
	Texas A&M University-Central Texas		
	Solid and Hazardous Waste Hazardous Waste Management Program	Program:	Environmental Management
		Doc. No.:	ENVM-24-L2-S6-CH01-001
		Rev No:	000
	Level 2	Date:	04/20/16
		Office:	Safety & Risk Management

Hazardous Waste Management Program



**Texas A&M University-Central Texas
Office of Safety & Risk Management**

April 20, 2016

	Texas A&M University-Central Texas		
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Concurrence and Approval

This Hazardous Waste Management Program document was developed for use by Texas A&M University-Central Texas and has been reviewed and approved by the following approvers.

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Change History

Revision Number	Interim Change No.	Effective Date	Description of Change	Author/Editor
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001		05/31/2016	Added appendixes	Shawn Kelley



Texas A&M University-Central Texas


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Foreword: Hazardous Waste Made Simple

Our Approach to Waste Generation and Management

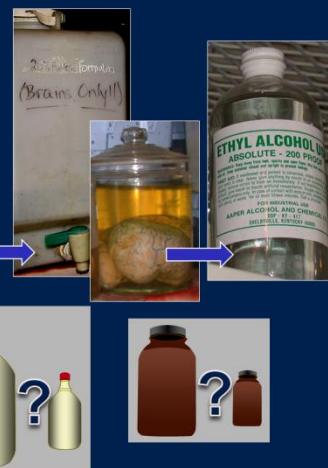
Avoid and/or Minimize Waste

The 1st 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 chemicals that must be disposed of carries the additional cost of managing the inventory, special handling, and ultimate disposal at a hazardous waste treatment or disposal facility.

Before You Buy a Chemical or Product, Ask:

1. Do I need it?
2. Is there a safer product?
3. Will I use it ALL?



Think Before You Toss


In domestic households, most spent or unused items or chemical products can be simply, legally tossed in the trash. As a public entity, the problem of waste management is not so simple. A greater variety of unwanted materials is generated and many of these have legal restrictions governing their treatment or disposal. Once a chemical (or any product for that matter) is selected, purchased, and either used or leftover as surplus, the three questions shown in the accompanying inset box should be asked.

1. In the hazardous waste world, many materials are not waste (i.e., “discarded” in regulatory speak) until deemed so. If it is of use and has value, think before you toss.
2. Consider legal limitations on where and how a material may be discarded or sent for treatment and disposal. This hazardous waste management program (HWMP) covers many of these legal requirements or directs the user to applicable guidance.

In Waste Matters, Ask Three Questions (Before you simply toss it in the trash)

- Is it waste?
- Is it legal?
- Is it wise?

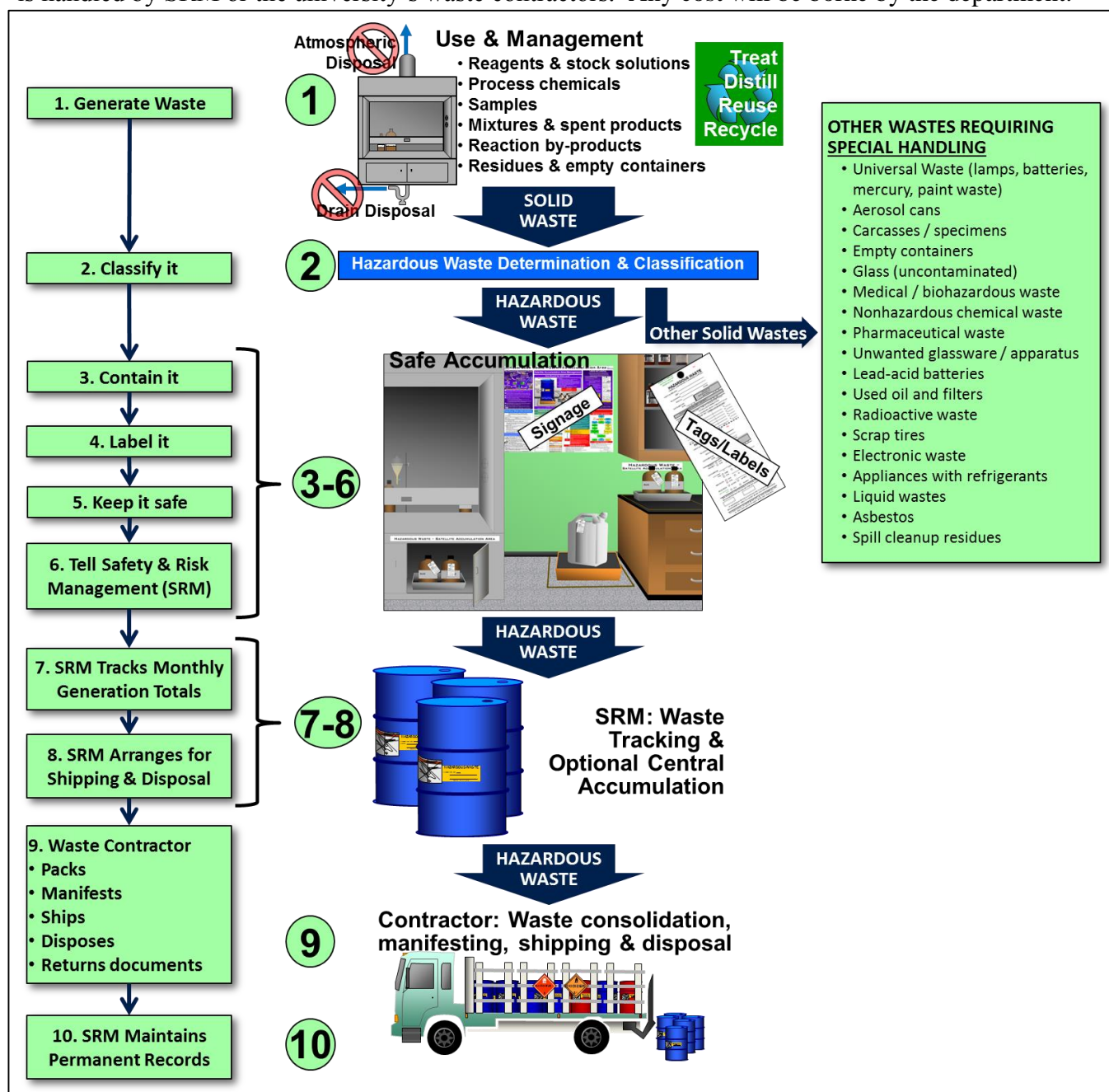



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- Finally, even if a material is deemed waste and can be legally disposed, consider whether it is wise to dispose of it. Might it be reused, recovered, or recycled?

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 Safety & Risk Management Office (SRM). After Step 6, the rest is handled by SRM or the university's waste contractors. Any cost will be borne by the department.



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Section 1. Introduction & Scope

For an institution of higher education, solid and hazardous waste management is one of the most complex technical, regulatory, and administrative challenges in the environmental arena. There are many topics and subtopics that alone require special attention. However, given the relative newness and modest size of Texas A&M University - Central Texas (A&M Central Texas), this waste management plan condenses key program requirements and good management practices into a single document.

What are some examples of hazardous wastes?

Hazardous wastes come in many forms, including liquids, solids, sludges and gases. At the university, the majority of hazardous waste is generated through academic laboratory experiments and facility operations. However, no workplace is immune from generating hazardous waste. Even light bulbs, rechargeable batteries, cell phones and computers are hazardous wastes when they are no longer usable and are of no further value. Examples of common types of hazardous waste include:

➤ Spent laboratory chemicals	➤ Leftover samples & stock solutions	➤ Wastes containing solvents, acids, bases, or other chemicals
➤ Used motor oil	➤ Aerosol products	➤ Unwanted, off-spec laboratory chemicals
➤ Spent fluorescent & other lamps	➤ Electronics wastes (E-waste)	➤ Leftover oil-based or alkyd paint and used thinners
➤ Mercury-containing equipment	➤ Rechargeable batteries	➤ Unused or off-specification pesticides

Objectives

The objectives of the procedures and protocols in this 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.

Scope

This HWMP applies to all A&M Central Texas 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 Office of SRM 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, prevent pollution, and encourage good stewardship of the environment by the A&M System communities. Part of that EMS is an outline for a growing *environmental manual*. Section 6 of the A&M System Environmental Manual, ***Solid and Hazardous Waste (Resource Conservation and Recovery Act [RCRA])***, covers both hazardous and other solid wastes governed by the Texas Commission on Environmental Quality (TCEQ), as shown in Table 1. The table also provides a cross-reference to the chapters of this HWMP. For the present, A&M Central Texas can operate using a streamlined hazardous waste management program, but as institution grows, it can be revised and segmented as needed to reflect the broadening solid waste management requirements of this dynamic, changing campus.



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Table 1. The A&M System Waste Management Program and Cross-References to This HWMP

Section 6	Solid and Hazardous Waste (Resource Conservation and Recovery Act)	A&M-Central Texas HWMP Contents
Chapter 1	Waste Program Administration	Chap. 1 Introduction & Scope
Chapter 2	Waste Recognition / Hazardous Waste Determination	Chap. 2 Waste Classification & the Hazardous Waste Determination
Chapter 3	On-Going Determination of Hazardous Waste Generator Status	Chap. 3 Generator Status
Chapter 4	Hazardous Waste Registration	N/A
Chapter 5	Pollution Prevention (P2) Plan and Waste Avoidance	Chap. 15 Source Reduction and Waste Minimization
Chapter 6	Municipal Solid Waste (Trash)	Chap. 4 Municipal Solid Waste
Chapter 7	Disposal Prohibitions	Chap. 5 Disposal Prohibitions
Chapter 8	Waste Treatment	Chap. 6 Waste Treatment
Chapter 9	Hazardous Waste Management at the Point of Generation (Satellite Accumulation)	Chap. 7 Satellite Accumulation
Chapter 10	Hazardous Waste Intra-Campus Transportation	Chap. 8 Self-Transportation of Waste
Chapter 11	Hazardous Waste Management at Central Accumulation Areas	(Chap. 9 RESERVED)
Chapter 12	Hazardous Waste Manifests	Chap. 10 Hazardous Waste Shipping and Disposal
Chapter 13	Pre-Transport Requirements (Packaging, Labeling, Marking, Placarding)	
Chapter 14	Contractors: Waste Transportation, Disposal, Recycling, and Emergency Response	
Chapter 15	Training and Required Certifications	Chap. 11 Training
Chapter 16	Required Monitoring, Records and Reporting	Chap. 12 Records
Chapter 17	Preparedness and Prevention	N/A
Chapter 18	Contingency Plan and Emergency Procedures	Chap. 13 Spill Cleanup
Chapter 19	Release Reporting	Chap. 14 Release Reporting
Chapter 20	Universal Waste (Batteries, Pesticides, Mercury-Containing Equipment, Lamps, and Paint and Paint-related Waste)	See Universal Waste Management Program
Chapter 21	Special Wastes: Aerosol Cans	See Aerosol Can protocol
Chapter 22	Special Wastes: Animal Carcasses and Specimens	N/A
Chapter 23	Special Wastes: Construction & Demolition Debris	N/A
Chapter 24	Special Wastes: Empty Containers	N/A
Chapter 25	Special Wastes: Ethidium Bromide	N/A
Chapter 26	Special Wastes: Food Waste	N/A
Chapter 27	Special Wastes: Formalin	N/A
Chapter 28	Special Wastes: Grease and Grit Trap Wastes	N/A
Chapter 29	Special Wastes: Laboratory Glass (Uncontaminated)	See Broken Glassware Guide
Chapter 30	Special Wastes: Light Ballasts and Capacitors (PCB-Free)	N/A
Chapter 31	Special Wastes: Medical and Biohazard Waste	See Medical Waste Management Program
Chapter 32	Special Wastes: Nonhazardous Chemical Waste	N/A
Chapter 33	Special Wastes: Pharmaceuticals, Controlled Substances, Precursor Chemicals and Apparatus	See Precursor Chemicals and Apparatus Program
Chapter 34	Special Wastes: Sewage Sludge	N/A
Chapter 35	Special Wastes: Treated Wood	N/A
Chapter 36	Special Wastes: Oil Cleanup Debris	N/A
Chapter 37	Special Wastes: Solvent-Contaminated Wipes	See Solvent-Contaminated Wipes Guide

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Section 2. Waste Classification & the Hazardous Waste Determination

Persons on a property owned or operated by any member of The Texas A&M University System who generate waste of any type are responsible for understanding the general principles of waste classification and the “dos and don’ts” of waste handling and disposal. All waste, especially chemical wastes, must “run the gauntlet” of the hazardous waste determination and classification process. Department heads and supervisors must ensure that their employees and student(s) (where needed) are trained in identifying and classifying wastes that they generate and what may be done with each class of waste.

Hazardous Waste Determination

What is a hazardous waste? According to the EPA, a *hazardous waste* is simply defined “as a waste with properties that make it dangerous or capable of having a harmful effect on human health or the environment.” Unfortunately, in order to develop a regulatory framework capable of ensuring adequate protection, this simple narrative definition is not enough. Given the vast array of known chemicals of widely varied properties, the complexity of the wastes that contain those chemicals, the breadth of activities that generate wastes, and the variety of practices used to accumulate, store, treat and dispose of wastes, the EPA had to develop a precise and detailed way to characterize a hazardous waste. As a result, the EPA's definition, as found in the most recent print version of Title 40 of the Code of Federal Regulations Part 261 (abbreviated 40 CFR §261), takes up 157 pages of two-column fine print.

Can this complex definition be made simple? You need not become an expert in federal and state regulations. The process provided in this document, while not exactly simple, helps by providing straightforward procedures for performing the first, required step whenever you generate any type of waste in your workplace - the *Hazardous Waste Determination*. Table 2 is a step-by-step guide, providing enough awareness to meet the basic requirements for most faculty, staff and students.

Table 2. Hazardous Waste Determination and Waste Classification Process

Who determines if a material is a "hazardous waste?" Faculty & Staff with help from Safety & Risk Management

1. Is it a waste?

Even if you no longer desire to keep a material, it may **NOT** be a waste if it is still usable and has value. If you have usable chemicals or commercial products that you no longer want, such as:

- Reagents
- Stock solutions
- Compressed gases (lecture bottles)
- Products in aerosol cans
- Paints and paint related products

Contact SRM. They will attempt to find a user for the product.

In general, an unwanted or unneeded material is considered a waste if:

- It has been used or has gone through a process causing it to be contaminated / impure and is no longer needed,
- It is an unused commercial chemical product that is no longer wanted or has exceeded its expiration date, or
- It is a cleanup material from a chemical spill.



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2. Is it a hazardous waste?

