



## Management and Disposal of Hazardous Waste

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### Purpose:

FGCU shall take every precaution when handling hazardous chemicals and wastes to avoid hazards to human health and the environment.

The University will manage all waste in accordance with applicable regulations, with the goal of remaining a *Very Small Quantity Generator* of hazardous waste. To remain exempt from the full hazardous waste regulations that apply to generators of larger quantities, the University must comply with three basic waste management requirements:

1. Identify all hazardous waste that is generated.
2. No more than 100 kilograms or 220 pounds of hazardous waste may be stored on the site at any time.
3. Ensure the contracted transporters of hazardous waste are qualified and are transporting to a qualified offsite treatment or disposal facility.

**Standards:**

Chapter 403.704 and 403.721, Florida Statutes, and Chapter 62-730, Florida Administrative Codes, Rules of the Department of Environmental Protection (DEP); Title 40, Code of Federal Regulations, Chapters 260 ~ 271, 273 and 279.

Violating these rules for transportation, treatment, storage, or disposal of hazardous wastes can result in cash fines and/or criminal imprisonment.

**Definitions:**

As used in this policy, the following terms shall have the assigned meaning:

*Characteristic Wastes:*

- *Corrosive Characteristic Waste* - Any type of waste which has a pH of less than 2 (acidic) or greater than 12.5 (basic), or corrodes steel at a rate specified by EPA. (Corrosive wastes may include sulfuric acid, hydrochloric acid (muriatic acid), sodium hydroxide, HTH, chlorine, lye, lime, battery acid, drain openers (Drano) and other products that contain strong acids or bases, which include many cleaning products.)
- *Flammable/Ignitability Characteristic Waste* - Any waste with a flash point of less than 140°F (60°C) that can create fires and includes liquids or friction sensitive substances under certain conditions. (Common flammable materials include acetone, toluene, methanol, ethers, isopropanol, duplicating fluids, rubber cement glue, paint thinner or mineral spirits, oil based paints and stains, rubbing alcohol, nail polish remover, many aerosol containers such as spray paints and adhesives, and solvent-soaked rags.)
- *Reactive Characteristic Waste* - Any waste which is unstable, can readily undergo a violent change, reacts violently with water, is capable of detonation or explosive reaction, or contains sulfides or cyanides that have the potential for generating toxic fumes or vapors. (Examples of reactive wastes include sodium and potassium metal, dry picric acid, compounds that form explosive peroxides, cyanide plating operations and anything pressurized i.e. propane tanks, aerosol cans, flares, fireworks, ammunition, etc.)
- *Toxic Characteristic Waste (or TCLP)* - Any waste identified through an EPA method (Toxic Characteristic Leachate Procedure) that has the potential of forming a leachate that may cause groundwater contamination. If any product contains a constituent greater than a specified concentration as determined by the TCLP, it is a hazardous waste. (Examples are products that contain benzene (many petroleum based products), cadmium (nickel cadmium batteries), lead (lead batteries and lead paints), silver (spent photofixer, silver nitrate), chromium, mercury (mercury batteries, fluorescent light tubes), rat poison, weed killers, and antifreeze, etc.)

*Contaminated Media and Debris* - Environmental media (i.e. soil or ground water) contaminated by a listed hazardous waste must be managed as that listed waste regardless of the concentration of waste they contain. Media and debris contaminated with a characteristic hazardous waste must be managed as a characteristic hazardous waste only if they exhibit a hazardous waste characteristic.

*Derived-From (By-Product) Wastes* - A result of treatment, storage, or even proper disposal, residues of hazardous waste can be generated from the original hazardous waste. The

hazardous status of residue, such as a sludge, ash, or filter, depends on the type of hazardous waste from which it is derived. Just as with mixtures of hazardous waste, if a residue is derived from a listed hazardous waste, or exhibits a characteristic of hazardous waste, then it is regulated under RCRA as a hazardous waste.

