45 must have a one time written notification/certification sent to each treatment, storage, disposal, or recycling facility with the initial shipment of that waste stream. These forms are kept with the signed manifest copy.

14.2.3 Exception Reports

SI will contact the TSDRF to determine the status of the waste if the manifest is not received within 35 days. SI will submit an exception report to the State agency and USEPA if a signed copy

of the manifest is not received from the receiving (TSDRF) facility within 45 days from the date the waste was accepted by the initial transporter. The exception report consists of the following:

- A legible copy of the manifest for which the generator does not have confirmed delivery
- A letter indicating that the SI facility hasn't received the TSDRF facility's signed manifest, and
- A cover letter, signed by the generator explaining the efforts taken to locate the hazardous waste and the results of those efforts.

14.3.3.1 Record Retention of Exception Reports

These reports should be kept with a copy of the manifest in question.

14.2.4 Profiles/Waste Analyses Results

Each waste stream must be evaluated to determine if it is a hazardous waste as defined by 40 CFR 261 and to determine the proper waste code. A waste analysis form or waste profile (developed by the disposal facility) is used to document the hazardous waste determination.

These records should be kept separate from the Land Disposal Notification/Certifications and Manifests.

14.2.5 Satellite and Central Accumulation Area Inspections

USEPA and States require central accumulation area weekly inspections. Additionally, SI requires satellite accumulation areas to be inspected at least monthly. Refer to HWMP-3, [Attachment 9](#) and [Attachments 10](#) or [13](#), as appropriate, for copies of the inspection forms recommended for used by SI facilities. The facility may develop forms tailored to meet their specific needs provided that the regulatory requirements are met.

14.3 Reporting

Hazardous waste regulations require that reports be submitted on a periodic basis. Reporting requirements are different for each different geographical location, but may include:

- Annual Reports
- Biennial Reports (USEPA Requirement)
- Small Quantity Generator Self Certifications

Any generator who generates hazardous waste that is not exempted from reporting must complete this section to indicate their report type and frequency.

14.3.1 Biennial Reports

Biennial reports are required by the USEPA for all Large Quantity Generators. The report will be submitted by March 1 of each even numbered year on forms provided by the USEPA.

14.3.2 Small Quantity Generator Hazardous Waste Self-Certification

Some States have implemented Small Quantity and/or Conditionally Exempt Small Quantity Generator Self-Certification Program. This program requires SQG/CESQG to perform an inspection of their facility *Insert number of years* to determine whether it is in compliance with the applicable hazardous waste regulations. The facility must review their hazardous waste management procedures, conduct a self inspection, and provide the State with a self-certification declaration that the facility is in compliance with applicable regulations.

If it is determined that the facility is not in compliance via self-inspection, the facility must develop a Corrective Action Plan that specifies how the facility plans to come into compliance, as well as a timetable for compliance.

15.0 Emergency Preparedness and Response / Contingency Plan

15.1 Introduction

Each SI facility has separately developed and implemented a plan entitled “Hazardous Chemicals Emergency Spill and Leak Control Procedures”. This plan provides information on actions SI personnel will take to minimize hazards to human health and the environment from releases of hazardous waste and identify actions and designate personnel who will respond to emergencies including hazardous material spills. However, SI policy is that all employees are First Responders on the Awareness Level and only respond to incidental releases pursuant to 29 CFR 1910.120(q). Release of a hazardous substance that is limited in quantity and poses no emergency or significant threat to the safety and health of employees in the immediate vicinity is considered an incidental release.

15.2 Emergency Coordinators

In case of a catastrophic emergency or the need to evacuate, the Office of Protection Services (OPS) must be called. They can be reached by dialing *Insert phone number*

Insert name of primary Emergency Coordinator or his designee serves as the overall Disaster/Emergency Coordinator for all responses to emergency situations.

Insert name of secondary Emergency Coordinator, serves as the secondary Emergency Coordinator for all actions. Contact information for the Emergency Coordinators and other emergency services can be found in the document Hazardous Chemicals Emergency Spill and Leak Control Procedures which is located in *Insert name of Appendix*

The Emergency Coordinator is responsible for the following:

- Being on the premises or on call at all times (or designee);
- Being available to respond to an emergency by reaching the site of generation or accumulation within a short period of time;
- Developing or coordinating the emergency response plans, site operations and activities;
- Being familiar with location and characteristics of waste handled by the facility, location of records, and layout of waste generation sites.