For a material to be a hazardous waste, it must first be what is termed a **solid waste**. Solid is a regulatory term that does not refer to a physical state of matter; thus, many solid wastes are actually liquids, sludges or gases. The regulations define what exactly is a solid waste and what is excluded from the definition. A material that meets the definition of a solid waste must then be assessed by the person generating the waste to determine if it is also a hazardous waste (*Note that the EPA also provides exemptions or reduced compliance requirements for certain wastes in order to promote recycling and to provide practical alternatives for managing many common, low-risk hazardous wastes*).

There are Two Ways a Waste May be Hazardous – waste is either (1) **listed** or (2) **characteristic**. Universal waste is a special subset.

If a given solid waste is one of an extensive list of wastes that EPA has categorically determined to be hazardous to human health or the environment if mismanaged, then it is automatically a listed hazardous waste. To make this determination, you basically compare your solid waste and its constituents to the EPA lists and make a yes-or-no determination. Whether or not a solid waste is listed, it may also be a characteristic hazardous waste.

Listed – Common wastes, hazardous by definition. Four lists include > 400 chemicals or mixtures:

F - waste from non-specific sources (e.g., spent halogenated & non-halogenated solvents such as methylene chloride & acetone)

K - waste from specific sources, such as wood preserving waste or pharmacy wastes (**rare at colleges/universities**)

P - **acutely hazardous** (i.e., toxic or reactive in small amounts) **unused or off-specification** (e.g., shelf-life exceeded) chemicals such as many poisons, pesticides, arsenicals and cyanides

U - **unused or off-specification** (e.g., shelf-life exceeded) chemicals that are **not acutely hazardous** (e.g., acetone, formaldehyde, alcohols and many solvents)

Characteristic – if a waste is not listed, it may still be a hazardous waste because it exhibits one or more hazardous properties. A **characteristic hazardous waste** exhibits one or more properties (characteristics), such as ignitability or toxicity that make it a potential hazard. There are **two methods** that can be used to determine if a solid waste is a characteristic hazardous waste. The first method is **measurement** using available standardized test methods (laboratory analysis), which is an expensive, time consuming and yet sometimes necessary approach. The second method applies the **generator's knowledge** of the waste and the process by which it was generated. This method is far less expensive than a laboratory analysis; however the generator must be able to document the chemicals used in the process and maintain supporting documents, such as safety data sheets (SDSs), process controls or written procedures. If the Hazardous Waste Determination is made by using generator's knowledge, supporting documentation must accompany the Hazardous Waste Determination Form and Worksheet (see [Appendix A](#), Hazardous Waste Determination Form and [Appendix B](#), Hazardous Waste Determination Worksheet).

Ignitability (40 CFR §261.21) – liquids with flash point <140°F (e.g., most non-halogenated solvents; some paint wastes, solids that can spontaneously ignite, ignitable compressed gases, oxidizers) (EPA Hazardous Waste Number D001)

Corrosivity (40 CFR §261.22) – aqueous liquids with pH ≤ 2 or pH ≥ 12.5 or liquids that rapidly corrode steel (EPA Hazardous Waste Number **D002**)

Reactivity (40 CFR §261.23) – unstable chemicals; chemicals that, when mixed with water, react violently, form explosive mixtures, or generate toxic gases, vapors or fumes; cyanides or sulfides that can generate toxic gases, vapors or fumes at normal pHs (between 2 and 12.5); are capable of detonation or explosion. Examples: some bleaches and peroxides (EPA Hazardous Waste Number **D003**)

Toxicity (40 CFR §261.24) – Extract from EPA's test method ("TCLP") ≥ threshold value(s) for one or more of 40 chemicals, mostly toxic metals and common organic chemicals. The threshold values represent chemical leachability in a landfill environment. (EPA Hazardous Waste Numbers D004 - D043)



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- As a general rule, the Office of SRM will handle the disposal of hazardous waste generated at A&M Central Texas; however, all costs associated with the determination of "Unknown" chemicals, and disposal will be charged back to the department submitting the unidentified chemical.
- The Laboratory Coordinator will maintain a list of wastes commonly generated in each locale and accumulated in satellite accumulation areas (SAAs) along with their respective EPA hazardous waste codes. If you do not know which codes apply, ask for assistance from SRM.
- For wastes not previously generated at a locale, use SRM's "Hazardous Waste Determination" worksheet to determine hazard(s) and EPA waste codes, if applicable, or ask SRM to make the determination for you.

3. Is it a special subclass of "hazardous waste"?

Universal Waste – 5 types of wastes are classed as "universal" (i.e., common). Universal waste (UW) is hazardous, but the generator can manage it separately and with fewer regulatory restrictions (see [Appendix C, Universal Waste Management Program](#)).

If you generate one of the following "universal wastes," place each type into its own container, labeled "Universal Waste - *****," and store the waste container (keep closed when not in use) in a location apart from the Satellite Accumulations Area (SAA). Contact SRM for pickup.

EPA universal wastes - EPA has designated four classes of universal wastes, as follow:

Batteries - Includes **most rechargeable batteries** (i.e., Ni-Cd, Li-ion, and Small Sealed Lead (Pb) batteries commonly found in cordless tools, cellular phones, laptops, cameras, and 2-way radios). Large Pb-acid batteries (e.g., auto) **must be recycled** separately and are not UW. Common dry-cell batteries (i.e., AA, AAA, C & D) are not hazardous and may be thrown in the trash.

Pesticides - This is a very limited category and should seldom be a concern. It primarily applies to recalled, banned, damaged or obsolete pesticides subject to a pesticide collection program.

Mercury-containing Equipment - Other than fluorescent lighting, A&M Central Texas is a mercury-free campus, so little to none of this waste should ever occur. Spilled mercury is a health hazard, so try to avoid all uses of mercury. Find Hg-free alternatives. If you have Hg to be disposed, contact SRM to arrange collection and recycling. If you spill mercury, immediately contact SRM for assistance.

Lamps - **Most lamps** (e.g., fluorescent, halogen, sodium, metal halide, mercury vapor, incandescent) are hazardous because of toxic elements, commonly mercury or lead. **NEVER THROW A LAMP IN THE TRASH. DO NOT BREAK.**


Paint & paint-related waste (PPW) - In Texas, ignitable oil-based paint, spent solvents and contaminated supplies are universal wastes. (NOTE: *Latex paints are not ignitable and are thus non-hazardous, but they must be dried before disposing in the regular trash.*)

4. If not a "hazardous waste," does it require special management?

Wastes Prohibited in the Regular Trash - University wastes are classed as **municipal solid wastes** (i.e., **nonindustrial**). Nevertheless, certain nonhazardous solid wastes are prohibited from municipal landfills:


- Lead-acid batteries,
- Used oil and oil filters,
- Scrap tires,
- Appliances with CFCs (refrigerants),
- PCBs (e.g., pre-1979 lighting ballasts),
- Radioactive material,
- Liquid wastes other than household-sized containers, and any other waste that may threaten water quality, create a nuisance, or endanger humans or the environment (e.g., ethidium bromide waste and spent formalin).

Special Wastes –Certain "Special Wastes" having their own disposal requirements include **medical and biohazardous wastes, animal carcasses, mixed radioactive wastes, scrap tires, and asbestos materials**. Contact SRM for proper handling and disposal.

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Hazardous Waste Determination Form/Worksheet

While it might seem sensible to document hazardous waste determinations, current regulations **do not** require the smallest waste generators, called ***Conditionally Exempt Small Quantity Generators (CESQG)***, to generate or retain documentation. Nevertheless, chemical waste that is known or suspected to be hazardous, especially waste that is generated repeatedly or in relatively large amounts, should be documented using the A&M Central Texas Hazardous Waste Determination form and spreadsheet (see [Appendix A, Hazardous Waste Determination Form](#) and [Appendix B, Hazardous Waste Determination Worksheet](#)). This Excel tool makes the process of making the determination and documenting it relatively straightforward and consistent. A waste generator may attempt to self-determine waste or obtain assistance from SRM.

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Section 3. Generator Status

Regulatory requirements for management of hazardous waste vary depending on the rate at which hazardous waste is generated. As common sense would dictate, the largest generators have the most requirements, moderate generators have a lessened set of requirements, and the smallest generators have very few duties. Table 3 shows the three generator categories and the compliance requirements for each. Note that generator category is, by regulation, to be determined monthly.

Table 3. Comparison of EPA hazardous waste generator categories and associated compliance requirements

(Yellow highlighted cells identify minimum responsibilities for CESQGs; green highlights indicate SQG practices adopted by A&M Central Texas as good management practices [GMPs])

Requirement	Generator Category		
	Conditionally Exempt Small Quantity Generators (CESQG)*	Small Quantity Generators (SQG)	Large Quantity Generators (LQG)
Hazardous Waste Determination For each solid waste generated, determine if it is a hazardous waste.	Required §262.11	Required §262.11	Required §262.11
Quantity Limits The amount of hazardous waste generated <i>per month</i> determines how a generator is categorized and what regulations must be complied with.	≤100 kg/month ≤1 kg/month of acute hazardous waste ≤100 kg/month of acute spill residue or soil §§261.5(a) and (e)	>100 <1,000 kg/month §262.34(d)	≥1,000 kg/month >1 kg/month of acute hazardous waste >100 kg/month of acute spill residue or soil §262.34(a)
EPA ID Number Acquire a unique EPA identification number that identifies generators by site.	Not required	Required §262.12	Required §262.12
On-Site Accumulation Quantity Determine amount of hazardous waste generators are allowed to "accumulate" on site without a permit.	≤1,000 kg ≤1 kg acute ≤100 kg of acute spill residue or soil §§261.5(f)(2) and (g)(2)	≤6,000 kg §262.34(d)(1)	No limit
Accumulation Time Limits Determine amount of time hazardous waste is allowed to accumulate on site.	None	≤180 days or ≤270 days (if transporting greater than 200 miles) §§262.34(d)(2) and (3)	≤90 days §262.34(b)
Accumulation Requirements Manage hazardous waste in compliance with certain technical standards.	None	Basic requirements with technical standards for tanks or containers §§262.34(d)(2) and (3)	Full compliance for management of tanks, containers, drip pads, or containment buildings §262.34(a)
Personnel Training Ensure appropriate personnel complete classroom or on-the-job training to become familiar with proper hazardous waste management and emergency procedures for the wastes handled at the facility.	Not required	Basic training required §262.34(d)(5)(iii)	Required §265.16 from §262.34(a)(4)
Contingency Plan and Emergency Procedures Develop procedures to follow during an unplanned major event.	Not required	Basic plan required §262.34(d)(5)(i-iv)	Full plan required Part 265 subpart D from §262.34(a)(4)



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Preparedness and Prevention Develop procedures to follow in the event of an emergency.	Not required	Required Part 265 subpart C from §262.34(d)(4) <i>(Applies to “facilities” only [i.e., waste management units, such as CAAs], not the entire generator site.)</i>	Full plan required Part 265 subpart C from §262.34(a)(4)
Air Emissions Control hazardous air emissions from tanks and containers	Not required	Not required	Required Part 265 subparts AA, BB and CC from §262.34(a)(1)(i)
Land Disposal Restrictions Meet standards for placing on the land and associated requirements for certifications, notifications, and waste analysis plans	Not required	Required Part 268 from §262.34(d)(4)	Required Part 268 from §262.34(a)(4)
Manifest Tracking hazardous waste shipments using the multiple-copy manifest (required by DOT and EPA)	Not required	Required Part 262 subpart B (Note: Done when an A&M System member employs a waste contractor to pack, ship, and treat or dispose of hazardous waste)	Required Part 262 subpart B
Waste Minimization Certify steps taken to reduce or eliminate the generation of hazardous waste	None	Good faith effort required §262.27	Program in place required §262.27
Pre-Transport Requirements Package and label hazardous waste for shipment off site to a RCRA facility for treatment, storage, or disposal	Yes (if required by DOT)	Required §§262.30-262.33	Required §§262.30-262.33
Biennial Report Report data from off-site shipments of waste during the previous calendar year	Not required	Not required	Required §262.41
Exception and Additional Reporting Report if any required copies of signed manifests are not received back Provide information on quantities and disposition of wastes upon request	Not required	Required §§262.42(b) and 262.43	Required §§262.42 and 262.43
Recordkeeping Maintain records of manifests , biennial reports , exception reports and waste testing	Not required	Required §262.40(a), (c), and (d)	Required §262.40
Facility Type Send off-site shipments to appropriate facilities for management	Facilities noted in §§261.5(f)(3) and (g)(3)	RCRA permitted/interim status facility Parts 264/265, 266/267 and 270 (Note: Done when an A&M System member employs a waste contractor to pack, ship, and treat or dispose of hazardous waste)	RCRA permitted/interim status facility Parts 264/265, 266/267 and 270
Closure Close equipment, structures, soils and units by meeting specified performance standards and disposal and decontamination requirements	Not required	Required - tanks only §265.201(f)	Required •General §§265.111(a) and 265.114 from §262.34(a)(1)(iv) •Unit specific Part 265, subparts I, J, W, and DD

*** Note:** Because even the smallest businesses, governmental entities, and public institutions generate common, potentially hazardous wastes (e.g., lamps, batteries, electronic waste, aerosol cans, oil-based paints and consumer products), **almost every “person” (or entity) in the U.S. is at least a CESQG, if not more.**

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A&M Central Texas is and should remain for quite some time a CESQG, allowing the least restrictive and most flexible setting for managing hazardous wastes. Nevertheless, as a good management practice for the safety of the campus community, this HWMP has adopted several requirements and procedures that go beyond the minimum regulatory requirements, as highlighted in green in Table 3. In essence, this HWMP treats the campus as if it were a small quantity generator.

CAUTION WITH P-LISTED CHEMICALS (40 CFR §261.33)

Because they are highly hazardous, ***acute hazardous wastes*** (designated by the EPA waste code prefix “P”) can be problematic. If monthly generation exceeds a mere 1 kg (2.2 lb) or total on-campus accumulation exceeds that amount, A&M Central Texas would be instantly launched into the large quantity generator (LQG) classification, subject to the most restrictive management requirements.

Campus chemical inventory management should track all [P-listed chemicals](#) in inventory, prevent or restrict their purchase to very small amounts, and encourage that the chemicals be used for their intended purpose rather than disposed, unused, as waste. Before deeming a P-listed chemical as waste, ensure that the total amount of one or a combination of P-listed wastes is less than 1 kg (2.2 lb) in a given month.

Contact the Office of SRM as soon as possible if you anticipate purchasing, using, or disposing of a P-listed chemical.


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Section 4. Municipal Solid Waste

As stated in Table 2 of Chapter 2, university wastes are classified by TCEQ as nonindustrial **municipal solid waste** (MSW). Therefore, once a solid waste has been determined to be nonhazardous, it should be amenable to disposal with the regular trash, **with a number of important exceptions**, some regulatory and some based on good management practices. Prohibitions are listed in Chapter 5.


