CHEMICAL, HAZARDOUS, AND UNIVERSAL WASTE MANAGEMENT GUIDE

Version	Date	Comments
3	April, 2014	Waste Management Guide

A. INTRODUCTION

This Guide applies to all employees and contractors who use, store, or generate chemical, hazardous, or universal waste on George Mason University property. Employees are responsible for ensuring that waste is properly labeled and stored prior to collection by Environmental Health and Safety Office (EHS) staff.

B. SCOPE

Hazardous waste is defined by the US Environmental Protection Agency (EPA) and Virginia Department of Environmental Quality (DEQ) as any material that "may pose a substantial or potential hazard to human health and safety and to the environment when improperly managed." The purpose of this Guide is to provide guidance to all George Mason University personnel for the safely handling, labeling, and storing all chemicals, hazardous and universal waste. This Guide is based upon EPA Standards 40 CFR Subchapter I, *Solid Wastes*, and DEQ regulations 9VAC 20-60 and 20-60-273.

C. EMPLOYEE RESPONSIBILITIES

- Receive appropriate training commensurate with assigned work or position.
- Properly manage chemicals and hazardous waste in accordance with EPA and DEQ regulations, and George Mason University policies.
- Attempt to reduce the volume of hazardous waste generated whenever possible.
- Report any waste spills immediately to your supervisor, EHS, or University Police.

D. TRAINING

- Hazard Communication Training, or Laboratory Safety Orientation Training for employees working in laboratories, is required upon initial assignment to a position that requires the management of hazardous chemicals.
- George Mason University requires Safety Refresher training be taken annually. Contact EHS for training information.
- Chemical-specific training should be provided by supervisors whenever a new hazardous chemical(s) is used in the work area.
- Annual hazardous waste management refresher training is required for all individuals generating or handling hazardous waste. Training is available through EHS via the Laboratory Safety Refresher training or Safety Refresher training.

E. WASTE COLLECTION

- Waste shall be accumulated in designated Satellite Accumulation (SAA) areas throughout facilities areas at or near the point of waste generation.
- Any areas that need a new SAA location must be coordinated with EHS to ensure an accurate inventory of the location is maintained and collections are being routinely performed.
- EHS will collect hazardous waste, and universal waste; to include batteries, mercury contained in manufactured articles, and small light bulbs on a routine basis from SAA's and transfer them to a Central Accumulation and Storage Area managed by EHS.
- Fluorescent light tubes shall be transported to and accumulated in the warehouse for pickup by a state approved universal waste vendor.

F. WASTE STORAGE

- Containers used to collect waste must be in good condition (i.e., free of cracks, punctures, dents, or other defects), have screw-top caps or lids, and be compatible with its contents.
- Waste containers shall be vapor tight and spill proof to prevent a release to the environment, and stored in secondary containment.
- Waste containers may not be larger than 55 gallons. EHS provides waste containers upon request.
- All waste containers must be free of conflicting markings or labels.
- Food and drug containers may not be used for collection of chemical or hazardous waste.
- Chemical wastes that are mixed together must be compatible with one another.
- Containers should never be filled beyond 90% capacity.
- Never dispose of hazardous waste in a sink, drain, sewer, municipal trash, or outdoors into the environment.

G. LABELING WASTE

Hazardous and universal waste labels are provided by EHS upon request. All waste must be labeled with an appropriate label that displays the complete chemical name and the date that the chemical is determined to be waste.

- Waste placed in an SAA must bear an appropriate hazardous waste or universal waste label and include the type of waste, and date the waste was placed in the SAA.
- Labels must be affixed to a container when waste is first placed in a container.
- All labels should be filled out using permanent ink.
- The complete chemical name (no abbreviations, chemical structures, or formulas) must be used to indicate the contents of a container. If more than one ingredient, percentages of constituents must be listed.
- The building and room number must be indicated on the label.

