

USF HAZARDOUS WASTE MANAGEMENT GUIDE

Satellite Accumulation Areas (SAA)

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Please direct questions to
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I. INTRODUCTION

Hazardous waste is generated at the University of South Florida (USF) from various activities including research, teaching, art, and facilities support. The Environmental Protection Agency (EPA) is the Federal agency charged with developing and ensuring compliance with hazardous waste regulations. In the State of Florida, the Florida Department of Environmental Protection (FDEP) has been delegated the authority to develop additional hazardous waste regulations, providing they are at least as stringent as

those promulgated by the EPA, and inspect facilities that generate, store, or dispose of hazardous waste. Therefore, USF is required to adhere to the regulations of both the EPA and DEP and may be subject to unannounced inspections by either agency.

EPA and DEP regulations allow for small quantities of hazardous waste to be accumulated under the control of the generator at or near the point of waste generation up to a maximum of 55 gallons, or one quart of EPA acutely hazardous waste. These accumulation points are called satellite accumulation areas (SAAs). The University may classify each laboratory, shop, studio, or other appropriate area as an SAA.

This document outlines the regulations governing the accumulation of hazardous waste in SAAs and describes the procedures for managing hazardous waste in SAAs at USF.

II. ROLES AND RESPONSIBILITIES

DIVISION OF ENVIRONMENTAL HEALTH AND SAFETY

The Division of Environmental Health and Safety (EH&S) provides information to University personnel on proper storage and disposal methods for hazardous waste. EH&S ensures that the storage of chemicals at the University's central Hazardous Waste Accumulation Site and final shipment and disposal of waste are in compliance with applicable federal, state, and local regulations. In addition, EH&S completes and submits all applicable hazardous waste reports to the appropriate regulatory agencies.

FACULTY, STAFF AND STUDENTS

All faculty, staff, and students working with hazardous materials that result in the generation of hazardous waste must comply with hazardous waste regulations and this procedure.

Each satellite accumulation area should appoint an individual responsible for ensuring that its respective area is in compliance with the University's procedures including the procedures contained within this document. This individual may be a Principal Investigator, lab manager, graduate student, shop supervisor, or other designated staff member.

The ultimate responsibility for hazardous waste satellite accumulation area compliance lies with the Principal Investigator or worksite supervisor. Any fines incurred for violations of the hazardous waste regulations during inspections by regulatory agencies will be the responsibility of the department.

III. HAZARDOUS WASTE IDENTIFICATION

A *waste* is defined as a material that has no intended use or reuse and includes chemicals that are no longer needed, expired, or spilled.

There are two types of wastes that the Environmental Protection Agency (EPA) considers to be *hazardous wastes*:

1. *Listed wastes* are waste chemicals specifically listed by the EPA in 40 CFR 261.31, 40 CFR 261.32, and 40 CFR 261.33. EPA listed hazardous wastes can be found at <http://usfweb2.usf.edu/eh&s/hazwaste/epahazlist.pdf>.
2. *Characteristic wastes* are wastes that exhibit one or more of the following characteristics:
 - *Ignitability*- substances that create fires under certain conditions or spontaneously combust and have a flashpoint less than 60°C (140°F)
 - *Corrosivity*- acids with pH less than 2 or bases with pH greater than 12.5
 - *Reactivity*- substances that are unstable under normal conditions and are capable of causing explosions or emitting toxic fumes, gases, or vapors when mixed with water or other materials
 - *Toxicity*- substances that are harmful or fatal when ingested or absorbed or are capable of polluting groundwater if disposed of on land

These characteristics are further defined in 40 CFR 261.21 - 261.24.

Not all chemical wastes are hazardous wastes as defined by the EPA. However, all chemical wastes should be stored in satellite accumulation areas and should be treated as hazardous wastes due to local disposal restrictions. Even chemical wastes that are not EPA hazardous wastes should be disposed of through EH&S unless specific authority has been granted through EH&S for alternative disposal methods. The EH&S staff is responsible for the final determination of whether a waste is hazardous as well as the ultimate disposal of all chemical waste.

IV. OTHER WASTE TYPES

Radioactive, biohazardous, and pharmaceutical wastes have separate management requirements from chemical hazardous wastes and are therefore covered under separate programs at USF. Please consult the EH&S website (<http://www.usf.edu/eh&s>) for more information about disposal of biohazardous and pharmaceutical waste, or the Research Integrity and Compliance website (<http://www.research.usf.edu/cs/>) for more information about radioactive waste.

