Hazardous Waste Management Program

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Purpose

The purpose of the procedures and protocols in this Hazardous Waste Management Program (HWMP) are to meet regulatory requirements and to protect faculty, staff, students, and the environment from risks associated with hazardous waste generation and management. This program summarizes and references applicable federal and state hazardous waste regulations and defines the necessary procedures to work safely and in compliance.

This program does not apply to the disposal of radioactive, infectious, or biological wastes. Compliance is critical and requires full cooperation from all University departments.

Scope

This HWMP applies to all TAMUT facilities. It pertains to hazardous (chemical) waste but does not include procedures for the management of radioactive, medical (biohazardous), or other special wastes as defined by the Texas Commission on Environmental Quality (TCEQ). The EHS Office administers the Hazardous Waste Management Program. Compliance with the program is mandatory and requires full cooperation by all campus entities. The Texas A&M University System has instituted a comprehensive environmental management system (EMS) to ensure compliance, achieve continuing improvement, preventing pollution, and encouraging good stewardship of the environment by the A&M System communities. Part of that EMS is an outline for a growing environmental manual. The A&M System Environmental Manual and the Resource Conservation and Recovery Act (RCRA), both cover hazardous and other solid wastes governed by the Texas Commission on Environmental Quality (TCEQ). For the present, TAMUT can operate using a streamlined hazardous waste management program, but as we grow, it can be revised and segmented as needed to reflect the broadening solid waste management requirements of this dynamic, changing campus.

Hazardous Waste Determination

Material becomes a waste when it is no longer **useful as determined** by the ‘owner’ and shall be disposed of. If the material is to be disposed of, it shall be determined if this material is hazardous or non-hazardous.

Hazardous wastes are those defined by the United States Occupational Safety and Health Administration (OSHA) as a substance for which there is a statistically significant evidence, based on at least one scientific study, showing that acute or chronic harm may result from exposure to that substance. This is regardless of whether the handling of the material is proper or improper.

Chemical waste can be made less hazardous by treatment to reduce the hazard or the quantity of waste in the laboratory if the treatment protocol is included in the experimental procedure.

A chemical waste is hazardous if it fits into one of the following categories:

Listed Waste:

- A listed waste is one included in one of four lists, generated by the United States Environmental Protection Agency (EPA; TCEQ). Identified by the letters F, K, P, and U. Within the lists the materials are assigned hazardous waste numbers and hazard rating by the EPA.

The definitions for the list types are as follows:

- Type F wastes are generic categories of solvents and wastes and waste water from some specific processes.
- Type K wastes are hazardous wastes from specific sources.
- Type P wastes include acutely hazardous wastes.
- Type U wastes are specific commercial chemical products, chemical intermediates and off-specification chemical products.

Characteristic Waste:

If a waste is not found to be one of the Listed Wastes it may be an "unknown" waste, which must be tested to determine the nature of the waste properties or characteristics. The Characteristics to be evaluated are:

- Ignitability (Waste #D001): Any easily combustible or flammable liquid with a flash point less than 600 C (1400 F), or solid that burns easily.
- Corrosivity (Waste #D002): Any waste that dissolves metals or other materials or burns the skin, pH less than 2 or greater than 12.5.
- Reactivity (Waste #D003): Wastes which are unstable, release toxic gases, or undergo rapid or violent chemical reaction with water or other materials.

- EP Toxicity (Waste #s D004-D017): Extracts of the material contain high concentrations of heavy metals and/or specific pesticides that could be released into ground water.

The EHS office and EPA website both have lists of the contaminants and their maximum allowed concentrations to be exempt from EPA Toxic designation.

Waste Classification and Determination

TAMUT is a ***Conditionally Exempt Small Quantity Generator (CESQG)*** of Hazardous Waste. Therefore, we are exempt from federal waste regulations. Nevertheless, chemical waste that is known or suspected to be hazardous, especially waste that is generated repeatedly or in relatively large amounts, should be well documented and sent to EHS. A waste generator may attempt to self-determine waste or obtain assistance from EHS.

Waste Generation and Management

The first priority should be to avoid generating waste, but if it cannot be avoided then consider how to reduce the amount of waste and how to reduce the hazards. Follow the guidance shown here. When selecting and purchasing a chemical or chemical product, first be sure that it is needed. This may include checking with others to see if it is already in stock and available on campus. Second, consider the safety of the product when used, as well as the cost of managing and disposing of process wastes or any unused chemical (e.g., Is it an EPA acute hazardous waste? Is it a high hazard chemical? Is it a carcinogen?). Finally, buy only what is needed and will be fully or mostly expended during your work. Unlike buying “economy size” laundry detergent for a lower unit price, excess chemical that must be disposed carries the additional cost of managing the inventory, special handling, and ultimate disposal at a hazardous waste treatment or disposal facility.