H. SATELLITE ACCUMULATION AREAS

A SAA is a space within the work area designated for the temporary accumulation and storage of hazardous waste. EHS will collect hazardous waste from the SAA on a routine basis. The following rules apply to satellite accumulation areas:

- Each work area that generates hazardous, universal, or chemical waste must have access to a SAA.
- Supervisors, Principal Investigators, or Laboratory Supervisors are responsible for establishing and managing the SAA and training staff on its use. Contact EHS for assistance with set-up and training.
- The SAA must be located in an area that is accessible to staff and EHS.
- Waste should be stored in secondary containment and segregated according to chemical compatibility. A chemical compatibility chart is provided in Appendix A.

I. SUPPLIES AND ASSISTANCE

EHS will provide the following supplies and assistance to support the proper management of chemical, hazardous, and universal wastes:

- Waste containers appropriate for a variety of chemical and hazardous waste.
- Supplies for creating a SAA such as secondary containment and signage.
- Labels (e.g., "Hazardous Waste" and "Universal Waste").
- Routine inspections of the SAA and transport of waste from the SAA to a central accumulation area.
- Assistance in identifying, accumulating, storing, and reducing hazardous wastes.
- Additional training as needed or as requested by supervisors or employees.

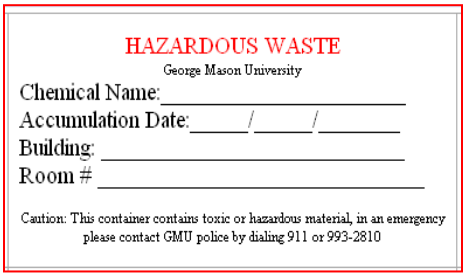
J. "NON HAZARDOUS" CHEMICAL WASTE

George Mason University recycles non-hazardous chemical waste whenever possible. The following chemical wastes do not require a hazardous waste label; however they must be labeled as waste with the words "Used Oil, Used Antifreeze" etc., collected and stored in the SAA for collection by EHS or authorized recycling vendor.

- **Antifreeze/Glycol**
  - All heat transfer fluids and glycol based products must be collected.
- **Latex Paint**
  - Excess latex paint cans and pails should be collected in a SAA.
- **Oil**
  - All oil (e.g., motor, refrigeration, vacuum, pump, and lubricating oil)
- **Oil Filters**
  - Oil should first be drained from the filter into a waste container or tank
  - Filters must be placed in a drum labeled "Waste Oil Filters".

K. HAZARDOUS WASTE

The following wastes must be collected, labeled, and placed in the SAA for collection by EHS. Hazardous waste labels are provided in the *Safety Manual* in facilities or non-laboratory work areas and in the *Safety Records and Resources Binder* in all laboratories.


HAZARDOUS WASTE
George Mason University
Chemical Name:_____
Accumulation Date:_____/_____/_____
Building: _____
Room # _____
Caution: This container contains toxic or hazardous material, in an emergency please contact GMU police by dialing 911 or 993-2810

- **Laboratory Chemicals**
  - Flammable
  - Corrosive
  - Oxidizer
  - Reactive
  - Toxic
- **Aerosol Cans**
  - All aerosol cans; empty, new, or partially full must be collected.
- **Cylinders**
  - An attempt to return cylinders to the distributor or manufacture must be made.
  - If the cylinder is unable to be returned, it must be managed as hazardous waste.
- **Corrosive Cleaning Compounds**
  - All corrosive cleaning compounds, such as those used to treat boilers, coils, or pipes.
  - Corrosive and caustic compounds must be collected in plastic containers.
- **Flammable Adhesives**
  - Epoxy, resins, glues, and sealants which contain solvents, organics, or petroleum distillates.
- **Oil-based Paint and Stains**
  - Containers must be collected in SAA.
- **Solvents, Paint Thinner, Mineral Spirits, and Parts Cleaner**
  - Flammable liquids that are poured off must be collected in grounded metal containers or safety cans.
- **PCB Containing Light Ballasts**
  - Ballasts that are clearly marked as not containing PCBs can be disposed in the municipal trash.
- **Broken or Damaged Fluorescent Lamps or Batteries**
  - Broken lamps or batteries must be collected in a sealed screw top container and labeled as hazardous waste.
- **Shop Rags**
  - Shop rags used with solvents or oil-based products must be placed in flame-arresting collection cans.