*DOT* - Department of Transportation

*EPA* - Environmental Protection Agency

*Hazardous Waste* - Any solid waste (as defined by the Federal Solid Waste Disposal Act) which possess hazardous characteristics, such as ignitability, corrosiveness, reactivity, or toxic characteristics (TCLP) as defined by the Code of Federal Regulations (40 CFR 261~262).

Please be aware that management practices often cause wastes to deviate from their original forms. Know your source, generation activity, and types of waste formed to assist with determinations.

*Hazardous Waste Generator Status:*

- *Very Small Quantity Generator (VSQG)* - The Code of Federal Regulations (CFR) Title 40, Section 261.5 defines a VSQG as a generator of less than 100 kilograms per calendar month (100kg/mo) of hazardous wastes or 1 kilogram per calendar month (1kg/mo) of acutely hazardous waste. At no time can a VSQG have greater than 1000 kg of hazardous waste in storage.
- *Small-Quantity Generator (SQG)* - A generator of hazardous wastes whom generates between 100 kg and 1000 kg of waste (or less than 1 kg of acutely hazardous waste) in a calendar month. At no time can a SQG have greater than 6000 kg of hazardous waste in storage.
- *Large-Quantity Generator (LQG)* - A generator of hazardous waste who generates greater than 1000 kg (or greater than 1 kg of acutely hazardous waste) in a calendar month.

*Listed Hazardous Waste* - Any chemical or product as listed in 40 CFR 261.31 - 261.33. Listed wastes are divided into four categories, according to their origin, often referred to as P, F, K, and U wastes. Listed wastes are always hazardous regardless of their chemical composition-no testing is required to identify them.

- P Listed wastes - Unused Waste, Acutely Hazardous Commercial Chemical Products - i.e. aldrin a chemical used as an agricultural insecticide.
- F Listed wastes - Waste from Generic Industrial Processes - i.e. certain used solvents from cleaning or degreasing.
- K Listed wastes - Waste from Specific Industry Sectors - i.e. certain petroleum refining waste.
- U Listed wastes - Unused Waste, from Commercial Chemical Products - i.e. DDT and formaldehyde.

*Mixtures* - A mixture of a listed waste and any other waste will remain regulated as a listed waste regardless of the percentage of the listed waste in the mixture. A mixture of a characteristic hazardous waste and any other waste will only be considered hazardous if the

resultant mixture exhibits a hazardous waste characteristic. Even if resultant mixtures do not exhibit a characteristic of hazardous waste, they may still require further treatment before proper disposal.

*RCRA* - The Resource Conservation and Recovery Act is the public law that creates the framework for the proper management of hazardous and non-hazardous solid waste. The law describes the waste management program mandated by Congress that gave EPA authority to develop the RCRA program.

*Satellite Accumulation Area* - A temporary storage and collection area of hazardous waste, **near the point of generation**, which is under direct control of the person or operator generating the waste. Waste in an approved satellite accumulation area is exempt from the 180-day time limit if other requirements are met. (NOTE: Subject to considerable interpretation and constraints by various regulators).

*Solid Waste* - For purposes of this program, a solid waste may be any solid, liquid, or containerized gas, which no longer has an appropriate and legal intended use for the University. For a legal definition, refer to the Federal Solid Waste Disposal Act (SWDA).

*Storage Area* - This is a regulated area in which all containers must be labeled, dated, and inspected weekly, in which hazardous wastes are temporarily stored while awaiting transport to a licensed disposal facility. These hazardous waste storage areas have limits which are defined by the facility's current status as follows: VSQG storage limits are nearly indefinite (provided hazardous waste storage is never more than 1000 kg), SQG up to 180 days, and LQG up to 90 days.

### **Responsibility:**

It shall be the responsibility of the departmental supervisor, instructor, and/or laboratory supervisor to ensure the proper management, and storage of all hazardous wastes generated by their respective department, laboratory, or research operation. The instructor, laboratory supervisor, or other departmental supervisor shall ensure that all hazardous wastes are identified, as defined below, at the point of generation and properly stored, labeled and dated.