Campus MSW and recyclable materials picked up from offices, labs and other locales on campus are placed in dumpsters or recycling located at each building. Dumpsters and recyclables are serviced by the City of Killeen Solid Waste Division. Aside from typical trash, laboratories and other campus workplaces may produce other wastes that under certain conditions may be disposed as regular trash, including but not limited to:

- **Treated biohazardous / medical waste** – May be disposed with regular trash after verifiable treatment. The “Biohazard” word and symbol on autoclave bags must be marked out or taped-over and the autoclave bag placed inside of a black plastic bag and tied shut. Do not place in trash cans, but personally place the black bag of treated waste into the dumpster for the building. (Note: It is advisable that the landfill operator be told that bags of treated medical/biohazard waste will occasionally be sent for disposal so that there is no cause for alarm should a black bag tear open and expose the inner autoclave bag.
- **Solvent-Contaminated Wipes** – Disposable wipes that are contaminated with solvents may be accumulated in leak-proof, marked containers. Provided that there are no free liquids in the container, the sealed container may be disposed with regular trash. EPA rules regarding used wipes disposal are explicit. Refer to the *Solvent-Contaminated Wipes Guide* for specifics ([see Appendix D, Solvent-Contaminated Wipes Guide](#)).
- **Noninfectious biological waste** – Used biological supplies that are not infectious and are not hazardous or sharp may be discarded in the regular trash, provided that they are not odorous or a hazard to custodial staff.
- **Empty chemical containers** – Provided that they are carefully emptied of their contents so that no hazards remain, empty chemical containers may be disposed in the regular trash after labels have been removed or defaced and lids taken off. To prevent injury to someone scavenging in trash bins, avoid disposing of large numbers at once and mixing the empty containers with other wastes so that they are not readily visible in the dumpster. (Note: EPA has an important exception for containers that held P-Listed chemicals. Those are not “RCRA empty” unless they have first been triple-rinsed, with the rinsate collected and disposed as hazardous waste. Thus, it is advisable to treat P-Listed empty containers as hazardous waste and have SRM manage them through the waste contractor).
- **Broken glassware (uncontaminated)** – Glass and other uncontaminated sharps (not hypodermic needles, syringes or other medical sharps) should be placed in leak-proof, lidded containers marked for waste glass only. Full, sealed containers may be placed in trash dumpsters. (See the *Broken Glassware Guide*). (Note: **DO NOT** discard unbroken laboratory glassware. It is controlled to prevent possible use for making illicit drugs) ([see Appendix E, Broken Glassware Guide](#)).
- **Spent alkaline batteries** – Most common, single-use batteries do not contain lead, mercury,

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cadmium or lithium and are thus not hazardous. These, such as alkaline AA, AAA, C and D cells, may be discarded in the trash.

- **Empty aerosol cans at atmospheric pressure** – If all of the product in an aerosol can is used and it has no remaining pressurized propellant, it may be discarded in the trash. When in doubt, collect aerosol cans for pickup and disposal by the Office of SRM (*see [Appendix F](#), Aerosol Can Guide*).

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Section 5. Disposal Prohibitions

Hazardous Waste Disposal Prohibitions

Dilution Prior to Land Disposal

It is the policy of The Texas A&M University System that

— **except as allowed after consultation with Safety and Risk Management, hazardous waste generators are prohibited from diluting wastes to render them less or nonhazardous.** —

Unwanted materials that are determined to be hazardous wastes should be accumulated in appropriate waste containers and managed for disposal along with other campus hazardous wastes.

Regulatory basis – Historically, the most common way to dispose of hazardous waste was to dispose of it on land (e.g., in landfills, surface impoundments, or land treatment units). After the EPA developed RCRA regulations governing hazardous waste in 1980, Congress amended RCRA (Hazardous and Solid Waste Amendments of 1984 [HSWA]) to further restrict or prohibit land disposal of inadequately treated or untreated hazardous waste. EPA developed its ***land disposal restrictions (LDR) program*** to address HSWA. In the LDR program, EPA set technology-based concentration limits on hazardous wastes that must be met before the treated waste residuals may be land disposed. Any method of treatment can be used to bring concentrations to the appropriate level ***except dilution***, unless the waste is treated using a technology required under the LDR.

Therefore, with the exception of dilution to eliminate a hazardous characteristic (i.e., ignitability, corrosivity or reactivity), the LDR regulations prohibit a generator from in any way diluting a land disposal-restricted waste to circumvent an LDR imposed by RCRA Section 3004 ([40 CFR §268.3](#)). Because of the complexity of the LDR program, an individual generator of hazardous waste is unlikely to know which wastes are governed by LDR and what technology or performance standards are applicable.


Intentional evaporation for the purpose of disposal

Irrespective of state and federal regulations, it is the policy of The Texas A&M University System that

— **waste chemicals shall not be intentionally disposed via evaporation unless evaporation is incidental to a process.** —

Unwanted volatile materials that are determined to be hazardous wastes should be accumulated in appropriate waste containers and managed for disposal along with other campus hazardous wastes.

Regulatory Basis – Solid and hazardous waste laws and regulations assume that air emissions, intentional or otherwise, are governed under Clean Air Act-derived emissions authorizations or restrictions. Thus, there is no explicit TCEQ waste-related rule prohibiting evaporation disposal. Under the TCEQ Office of Air program, evaporation of chemicals requires an air emissions authorization, and, for academic laboratories (e.g., fume hoods), those emissions are authorized as [de minimis](#) sources with no restrictions, agency notification or documentation of any kind. However, TCEQ views these *de minimis* releases as **incidental** to normal laboratory activities and does not anticipate that a laboratory will intentionally dispose of volatile chemicals via evaporation.

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From an EPA perspective, there is no explicit RCRA rule prohibiting evaporation disposal by a waste generator. A single EPA regulatory opinion (RO 11840, Michael J. Peska, June 2, 1994, Chief Regulatory Development Branch, EPA Office of Solid Waste) appears to authorize evaporation for a specific circumstance as part of a treatment process under the RCRA wastewater treatment exemption. More broadly, however, for wastes restricted from land disposal (see previous discussion of dilution), EPA policy does prohibit the use of surface impoundments for waste treatment where evaporation of hazardous constituents is the principal method of treatment (EPA. 2001. Land Disposal Restrictions: Summary of Requirements. Offices of Solid Waste and Emergency Response & Enforcement and Compliance Assurance. EPA530-R-01-007). While a laboratory fume hood or open waste container is not a surface impoundment, the principle of this EPA policy does apply.

Discharge to sanitary or storm sewer

Irrespective of state and federal regulations, it is the policy of The Texas A&M University System that

— **Chemical wastes shall not be intentionally discharged via sink or drain unless the discharge meets requirements of the A&M Central Texas Drain Disposal Guide** —

Unwanted materials that are determined to be hazardous wastes should be accumulated in appropriate waste containers and managed for disposal along with other campus hazardous wastes (see [Appendix G, Drain/Sink Discharge of Chemicals](#)).

Regulatory basis – Based on the RCRA exclusion (see inset box below) for wastes mixed with sewage destined for a publicly-owned treatment works (POTW), hazardous waste *may* be legally disposed via **sanitary wastewater**. However, this exclusion presumes that the POTW issues permits or restrictions to its customers under its TPDES discharge permit. Therefore, before discharging any chemicals or wastes via sink or sanitary drain disposal, consult the guidelines developed for A&M Central Texas.

With respect to **storm water** discharges, the Texas Water Code (TWC Sec. 26.121) prohibits unauthorized waste discharges to any water in the state. Thus, waste disposal either directly to surface water or via storm water drains, inlets, or outfalls is **illegal** without a permit.

40 CFR §261.4 Exclusions.


(a) *Materials which are not solid wastes.* The following materials are not solid wastes for the purpose of this part:

(1)(i) Domestic sewage; and

(ii) Any mixture of domestic sewage and other wastes that passes through a sewer system to a publicly-owned treatment works for treatment. “Domestic sewage” means untreated sanitary wastes that pass through a sewer system.

Land disposal of hazardous waste

As covered in the above section on dilution prior to land disposal, the EPA has promulgated technology-based pretreatment standards for hazardous wastes before they may be disposed on land (e.g. in landfills). All hazardous waste collected and manifested for shipment and treatment, storage or disposal must be accompanied by documentation showing which wastes are restricted by LDR to ensure that they receive proper treatment before the residues (e.g., incinerator ash) may be land disposed. ***These documents are prepared by the contractor hired by A&M Central Texas to lab pack, transport, sort and dispose of hazardous waste.***

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Solid Wastes Prohibited in the Regular Trash

Certain hazardous and nonhazardous solid wastes from any source are prohibited from municipal landfills, as shown in the figures below.




In higher education, the same prohibitions apply, plus:

- Liquid wastes (other than household-sized containers);
- Hazardous wastes (except for landfills authorized to accept waste from CESQGs); and
- Any other wastes that may threaten water quality, create a nuisance, or endanger humans or the environment.


Finally, certain other "Special Wastes" having their own disposal requirements include:

- Untreated medical and biohazardous wastes;
- Animal carcasses (may be landfilled under some circumstances);
- Mixed radioactive wastes;
- Asbestos containing materials (may be landfilled only at licensed facilities under proper handling procedures).

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- Grease and grit trap wastes; and
- Light ballasts and capacitors that are not PCB-free.

Contact SRM for proper handling and disposal (all light ballasts are PCB free at A&M Central Texas).

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Section 6. 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 lead or mercury); and
- Distillation and recovery of spent solvents.

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


Regulatory basis – The 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 the EPA's interpretation:

1. In the January 12, 1981 Federal Register (46 FR 2806-2808), the 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.
2. 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.
3. 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.

It should be noted, however, that some forms of treatment by generators are not allowed without a permit. For example, incineration is regulated by specific standards for incinerators (Part 264/265 Subpart O), and burning waste in boilers and industrial furnaces is regulated under the specific standards for those units (Part 266 Subpart H).

If the waste is being treated on-site and the treatment residue is destined to be land disposed, the generator still has responsibilities under the land disposal restrictions (LDR) program. The LDRs require that hazardous waste must be treated by a specified method or to a specified constituent concentration level before it (or its residue) may be placed in the land. The generator must know the treatment


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standard applicable to his/her waste and either treat to meet the treatment standard or send it to a treater to do so.

Generators who treat waste on-site to remove a hazardous characteristic must prepare a waste analysis plan if treatment occurs in units that do not require a RCRA permit (see 40 CFR §262.34(a)(4) for LQGs, and 40 CFR §262.34(d)(4) for SQGs). In addition, there are some generator paperwork requirements associated with the LDRs (40 CFR §268.7(a)). More information about the LDR program may be found in “[Land Disposal Restrictions: Summary of Requirements](#).”

Some treatment units have been and continue to be specifically excluded from permitting. For example, owners and operators of elementary neutralization units are not required to obtain a RCRA permit (40 CFR §270.1(c)(2)(v)). Similarly, many forms of on-site recycling of hazardous waste can be performed without a permit, since EPA generally does not regulate the recycling process itself. However, any accumulation of hazardous waste prior to placement in an exempt unit or prior to recycling would be regulated under 40 CFR §262.34 Accumulation Time.

(Reference: [Memorandum from Elizabeth Cotsworth](#), Director, EPA Office of Solid Waste. August 16, 2002. To RCRA Senior Policy Advisors, EPA Regions I-X)

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Section 7. Waste Management at the Point of Generation (Satellite Accumulation)

General Information

- 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 Office of SRM for evaluation and proper waste classification.
- Photographic wastes may be considered hazardous. If you have photographic lab waste, please notify the Office of SRM 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 Office of SRM.
- 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. Departments 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 Office of SRM. 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 Office of SRM 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 will be charged to the department.


Classification and Segregation of Hazardous waste

Classification for Treatment, Storage or Disposal

In addition to the EPA waste codes assigned through the hazardous waste determination process (see Section 2), 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, water 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

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prior to off-site shipment.

Segregation of Hazardous Wastes

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 Section 4 for more detail)
- Sharps are categorized as Biohazardous Waste, NOT hazardous waste. Refer to the A&M Central Texas Bloodborne Pathogens Program and Biohazardous Waste Program.

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


Satellite Accumulation of Hazardous wastes

The EPA and TCEQ regulations allow individuals who generate wastes at a SQG or LQG to accumulate hazardous wastes at or near any point of generation where wastes initially accumulate which is under the control of the operator of the process generating the waste without a permit and without complying with the more stringent accumulation time (central accumulation) restrictions ([30 TAC §335.69](#); [40 CFR §262.34\(c\)](#)). The term for such a point of generation is Satellite Accumulation Area (SAA), although the term does not appear in the regulations. SAAs do not apply to CEQSGs, but designation and use of SAAs is a good management practice enforced by the A&M System Office of SRM.

In addition to hazardous waste determinations (see Section 2), hazardous waste generators must follow the following guidelines for hazardous waste accumulation. (***Note: These guidelines are condensed from the A&M Central Texas SAA Poster, Haz Waste Tag, and SAA Training. See these sources for more details.***)

Generators must ensure that SAAs have the following:

- Area is secure from “Unauthorized Entry” and emergency contacts are posted.
- Waste is accumulated in a designated area with visible SAA signage.
- Areas must be accessible to the Office of SRM.
- Waste that is hazardous must be separated from non-waste chemicals.
- Waste accumulated in the SAA must be less than 55 gallons of hazard waste or less than one quart of acute hazardous waste.
- Spill control supplies are available.