L. UNIVERSAL WASTE

A subset of very common hazardous waste is collected, managed, and labeled as universal waste and is therefore not subject to the same regulations as other hazardous waste; typically this means they may be collected and stored in greater quantity and for longer periods of time.

- **Fluorescent bulbs**
  - Tubes- all lengths
  - Compact fluorescents
- **High Intensity (HID) Lamps**
  - Mercury Vapor
  - Metal-Halides
- **Intact Mercury-containing Equipment**
  - Thermostats, switches, and intact mercury thermometers.
  - Broken or breached mercury-containing equipment should be reported immediately to EHS. Do not attempt to clean up a mercury spill.
- **Pesticides, Fertilizers, Insecticides and Herbicides**
  - All containers that contain or previously contained pesticides, insecticides, or herbicides.
- **Lead Acid Batteries**
  - All caps on the battery must be present.
  - Battery terminals without caps should be taped with duct tape, or electrical tape.
  - Leaking batteries should be placed in secondary containment to prevent a release to the environment, labeled as hazardous waste, and reported to EHS immediately.
- **Rechargeable Batteries**
  - Nickel cadmium, Lithium ion, Nickel metal Hydride (e.g., NiCad, Li-ION, NiMH)
  - Must be collected in sealed containers and labeled with their contents.

M. EMERGENCY SPILLS AND RESPONSE

In the event of a spill involving hazardous material or waste employees must follow the appropriate reporting and response procedures.

- **Facilities Personnel**
  - Contact University Police immediately at (703) 993-2810 for any spill that is not contained, uncontrollable, or greater than 25 gallons.
    - Leave the area and report the location to the police
    - Identify the hazardous material(s), if safe to do so, using available labels or SDS.
    - Follow Police instructions
  - Contact EHS at (703) 993-8448 for assistance with spills less than 25 gallons involving materials that do not pose a threat to human health, safety, or the environment.
- **Laboratory Personnel**
  - Follow procedures outlined in *Laboratory Safety Orientation* or *Biological Safety for BSL-2 Laboratories* training, or contact University Police at (703) 993-2810.
    - Leave the area and report the location to the police
    - Identify the hazardous material(s), if safe to do so, using available labels or SDS
    - Follow Police instructions

Appendix A. Chemical Segregation Chart

Chemical Hazard Class	Incompatible Materials	Hazard Symbols
Flammable Materials Materials with a flashpoint less than 60˚C (140˚F). Examples: gasoline, xylene, turpentine, paint thinner, acetone, solvents, alcohols, and ketones	Oxidizing materials, Acids, Toxic materials, Reactive materials	
Oxidizing Materials Readily release oxygen or oxidize surrounding compounds. Examples: nitrates, nitrites, peroxides, and strong acids	Flammable materials, Bases, Acids, Reactive materials	
Acidic Materials pH less than 5. Examples: hydrochloric acid, nitric acid, butyric acid, formic acid, acetic acid, and phosphoric acid	Cyanides, Bases, Oxidizing materials, Toxic materials, Reactive materials	
Basic Materials pH higher than 10. Examples: sodium hydroxide, potassium hydroxide, amines, and ammonium hydroxide solutions	Acids, Oxidizing materials	
Toxic Materials Materials that are carcinogenic, teratogenic or pose and inhalation hazard. Examples: pesticides, solvents, cyanides, and heavy metals.	Acids, Bases, Flammable materials	

Reactive Materials Materials that react with water/air or spontaneously combust on contact with other chemicals. Examples: metal hydrides, and metal powders.	Acids, Bases, Flammable materials, Oxidizing materials	  

The information contained in this Guide is not inclusive of all OSHA or EPA regulations. Please contact Environmental Health and Safety Office at (703) 993-8448 or visit www.OSHA.gov or www.EPA.gov for more information regarding workplace hazards, safety precautions, and regulations.