### **Environmental Health and Safety:**

Environmental Health and Safety collects hazardous wastes from generators in a timely manner; verifies appropriate identification and labeling information; provides appropriate temporary storage, and arranges for transportation and disposal of the waste in a safe and legal manner.

### **Emergency Notifications and Emergency Response:**

State and Federal regulations 40 CFR 262.34(d)(4) require that the University develop and maintain an Emergency Response Plan to address spills, fires and other emergencies associated with hazardous waste.

An emergency contact shall be appointed who has authority to take appropriate action and is on call 24 hours per day. The emergency contact for the University is the Director of Campus Police and Safety. In the case of a true emergency, the University Police should be called at 911 from any campus telephone. A list of other contacts and phone numbers in order of contact is listed at the end of this section.

Spills and releases of certain chemicals in excess of their Reportable Quantities (RQ) require immediate notification of the National Response Center and the State Warning Point.

Environmental Health and Safety or other designee should be contacted immediately if a large amount of a substance has been spilled or released.

Spills of small quantities occur on occasion. In most cases these spills can and should be handled by FGCU laboratory or shop personnel in a safe manner. Spilled materials and absorbents must be handled as a hazardous waste if applicable criteria are met as defined above under definitions under Listed Hazardous Waste.

Spills that cannot be handled safely by laboratory or shop personnel should be referred to Environmental Health and Safety who will contact the proper agencies.

Spills of large quantities, extremely hazardous substances, or any spill that is an immediate threat to personal safety or the environment shall be handled through the Emergency Notification System. That system shall be activated as follows:

1. Contact Campus Police at 911. Inform them of the exact situation, chemicals and quantities involved, and the location.
2. University Police shall contact the Lee County Emergency Notification System via a direct line who will notify San Carlos Fire Department, EMS, and DEP Emergency Response. University Police will also contact the Director of EH&S or designee and other personnel as described in the FGCU Emergency Action Plan.
3. The Director of EH&S or designee will determine if RQ's have been exceeded and make appropriate notification to the State Warning Point (904-413-9911 or 1-800-320-0519) and the National Response Center (1-800-424-8802).

**List of Emergency Contacts:** *Inform the emergency contact of the exact location, situation, chemicals and quantities involved.*

Campus Emergency Number: 911

Steven Moore, Director, University Policy and Safety, Office Phone 239-590-1919

Rhonda Holtzclaw, Director, Environmental Health & Safety, Office Phone 239-590-1037

**Procedures for Departments Generating Hazardous Wastes:**

1. All hazardous waste shall be identified at the source. A material does not become a waste until it can no longer be used for its intended purpose. The words HAZARDOUS WASTE must be present on each container.
2. For departments generating Biohazardous Waste, refer to *Management and Disposal of Biohazardous Waste*.
3. Ensure that hazardous wastes are collected in appropriate containers, which are compatible with the waste and can be tightly capped.
4. All hazardous waste shall be clearly labeled with all known constituents. Be sure to include both the solvent(s) and solute(s). Particular emphasis shall be placed on identifying listed and characteristic components.

5. The START DATE shall be placed on the label on the date that waste is first added. **Do not** put a date in the STORAGE DATE location. The storage date will be completed when the container is moved from the generation point to the storage location.
6. Complete the other information on the label including department and/or research group, name of individual/researcher/supervisor providing the information, and a phone number.
7. Shop departments should continue handling disposal of hazardous waste and contact Environmental Health and Safety when a container has been filled or a particular project generating waste has been completed for new directives as warranted.
8. Environmental Health and Safety will maintain all records of hazardous waste manifests for a minimum of 3 years.