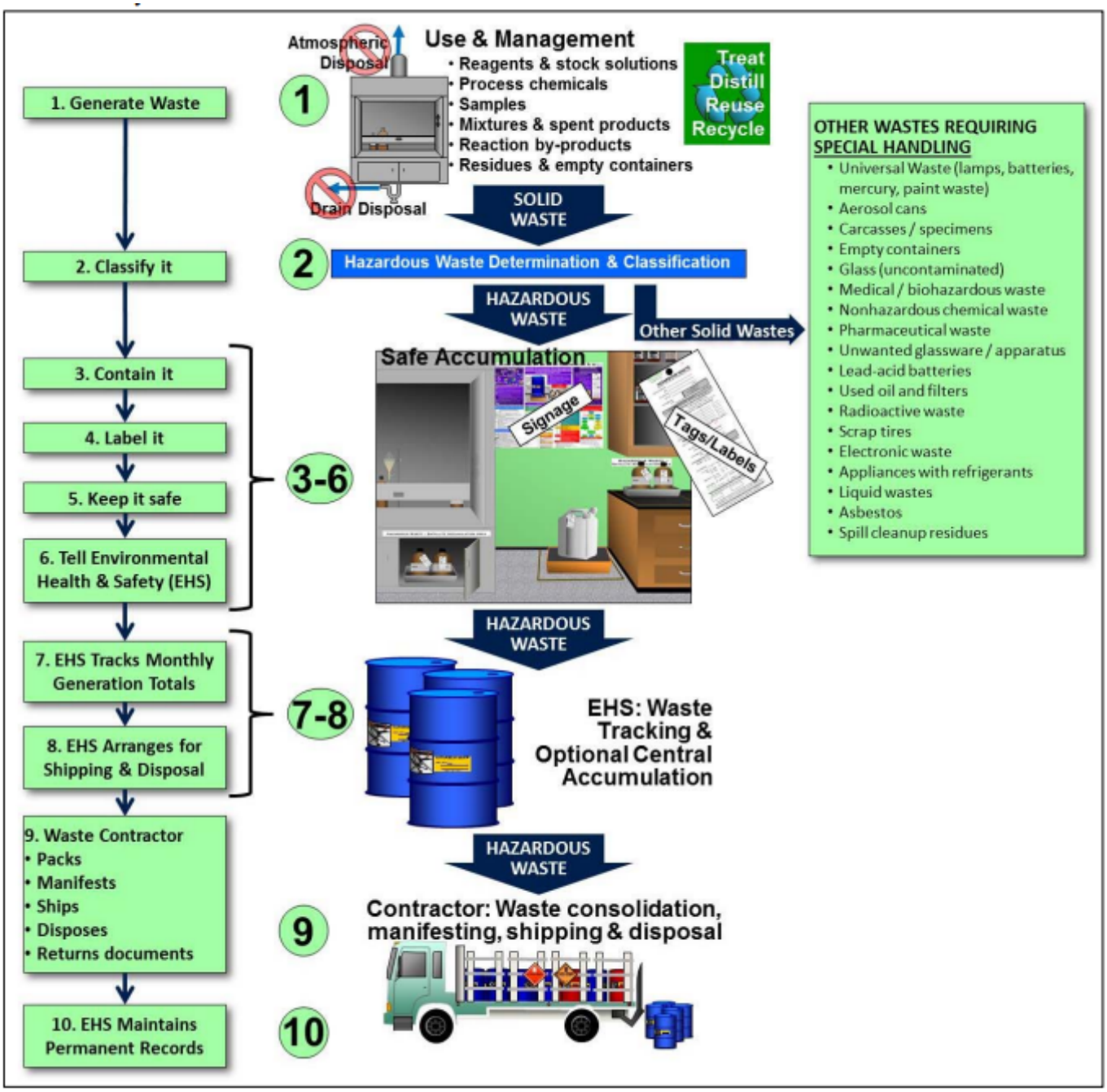
Hazardous Waste Accumulation:

The laboratories shall store all hazardous waste in a Satellite Accumulation Area (SAA) within their laboratories. All SAA must meet the following requirements:

- Secondary containment large enough to hold your largest volumed container
- All containers must be properly labeled at all times
- All containers must be closed and secured, except when adding waste into them
- All containers must be compatible with their wastes
- All waste must be properly segregated
- Waste must be 25 feet from any sink or floor drain
- All waste areas shall be inspected weekly and copies sent to EHS
- Signage stating area is an SAA

Simplified Hazardous Waste Workflow

Setting aside the complexities covered in this HWMP, the hazardous waste management process may be summarized fairly simply. If you generate waste, Steps 1-6 apply to you. Waste classification is the most complex step, and faculty, staff and students are not expected to know most of the finer details. Help with those are available from the Environmental, Health and Safety Office (EHS). After Step 6, the rest is handled by EHS or the university's waste contractors.



