Hazardous Waste Management
by
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Objectives

• To provide hazardous waste management procedures to researchers, staff, and students that handle hazardous wastes

• To provide accident management and spill clean-up procedures

• To provide contact information and resources to aid in safety concerns
• Hazardous Waste Determination
• Container Management
• Waste Storage
• Waste Compatibility
• Waste Minimization
• Waste- Pickup
• Spill Clean-up
• Risk Management
What is a hazardous waste?

A waste is hazardous if it meets one of the following criteria:

- exhibits one or more characteristics of a hazardous waste.
• An Ignitable waste is a liquid that can create a fire or spontaneously combust at temperatures less than 60°C or 140°F. Examples: ethyl ether, xylene, oxidizers

• A Reactive waste is a liquid that tends to be unstable at normal temperatures and pressures. It may react violently with water, air, and other materials. Examples: sodium, potassium, peroxides
- A Toxic waste is a material that can be harmful or fatal if you are exposed and can pollute groundwater if released on land. Examples: lead-based paints, cadmium, arsenic

- A Corrosive waste is a liquid with a pH less than or equal to 2 or a pH greater than or equal to 12.5. Examples: hydrochloric acid, glacial acetic acid
What is an acutely hazardous waste?

- Acutely toxic to humans and animals in very small amounts

Examples include:
- sodium cyanide
- osmium tetroxide
- sodium azide
Time-Sensitive Chemicals

- Potential organic peroxide salt formers & explosives can be created if stored too long or under improper conditions

Examples: Ethers
- Tetrahydrofuran
- Picric/Picrylsulfonic Acid
Do Not Attempt to Open Expired Chemical Containers!

Time-Sensitive Chemicals
- Check for crystallization periodically
- Dispose of no later than 12-18 months after purchase
- Call EH&S to pick up all expired chemicals
Final Determination

- Environmental Health & Safety has the final determination of whether a waste is hazardous and its proper disposal.

- Therefore, all accumulated chemical wastes should be treated as hazardous wastes.

  No Chemical Wastes Down The Drain or in the Trash!

  Dilution is not the pollution solution.

- Contact EH&S for waste pick-up
Container Management

- Must label containers “Hazardous Waste”
- Include contents/percentages
- No abbreviations or formulas
- Container must be compatible with hazardous waste being stored
  Do not store hazardous wastes in food containers

- Keep containers closed at all times except when adding or removing contents. Evaporation of wastes is a violation.
- Contents of leaking containers must be transferred into another container
What should you do with empty containers?

• Can be disposed of in lab trash except for acutely hazardous wastes

• Empty containers that contained acutely hazardous wastes are managed as hazardous wastes themselves.

• Original chemical labels on empty containers should be defaced and marked “Empty” before disposing in trash.
Waste Accumulation and Storage

- **Satellite Accumulation Area (SAA)**
  - At or near the related work process
  - Under the control of the generator
  - Maximum amount stored 55 gallons or 1 quart acutely hazardous

- Secondary containment and weekly inspections are strongly recommended.

**3L’s**
- Leaks
- Lids
- Labels
Accident at University of Kentucky

• A student added methylene chloride to a waste bottle with unknown contents.

• An explosion occurred blowing glass shrapnel across the laboratory.

• A fire occurred in the hood and the laboratory quickly filled with smoke.

• Explosions of this nature can have an induction period ranging from one second to one hour or more.
Waste Compatibility

- Wastes should be segregated in an SAA to minimize potential reactions.

- To prevent potential reactions,
  - Read MSDS
  - Keep unused chemicals in original containers
  - Divide wastes into separate waste streams
    - Acids
    - Oxidizers
    - Photographic waste
    - Bases
    - Solids
    - Mercury
Waste Incompatibility Incident

- Nitric acid waste was added to bottle containing waste solvents
- Reacted violently causing explosion under fume hood

http://www2.umdnj.edu/eohssweb/aiha/accidents/explosion.htm#Incompatible
What Would You Correct?
Waste Minimization

Methods:

• Substitution

• Use smaller amounts of chemicals in experiments

• Practice effective inventory control
Coming Soon…
Implemented in Some Labs

HITS
Hazardous Inventory Tracking System
Waste Pick-up

Hazardous waste tags must be placed on containers the first time waste is added.

To have waste collected for HITS users:

1. Fill out HITS yellow tag
2. Complete with percentages
3. Attach the tag to the waste
4. Login to HITS system, https://hits.admin.usf.edu/HITS/login.jsp
5. On Main Menu Click on Dispose of Chemical
6. Select chemical from inventory or a waste made from process
Select Item from Inventory

Inventory Search

Return to Main Menu

Select search criteria below to display current inventory or Search MSDS

Material
Owner

Search
Reset

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Direct questions or comments about the Web site to infochs@admin.usf.edu
Select Waste Made from Process

Waste Generated from Process

Return to Main Menu

Note: The overall percentage entered for all items MUST total 100%.

Hazards/Precautions/Special Instructions

I certify that:
- The description of the chemicals listed above is accurate and complete and all infectious organisms/agents have been rendered noninfectious.
- I am actively seeking to minimize the generation of hazardous waste and to recycle when possible.

For further information please see Hazardous Waste Procedures.

Done
For Non-HITS users:
1. Fill out USF white hazardous waste tag
2. Complete with percentages
3. No abbreviations
4. Send top copy (white) to EH&S (CRS 104)
5. Attach the rest of tag to the waste
Spill Clean-up

When responding to a small chemical or hazardous waste spill,

- Knowledgeable about the material’s hazards
- Potential to react with other materials

Contact EH&S/UPD for spill clean-up assistance when:

- Large spills
- Spills involving extremely hazardous chemicals
- Inadequate ventilation in spill area
- No spill clean-up materials
- Personnel uncomfortable handling clean-up
- If a spilled chemical enters the drain, soil or water body
To clean up a chemical or hazardous waste spill using a spill kit,

- Consult MSDS & wear proper PPE prior to clean-up.
- Spread absorbent around and over liquid’s surface
- Collect wet absorbents & transfer them in plastic bucket or bag using dustpan & brush
- Identify contents of bucket/bag using hazardous waste tags. They are now hazardous wastes.
- Call EH&S for waste pick-up
Scenario

• You accidentally knock over a 2 gallon container of nitric acid on the floor. The liquid has started to seep through the floor drain. What should you do next?
Accident Management

• **Dial 911** on campus for emergencies

• **Call Environmental Health & Safety**
  – for assistance with spills that you are uncomfortable handling
  – to clean up mercury spills
  – to report an accident

• **After hours or on weekends call campus police to contact EH&S staff**
Risk Management/Workers’ Comp.

- If you are injured on the job…
  - Notify your supervisor
  - Proceed to approved medical facility
  - Report injury to WC office within 24 hours
    - Tampa - (813) 974-5775
    - St. Pete - (727)553-4115
  - Weekends/after hours contact CorVel at
    1-800-929-0107

- Forms are available on the EHS website
- Refer to “What to Do if You Are Injured” info card
THANK YOU