15.3 Emergency Equipment

Insert name of facility provides the following equipment to control emergencies at or near Central Accumulation Areas:

- A communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;
- A device, such as a telephone (immediately available) or a hand-held two-way radio, capable of summoning emergency assistance from the police departments, fire departments, or State or local emergency response teams;
- Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and
 - Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

15.4 Posted Emergency Action Information

The following information is posted at the nearest telephone to the Central Accumulation Area:

- Brief summary of emergency action steps; and
- Emergency phone numbers for:
 1. Emergency coordinator(s) (home and office)
 2. Support services (e.g., fire, police, hospital, Local Environmental Agency)
- Fire extinguisher location;
- Spill control materials location; and
- Fire and internal emergency alarm locations (if present.)

15.5 Notification and Reporting

If *Insert name of facility* experiences an event that exceeds any Federal or State reporting threshold, the facility HWC will coordinate with OSHEM to notify the USEPA Regional Administrator, and appropriate State and local authorities. As required by regulations, a written report of the incident will be submitted to the Regional Administrator within 15 days after the incident. The report will include the following information:

- Facility name, address, and telephone number;
- The date, time, and type of incident (e.g., fire, explosion);
- The name and quantity of material(s) involved;
- The extent of injuries, if any;
- An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- Estimated quantity and disposition of recovered material that resulted from the incident.

*To be completed by Supervisors***Instructions for the “Location of Waste Activities/Materials” form**

Complete this form and return it to the Hazardous Waste Coordinator for your facility.

1. In the column labeled Building/Section, list **all** areas where there is any activity that produces a waste. Look at all:
 - a) Activities that:
 - Use a product requiring a Material Safety Data Sheet (MSDS). Consider both *Manual* and automated processes.
 - Use oils of any type (e.g., petroleum, animal, or vegetable);
 - Use batteries (e.g., lead acid, NiCad, Lithium);
 - Use mercury-containing (e.g., fluorescent) or high intensity discharge (HID) lamps;
 - b) Areas:
 - that are used for holding waste materials,
 - where automated equipment discharges spent chemicals into containers or drains.

Do not eliminate any area because of very small quantities of waste materials or any infrequent activities. Examples include areas where maintenance of equipment generates a contaminated filter or media; areas where activities are not routinely performed but the equipment or reagents remain in the room; and areas where unused or waste materials have been placed, (e.g., used batteries or burned out bulbs). These areas are often selected for their convenience and are often overlooked until an inspection discovers them. Also, keep in mind that some materials that are not regulated are still very harmful and require careful handling (e.g., Ethidium Bromide). List any material that should not be disposed in the regular trash.

If all of the waste producing processes, activities, or materials are in the same building, use the “Building/Section” column to identify the department or section that produces the item, (e.g., microbiology, photography, or maintenance). If the process, activity, or material is in the same room, use a more descriptive term in the Building/Section column (e.g., HPLC-waste, Corrosives Cabinet, or Solvent drum by blue shelf).

2. In the “Rm #” column put the room number. If the room number is already clearly understood use this column for clarification. For example if you are identifying a container put 5-gal or 1-ltr.
3. The “Supervisor” column is to be used to identify the person responsible for the area. Keep in mind that this form will be returned to the Hazardous Waste Coordinator (HWC). If the Supervisor is not normally present in the area, list someone who is knowledgeable about the item on the list and is usually in the area.
4. The “Generate” column is to be used to identify the activity or material that requires special handling. Use simple terms like Acid, Paint, Solvent, Cleaners, or the name of the equipment that generates a waste stream. Put an ASTERISK * on the vertical line to the left of any item you KNOW is required to be shipped as a hazardous waste.
5. The “Store” column is used if no waste is produced (generated) in the area but is held there before being shipped off site. Examples are areas where chemicals from other areas are accumulated, light bulbs are held, used batteries, used oil collection drums, paint collection drums, etc. Areas that are designated to be used for central accumulation areas are to be listed as CAA on the form.

Attachment 5

LOCATION OF WASTE ACTIVITIES/MATERIALS

Building/Section	Rm #	Supervisor	Generate	Store

Supervisor: Supervisor or person responsible for and knowledgeable of all activities in the area where the waste is located.
Generate: List the types of waste produced in the area i.e. Acids, Solvents, Paint, Oil, Batteries, Automated equipment, etc.
Store: Use this section if no waste is produced in the area but it is held there before being shipped off site. Examples are areas where chemicals from other areas are accumulated, light bulbs are held, used batteries, used oil collection drums, paint collection drums, etc.

*To be completed by the HWC***Instructions for the “Regulated Waste ID Log” form**

The Supervisors will complete this form in conjunction with the HWC. The purpose of the coordination is to ensure that all waste activities and/or materials determined to require regulation are clearly identified and shipped offsite in a timely manner.