Waste Treatment

Hazardous chemicals can be treated to reduce the hazard or the quantity of waste in the laboratory, preferably if the treatment procedure is included in the experimental protocol. Practically, however, treatment is mostly limited to:

- Elementary neutralization of acids and bases not containing other underlying hazardous constituents (e.g., hazardous elements such as chromium, lead or mercury); and
- Distillation and recovery of spent solvents.

Other forms of treatment are allowed, but should be reviewed and approved by the EHS Office.

Regulatory Basis

EPA has consistently interpreted its regulations to allow any generator (i.e., CESQG, SQG or LQG) to treat their own hazardous waste in containers without a permit. Of course, all generators are allowed to treat only the hazardous waste that is generated on-site. A permit would be required to store and/or treat hazardous waste that is consolidated from off-site locations. Examples of treatment that may be conducted include precipitating heavy metals from solutions, and oxidation/reduction reactions.

There are three reasons for EPA's interpretation:

- In the January 12, 1981 Federal Register (46 FR 2806-2808), EPA noted that treatment can occur at a permitted disposal or storage facility without affecting that facility's regulatory status. Since the regulations do not impose additional standards for treatment at a permit-required storage facility, there is no basis for regulating treatment more strictly at a generator facility that does not require a permit.
- Treatment often renders waste less hazardous, or more amenable for further treatment, recycling, shipment off site, etc. A requirement for generators to obtain a permit for any on-site treatment would very likely discourage such practices.
- With regard to who may treat a hazardous waste, a generator is defined as "any person, by site, whose act or process produces hazardous waste..." (40 CFR §261.10). Therefore, any individual who is part of the "person," as defined, is allowed to conduct treatment. Additionally, nothing in 40 CFR §262.34 precludes generators from transferring waste between tanks or containers to facilitate storage or treatment.

Point of Generation

- Non-hazardous waste may be disposed of using the sanitary sewer or regular trash.
- Hazardous chemicals can be treated to reduce the hazard or the quantity of waste in the laboratory if the treatment procedure is included in the experimental protocol.

- Gas cylinders should be returned to the manufacturer or distributor whenever possible. If you have non-returnable cylinders, please notify the EHS Office for evaluation and proper waste classification.
- Photographic wastes may be considered hazardous. If you have photographic lab waste, please notify the EHS Office for evaluation and proper waste classification.
- "Mixed Waste" (includes both radioactive material and hazardous chemicals) should be treated as radiological waste and handled separately. Notify the EHS Office.
- Chemical waste that is "unknown" must be labeled as such in order to be picked up for disposal. Apply a waste disposal label to the container and write "unknown" under chemical description. Generators will be charged for the cost of analysis necessary to determine the chemical identity for proper disposal.
- Lab clean-outs require advance notice to the EHS Office. It is recommended to plan on at least three weeks from the time all paperwork is received to the actual time of removal. Once the Lab Cleanout Form is finalized, a representative from the EHS Office will contact you to schedule a hazardous waste disposal pick-up date and time. Additional costs for a pickup that is not regularly scheduled with waste disposal may be charged to the department.

Classification, Segregation and Storage

Classification

In addition to the EPA waste codes assigned through the hazardous waste determination process, the person generating hazardous waste should categorize the wastes into the following hazard classes, corresponding to the TCEQ Texas Waste Codes typical of hazardous wastes generated by higher education and found on their TCEQ Notices of Registration (NOR):

- Halogenated solvents
- Non-halogenated solvents
- Acids (inorganic or organic)
- Bases (inorganic or organic)
- Heavy metals (silver, cadmium, lead, mercury, etc.)
- Poisons (inorganic or organic)
- Reactives (cyanides, sulfides, waste reactive chemicals, peroxides, etc.)

Since most higher education hazardous wastes are small amounts of a wide variety of chemicals, many of these hazard classes are “lab packed” in drums and manifested accordingly by the waste contractor prior to off-site shipment.