#### Do's and Don'ts:

1. **Do** use an appropriate size container for the waste generated. Under-filled containers cost the same to dispose as those filled.
2. **Don't** overfill containers. Leave approximately a one to two inch air space at the top of the container. Over filled containers of volatile organics pressurize and leak in storage. Leaking containers are a violation of hazardous waste regulations and also eradicate the ink on labels.
3. **Do** write legibly on the label with permanent ink. Write out chemical name(s) of the components. Avoid using chemical formulas. Please do not use water based felt tip markers.
4. **Don't** mix metallic mercury (Hg) with any other chemicals.
5. Keep all organic and inorganic mercury compounds separate from other materials. Contact EH&S if a procedure uses mercuric compounds or generates a hazardous waste containing mercuric compounds.
6. **Don't** mix radioactive materials with any hazardous waste.
7. **Don't** mix biohazardous materials with any hazardous waste.
8. **Don't** mix incompatible materials together. If unsure of any particular combinations, use a separate container.
9. **Do** call Environmental Health and Safety if you have any questions or are not sure how to manage a particular substance.

#### **Procedures for the Scientific Stores- Teaching Labs:**

1. All procedures listed above shall be followed. Scientific Stores shall be responsible for managing hazardous waste from all Teaching Laboratories.
2. Each teaching laboratory shall designate a satellite accumulation area.
3. Hazardous waste containers from teaching laboratories shall be collected by Scientific Stores personnel when full or when a given procedure is complete. Containers of hazardous waste shall be stored temporarily at the dedicated satellite storage areas, with accumulation at each site not to exceed 15 liters, until collected by EH&S.

**Procedures for Environmental Health and Safety (EH&S):**

1. Environmental Health & Safety shall collect hazardous wastes upon receipt of the *Material Pick-up Request Form* from the generating department.
2. EH&S shall verify label information including contents, generating department, hazard classification, and storage date. Any incomplete information will be obtained from the generator prior to collection and removal from the area.
3. All hazardous waste collected by EH&S will be taken to the hazardous waste storage building located behind the EH&S Modular Building and stored as directed by our current DEP generator status, assuring compliance with monthly accumulation weight and storage time limits.
4. Every waste container shall be identified with the words HAZARDOUS WASTE or specific contents.
5. Records shall be maintained including the chemical identity, quantity of material, date of collection, and other pertinent information.
6. All hazardous waste shall be packaged, labeled, manifested, and transported as required by applicable EPA, DOT, and state DEP regulations.

**Waste Minimization:**

Waste minimization is federally mandated for hazardous waste generators. Each department of Florida Gulf Coast University shall take reasonable and appropriate actions to minimize the amount of hazardous waste generated by their operations, teaching, and research. Waste minimization techniques shall include, but are not limited to:

- Recycling solvents thru EH&S
- Eliminating the waste generating process - Change or modify a process so that a hazardous waste is not produced. (i.e. use a computer program or model demonstration.)
- Substituting a non-hazardous or less hazardous material - Some suggestions include:
  - Use surfactant cleaning compounds instead of chromic acid
  - Use non-formaldehyde based fixatives in place of formalin
  - Purchase formaldehyde-free preserved specimens
  - Use non-hazardous scintillation fluids in place of toluene
  - Use water-based latex paints and stains in place of oil based paints, stains, and solvents, etc.
- **Purchase small quantities/only purchase what you need - Remember that the cost of disposal often exceeds the purchase price. Recognizing the financial impacts related to the disposal of hazardous wastes also helps minimize the volumes that are generated.** The higher generators of hazardous waste on campus would include laboratories, maintenance, garages, art studios, plus other shops and offices. All must be aware of the environmental impacts when handling and disposing of hazardous

chemicals and wastes (to include shop rags, paper or alternate absorbing materials) avoiding or reducing human and environmental exposure.