1. Each room or distinct area should complete a HWMP-2 form. The “Section” space identifies the part of the facility organization responsible for the waste producing activities in the area. The “Supervisor” and “Alternate” spaces are to be used to identify individuals knowledgeable of, and responsible for, the activities that generate wastes. This information is collected for compliance inspection purposes; regulations require that someone always be available to answer questions.
2. The “Process” column is used to identify the activity that actually produces a regulated waste stream. This could be a *Manual* process such as painting, preservative change, maintenance; or it could be the name of automated equipment- ICP-MS, or tissue processor.
3. The “Contact Person” column identifies the individual that performs the activity or runs the equipment that produces the waste. This information is valuable for explaining abnormalities noted during compliance inspections.
4. The “Waste Description” column is used to provide the most descriptive information possible about the identity of the waste stream. Use the proper chemical name as it appears on the MSDS or a complete description that will allow the HWC or others that must handle the waste to be able to segregate it from incompatibles and otherwise avoid injury from mishandling.
5. The “90-day Amount” column is used to record the maximum amount of the waste stream generated in a 90 day period. . The amount is to consider peak usage of the equipment or activity and average the quantity over a 90-day period. Pounds or gallons are the preferred units of measure. The Supervisor is to use the cumulative amount of all waste generated in their area of authority to arrange a schedule with the HWC to ensure that waste is removed and shipped off site in a timely manner.

The regulatory requirement for time allotted to ship waste off site will vary depending on the total amounts of waste generated at the entire facility. It is therefore *critical* that Supervisors be cognizant of the amounts of waste normally generated in their areas of authority and alert the HWC when unusual circumstances arise that increase quantity totals.

Regulated Waste ID LOG

SECTION _____

Rm. No. _____

Supervisor: _____

Alternate: _____

Process	Contact Person	Waste Description	90-day Amt.

Supervisor: Person normally responsible for entire section or area.

Alternate: Person responsible for section or area when Primary is away.

Process: Activity that produces a waste i.e. solvent extraction, sample preservation, painting, battery change, etc.

Contact Person: Individual that performs the activity or runs the equipment that produces the waste.

90-day amount: Pounds or gallons preferred. Will accept other units of measure that provide most accurate estimate i.e. cc or ml.

Instructions for the “Satellite Accumulation Area Inspection” form

Supervisors are to provide this form to an individual who is to be held accountable for waste accumulation containers or areas. This individual may be the same Contact Person identified on the HWMP-2 form, but it is not mandatory. A separate form should be completed for each waste accumulation container and/or area. The best management practice (BMP) for frequency of use of this form is once per month; however, supervisors may require more frequent intervals. *Before copying the form insert the name and phone number of the HWC in the number 6 space.*

1. The “Section” space identifies the part of the facility organization responsible for the waste producing activities in the area.
2. In the “Room #” space indicate the room number; however, if the room number is already clearly understood, use this space for clarification. For example, if there is more than one work station performing the same activity (process) in the same room, and using separate waste collection containers, use this space to differentiate between the container locations. Also, if there are several cabinets used to hold the accumulated waste container specify, “Yellow Cabinet” or “Acid Cabinet”.
3. The “Process” space is used to identify the activity that actually produces a regulated waste stream. This could be a *Manual* process such as painting, preservative change, or maintenance; or, it could be the name of automated equipment such as ICP-MS, or tissue processor.
4. The “Contact Person” space identifies the individual that performs the activity or runs the equipment that produces the waste and is the one completing this form.
5. The remainder of the form is self explanatory. Put the date the inspection is performed in the “Date this data is accurate for” section; answer each question with a **Y** for Yes or **N** for No, and put any additional comments in the “Comments” section.



This form is for Satellite Accumulation Areas **ONLY**. If anyone other than the individual activity generating the waste uses the accumulation container, the “Central Waste Accumulation Area” form HWMP-4 must be used.

Satellite Accumulation Area Inspection Form

Section: _____
Room #: _____
Process: _____
Contact: _____

Date this data is accurate for: ____ / ____ / _____		Y/N
1	Is the container label clearly visible and legible?	
2	Is container in good shape (closed and not deteriorated or leaking)?	
3	Is secondary containment provided for containers holding liquids?	
4	Is the container in its proper location? Are incompatible materials segregated (i.e. separate containers and separated by distance or a barrier)?	
5	Are there full containers of waste, or containers of waste that are no longer needed? If yes, the filled date should be filled in.	
6	Have arrangements been made to have full waste containers or containers that are no longer needed picked up? Requests to have waste picked up can be made by contacting <u>Insert name and phone #</u>	
Comments: 		