Mixtures of radioactive or biohazardous wastes with chemical wastes should be minimized due to the difficulty of disposing of these wastes and costs associated with disposal. Please contact the EH&S Office with questions regarding waste mixtures.

Universal wastes, including mercury containing bulbs and other mercury containing devices (e.g., thermostats), recyclable batteries, and scrap metals are managed by USF Physical Plant. Please contact Physical Plant for information about disposal of these items.

V. WASTE STORAGE LOCATIONS

According to EPA regulations all chemical waste must be labeled and stored in a satellite accumulation area in the immediate vicinity of the related work process and must be under the control of those generating the waste. Each SAA should be identified with a sign or sticker for this purpose. SAA stickers are available through the EH&S Office. Chemical wastes may not be moved to an SAA in a different room or work area for storage.

VI. CHEMICAL COMPATIBILITY

Chemical wastes within the satellite accumulation area should be segregated by waste type to minimize the potential for dangerous reactions and to help reduce the costs for final disposal.

Safety should be the highest priority when accumulating hazardous waste. Some safety practices that should be considered when accumulating and storing chemical waste are:

- Read the MSDS for potential reactivity information paying special attention to any compatibility information prior to combining any waste chemicals into a common waste container.
- Submit unused chemicals for disposal in their original containers to minimize exposure to harmful vapors or dusts.
- Solid wastes should be kept separate from liquid wastes.
- Wastes should be divided into separate waste streams according to their hazard characteristics.

Some examples of waste streams that may be combined into separate containers include:

- Non-halogenated flammable liquids (e.g. xylene, methanol, gasoline)
- Halogenated flammable liquids (e.g. chloroform, dichloromethane)
- Mercury (e.g. elemental and compounds)
- Other heavy metals (e.g. lead, arsenic, chromium)
- Used oil (e.g. used pump oil)
- Used photographic waste (fixer separated from developer)
- Toxic organic and inorganic liquids (e.g. ethidium bromide)
- Toxic organic and inorganic solids (e.g. acrylamide)

Please be aware that some chemicals that have similar hazard characteristics are incompatible with one another, such as nitric acid and glacial acetic acid. In general, corrosives, oxidizers, or other reactive liquids should not be combined with any other waste streams due to their potential to generate gases or heat. Consult the MSDS for compatibility information before combining any chemicals.

VII. CONTAINER MANAGEMENT

Containers used to accumulate hazardous waste must be:

- Compatible with the waste chemicals contained therein.
- Tightly sealed except when wastes are being actively poured into them. Funnels must be removed immediately after use. The evaporation of hazardous waste is a violation of hazardous waste regulations.
- Able to withstand packaging and travel. Test tubes, beakers, flasks, plastic milk/soda bottles or any other type of beverage/food containers are not an acceptable means of packaging hazardous wastes.
- Labeled with the words "Hazardous Waste" and include the contents of the container including percentages of chemical mixtures. Attaching a completed Hazardous Material/Waste Tag or Sticker to the container will satisfy both of these requirements.

The use of secondary containment in each SAA is strongly recommended. The secondary containment should be large enough to collect the volume of the largest waste container stored in that SAA if the container leaks. Polyethylene trays are commonly used as secondary containment for many wastes.

Hazardous Material/Waste Tags, stickers, and various hazardous waste accumulation containers are available from the Division of Environmental Health & Safety. For information about acceptable waste containers and/or labeling requirements contact the EH&S hazardous waste staff.

VIII. MANAGEMENT OF EMPTY CONTAINERS

Containers from which all chemical product has been removed are considered empty and can be safely disposed of in the trash if:

- All waste has been removed that can be removed using the practices commonly employed to remove materials from that type of container (e.g. pouring, pumping), *and*
- No more than one inch of residue remains on the bottom of the container *or*
- No more than 3% by weight of the total capacity of the container remains in the container if the container is less than 110 gallons, *or*

- No more than 0.3% by weight of the total capacity of the container remains in the container if the container is greater than 110 gallons.
- The pressure in compressed gas cylinders is equal to atmospheric pressure.
- Original chemical labels are defaced and/or marked with the word “Empty”.

Please note that containers that contained EPA acutely hazardous (P-listed) waste must themselves be managed as hazardous waste *even if empty*. For a list of acutely hazardous wastes please see <http://usfweb2.usf.edu/eh&s/hazwaste/epahazlist.pdf>.