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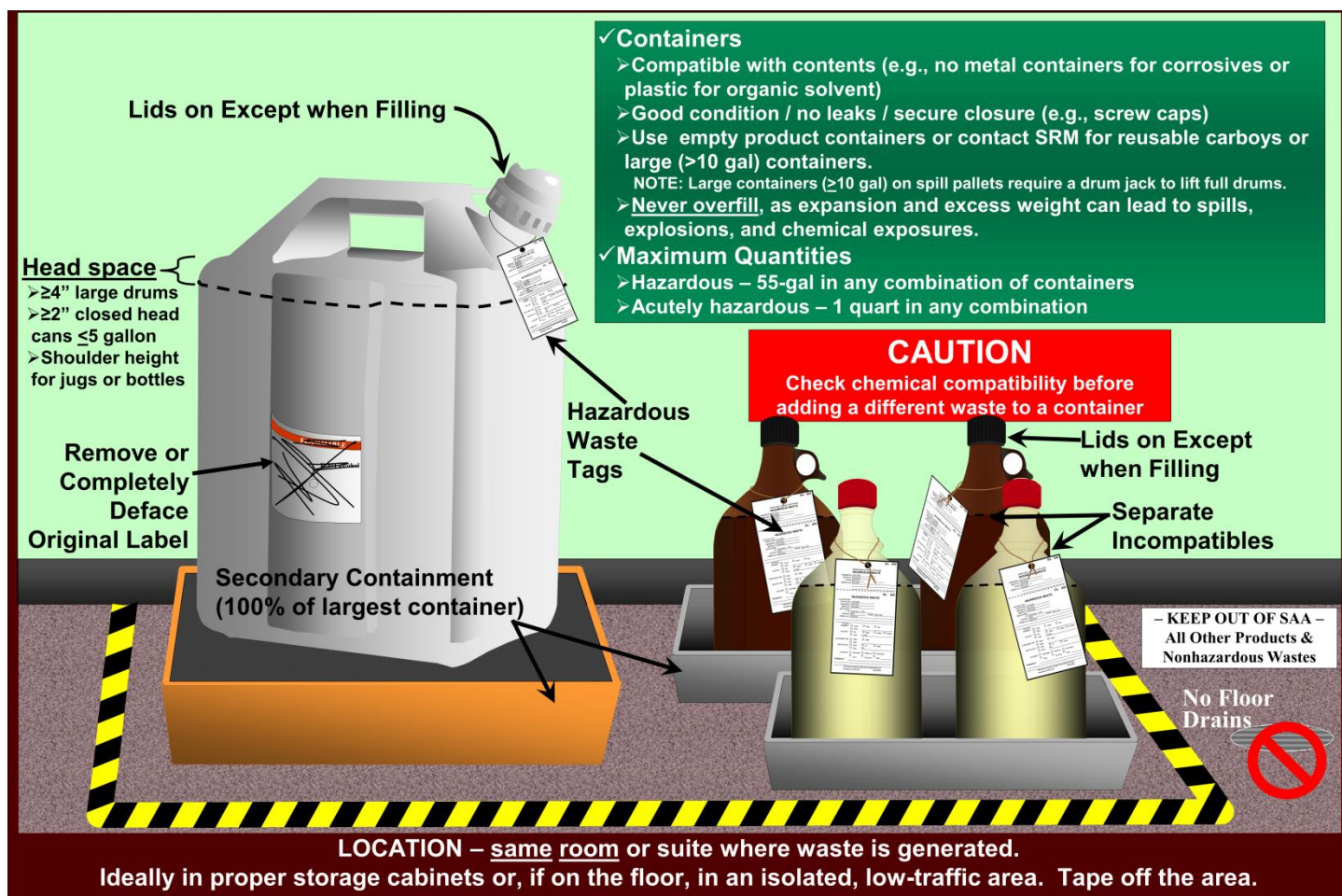
How Should the SAA Look?

According to regulatory requirements, containers must be:

- **Compatible with contents** (e.g., no metal containers for corrosives or certain plastics for organic solvents)
- **In good condition**, with no leaks and a means of **secure closure** (e.g., screw caps)

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 before quantities approach 55-gallons.)
- **Acute hazardous waste** – Up to one (1) quart in any combination **campus-wide!**



Lids on Except when Filling

Head space

- ≥4" large drums
- ≥2" closed head cans ≤5 gallon
- Shoulder height for jugs or bottles

Remove or Completely Deface Original Label

Hazardous Waste Tags

Secondary Containment (100% of largest container)

CAUTION
Check chemical compatibility before adding a different waste to a container

Lids on Except when Filling

Separate Incompatibles

– KEEP OUT OF SAA – All Other Products & Nonhazardous Wastes

No Floor Drains


LOCATION – same room or suite where waste is generated.
Ideally in proper storage cabinets or, if on the floor, in an isolated, low-traffic area. Tape off the area.

✓Containers

- Compatible with contents (e.g., no metal containers for corrosives or plastic for organic solvent)
- Good condition / no leaks / secure closure (e.g., screw caps)
- Use empty product containers or contact SRM for reusable carboys or large (>10 gal) containers.
- NOTE: Large containers (≥10 gal) on spill pallets require a drum jack to lift full drums.
- Never overfill, as expansion and excess weight can lead to spills, explosions, and chemical exposures.

✓Maximum Quantities

- Hazardous – 55-gal in any combination of containers
- Acutely hazardous – 1 quart in any combination

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What Containers Are Acceptable?



For high-production volume wastes, larger containers such as 55-gallon drums may be acceptable, but if spill containment requires a spill pallet, a drum jack will be needed to lift and move the drum.

Where Should an SAA be Located?


Within the Room

Satellite accumulation areas should be marked with signage and safely located, such as:

- Vented storage cabinets (e.g., under fume hoods, flammables storage cabinets, corrosives storage cabinets)
- Countertops back from the edge and away from valuable or sensitive equipment or supplies, or
- If necessary, on the floor in an out-of-the-way area and away from floor drains.


The SAA poster should be used as a sign to mark the vicinity of the SAA and to provide guidance to hazardous waste generators. The poster is formatted in different size configurations to accommodate available wall space.

A second type of SAA, sometimes called a “process SAA,” may be connected to an analytical instrument or laboratory process, collecting waste as the instrument or process is operated (e.g., an eluate tube connected to a waste collection bottle). Containers are closed at the end of the process operation or at the close of day and full containers are moved to a nearby SAA within the control of the same operator who generated the waste.

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The figure below illustrates various SAA location and signage options within a room.



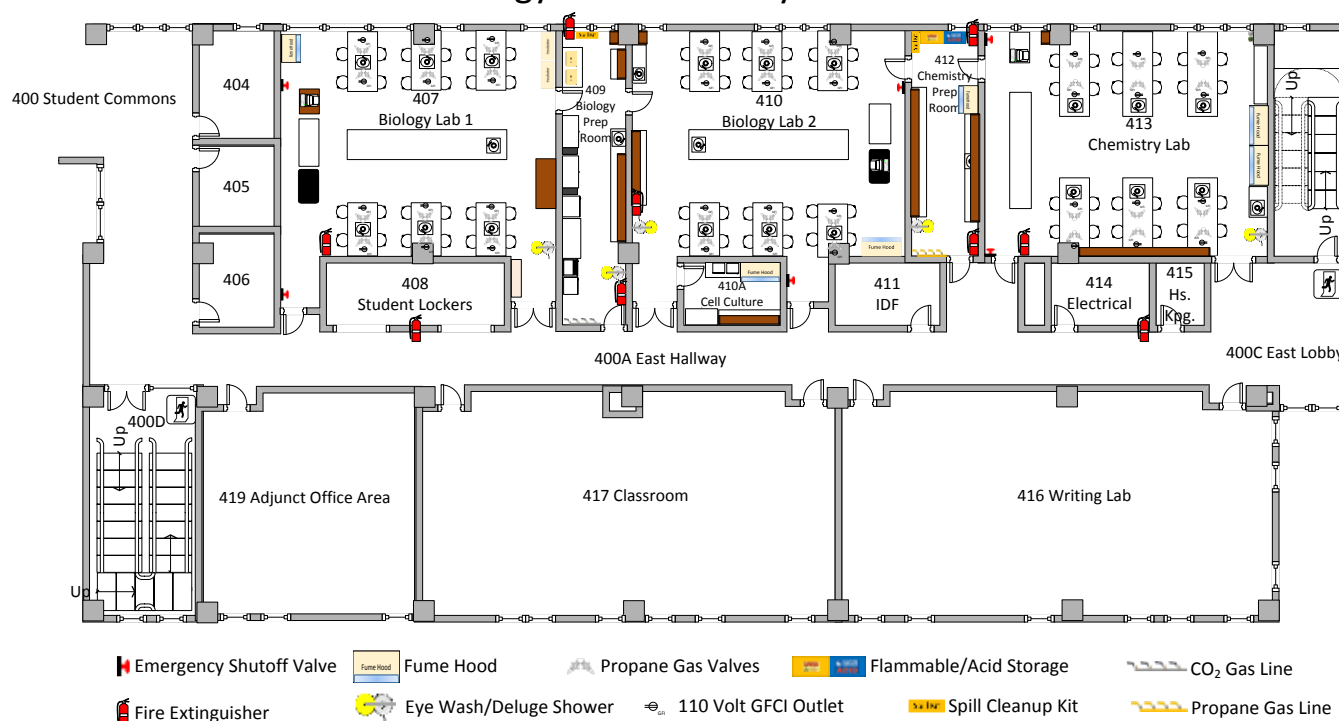
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SAAs Located Among Rooms Based on the Operator in Control

Based on the regulatory language, SAAs must be within one room, suite of rooms, process area, or locale controlled by one person (e.g., PI; laboratory supervisor; process operator). The intent of the rule is to allow flexibility (e.g., no time limits on waste containers) in managing waste at the point of generation while maintaining workplace and environmental safety. The rule assumes that the operator having control over the process(es) generating the waste(s) and those persons in the workplace under his/her supervision are knowledgeable about the chemicals involved and the hazards of the wastes that are generated.

CAUTION. Exercise extra caution when multiple independent researchers occupy a common laboratory space, as one cannot assume that each knows what wastes are being produced by the others. A common cause of hazardous waste incidents in SAAs is a container receiving an incompatible mixture of wastes, resulting in an overpressure explosion and/or fire.


4th Floor Biology and Chemistry Labs Warrior Hall



How Should Wastes be Moved in and Among SAAs, and by Whom?

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

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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 Control Areas to Locations 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. Such locations are deemed “central accumulations areas” (CAAs) and carry with them significant compliance requirements. A&M Central Texas does not currently have a CAA.

Waste Container Labels and Labeling

General Labeling Requirements for ALL Chemical Containers

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 MSDS)
 - As a safe practice, also include hazard warnings and identifying information (e.g., Chemical Abstracts Service [CAS] numbers and manufacturer) on secondary containers.

Note that many containers end up being disposed as waste, even if not originally considered waste. Examples include:


- | | | |
|------------------------------|------------------------|-------------------------------|
| ➤ Reagents & stock solutions | ➤ Process chemicals | ➤ Samples |
| ➤ Mixtures & spent products | ➤ Reaction by-products | ➤ Residues & empty containers |

This may occur for a number of reasons, such as when a laboratory is closed or cleaned out, a faculty member leaves or retires, or a graduate student or post-doc completes research and leaves. Unlabeled or insufficiently labeled containers must be treated as unknowns and tested at additional expense for waste disposal. Therefore, always label containers directly or leave sufficient documentation that container contents can be identified and hazardous waste determinations conducted.

(Note: See the university Hazard Communication Program and/or the A&M System Hazard Communication Training for more guidance on general labeling)

Specific Labeling Requirements for Hazardous Waste Containers

In addition to the general container-labeling requirements, hazardous waste regulations require that waste containers in SAAs be labeled with “*either with the words “Hazardous Waste” or with other*

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words that identify the contents of the containers” (30 TAC §335.69(d)(2) ; 40 CFR §262.34(c)(1)(ii)).

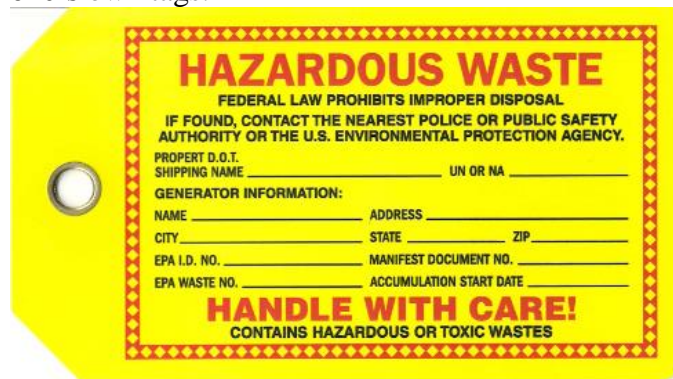
As a practical matter, simply labeling a container with “Hazardous Waste” is not sufficient due to the vast array of waste types generated in a higher education setting. Therefore, the each waste generator must adhere to the following methods.

Starting a New Waste Container

- You MUST destroy or deface any original label(s) on containers used for waste.
- You MUST label each new container when waste is first added 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).
- You MUST 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 Office of SRM. Alternatively, an Excel file may be obtained from SRM, allowing one to type, save and print one’s own tags.



HAZARDOUS WASTE
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL
IF FOUND, CONTACT THE NEAREST POLICE OR PUBLIC SAFETY AUTHORITY OR THE U.S. ENVIRONMENTAL PROTECTION AGENCY.
PROPERTY D.O.T. SHIPPING NAME _____ UN OR NA _____
GENERATOR INFORMATION:
NAME _____ ADDRESS _____
CITY _____ STATE _____ ZIP _____
EPA I.D. NO. _____ MANIFEST DOCUMENT NO. _____
EPA WASTE NO. _____ ACCUMULATION START DATE _____
HANDLE WITH CARE!
CONTAINS HAZARDOUS OR TOXIC WASTES

REFER TO LABELING INSTRUCTIONS ON REVERSE SIDE No.

HAZARDOUS WASTE
FEDERAL LAW PROHIBITS IMPROPER DISPOSAL

MGR/PI/SUPERVISOR: _____
DEPT: _____
BUILDING NAME: _____
ROOM NO: _____ PHONE: _____
CONTAINER START DATE: _____
ACCUMULATION START DATE (ONLY IF SAA IS FULL): _____
CAA START DATE (E.H.S DEPT. USE ONLY): _____

CONTENTS PROVIDE FULL CHEMICAL NAME (and CAS# if known) NO FORMULAS OR ABBREVIATIONS
Separately list % of each component (including water / solvent) in a solution or mixture (total must equal 100%. If <0.1% label as "trace." (If needed, continue list on back))

_____	_____	_____ %
_____	_____	_____ %
_____	_____	_____ %
_____	_____	_____ %
_____	_____	_____ %
_____	_____	_____ %

Proper Chemical Name _____ CAS# _____

HAZARDOUS WASTE No.

MGR/PI/SUPERVISOR: _____
DEPT: _____
BUILDING NAME: _____
ROOM NO: _____ PHONE: _____
CONTAINER START DATE: _____
ACCUMULATION START DATE (ONLY IF SAA IS FULL): _____

PHYSICAL PROPERTY: ☐ Liquid ☐ Solid ☐ Gas
☐ Other _____

CONTAINER SIZE: _____ WASTE QUANTITY: _____
Amt. Units Amt. Units


CONTAINER TYPE: ☐ Glass ☐ Metal ☐ Plastic
☐ Other _____

REACTS WITH: ☐ None ☐ Air ☐ Water
☐ Other _____

HAZARDS: ☐ Ignitable ☐ Corrosive ☐ Reactive
(SEE REVERSE SIDE) ☐ Toxic ☐ Explosive ☐ Other _____

EPA HAZARDOUS WASTE CODE(S) IF KNOWN FROM HAZARDOUS WASTE DETERMINATION AND/OR TCEQ NOTICE OF REGISTRATION

IF HAZARDOUS WASTE CLASSIFICATION IS UNKNOWN, CALL SAFETY, RISK & EMERGENCY MGMT @ 519-5771 FOR ASSISTANCE
For waste pickup, call SRM @ 254-519-5771 or e-mail s.kelley@tamuct.edu

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HAZARDOUS WASTE

FEDERAL LAWS PROHIBIT IMPROPER DISPOSAL.

IF FOUND, CONTACT THE NEAREST POLICE OR
PUBLIC SAFETY AUTHORITY, OR THE
U.S. ENVIRONMENTAL PROTECTION AGENCY.