Central Accumulation Area Inspection Form

1. Is each drum or container:	Answer each question yes or no	Y/N
Closed?		
In good condition, non-leaking?		
Liquids provided secondary containment?		
Labeled and DOT marked?		
Dated?		
Logged in?		
2. Do we have on hand		
Additional drums/spill trays?		
Spill response equipment, overpack drums?		
Hazardous waste accumulation labels?		
DOT hazard class/division labels?		
3. Are lights and exhaust fans working properly?		
4. Unrestricted access to outside doors?		
5. Unrestricted access to fire extinguisher?		
6. Unrestricted access to alarm and telephone?		
7. Unrestricted access to shower and eye wash?		
8. Any obvious problems with drench shower?		
9. Containers stored to prevent release?		
10. Is incompatible waste segregated?		
11. For outside storage		
Is containment pad drain closed?		
Are drums covered?		
12. Obvious signs of unauthorized access:		
At storage modules/ receiving building?		
13. Is the fence in good condition?		
14. Any objects in fenced area that indicate or could cause a security breach?		
15. Authorized individuals in possession of key?		
	Inspector's initials:	
	Date:	
	Time:	
<p>Comments:</p>		

Hazardous Waste Satellite Accumulation Areas

Best Management Practices for the Handling, Minimization, and Disposal of Hazardous Chemicals

This fact sheet provides an overview of hazardous chemical management at the *Insert name of facility* and incorporates Smithsonian, federal, state and local requirements. The goal is to help you make informed, responsible decisions on how you purchase, use, store and dispose of chemicals at SI. The Office of Safety Health and Environmental Management (OSHEM) provides support to the Smithsonian community to help ensure safe chemical handling practices. Should you require additional training on the handling of Hazardous Waste please, call (202) 633-2530

Prudent Chemical Management

The use of hazardous chemicals is necessary in science, education and research. The use of potentially hazardous chemicals is vital to the operation and maintenance of this facility.

Hazardous chemicals can be divided into four general categories:

- ***Corrosives***
- ***Flammables***
- ***Reactives***
- ***Toxics***

In most cases, the immediate or obvious health hazard resulted in the chemical's classification. However, "Toxics" typically refers to chemicals with acute or chronic health effects that may not be immediately apparent. Some chemicals can fall into more than one of these four categories

General Principles for Managing Potentially Hazardous Chemicals

Do Your Part.....

- Only purchase what you can reasonably expect to use during a 6 month period.
- Purchase containers in the smallest practical size. Although the per-amount cost may be greater, significant savings are realized in reduced disposal costs and safer storage.
- When possible, buy what you specifically need. It is often possible to buy pre-made products or reagents.
- Rotate your chemical inventory. Indicate the date received and the date opened. Pay particular attention to expiration dates.
- OSHEM best management practices require a hazardous material inventory review and justification at least every three years.
- Read labels and Material Safety Data Sheets (MSDS). Manufacturers supply much of what you need to know about the safe use and storage of a chemical.
- Glass breaks! Buy chemicals in plastic containers or shatter resistant plastic coated bottles.
- Peroxide forming compounds should be disposed of if not used within a year.
- Read the National Safety Council data sheet "Recognition and Handling of Peroxidizable Compounds" for specific information on peroxide forming compounds

Attachment 11

- Keep all chemical containers off floors, carts and electrical equipment. Pay close attention to floor drains, sinks and other environmental receptors.
- Store corrosive, flammable and reactive chemicals below eye level. This simple task greatly reduces the likelihood of something falling from above and breaking.
- Cabinets with doors are safer locations than open shelves for hazardous chemicals.
- For safely carrying hazardous chemicals, place the original container into a secondary container. A bottle carrier or bucket will help reduce the likelihood of a break or spill and contain any contents should something happen.
- Be especially careful with reactive chemicals. Obtain and read the Material Safety Data Sheet for each reactive chemical that you may have or may work near.
- Avoid placing any chemical container in direct sunlight, underneath a sink or near a heat source.
- Never place volatile, toxic or flammable chemicals in unapproved refrigerators.
- For your safety, always wear personal protective equipment (eye/face protection, appropriate gloves and lab coat) and appropriate attire when handling hazardous chemicals. “Appropriate attire” does not include shorts, sandals and other garments that leave skin unprotected!
- Always wash your hands after removing gloves and before leaving the laboratory.

The identification and disposal of unlabeled chemical containers is very expensive; please label all containers with the following information. This includes any stock or working solutions.

- ✓ *Name of chemical or stock solution*
- ✓ *Date made (mm/dd/yyyy)*
- ✓ *Your initials and department*
- ✓ *Hazard warning if applicable*

Follow all waste disposal guidelines provided by your Supervisor and Hazardous Waste Coordinator!