IX. WASTE PICKUPS

Hazardous waste pickup procedures vary based upon campus location. If you are unsure of the hazardous waste collection procedures for your location, please contact EH&S at (813) 974-4036.

X. CHEMICAL SPILLS

CHEMICAL SPILL KITS

Each satellite accumulation point should be prepared to safely clean up any small spills that could occur during everyday activities.

A chemical spill kit should be stored near each satellite accumulation area for use in the event of a spill. Each satellite accumulation area has different chemical spill kit needs depending on the type and quantity of hazardous materials used. In order to determine specific spill kit components, consult the material safety data sheets of the chemicals used in the area. A basic spill kit should contain:

- A five gallon plastic bucket
- Personal protective equipment to be used only for spill cleanup (e.g., thick rubber gloves, splash goggles, shoe covers.)
- Inert absorbents compatible with chemicals to be absorbed (e.g., vermiculite, clay, absorbent socks or pillows)
- Plastic dustpan and brush
- Chemical-resistant bags
- Hazardous waste tags or labels

The five gallon bucket can be labeled with the words “Chemical Spill Kit” and all other materials can be stored within it for quick access in the event of a spill.

SPILL CLEANUP PROCEDURES

If a spilled chemical poses an immediate threat to life or health, the building occupants should be evacuated from the building and emergency responders should be contacted immediately. Occupants can be notified of a building evacuation through the activation of a fire alarm pull station. Dial 911 to contact the local emergency responders for your area. Detailed information should be provided to the emergency responders including chemical name, volume, hazards, spill location, and any injuries incurred.

Prior to beginning any spill cleanup, area workers should be notified of the spill and bystanders should be asked to leave the immediate area. The contaminated area should be cordoned off if necessary.

Please note that the MSDS should be consulted and the proper PPE should be worn prior to cleaning up any spilled materials.

To clean up a minor liquid spill:

- Spread absorbent liberally around and over the surface of the liquid and allow time to absorb;
- Use a dustpan and brush to collect the wet absorbent and transfer to a 5 gallon plastic bucket;
- Store contaminated brushes, dustpans, and protective equipment in a chemical resistant bag;
- Use Hazardous/Chemical Waste Tags or labels to identify the contents of any containers used for spill cleanup;
- Dispose of all cleanup materials as hazardous waste.

Under certain conditions, EH&S should be contacted to assist with a spill cleanup.

EH&S should be contacted if:

- the chemical volume is large
- the chemical involved is acutely hazardous
- there is not adequate ventilation in the spill area to protect workers
- the facility does not have appropriate spill cleanup materials or PPE
- personnel in the facility do not feel that they can safely handle the cleanup

The University Police Department (UPD) should be contacted if a spill that requires EH&S assistance occurs outside of normal business hours. The UPD will contact EH&S representatives who can assist with the cleanup.

EH&S or UPD may contact the Fire Department or a hazardous materials contractor to assist with decontamination if a spill is particularly large or hazardous.

Every effort should be made to prevent spilled materials from entering drains, soil, or bodies of water. If a spilled chemical or fuel enters the drain, soil, or a water body, EH&S must be contacted immediately.

XI. WASTE MINIMIZATION

All USF laboratories and work areas are encouraged to minimize the amount of hazardous waste they create. Waste minimization can be accomplished using several methods:

- A. Substituting or using less-hazardous materials
 - Whenever possible, choose materials or procedures that use less-hazardous materials over those that involve the creation of hazardous wastes.
 - Avoid the use of heavy metals such as arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver.
 - Use non-hazardous cleaners in lieu of solvent or acid-based cleaning solutions.
 - Replace mercury thermometers with alcohol or digital thermometers.

- B. Using smaller amounts of chemicals
 - Practice micro-scale chemistry or use demonstrations instead of individual experiments in teaching laboratories.
 - Purchase pre-mixed solutions or kits whenever available.

- C. Practice effective inventory control
 - Keep an up-to-date inventory to prevent the purchase of duplicate chemicals.
 - Purchase chemicals in the smallest quantity necessary to complete the task.
 - Label all containers with the date received and use a “first in, first out” approach.
 - Label all chemicals transferred from original containers with the complete chemical name, date of transfer, and the preparer’s name.
 - Avoid the generation of unknown wastes by performing periodic inventory evaluations and replacing labels that have degraded.
 - Purchase compressed gas cylinders from manufacturers to whom cylinders can be returned when empty.

If you have any questions regarding these procedures, contact the Division of Environmental Health and Safety at (813) 974-4036 for clarification.