Segregation

The following are some basic guidelines for waste segregation:

- Do not mix or commingle different classes of hazardous waste in the same container (e.g., Do not combine inorganic heavy metal compounds and organic waste solvents; do not mix halogenated with non-halogenated solvents).
- Do not combine non-hazardous waste (e.g., mixture of water, dilute acetic acid, and sodium bicarbonate) with hazardous waste.
- Dry materials (paper, rags, towels, gloves, or Kim Wipes, etc.) contaminated with extremely toxic chemicals must be double-bagged in heavy-duty plastic bags and must be treated as hazardous waste.
- Solvent-contaminated wipes (no free liquids) may be disposed in the regular trash provided that they do not present a fire hazard. (See Chapter 4 for more detail)
- Sharps are categorized as Biohazardous Waste, NOT hazardous waste. Refer to the TAMUT Bloodborne Pathogens Program and Biohazardous Waste Program.

Contact the EHS Office if you have any questions regarding hazardous waste classification and segregation.

Storage

The maximum quantities of waste that may accumulate in a single SAA are:

- **Hazardous waste** – Up to 55-gal in any combination of containers (Note: Ordinarily, waste should be picked up and removed to central accumulation or shipped off-site long before SAA quantities approach 55-gallons.) (40 CFR §262.34(c)(1))
- **Acute hazardous waste** – Up to one (1) quart in any combination (and a total of 1 kg or less campus-wide!) (40 CFR §262.34(c)(1))

Waste Removal and/or Relocation

Within Control Areas

Any authorized person, if properly supervised, may move waste within a control area to or among SAAs in the area. The person may also add waste to a container or consolidate like, compatible wastes with which he/she is familiar. Mixing wastes, especially by persons unfamiliar with the container contents can be dangerous, presenting a fire, explosion or toxic hazard. Regulations do not require that such persons be formally trained in RCRA waste management. However, untrained persons may NOT move hazardous waste outside of their own control areas for which they or their supervisor are responsible.

From Central Areas to Location *NOT* under Operator Control

Only RCRA-trained waste management personnel may collect hazardous waste from SAAs and move it to a centralized accumulation room not under their full control or to an outside building.

General Labeling Requirements

The Hazard Communication standard and the Globally Harmonized System of Classification and Labeling of Chemicals (GHS), as adopted by the Texas Department of State Health Services (DSHS), require that all chemical containers in a laboratory or workplace, whether unused reagents or wastes, should be labeled with at least:

- Name (as on SDS or MSDS);
- Hazard warnings; and
- Name and address of manufacturer (if appropriate).

Temporary use containers must also be labeled.

BEFORE using a secondary container to receive a transferred chemical, chemical product or waste:

- Select a clean and chemically compatible container.
- Remove or completely deface any label that incorrectly identifies the new contents.
- Correctly label the secondary container with the following information:
    - Name (as on SDS)
    - As a safe practice, also include hazard warnings and identifying information (e.g., CAS numbers and manufacturer) on secondary containers.

Specific Labeling Requirements

In addition to the general container-labeling requirements, hazardous waste regulations require that waste containers in SAAs be labeled with the words “Hazardous Waste” or with other words that identify the contents of the containers” (30 TAC §335.69(d)(2); 40 CFR §262.34(c)(1)(ii)).

As a practical matter, simply labeling a container with “Hazardous Waste” is not sufficient due to the vast array of waste types generated in a higher education setting. Therefore, each waste generator must adhere to the following methods.

You MUST destroy or deface any original label(s) on containers used for waste.

- When waste is first added, you MUST label each new container with:
    - A tag (preferred) or label in one of two accepted formats (see illustration),
    - The specific waste contents,
    - Optionally the words "Hazardous Waste," and
    - The “Container Start Date” (i.e., the 1st day on which waste is added to the container).
- PRINT LEGIBLY.
- DO NOT fill in the “Accumulation Start Date,” a regulatory term for the day that a specific container causes an SAA to exceed its allowable capacity.

The reverse side of the tag has space for additional waste constituents and helpful instructions and reminders.

Hazardous waste tags and labels are available from the EHS Office. Alternatively, an Excel file may be obtained from EHS, allowing a person to type, save and print his/her own tags.

Waste Removal (On-site)

Contact EHS @ 903-334-6794 or ehs@tamut.edu for waste disposal and pickups.

Waste Removal (Off-site)

The Department of Environmental Health and Safety shall require all contracted hazardous waste transporters to comply with the requirements set forth by this plan, in addition to the federal, state and local hazardous waste regulations.

Packing

The contracted hazardous waste transporter shall package all hazardous waste in accordance with all Department of Transportation regulations under 49 CFR Parts 173, 173.12 & Subpart B, 178, and 179.