It is highly recommended that you institute a label awareness campaign at your facility. As a Hazardous Waste Coordinator you may put up flyers, suggest that each Supervisor ask the questions on the container management checklist once a month, or suggest that each employee check the containers in their work area every Monday upon returning to work. These are easily accomplished tasks that take only a few minute.

Characteristic Wastes and Listed Wastes Codes

Both characteristic wastes and listed wastes are categorized using the applicable EPA hazardous waste codes.

- (A) Listed HW's are located in several sections within 40 CFR 261 and are grouped into the following categories of EPA HW numbers:
 - (1) F Wastes (40 CFR 261.31): Wastes from nonspecific sources (e.g., spent solvents used in cleaning operations).
 - (2) K Wastes (40 CFR 261.32): Wastes from specific sources (e.g., wastewater treatment sludge from the manufacturing or processing of conventional explosive materials).
 - (3) P Wastes (40 CFR 261.33): Acutely hazardous discarded commercial chemical products, off-specification products, container residues, and spill residues thereof.
 - (4) U Wastes (40 CFR 261.33): Toxic discarded commercial chemical products, off-specification products, container residues, and spill residues thereof.

- (B) Characteristic HW's are designated as EPA waste numbers beginning with the letter "D" and are described in 40 CFR 261.20 - 24. They are identified as follows:
 - (1) Ignitable Wastes (D001): Any solid waste when it is a liquid and has a flash point of less than 140o F; when it is not a liquid and is capable of igniting a vigorous, persistent fire through friction, absorption of moisture, or spontaneous chemical change; when it is an ignitable compressed gas; or when it is an oxidizer.
 - (2) Corrosive Wastes (D002): Any solid waste that has a pH less than or equal to 2 or greater than or equal to 12.5, or a solid waste capable of corroding steel at a rate greater than 0.25 inch per year.
 - (3) Reactive Wastes (D003): Any solid waste with any of the following properties:
 - (a) Normally unstable and readily undergoes violent change without detonating,
 - (b) Reacts violently with water,
 - (c) Forms potentially explosive mixtures with water,
 - (d) Generates toxic gases when mixed with water,
 - (e) Cyanide or sulfide bearing and capable of generating toxic gases when exposed to pH conditions between 2 and 12.5,
 - (f) Capable of detonation or an explosive reaction when exposed to a strong initiating force or when heated under confinement,

Attachment 12

- (g) Capable of detonation or an explosive decomposition reaction in normal room conditions,
 - (h) A forbidden Department of Transportation (DOT) hazard class 1 explosive.
- (4) Toxic Wastes (D004 - D043). Any solid waste, the extract of which, when tested using the Toxicity Characteristic Leaching Procedure (TCLP), contains contaminant(s) exceeding the allowable level(s). Described in 40 CFR 261.24 is a list of contaminants, allowable levels, and corresponding D Waste numbers.
- (C) Emission residues from air pollution control equipment and sludge from wastewater treatment plants may display an HW characteristic. Toxicity is the most common characteristic of these residues and sludge. Therefore, these residues and sludge must be evaluated to determine whether they are HW, and, if so, they must be managed appropriately.
 - (D) Several pesticides exhibit toxic waste characteristics. Facilities that use pesticides must determine whether the waste pesticides and pesticide waste products (containers, rinsate, etc.) meet the definition of toxic HW listed above. When ready for disposal, pesticides and pesticide waste products meeting this definition must be managed as HW.
 - (E) Mixtures of a non-HW and listed HW are also considered HW and must be managed appropriately.
 - (F) Mixtures of a non-HW and a characteristic HW are regulated as HW only if the entire mixture exhibits one of the four hazardous characteristics.
 - (G) Because of the regulations summarized above, it is extremely important to segregate waste streams, both hazardous and non-hazardous, to avoid the added expense of managing HW when it can be avoided through proper segregation.

Hazardous Waste Weekly Inspection Checklist

Hazardous Waste Weekly Inspection Checklist
For Central Accumulation Areas

Location: _____

Date	Inspectors Initials	Containers in good condition (not leaking)	Containers are closed	Containers are compatible with waste	Containers are labeled with "Hazardous Waste" and the Accumulation Start Date	Containers are within secondary containment	Incompatible wastes are segregated	Container dates less than 180 days old	Comments

Instructions: Review items above and place checkmark in square after inspected to indicate item is correct. Explain any problems found in the Comments section and report them immediately to the Hazardous Waste Coordinator. Any corrective actions taken should also be noted in the Comments section.