GENERATOR INFORMATION:

NAME _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

EPA ID NO. _____ EPA WASTE NO. _____


ACCUMULATION START DATE _____ MANIFEST TRACKING NO. _____

D.O.T. PROPER SHIPPING NAME AND UN OR NA NO. WITH PREFIX

HANDLE WITH CARE!

Completing HAZARDOUS WASTE Tags

1. Attach an individual HAZARDOUS WASTE tag (or label) to each container.
2. Secure the top part of the tag with a string that encircles the top of the container - rubber bands, tape, and wire are not acceptable. Alternatively, for large containers, slide the tag into a clear plastic pouch (such as those used for courier packages) that has been affixed to the container.
3. Fill in both upper and lower sections of the tag completely and legibly *except* for "ACCUMULATION START DATE." (This information is essential for record keeping)
 - CONTENTS: Provide proper chemical name(s). Chemical formulas or abbreviations are not acceptable. For brand-name products, list active ingredients, if available. List all chemical components in a waste container (including water). Lists may be continued on the back of the tag. Tags for containers of potentially explosive materials such as picric acid, silanes, nitro compounds, and ethers must indicate the percent concentration of these chemicals.
 - ACCUMULATION START DATE: Fill in ONLY IF the waste container causes the SAA to exceed its 55-gallon hazardous (or 1 quart of acute hazardous) waste limit.
 - PI / LAB COORDINATOR: The Principal Investigator or person in charge of the lab/location that generated the waste.
 - EPA WASTE CODE(S): Conduct a hazardous waste determination or refer to SRM's list of wastes registered with the TCEQ. Become familiar with codes for wastes frequently generated at your location. For wastes not previously or commonly generated, contact SRM for guidance.

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Waste Pickup for Disposal

Full waste containers ready for disposal

- A. **For Tagged Containers.** Fill in the accumulation start date (if applicable - see above) and call (519-5771), e-mail a copy of the tag (s.kelley@tamuct.edu), or mail the bottom part of the tag to SRM in Campus Mail to schedule a pickup. (*NOTE: At present, because of the relatively small size of the university and the low waste generation rate, the university's hazardous waste contractor will pack, manifest and ship hazardous wastes directly from the SAA locations.*)
- B. **For Labeled Containers.** Fill in the accumulation start date (if applicable - see above), and contact SRM via one of the methods listed in A. above to schedule a pickup.

SRM will not pick up leaking, improperly capped or labeled, or contaminated containers.

Remember, intentionally disposing of hazardous chemicals through sanitary (sink) drains, evaporation in a fume hood, or in the regular trash is prohibited.

Disposal of Empty Chemical and Waste Containers


A container that has held hazardous waste or hazardous chemicals can in certain cases also be a hazardous waste, even when seemingly empty. Before an empty chemical or waste container may be considered nonhazardous municipal solid waste, it must be Resource Conservation and Recovery Act (RCRA) empty.” (See **40 CFR §261.7 Residues of hazardous waste in empty containers at:** <https://www.gpo.gov/fdsys/granule/CFR-2011-title40-vol26/CFR-2011-title40-vol26-sec261-7>). The regulation is explicit but generally practical, with the exception of containers that held a P-listed chemical (see Section 2 and Appendix E: Aerosol Can Guide).

In practice, place empty containers in regular trash after: 1. EMPTYING liquids or solids, 2. defacing/REMOVING LABELS, 3. REMOVING CAPS/lids, and 4. PUNCHING HOLES in metal or plastic containers. Do not break glass containers. If not handled in this manner, empty containers must be handled and disposed as hazardous waste.

EXCEPTION: Because of the stringency of the definition of “empty” for P-listed acute hazardous chemicals, always collect empty P-listed chemical containers for handling and off-site disposal as hazardous waste by SRM and the university’s waste contractor.

SAA Self-Inspections and Maintenance

While not explicitly required by regulations, SAA operators must conduct monthly inspections of SAAs for rule-required and university policy-required information. State and federal regulations *do not* require that any records of inspections be maintained; therefore, keep only a rolling 3-month record of SAA inspections. Use the form shown on the following page to conduct and record SAA inspections.


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Monthly SAA Inspection - USE ERASABLE MARKER			
ANSWER "Y" OR "✓" FOR YES AND "N" OR "X" FOR NO. --- KEEP A ROLLING 3-MO. RECORD. --- ERASE ENTRIES FROM OLDEST MONTH COLUMN TO RECORD CURRENT INSPECTION. --- SAVE ANY CORRECTIVE ACTION ITEMS THAT HAVE NOT BEEN COMPLETED.			
Inspections are not required by State/Federal regulation, but SRM requires monthly checks of compliance and performance. Regulatory citations indicate State/Federal requirements.			
	month	month	month
DATE OF INSPECTION			
NAME OF INSPECTOR			
Required by Regulation			
Are containers in good condition? (30 TAC §335.69(f)(2) / 40 CFR §262.34(d)(2))			
Is the waste compatible with the containers? (30 TAC §335.69(d)(1) / 40 CFR §262.34(c)(1)(i))			
Are containers kept closed except when adding or removing waste? (30 TAC §335.69(d)(1) / 40 CFR §262.34(c)(1)(i))			
Are containers marked "hazardous waste" or labeled to identify the contents? (30 TAC §335.69(d)(2) / 40 CFR §262.34(c)(1)(iii))			
Has the sum of hazardous waste volumes in the SAA exceeded 55 gallons, or has more than 1 quart of acutely hazardous waste(s) accumulated? If YES, THEN answer a. & b.:			
<div style="border: 1px solid black; padding: 2px;"> a. Has/have the container(s) responsible for holding the excess amount been marked with the beginning date of the excess accumulation (the "Accumulation Start Date" on the Hazardous Waste tag)? (30 TAC §335.69(e) / 40 CFR §262.34(c)(2)) </div>			
<div style="border: 1px solid black; padding: 2px;"> b. Has the container holding the excess amount remained in the SAA >3 days? (30 TAC §335.69(e) / 40 CFR §262.34(c)(2)) </div>			
Does the facility maintain a record of the location of each SAA? (i.e., Has the manager of this SAA location notified the SRM of its existence and location?) (30 TAC §335.9(a)(1)(G))			
Required by the Safety & Risk Management Office			
If containers formerly contained product, have the original labels been removed or defaced?			
Are containers of incompatible wastes separated?			
Do all containers have secondary containment (e.g., spill pallet, bucket or pan) for spill prevention?			
Is there adequate head space in all containers?			
Are labels and tags properly filled in?			
Briefly describe the listed Corrective Actions:	CORRECTIVE ACTION REQUIRED (BRIEFLY LIST)		
	DATE COMPLETED		
	COMPLETED BY		
Monthly waste generation record			
Estimated quantity of hazardous waste generated during the month (kg):			
Quantity picked up by SRM:			

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
 - ALARMS
 - EXITS
 - TELEPHONES
 - SAA
 - 1st AID KIT
 - EMERGENCY SHOWER
 - EYEWASH STATION
 - SPILL CLEANUP KIT
 - UTILITY SHUTOFF
 - NON-HAZARDOUS WASTE ACCUMULATION AREAS

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- Key contacts,
- Spill response materiel, and
- Cleanup procedures.

The following table, taken from the A&M Central Texas SAA Wall Chart, offers a useable format.

Emergency Contacts			
For emergency services, dial 911 or UPD @ 1911			
SREM Office	Director: <u>Shawn Kelley</u>	tel no. <u>254-519-5771</u>	
	Office Rm. No. <u>Warrior Hall, 425H</u>		
Dept. Chair	Asst. Dean _____	tel no. _____	
	Office Rm. No. _____		
Lab Manager		tel no. _____	
Local Authorities			
Killeen Fire Dept - 911			
UPD - 911 or 254-501-5800			
Other Important Phone Numbers			
Poison Control 1-800-222-1222			
Emergency/Spill Response Equipment			
Spill Kit Item	Quantity	Use	Last Inspected (date / init.)
*Add other spill response equipment, such as aprons, brooms, solvents, etc.			
Order replacement items from:			

Emergency Response for SAAs

Should an incident occur, quickly follow the protocol shown below.



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Incident Discovery

Recognize

Observe

Notify

RECOGNIZE - Know your work area; know the hazards.

Common hazards, from greatest to least:

Flammable Gas Release without Ignition (e.g., hydrogen) - Evident by visible damage to equipment, sound, condensation or frost on surface. High explosion hazard. Immediately evacuate.

Fire - Commonly evident by visible flame and/or smoke, heat, charring of surface. If caused by compressed gas, shut off the source if possible, but do not extinguish. Immediately evacuate, unless the fire is incipient and controllable.

Corrosive, Toxic or Other Highly Volatile Liquid Release - Evident by visible liquid, damage to equipment, and characteristic odor. Dense vapors may near the ground and can explosively ignite. Evacuate if the release is large, is uncontrolled, and/or there is a potential for ignition.

Non-Flammable Gas Release - Evident by visible damage to equipment, sound, condensation or frost on surface. Risk of asphyxiation due to oxygen displacement. Evacuate if release appears large and uncontrolled, especially if in a building or confined space.

Toxic / Corrosive Gas or Vapor Release (e.g., acid or caustic) - Evident due to equipment damage, visible vapor cloud, odor, or acute pain in breathing, the eyes, and the skin. Evacuate to a safe distance.

Injury / Illness (including confined space) - Seek First-Aid/CPR/AED-trained personnel. Do not move the victim unless a continuing incident (e.g., chemical release) presents an ongoing risk. Look for the cause. Do not enter a confined space to attempt to help a person.

Life-Threatening Equipment Failure - Can be invisible. Often accompanied by sudden or loud sound or vibration. Stand clear of any failed or failing equipment. Shut off power if safe to do so.

Oil or Other Organic Liquid Spill or Release - Visible or clear to dark colored fluid. Same flow freely while some are viscous. Can have a noticeable odor. Observe from a safe distance.

OBSERVE AND NOTE quickly and from a safe place:

Location of the problem and its source;

Identity of the material involved;

Extent of the problem (Incidental or Uncontrolled);

Threat of fire, explosion or other;

Injuries to personnel and their severity; and

Risks to other personnel or emergency responders.

1. immediately notify nearby persons who may be in danger or who may be trained to assist. (Do so without slowing notification of Emergency Dispatch (911)). IF THERE IS IMMEDIATE DANGER TO LIFE OR HEALTH, ACTIVATE THE ALARM SYSTEM IMMEDIATELY.

2. immediately notify Emergency Dispatch @ 911 and provide the following information:

1. Your name;

2. Your observations (Location, Identity, Extent, Threat, Injuries, Risks).


Be prepared to act (e.g., care for injured, keep others away, control minor spills or fires) if properly trained or until the arrival of emergency responders.

3. call Safety & Risk Management @ 254-519-5771.

4. remain on-scene at a safe distance (if instructed by the emergency dispatcher) to meet responders and guide them to the scene.

Controlling Incidental Spills

- ⇒ **Get supplies**, such as spill kit and protective equipment (e.g., gloves, apron, eye protection).
- ⇒ **Control the source** of ongoing spills by shutting off supply valve or pump.
- ⇒ **Ventilate** the area if possible and advisable, based on location and risks.
- ⇒ **Contain the spill** (e.g., dike ahead of the spill and cover drains).
- ⇒ **Immobilize or treat** the material (e.g., absorb, neutralize, etc.) using spill kit supplies.
- ⇒ **Recover** spill residues and deposit wastes in labeled containers.
- ⇒ **Replenish used spill kit materials.**

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Incident Classification

INCIDENTAL or INCIPIENT Release, Spill, or Fire

A release or small fire that can be controlled locally by responsible individuals with no adverse effects on faculty / staff / students or the environment.

UNCONTROLLED Release, Spill, Fire or Explosion Risk

A spill / fire that cannot be classified as incidental / incipient, normally requiring evacuation of the building. Risk is too great for local personnel to manage.

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Section 8. Self-Transportation of Waste

Within SAAs

As stated in the section on Satellite Accumulation Areas, operators of SAAs and their authorized personnel may move wastes about within their operational areas without having to follow any rules or regulations and without receiving any required training other than hazardous waste / SAA awareness training.

From SAAs

If waste must be moved outside of an SAA operational area, certain regulations apply. *(NOTE: At its present size and CESQG status, A&M Central Texas should have little or no need to move wastes outside of SAA areas. The hazardous waste contractor will normally come to each SAA, prepare wastes for shipment, and remove them.)*

Authorized Personnel

While at a CESQG, anyone may legally move any waste to any location on campus at any time A&M Central Texas prohibits untrained persons from removing hazardous waste from SAA locations to another locale. As listed in the training section of this HWMP (Section 10), authorized personnel must receive in-depth training.

Intra-Campus Waste Movement

Hazardous wastes collected from SAAs must remain in the custody of authorized personnel and must be taken directly to a designated “central accumulation area” (CAA). Waste may be moved freely within the contiguous campus property. However, hazardous waste at remote locations off of the main campus may need to be handled according to TCEQ, EPA, and US Department of Transportation rules for hazardous waste transportation.


Section 9. Central Accumulation (*RESERVED*)

THIS SECTION RESERVED FOR FUTURE CAMPUS GROWTH OR CHANGE IN WASTE MANAGEMENT PRACTICES

Section 10. Hazardous Waste Shipping and Disposal

The Office of SRM administers the collection, transportation, and storage of hazardous waste prior to final disposal. In addition, the department provides technical information and assistance to individual generators and maintains permanent records of all hazardous waste movement on the main campus.

Off-site transportation of hazardous waste is governed by TCEQ and EPA. For information on the transportation of other hazardous materials (non-wastes), refer to the campus Hazardous Materials (HazMat) Transportation Program also administered by the Office of SRM.

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Shipping and disposal of hazardous waste must be done by a selected hazardous waste contractor who has qualified personnel, is registered as a hazardous waste transporter, and who ensures, documents, and certifies that wastes have been legally and properly transported, handled and disposed.

While waste may be transferred to the custody of the waste contractor, transporter, and ultimately the disposal facility, the waste generator never totally loses liability for environmental damage; therefore, the selection of a reliable contractor is essential. The process of selecting a contractor is complex and requires auditing of the vendor's entire waste management process from "cradle to grave," so this is handled for the entire A&M System by the Texas A&M University Environmental Health and Safety (EHS) Department in College Station.

Finally, if a laboratory cleanout or unusual, singular event causes the university to potentially exceed its monthly hazardous waste generator category (i.e., CESQG), the TCEQ offers the option of using its One-Time Shipment Request for Texas Waste Code (OTS) form (TCEQ-0757 (Rev. 01/01/2014)). Use of the OTS allows over-sized shipments to be disposed without affecting the university generator category. **ALWAYS PAY CLOSE ATTENTION TO P-LISTED CHEMICALS WHEN THEY ARE TO BE DISPOSED DUE TO THE VERY SMALL THRESHOLD (i.e., 1 Kg).**

Never attempt to employ a hazardous waste contractor other than the one currently contracted by the Texas A&M University System Office of Safety & Risk Management.