The Department of Environmental, Health and Safety shall require all contracted hazardous waste transporters to carry emergency spill cleanup materials when packing hazardous materials for transportation.

Labeling and Marking

Before transporting the hazardous waste, the transporter shall label each package in accordance with Department of Transportation labeling requirements (49 CFR Part 172 Subpart D and E). The transporter shall mark all containers of 110 gallons or less used in transportation with the following words and information displayed in accordance with the

requirements of 49 CFR 172.304: “HAZARDOUS WASTE”

Federal Law Prohibits Improper Disposal. If found, contact the nearest police or public safety authority or the “U.S. Environmental Protection Agency”.

Placarding

The transporter shall placard the transportation vehicle according to Department of Transportation regulations 49 CFR Part 172 Subpart F for hazardous materials.

Manifest

The Department of Environmental Health and Safety and the hazardous waste transporter will mutually designate on the manifest one primary facility that is permitted to handle the waste described on the manifest.

Universal Waste

This is any hazardous waste that is subject to 40 CFR Part 273 and TAC 335.261 and includes:

- Art related chemical waste
- Mercury thermometers and thermostats (unbroken) that are not hazardous using 40 CFR 261 Subpart C
- Batteries including lead-acid that are not managed under 40 CFR 266, Subpart G
- Recalled pesticides that are part of a voluntary or mandatory recall under FIFRA or pesticides managed as part of a waste pesticide program

Nonhazardous waste

Wastes that meet none of the criteria of hazardous wastes shall be considered as nonhazardous. Following certification of a waste as nonhazardous it may be treated as general garbage. It is important however that the waste be certified first.

Personal Protective Equipment

Personal protection equipment shall be required during hazardous waste pickups. Safety personnel will determine the level of protection required to safely transport the materials.

Emergency Preparedness for SAAs

Similar to normal preparedness for chemical spills of any kind, SAA operators should consider the nature of the hazardous wastes being generated and accumulated and develop an appropriate emergency preparedness plan, including

- Map of the workspace with key features identified:
  - Fire Extinguishers and Fire Blankets
  - Alarms
  - Exits
  - Telephones
  - SAA
  - 1st Aid Kit
  - Emergency Shower
  - Eyewash Station
  - Spill Kit
  - Utility Shutoff
  - Non-Hazardous Waste Accumulation Areas
- Key contacts,
- Spill response materiel, and
- Cleanup procedures.

Training

State and federal regulations do not require CESQGs to provide hazardous waste management training to their employees.

Nevertheless, the A&M System requires, for safety and as a good management practice, that two levels of training be provided.

- EHS staff and anyone who will be managing, transporting, or cleaning up spills of hazardous waste should receive in-depth training and be thoroughly familiar with this HWMP, while
- Awareness training (e.g., SAA Training) should be provided to members of the campus community who may be generating hazardous waste.

Course materials are available for both types of training, with plans for on-line training through TrainTraq.

Recordkeeping

The following should be kept on file to aid in hazardous waste reviews:

- Hazardous waste reviews
- SAA inspections
- Waste shipment and disposal records
- Training

Spill Cleanup

TAMUT's Hazard Communication Program requires that employees be informed of hazardous

materials that they might use or be exposed to at work. In addition, the program includes training on handling spills and other emergencies. Safety Data Sheets (SDSs) are an additional source of information and should be maintained or quickly accessible for all chemicals used or stored within a workplace. Special cleanup supplies should be available and employees should be trained on how to use these supplies. The EHS Office can provide additional information on handling specific chemical spills. Contaminated clothing, rags, absorbent materials, or other waste from cleanup of spills or leaks must be properly disposed of. All labs should post emergency numbers to be used and have a response scenario for emergencies.

Emergency telephone numbers of importance are listed below:

- Emergency Number 911
- University Police Department 903-334-6611 from any campus phone
- EHS Office 903-334-6794 from any campus phone

Waste Disposal Company used by The Texas A&M University System:

SET Environmental
Contact: Patricia Miller
Office Phone: 713-227-5171
Cell Phone: 281-227-5171
Email: pmiller@setenv.com

Spills of hazardous waste or other chemicals that are beyond the capability of waste generators and their personnel to safely cleanup should be reported to UPD and EHS. If EHS has the capability to conduct the cleanup, it will do so. If not, the university relies on the local Texarkana Fire Department hazardous materials team to contain larger spills. Cleanup would be conducted by either the Texarkana FD Hazardous Materials team or a spill response contractor, such as the university's hazardous waste contractor (SET), who offers these response services.

Please see the TAMUT Spill Management Procedure located on the TAMUT website.