- Use less material - Reduce the scale of procedures or process.
- Check with other labs or stockrooms to see if they may have what is needed.
- Reuse and recycle materials where practical.
- ***Do not purchase large quantities of materials because they are less expensive per unit volume.***

It is important that waste management be an integral part of all your operating procedures. Implementing 'EcoPurchasing' means considering attributes such as: recycled contents, toxicity, reusability, durability, and reparability, before you buy a product.

All hazardous chemical waste must be identified at the source. A material does not become waste until it can no longer be used for its intended purpose. The collection container must be suitable and be able to be sealed or closed tightly. All containers must be labeled "Hazardous Waste" and list their solvents and characteristic components.

### **Training:**

FGCU will use State and Federal regulations 40 CFR 262.34(a)(4) and 40 CFR 265.16 as guides for the required training that will be provided to all individuals who generate hazardous waste.

Training shall be provided to all faculty, staff, and students performing activities, which generate or potentially generate a hazardous waste.

Training shall be provided by supervisors of areas in which hazardous waste is generated.

Hazardous waste training provided by other facilities or recognized organizations (e.g. University of Florida TREEO Center, Georgia Tech Continuing Education) will be evaluated on a case by case basis to determine if required topics have been covered. However, in all cases, individuals must be trained in specific procedures used by the University.

Training topics to be covered will include, at a minimum, the following:

1. Standard operating procedures and safety evaluations
2. Hazardous waste identification and classification
3. Proper labeling
4. Proper containers, segregation, and storage within generating areas
5. Emergency procedures and spill response
6. Penalties for non-compliance

**Examples of Hazardous Waste:** (Including special waste that must be separated from normal trash)

#### Flammable Materials/Solvents

- Mineral Spirits
- Oil-based paints, spray paint, and spray adhesives

- Turpentine
- Rubber Cement
- Rubbing (isopropyl) alcohol
- Aerosol cans
- Citrus-based solvents
- Cleaning rags used with flammable solvents
- Paints, markers, or dyes containing non-aqueous solvents

#### Corrosives

- Drain openers
- Sodium hydroxide
- Muriatic acid (hydrochloric acid)
- Sulfuric acid

#### Reactives

- Sodium and potassium metal
- Sodium and potassium cyanide & solutions
- Water reactive and shock sensitive compounds
- Pressurized containers (i.e. propane tanks, any compressed gas tanks, aerosol cans)

#### Other

- Photofixer and any products containing silver at a concentration of >5ppm
- Paint strippers
- Products containing methylene chloride or other chlorinated solvents
- UV, HID (sodium or mercury vapor), Fluorescent lamps
- Ballasts or capacitors containing PCB's (Polychlorinated biphenyls)
- Nickel-cadmium or lead batteries (also silver or mercury batteries)
- Mercury switches thermostats, thermometers, barometers, etc.

If you are unsure whether or not waste material may be classified as a hazardous waste, please contact Environmental Health and Safety.

#### **Routine Contacts for Hazardous Waste Collection or Information:**

Environmental Health and Safety

Phone: 239-590-1414

Email: [ehs@fgcu.edu](mailto:ehs@fgcu.edu)

**Additional Information:** Additional information may be obtained from the following sources

- United States Environmental Protection Agency 40 CFR 260~279
- Florida Department of Environmental Protection FAC 62-710 & 62-730
- Summary of Hazardous Waste Regulations; Florida Department of Environmental Protection; (2006)
- Laboratory Waste Management: A Guidebook, ACS Taskforce on Laboratory Waste Management; American Chemical Society, Washington, D.C. (1994).
- Less is Better: Laboratory Chemical Management for Waste Reduction, 2nd Ed.; ACS Taskforce on Laboratory Waste Management; American Chemical Society, Washington, D.C. (1993).
- Prudent Practices in the Laboratory: Handling and Disposal of Chemicals; National Research Council; National Academy Press; Washington, D.C. (1995).
- Pollution Prevention and Waste Minimization in Laboratories; Reinhardt, Peter, et al; CRC Press Lewis Publishers; Boca Raton, FL; (1996)