Section 11. 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.

- SRM staff and anyone who will be managing, transporting, or cleaning up spills of hazardous waste should receive in-depth training.
- Awareness 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.

Section 12. Records

According to TCEQ and EPA, CESQGs are exempt from any record-keeping requirements. However, since the campus will manage operations as if it is an SQG, the following records should be maintained:

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- **Hazardous waste determinations** – Any documented determinations, *although not required, should be kept on file.*
- **SAA inspections** – Inspections and records for Satellite Accumulation Areas (SAAs) at LQGs, SQGs or CESQGs are not required. The SAA poster/sign includes an inspection form that has a rolling, 3-month inspection record (temporary). Other than that, *no permanent record is necessary for SAA inspections.*
- **Waste shipment and disposal records** – Keep these records permanently. Several types of records may be produced, including:
 - Pre-shipment waste lists submitted to the waste contractor;
 - Copies of tags from individual waste containers
 - Hazardous waste manifests and accompanying lab pack inventories
 - TCEQ one-time shipment requests, along with TCEQ responses
 - Manifest deviation documents
 - Certificates of disposal from destination treatment/disposal facilities
 - Documents proving the net weights of any P-listed wastes.
- **Training** – Although training is not required by regulation for CESQGs, records of A&M System / University-required training for (1) waste handlers (e.g., SRM staff; select Facilities Services staff) and (2) waste generators (e.g., science faculty; student workers) should be maintained using the TrainTraq learning management system.

Section 13. Spill Cleanup


A&M-Central Texas' 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 a source of this information and should be maintained 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 Office of SRM 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 501-5800 or ext: 5800 from any campus phone
- Office of Safety and Risk Management 519-5771 or ext: 5771 from any campus phone

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

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

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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 SRM. If SRM has the capability to conduct the cleanup, it will do so. If not, the university relies on the Killeen Fire Department hazardous materials team to contain larger spills. Cleanup would be conducted by either the Killeen Fire Department Hazardous Materials team or a spill response contractor, such as the university's hazardous waste contractor, who offers these response services.

Section 14. Release Reporting

Hazardous waste spills that might occur on campus would ordinarily be within building workspaces at or near SAAs. As such, these spills are not by rule reportable releases.

However, if a chemical or hazardous waste spills into a sanitary sewer drain at anything greater than *de minimis* amounts, the university should report the release City of Killeen wastewater utilities.


Releases to sewer must also be compared against the CERCLA list of reportable quantities (RQs). If an RQ is exceeded, the release must also be reported to state and federal entities as follows:

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<p>The spill is determined to be reportable to the state only (Level 2) or to both the state and federal government (spill reaches surface water and is capable of producing a sheen), follow these steps as soon as possible but not later than 24 hours after the discovery of the spill:</p>				
1. COLLECT INFORMATION TO BE REPORTED				
State	Federal	Check boxes indicate which information must be provided for State SERC notifications (30 TAC §327.3(d)) and which is required for Federal National Response Center notifications (40 CFR 300.405(d)). DO NOT DELAY FOR LACK OF COMPLETE INFORMATION!		
<input type="checkbox"/>	<input type="checkbox"/>	The name, address and telephone number of the person making the telephone report.		
<input type="checkbox"/>	<input type="checkbox"/>	Name and address of the party responsible for the incident.		
<input type="checkbox"/>	<input type="checkbox"/>	The date, time, and exact address or location of the spill or discharge.		
<input type="checkbox"/>	<input type="checkbox"/>	A specific description or identification of the petroleum product or other oil discharged or spilled.		
<input type="checkbox"/>	<input type="checkbox"/>	An estimate of the total quantity discharged or spilled into the environment.		
<input type="checkbox"/>	<input type="checkbox"/>	An estimate of the quantity discharged into or upon water in storm sewers, ditches or streams.		
<input type="checkbox"/>	<input type="checkbox"/>	The duration of the incident.		
<input type="checkbox"/>	<input type="checkbox"/>	The name of the surface water or a description of the waters in the state affected or threatened by the discharge or spill.		
<input type="checkbox"/>	<input type="checkbox"/>	The cause / source of the discharge or spill.		
<input type="checkbox"/>	<input type="checkbox"/>	A description of the extent of actual or potential water pollution or harmful impacts to the environment and an identification of any environmentally sensitive areas or natural resources at risk.		
<input type="checkbox"/>	<input type="checkbox"/>	If different from the person making the report, the names, addresses, and telephone numbers of the responsible person and the contact person at the location of the discharge or spill.		
<input type="checkbox"/>	<input type="checkbox"/>	A description of any actions that have been taken, are being taken, and will be taken to contain and respond to discharge or spill.		
<input type="checkbox"/>	<input type="checkbox"/>	Whether an evacuation may be needed.		
<input type="checkbox"/>	<input type="checkbox"/>	Any damages or injuries caused by the discharge.		
<input type="checkbox"/>	<input type="checkbox"/>	Any known or anticipated health risks.		
<input type="checkbox"/>	<input type="checkbox"/>	The names of individuals and/or organizations who have also been contacted.		
<input type="checkbox"/>	<input type="checkbox"/>	The identity of any governmental representatives, including local authorities or third parties, responding to the discharge or spill.		
<input type="checkbox"/>	<input type="checkbox"/>	Weather conditions at the incident location.		
<input type="checkbox"/>	<input type="checkbox"/>	Any other information that may be significant to the response action.		
2. IMMEDIATELY CONTACT THE FOLLOWING (as indicated by the size of the spill and whether or not it reaches surface water)				
→ State Emergency Response Commission's Spill-Reporting Hotline at 1-800-832-8224				
→ Federal National Response Center at 1-800-424-8802 or, if you have Internet access, use the NRC On-Line Reporting Tool at: http://www.nrc.uscg.mil/nrchp.html				

Section 15. Source Reduction and Waste Minimization


As a CESQG, there is no regulatory requirement for source reduction and waste minimization. However, consistent with A&M System Policy 24.01 Risk Management paragraph 4, all A&M System members are to institute environmental management systems (EMS) that include stewardship provisions for waste minimization and continual improvement.

Hazardous waste regulations have evolved from emphasis on reduction to the prevention of

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environmental pollution. The Pollution Prevention Act of 1990 (Federal Regulation) made the prevention of pollution and reduction of waste generation, a national priority. The key to source reduction is "front-end minimization". Front-end minimization means reducing overall hazardous waste production by reducing the quantities of hazardous chemicals purchased, used and by substituting for less hazardous materials.

Research and teaching laboratories and other working groups that generate hazardous waste should review their purchasing practices and systems, chemical usage patterns, and workplace activities to identify potential points in their operations where source reduction and waste minimization can be implemented. Contact the Office of SRM if you have any questions.

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Abbreviations, Acronyms and Definitions

Acute Hazardous Waste – In accordance with 40 CFR §261.11(a)(2), hazardous waste that has the following criteria:

- Fatal to humans in low doses
- In the absence of data on human toxicity capable of causing or significantly contributing to an increase in serious irreversible, or incapacitating reversible illness

CAS – Chemical Abstracts Service: Chemical Abstracts Service (CAS), a division of the American Chemical Society, is the world's authority for chemical information and related solutions. Dedicated to the ACS vision of improving people's lives through the transforming power of chemistry, the CAS team of highly trained scientists finds, collects and organizes all publicly disclosed substance information, creating the world's most valuable collection of content that is vital to innovation worldwide. Scientific researchers and patent professionals around the world rely on a suite of research solutions from CAS that enable discovery and facilitate workflows.

Central Accumulation Area (CAA) – Site designated by the Office of Safety and Risk Management to be used for the accumulation of hazardous waste prior to shipment to permitted disposal facilities. There is one CAA on A&M-Central Texas campus:

- 4th floor Warrior Hall


(Note: A conditionally exempt small quantity generator (CESQG) of hazardous waste does not have to designate accumulation areas, either satellite locations (SAAs) or central locations (CAAs). Neither must these areas comply with accumulation time regulations. However, small quantity generators and large quantity generators who have designated SAAs and CAAs must comply with applicable regulations (30 TAC §335.69 and 40 CFR §262.34).)

Commerce – Trade or transportation in the jurisdiction of the United States within a single state; between a place in a state and a place outside of the state; that affects trade or transportation between a place in a state and place outside of the state; or on a United States-registered aircraft (49 CFR §171.8).

CESQG – Conditionally Exempt Small Quantity Generator: If you generate no more than 220 lbs (100 kg) of hazardous waste per month, you are a Conditionally Exempt Small Quantity Generator (CESQG). You must comply with three basic waste management requirements to remain exempt from the full hazardous waste regulations that apply to generators of larger quantities (SQGs and LQGs).

DSHS – Department of State Health Services (Texas): Mission is to improve health and well-being in Texas.

EPA – The Environmental Protection Agency: Mission is to protect human health and the environment.

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EPA Identification Number – The number assigned by the Environmental Protection Agency to regulated generators, transporters or treatment, storage or disposal facilities.

(Note: In addition to an EPA ID Number, a facility required to notify or register with the TCEQ also receives a state Solid Waste Registration Number. CESQGs are not required to notify the TCEQ or the EPA and are not assigned either EPA or state ID numbers.)

EMS – Environmental Management System: Refers to the management of an organization's environmental programs in a comprehensive, systematic, planned and documented manner. It includes the organizational structure, planning and resources for developing, implementing and maintaining policy for environmental protection.

Facility – Includes all contiguous land, structures, other appurtenances, and improvements on the land used for storing (Note: includes accumulating in central accumulation areas [CAAs]), processing or disposing of municipal hazardous waste or industrial solid waste (30 TAC §335.1(60); 40 CFR §260.10).

*(Note: EPA instead uses the terms “treating, storing, or disposing”. In either case (TCEQ or EPA), the operative words of this definition are “...used for storing, processing or disposing of ... waste” That is, in hazardous waste regulatory terminology, the entire campus is **NOT** the facility, but only those portions dedicated to waste management (i.e., for generators, only the CAAs; the rules exclude SAAs from the definition). Higher education facilities are institutional and are, by definition, nonindustrial; therefore, universities do not generate industrial solid waste. They produce either municipal hazardous waste (or simply hazardous waste) or municipal solid waste.*

Generator – **Any person, by site**, who produces municipal hazardous waste or industrial solid waste; any person who possesses municipal hazardous waste or industrial solid waste to be shipped to any other person; or any person whose act first causes the solid waste to become subject to regulation.


(Note the subtle but important difference between the definition of “facility,” which strictly includes waste management units and their immediate surrounds only, and “generator,” which is “by site,” a broader, more inclusive term that includes the entire contiguous property owned/operated by a “person” (see definition of “person” below).

GHS – Globally Harmonized System of classification and labeling of Chemicals. The GHS is a system for standardizing and harmonizing the classification and labeling of chemicals. It is a logical and comprehensive approach to:

- Defining health, physical and environmental hazards of chemicals;
- Creating classification processes that use available data on chemicals for comparison with the defined hazard criteria; and
- Communicating hazard information, as well as protective measures, on labels and Safety Data Sheets (SDS).

Hazardous Material – A substance or material, including a hazardous substance, which has been determined by the U.S. Secretary of Transportation to be capable of posing an unreasonable risk to health, safety, and property when transported in commerce, and which has been so designated.

Hazardous Waste – Any solid waste material listed or identified in Title 40 Code of Federal Regulations, Part 261, Subpart C and D or exhibiting the characteristics of ignitability, corrosivity, reactivity, or EP toxicity also defined in Part 261.

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HWMP – Hazardous Waste Management Program: Used to provide cost-effective hazardous waste management programs to assure compliance with all Federal, State and local regulations.

Hazardous Waste Manifest – A legal document containing required information, which must accompany shipments of Municipal Hazardous Waste or Class I-Industrial Solid Waste transported on public roads or thoroughfares.

LDR – Land Disposal Restrictions: The LDR program ensures that toxic constituents present in hazardous waste are properly treated before hazardous waste is land disposed. Since then, the LDR team has developed mandatory technology-based treatment standards that must be met before hazardous waste is placed in a landfill. These standards help minimize short and long-term threats to human health and the environment, which directly benefits local communities where hazardous waste landfills are located.

LQG – Large Quantity Generator: Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Mixed Waste – A radioactive waste that is also a hazardous waste.

MSW – Municipal Solid Waste: Commonly known as trash or garbage in the United States and as refuse or rubbish in Britain, is a waste type consisting of everyday items that are discarded by the public.


MSDS – Material Safety Data Sheets (Old term may still be found in some places).

On-Site – The same or geographically contiguous property which may be divided by public or private rights-of-way, provided the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing, as opposed to going along, the right-of-way. Noncontiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access, is also considered on-site property.

(Note: A generator of any size classification may move waste on-site without having to follow DOT or RCRA waste transportation requirements. However, if an SQG or LQG self-transport waste off-site or offers waste for off-site transport by a third party, waste manifest and transport requirements must be observed. CESQGs are exempt from these off-site transport limitations (40 CFR §261.5(b)) and must only follow applicable DOT hazardous materials shipping regulations. With regard to applicable DOT rules, since A&M System members are public entities, a member who is a CESQG may allow its own employees (but NOT contractors) to self-transport wastes between and among their own non-contiguous sites without having to comply with DOT rules either, because such movements are not “in commerce”(49 CFR §§171.1 and 8).

Permit – A written document issued by EPA or TCEQ that, by its conditions, authorizes the construction, installation, modification, or operation of a specified municipal hazardous waste or industrial solid waste storage, processing, or disposal facility in accordance with specified limitations.

(Note: Provided that a generator (CESQG, SQG or LQG) abides by applicable accumulation time regulations (30 TAC §335.69 and 40 CFR §262.34), no hazardous waste treatment, storage or disposal facility permit is required.)

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Person – An individual, trust, firm, joint stock company, Federal Agency, corporation (including a government corporation), partnership, association, State, municipality, commission, political subdivision of a State, or any interstate body.

PCB – Polychlorinated Biphenyls (We do not have any on the TAMUCT Main Campus). PCBs were widely used as dielectric and coolant fluids in electrical apparatus, cutting fluids for machining operations, carbonless copy paper and in heat transfer fluids. Because of PCBs' environmental toxicity and classification as a persistent organic pollutant, PCB production was banned by the United States Congress in 1979 and by the Stockholm Convention on Persistent Organic Pollutants in 2001.

Processing – The extraction of materials, transfer, volume reduction, conversion to energy, or other separation and preparation of solid waste for reuse or disposal, including the treatment or neutralization of hazardous waste, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste, or as to recover energy or material from the waste or so as to render such waste non-hazardous or less hazardous; safer to transport, store, and dispose; or amenable for recovery, amenable for storage, or reduced in volume.

RCRA – Resource Conservation and Recovery Act: The Resource Conservation and Recovery Act (RCRA) 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. The term RCRA is often used interchangeably to refer to the law, regulations and EPA policy and guidance.


Recyclable Materials – Wastes that are recycled. Recycled material is used, reused, or reclaimed.

Reclaimed material is processed or regenerated to recover a usable product. Examples: Recovery of lead from spent batteries, or regeneration of spent solvent.

Satellite Accumulation Area (SAA) – An area, system, or structure used for temporary accumulation of hazardous waste prior to transport to a central accumulation area or to a permitted off-site destination. An SAA must be at or near the point of generation where wastes initially accumulate and under the control of the operator of the process generating the waste. As a good management practice for CESQGs, an SAA should have a sign posted identifying the location of SAA and it should follow certain minimum requirements, as found in 30 TAC §335.69 and 40 CFR §262.34. Example locations: workspace corner, lab area, fume hood storage cabinet, chemical storage locker, closet, etc.

SDS – Safety Data Sheets (New term currently in use). The Hazard Communication Standard (HCS) requires chemical manufacturers, distributors, or importers to provide Safety Data Sheets (SDSs) (formerly known as Material Safety Data Sheets or MSDSs) to communicate the hazards of hazardous chemical products.

SQG – Small Quantity Generator: A generator is a small quantity generator in a calendar month if the generator generates greater than 100 kilograms (220 pounds) but less than 1,000 kilograms (2,205 pounds)

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of non-acutely hazardous waste in that month. There are stricter limits on the generation of acute hazardous waste that apply to SQGs.

SRM – Safety & Risk Management.

Storage – The holding of solid waste for a temporary period, at the end of which the waste is processed, disposed of, recycled, or stored elsewhere. **Storage of hazardous waste** is a permit-required activity and differs from **accumulation**, which does not require a permit provided that accumulation time regulations are followed.

TCEQ – Texas Commission on Environmental Quality: The Texas Commission on Environmental Quality strives to protect Texas public health and natural resources consistent with sustainable economic development. Our goal is clean air, clean water, and the safe management of waste.

Texas Solid Waste Number – The number assigned by the TCEQ to each generator, transporter, and treatment, storage or disposal facility that is required to notify the agency of its activities.

(Note: A CESQG is not required to notify TCEQ or to obtain a Texas Solid Waste Number.)


TWC – Texas Water Code.

Transporter – Any person who conveys or transports municipal hazardous waste or industrial solid waste **off-site** by truck, ship, pipeline, or other means.

(Note: A person may move waste within a facility or across a public roadway to contiguous property under his control without it being considered transportation and without requiring a manifest or shipping papers).

Universal Waste (UW) – a subtype of hazardous waste subject to 40 CFR Part 273 and TAC §335.261-262 to include:

- **Batteries** including lead-acid that are not managed under 40 CFR §266, Subpart G *(Note: Most common batteries (e.g., AA, AAA, C, D alkaline batteries) are not hazardous wastes and may be managed as normal municipal solid waste or recycled, if desired. See the campus Universal Waste Program or more details.);*
- **Pesticides** – Recalled pesticides that are part of a voluntary or mandatory recall under FIFRA or pesticides managed as part of a waste pesticide program *(Note: Few if any pesticides qualify as universal waste. The best option for disposal is to use them as intended rather than pay to have them disposed as hazardous waste.);*
- **Mercury-Containing Equipment** (i.e. thermostats, switches, thermometers, etc.)
- **Lamps** including Fluorescent(Hg), Halogen(Hg), Metal Halide(Hg), High/Low Pressure Sodium(Hg), Mercury Vapor(Hg), Incandescent(Pb).
- **Paint and Paint-Related wastes** – considered universal waste in Texas only (30 TAC §335.262). If this waste is shipped outside of Texas, it must be manifested as hazardous waste.

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REFERENCES

The most recent version of the Texas Administrative Code, Industrial Solid Waste and Municipal Hazardous Waste, 30 TAC 335.


The most recent version of the Texas Administrative Code, Conditionally Exempt Small Quantity Generators, 30 TAC 335.

The most recent version of the Resource Conservation and Recovery Act (RCRA) administered by the Environmental Protection Agency regulation, Hazardous Waste Management, 40 CFR 260 – 265.

The most recent version of the Environmental Protection Agency regulation, Standards for Universal Waste Management, 40 CFR 273.

The National Pollution Prevention Policy, Pollution Prevention Act (PPA), 42 USC 13101.

TAMUCT – Bloodborne Pathogen Program, Biohazardous Waste Program, Hazardous Materials Transportation Program, Hazard Communication Program

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HAZARDOUS WASTE DETERMINATION

INSTRUCTIONS: Fill in Sections 1 & 4 first, except waste codes. Then proceed to the "Work Sheet" page and fill in the correct responses before returning to this sheet to complete the determination.

SECTION 1: GENERAL INFORMATION & WASTE CODES

WASTE NAME	TEXAS WASTE CODE	WASTE STREAM DESCRIPTION	EPA WASTE CODE(S)
	<div style="display: flex; justify-content: space-around; font-size: small;"> 4-digit seq. no. 3-digit form code 1-digit class. code </div>		
FILL IN ONLY IF WASTE IS HAZARDOUS (If needed, obtain assistance from the Safety Office) IF HAZARDOUS WASTE, NOTICE OF REGISTRATION MUST BE SUBMITTED TO TCEQ			
DATE DETERMINED: <div style="border: 1px solid black; width: 60px; height: 20px;"></div> PERFORMED BY: <div style="border: 1px solid black; width: 120px; height: 20px;"></div> DEPARTMENT (name & code): <div style="border: 1px solid black; width: 120px; height: 20px;"></div>	WHERE WASTE IS GENERATED: <div style="display: flex; justify-content: space-around; margin-top: 10px;"> <div style="border: 1px solid black; width: 60px; height: 20px;"></div> <div style="border: 1px solid black; width: 60px; height: 20px;"></div> </div> <div style="display: flex; justify-content: space-around; font-size: x-small; margin-top: 5px;"> Dept. Name Dept. Code </div>	<div style="border: 1px solid black; width: 150px; height: 60px;"></div> <div style="display: flex; justify-content: space-between; font-size: x-small; margin-top: 5px;"> Building Name(s) Bldg #(s) </div>	<div style="border: 1px solid black; width: 150px; height: 60px;"></div> <div style="display: flex; justify-content: space-between; font-size: x-small; margin-top: 5px;"> Room Number(s) </div>

SECTION 2: LISTED HAZARDOUS WASTE DETERMINATION
No **EPA Code**

Is the waste a listed hazardous waste, or is it mixed with or derived from one?

☐ If yes, check all that apply ☐ F ☐ K ☐ P ☐ U
SECTION 3: CHARACTERISTIC HAZARDOUS WASTE DETERMINATION
Yes **No** **EPA Code**

Is the waste ignitable according to 40 CFR Section 261.21?

☐ ☐

D001

Is the waste corrosive according to 40 CFR Section 261.22?

☐ ☐

D002

Is the waste reactive according to 40 CFR Section 261.23?

☐ ☐

D003

Is the waste toxic according to CFR Section 261.24?

☐ ☐

D004 - D043

SECTION 4: DOCUMENTATION OF WASTE CLASSIFICATION

(Either "GENERATOR'S KNOWLEDGE" only, or BOTH "ANALYTICAL DATA" and "GENERATOR'S KNOWLEDGE")

GENERATOR'S KNOWLEDGE OF THE WASTE

1. Date waste 1st generated <div style="border: 1px solid black; width: 100px; height: 20px;"></div> (if known) <div style="text-align: center; font-size: x-small;">mo / dy / yr</div>	2. Est. Generation Rate or 1-Time Amount: <div style="border: 1px solid black; width: 60px; height: 20px;"></div> <div style="border: 1px solid black; width: 60px; height: 20px;"></div> <div style="text-align: center; font-size: x-small;">Amt. Units</div>
3. Process / activity that generates the waste <div style="border: 1px solid black; height: 30px;"></div>	
4. Manufacturer's literature (Attach MSDS, etc.) <div style="border: 1px solid black; height: 30px;"></div>	
5. Description of the waste	<div style="display: flex; justify-content: space-between; font-size: x-small;"> <div> Waste Form <input type="checkbox"/> ≤ 2 <input type="checkbox"/> 2 < pH < 12.5 <input type="checkbox"/> ≥ 12.5 pH Range. If not applicable, N/A ⇒ </div> <div style="border: 1px solid black; width: 200px; height: 20px;"></div> </div> <div style="display: flex; justify-content: space-between; font-size: x-small; margin-top: 5px;"> <div> <input type="checkbox"/> ≤ 140 <input type="checkbox"/> 140 < F < 200 <input type="checkbox"/> ≥ 200 Flashpoint, °F. If not applicable, N/A ⇒ </div> <div>Appearance and properties</div> </div>
6. Waste Contents - List matls/chemicals, CAS # (REQUIRED, if existing) & approx. content (%)	
	%
	%
	%
	%
	%
	%
Description or Proper Chemical Name (Include inert ingredients such as water and solids)	CAS #

F-List	P-List	U-List	Toxicity
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
RCRA Regulated Chemical?			

ANALYTICAL DATA
Yes **No**

1. Sampling procedures	Date Sampled: <div style="border: 1px solid black; width: 100px; height: 20px;"></div>	Sample Number(s): <div style="border: 1px solid black; width: 100px; height: 20px;"></div>	
		Sampling Procedures Attached? <input type="checkbox"/> <input type="checkbox"/>	
2. Analytical testing	Date of Lab Report: <div style="border: 1px solid black; width: 100px; height: 20px;"></div>	Lab Report Attached? <input type="checkbox"/> <input type="checkbox"/>	
		Chain of Custody Form Attached? <input type="checkbox"/> <input type="checkbox"/>	
	Lab Name: <div style="border: 1px solid black; width: 150px; height: 20px;"></div>	Report No: <div style="border: 1px solid black; width: 100px; height: 20px;"></div>	
Analyses Performed: (check all that apply)	<input type="checkbox"/> Ignitability <input type="checkbox"/> Corrosivity <input type="checkbox"/> Reactivity <input type="checkbox"/> Toxicity (TCLP) <input type="checkbox"/> Other (specify): <div style="border: 1px solid black; width: 100px; height: 20px;"></div>		

SECTION 4A: WASTE CONTENTS CONTINUATION SHEET

WASTE NAME	


_____	_____	_____
_____	_____	_____
_____	_____	_____
Building Name(s)	4-Ltr Code	Room Number(s)

Dept. Code

Room Number(s)

6. Waste Contents - List matls/chemicals, CAS # (REQUIRED, if one exists) & approx. content (%)		
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
		%
Description or Proper Chemical Name (Include inert ingredients such as water and solids)	CAS #	

RCRA Regulated Chemical?

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	Level 3	Date: 18-Nov-13
		Office: Safety & Risk Management

Hazardous Waste Determination Work Sheet

WASTE NAME

DATE

DETERMINED:

PERFORMED BY:

DEPT:

WHERE WASTE IS
GENERATED:

Building Name(s)	Room Number(s)

Step 1 – Is this waste material a Solid Waste as defined by EPA?

The first step is to determine if the material in question is classified as a solid waste.

If the material is **NOT** a solid waste, it cannot be a hazardous waste.

- The statutory and regulatory definitions of a solid waste completely disregard the physical form of the waste. The definition of "**solid waste**" is three-tiered, stating that a material is considered a "**solid waste**" if it:
 - Tier 1: Is a solid, semi-solid, liquid, or contained gaseous material which is a "**discarded material**" or is "**no longer a usable substance that has value**."
 - Tier 2: A "**discarded material**" is material that is either "**abandoned**," "**recycled**" or is "**inherently waste-like**."
 - "**Abandoned**" means: (1) disposed of; or (2) burned or incinerated; or (3) **accumulated** (most commonly applicable to waste generators at universities), stored, or treated (but not recycled) before or in lieu of being disposed of, burned, or incinerated.
 - "**Recycled**" means: (1) used in a "manner constituting disposal" (i.e., *beneficially placed on the land* but not the ordinary manner of use), (2) burned as or in a fuel for energy recovery, unless the material is a commercial chemical product that is itself a fuel, (3) reclaimed, or (4) accumulated speculatively.
 - "**Inherently waste-like**" is not a general term. It denotes only a specified short-list of materials (e.g., dioxin wastes) that are seldom encountered in higher education operations. It also provides that EPA may add to the list through future rulemaking.
 - Tier 3: the ordinary manner of use), (2) burned as or in a fuel for energy recovery, unless the material is a commercial chemical product that is itself a fuel, (3) reclaimed, or (4) accumulated speculatively.

If the material in question meets any of the provisions above, you may have a solid waste.

If you answered NO to all of the above provisions, you do not have a solid waste.

- Some materials are excluded by the statutory definition of solid waste (40 CFR §261.4 Exclusions).
If the material is any of the following, it is, by definition, NOT a solid waste:
 - ⇒ Domestic sewage;
 - ⇒ Industrial wastewater discharges;
 - ⇒ Irrigation return flows;
 - ⇒ Radioactive waste;
 - ⇒ Spent wood preserving solutions that are reclaimed and reused in the wood preserving process;
 - ⇒ Processed scrap metal;
 - ⇒ Shredded circuit boards;
 - ⇒ In situ mining waste; or
 - ⇒ Secondary materials that are reclaimed and returned to the original process, if the reclamation and return process is totally enclosed.
- Finally, some recycled materials are not classified as solid waste.
Materials are NOT solid wastes IF:
 - ⇒ They are being used as substitutes for commercial products, or
 - ⇒ They are returned back to the original process without first being reclaimed or land disposed.

Does this waste meet the Solid Waste definition?

YES

☐

NO

☐

If YES – Go to Step #2

If NO – The material does not qualify as a solid waste and therefore cannot be regulated under RCRA Subtitle C. **Contact the EHS Office** for verification and instructions for disposal.

Step 2 – Is this Solid Waste Excluded/Exempted from Hazardous Waste Regulations?

After you have determined that you have a solid waste on hand, the next step is to determine if that solid waste is excluded/exempted from RCRA regulation. EPA grants specific exclusions from some hazardous waste regulations if certain conditions are met. Knowing these exclusions can be helpful in waste management programs.

• **The following solid wastes are excluded from the definition of hazardous wastes:**

- ⇒ Household waste (e.g., pesticides, cleaners, used oil, spent lamps, electronic waste)
- ⇒ Some agricultural wastes that are returned to the soils as fertilizers
- ⇒ Fossil fuel combustion wastes
- ⇒ Cement kiln dust (unless the facility burns hazardous waste as fuel)
- ⇒ Arsenically treated wood wastes generated from a person using wood for its intended purpose
- ⇒ Petroleum-contaminated media that is subject to the Underground Storage Tank (UST) corrective action program
- ⇒ Used oil filters that have been hot drained
- ⇒ Used chlorofluorocarbon refrigerants that are being reclaimed for further use
- ⇒ PCB wastes regulated under Toxic Substance Control Act (§261.8)

The list above is NOT comprehensive but does include the most likely or common exclusions for a university. If your waste is not on the list above, it may still be excluded from RCRA regulation. See 40 CFR §261.4 for a complete list of those wastes exempt from hazardous waste regulation. Furthermore, if your waste IS listed above, that does not mean you are automatically exempt. Each exemption above is conditional and facility managers should review applicable sections of 40 CFR §261 and contact the EHS office or TCEQ for clarification on exemptions.

Is the solid waste excluded from hazardous waste regulation?

YES ☐ NO ☐

If **YES** - the waste is exempt and is **not regulated** under RCRA Subtitle C. **Contact the EHS Office for verification and instructions for disposal.**

If **NO** - Go to Step #3.

Step 3 – Is the Solid Waste Used Oil?

Once you have determined that your solid waste is not excluded from RCRA requirements, or is a Universal Waste-Paint and Paint-Related Waste (see Step 6 below), the next step is to determine if the material is Used Oil.

As stated in 40 CFR 279, Used Oil is defined as *any oil that has been refined from crude oil, or any synthetic oil, that has been used and as a result of such use is contaminated by physical or chemical impurities*. Mixing used oil with another waste material may cause the mixture to become a hazardous waste. If a *universal waste-paint and paint-related waste* has a Flash Point $\geq 100^{\circ}$ F but $< 140^{\circ}$ F, it *may* also be classifiable as used oil, depending on other contaminants in the waste.

Used oil must be collected in a container that is in good condition and not leaking and which is clearly marked with the words "Used Oil". Generators may legally transport up to 55 gallons of used oil in their Member-owned vehicles to a central aggregation point on campus or, with Safety Office permission, to an off-site used oil collection center. Otherwise, the used oil must be collected by an EPA- and TCEQ-registered transporter for recycling or re-refining through a registered facility.

Is the solid waste Used Oil?

YES ☐ NO ☐

If **YES** - the waste is not a hazardous waste but is **regulated** as Used Oil under 30 TAC §324. **Contact the EHS Office for verification and instructions for accumulation and disposal.**

If **NO** - Go to Step #4.

Step 4 – Is the Solid Waste a Listed Hazardous Waste?

Once you have determined that your solid waste is not excluded from RCRA requirements, the next step is to determine if the material is a "listed hazardous waste".

Avoid having to look up chemicals in the regulatory lists by entering the Chemical Abstract (CAS) Numbers of your waste chemicals in the "HazWaste Determination" form worksheet. These will be compared to the lists and Xs will appear in the appropriate check boxes to the right of the form. Based on that, fill in the appropriate boxes below.

After thorough review and testing, EPA has determined that certain types of wastes, though their individual properties may vary, are categorically hazardous due to one or more properties. EPA has compiled these wastes into "lists" of hazardous wastes that fall into four categories. Any given listed hazardous waste always remains a listed hazardous waste, irrespective of its actual hazards, unless the individual generator of a particular waste has successfully petitioned EPA for delisting through an arduous and costly process.

F-listed wastes (40 CFR 261.31):

- The "F" list includes wastes from common industrial processes. Because they are not specific to one type of industry, they are called wastes from non-specific sources. This list includes many types of spent solvents that a university may generate.

K-listed wastes (40 CFR 261.32):

- The "K" list includes wastes from specific industrial processes, such as wood preservation, organic chemical production, and pesticide manufacturing. Thus, few if any university wastes would be K-listed.

P- and U-listed wastes (40 CFR 261.33):

These two lists designate certain toxic or reactive *commercial chemical products* (CCP) as hazardous wastes when disposed of **unused**. The phrase "commercial chemical product" refers to a chemical substance that is manufactured or formulated for commercial or manufacturing use and that consists of the commercially pure grade of the chemical, any technical grades of the chemical that are produced or marketed, and all formulations in which the chemical is the **sole active ingredient**. It does not refer to a used or spent material or a manufacturing process waste.

An unused CCP may become waste in a number of ways. It can be spilled while in use, or it can be intentionally discarded if out of specification or no longer wanted. It can also be a non-empty container that still holds unused CCP residue or a rinsate from a container of unused CCP.

- For a waste to qualify as a P- or U-listed waste, it must meet ALL three of the following criteria simultaneously:
 - ⇒ It is an unused CCP that is discarded or spilled (as explained above);
 - ⇒ A chemical ingredient in the CCP is listed in 40 CFR Section 261.33(e) or (f) (i.e., the "P" or "U" list); **AND**
 - ⇒ The chemical on the "P" or "U" list serves as the sole active ingredient in the product (i.e., the chemical identified on the "P" or "U" list is the only chemically active component of the product, for the function of the product).

NOTE: Hundreds of chemical ingredients are on the P- and U-lists. Facility managers, stock room managers, lab technicians, and principal investigators should look in 40 CFR 261.33 to see if CCPs present on-site would be P- or U-listed hazardous wastes if disposed of unused. *Please note that the chemicals with the "P" code are acutely hazardous.* Generators with P-listed acutely hazardous waste are subject to much-restricted limits on the total hazardous waste quantities that may be accumulated at one location at any one time (i.e., **only one quart** instead of 55 gallons).

A good electronic chemical inventory system should have the lists of P- and U-listed chemicals and should automatically flag any inventoried chemicals that are on one of the lists.

Is the solid waste a listed waste? Check all that apply.

F ☐

K ☐

P ☐

U ☐

☐ NO

If **YES** - What is(are) the applicable waste code(s)? _____

If **YES** - the waste is a Listed Waste and is **regulated** under RCRA Subtitle C. Contact the EHS Office for verification and instructions for accumulation and disposal.

If **Yes or No** Go to Step #5 (Note: A waste must be categorized by **all** of its applicable listings and characteristics)

Step 5 – Is the Solid Waste a Characteristic Hazardous Waste?

If your waste is not listed in 40 CFR Part 261, it may still be a hazardous waste if it exhibits one or more *characteristics*. Even if it is listed, it may also be a characteristic hazardous waste.

The next step is to see if your waste is a characteristic hazardous waste.

EPA uses a classification system based on four properties of solid wastes. If a material exhibits at least one of these characteristics, it is classified as a hazardous waste.

The four properties of Characteristic Hazardous Waste are:

- **IGNITABILITY (40 CFR §261.21)**

The solid waste is ignitable (EPA Waste Code D001) if it displays any of the following properties:

- ⇒ A liquid with a flashpoint of less than 140° F;
- ⇒ A non-liquid that is capable, under standard temperature and pressure, of causing fire through friction, absorption of moisture, or spontaneous chemical changes, and when ignited, burns so vigorously and persistently that it creates a hazard;
- ⇒ An ignitable compressed gas;
- ⇒ An oxidizer (such as a chlorate or peroxide).

- **CORROSIVITY (40 CFR §261.22)**

The solid waste is corrosive (EPA Waste Code D002) if it displays any of the following properties:

- ⇒ An aqueous material with a pH less than or equal to 2 or greater than or equal to 12.5; or
- ⇒ A liquid that corrodes steel at a rate of at least 0.25 inches per year at 130° F.

NOTE: A waste that is not aqueous and contains no liquid falls outside the EPA definition of corrosivity.

- **REACTIVITY (40 CFR §261.23)**

The solid waste is reactive (EPA Waste Code D003) if it displays any of the following properties:

- ⇒ Normally unstable and readily undergoes violent change without detonating;
- ⇒ Reacts violently with water;
- ⇒ Forms potentially explosive mixtures, or toxic gases when mixed with water;
- ⇒ A cyanide or sulfide bearing waste which can generate fumes in a quantity sufficient to present a danger to human health when exposed to pH conditions between 2 and 12.5;
- ⇒ Capable of detonation at standard temperature and pressure; or
- ⇒ A forbidden explosive, or a Class A or Class B explosive, as defined in Department of Transportation regulations in 49 CFR Part 173.

- **TOXICITY (40 CFR §261.24)**

The solid waste is toxic (EPA Waste Code D004-43, depending on the chemical constituent) if, following extraction using a specified test, the Toxicity Characteristic Leaching Procedure (TCLP), it exceeds the concentrations for contaminants listed in the "Maximum Concentration of Contaminants for the Toxicity Characteristic" table, presented in 40 CFR 261.24.

Note: A waste that is hazardous solely because of one or more characteristics can often be treated in the laboratory or workplace to eliminate the characteristic(s) or recovered through some procedure. This is a preferable waste minimization technique for corrosive or reactive wastes and for some ignitable solvent wastes. For example, strong acids or bases may be neutralized. For potentially reusable solvent wastes, solvent recovery through distillation may be an option. However, for any waste that also exhibits the toxicity characteristic, such as acids with dissolved hazardous metals, treatment or recovery may not be sufficient to also eliminate the toxicity characteristic. Consult with the EHS Office to select a procedure and determine if it will render the waste non-hazardous.

A Note on Aerosol Cans: Aerosol cans are common and sometimes tricky problems for hazardous waste determinations. When still under pressure and containing certain propellants and/or products, they may be ignitable, reactive and/or toxic. When completely used and at atmospheric pressure, they may be RCRA empty and disposable with regular trash or recycled as scrap metal. See the separate Aerosol Can guide for assistance in making the waste determination.

Avoid having to look up toxicity characteristic chemicals by entering the Chemical Abstract (CAS) Numbers of your waste chemicals in the "HazWaste Determination" form worksheet. These will be compared to the lists and Xs will appear in the appropriate check boxes to the right of the form. Based on that, fill in the appropriate boxes below.

Is the solid waste a characteristic IGNITABLE hazardous waste (D001)?	YES	<input type="checkbox"/>	<input type="checkbox"/>	NO
Is the solid waste a characteristic CORROSIVE hazardous waste (D002)?	YES	<input type="checkbox"/>	<input type="checkbox"/>	NO
Is the solid waste a characteristic REACTIVE hazardous waste (D003)?	YES	<input type="checkbox"/>	<input type="checkbox"/>	NO
Is the solid waste a characteristic TOXIC hazardous waste (D004-D043)?	YES	<input type="checkbox"/>	<input type="checkbox"/>	NO

IF **TOXIC** hazardous waste, what is(are) the D Code(s)? _____

If **Yes** - the waste is a Characteristic Hazardous Waste and is **regulated** under RCRA Subtitle C. **Contact the EHS Office for verification and instructions for accumulation and disposal.**

Step 6 – Is the Solid Waste a Universal Waste?

Once you have determined that your solid waste is a listed and/or characteristic hazardous waste, the next step is to determine if the hazardous waste is a "Universal Waste".

A "Universal Waste" is a special category of widely-dispersed hazardous waste that is frequently generated in a wide variety of settings by a vast community, sometimes in significant volumes. Because many universal wastes end up in municipal landfills, EPA has promulgated streamlined hazardous waste management regulations to facilitate their environmentally-sound collection, govern their management and increase their proper recycling or treatment.

One can choose to continue managing universal waste under the full set of hazardous waste regulations; however, opting to classify a waste as universal waste has certain advantages, including:

- You don't need to register with the TCEQ if you generate or handle only universal waste,
- You don't need to include universal waste when you figure your hazardous waste generator status,
- You don't have to identify universal waste on your facility's Notice of Registration (NOR),
- You don't have to report universal waste on your Annual Waste Summary,
- You can accumulate universal waste for up to one year (sometimes even longer) before sending it for disposal,
- You don't need a manifest when shipping your universal waste in Texas,
- You don't need to use a registered waste hauler to transport your universal waste, and
- You don't need to pay a hazardous waste generation fee.

EPA has identified the following hazardous wastes as universal waste (for guidance, see comments for each category below):

- Batteries as described in 40 CFR §273.2;
- Pesticides as described in 40 CFR §273.3;
- Mercury-containing equipment as described in 40 CFR §273.4; and
- Lamps as described in 40 CFR §273.5.

In addition, in Texas ONLY, TCEQ has identified the following hazardous waste as universal waste:

- Paint and paint-related waste as described in TAC 30 §335.262(b). (mostly ignitable [D001] oil-based paints and thinners)

Is the hazardous waste a *universal waste*?

YES ☐ ☐ NO

If **YES** - the waste is a **regulated** universal waste under 30TAC §335.261. Contact the EHS Office for verification and instructions for accumulation and disposal.

If **NO** - Go to Step #7.

Step 7 – Is the Solid Waste a Hazardous Waste because of the Mixture Rule?

Even if a solid waste is not a listed or characteristic hazardous waste, it could become a hazardous waste if mixed with materials classified as hazardous. The next step is to determine if your waste is a mixture of a solid waste and a hazardous waste.

The "Mixture Rule" states that mixtures of solid waste and listed hazardous waste must be regulated as hazardous waste. There are two ways to determine if a material is regulated under the mixture rule:

- If the material is a mixture of a solid waste and a hazardous waste, and the mixture exhibits one or more of the characteristics of hazardous waste; or
- If the material is a mixture of a solid waste and a listed waste.

[The mixture rule is intended to discourage generators from mixing waste streams. More information can be reviewed at 40 CFR 261.3\(a\)\(iii\) and \(iv\).](#)

Is the solid waste subject to the mixture rule?

YES ☐ ☐ NO

If **YES** - the waste is subject to the Mixture Rule and is **regulated** under RCRA Subtitle C. Contact the EHS Office for verification and instructions for disposal.

If **NO** - Go to Step #8.

Step 8 – Is the Solid Waste Subject to the Derived-From Rule?

Your solid waste is not a listed or characteristic hazardous waste, nor is it classified as hazardous due to the mixture rule. Yet the material might still be a hazardous waste if it is derived from a hazardous waste. The next step is to determine if the waste is a hazardous waste because of the "derived-from" rule.

Hazardous waste treatment, storage, and disposal processes often generate residues that may contain high concentrations of hazardous constituents. If you have used an authorized method to treat a hazardous waste in an attempt to render it non-hazardous, the derived-from rule may govern the regulatory status of such waste residues.

[The Derived-from Rule \(40 CFR Part 261.3 \(c\) and \(d\)\).](#)

According to the Rule, any solid waste derived from the treatment, storage, or disposal of a hazardous waste is also considered to be a hazardous waste. "Derived from" wastes include sludges, spill residue, ash, emission control dust, and leachate. Some examples are drums that have been used for storage of a hazardous waste, or ash from the incineration of hazardous waste. This principle applies regardless of the actual risk to human or environmental health. More details about the "derived-from" rule and exemptions to the rule are included in 40 CFR Part 261.3 (c) and (d).

Is the solid waste subject to the derived-from rule?

YES ☐ ☐ NO

If **YES** - the waste is subject to the Derived-From Rule and is **regulated** under RCRA Subtitle C. Contact the EHS Office for verification and instructions for accumulation and disposal.

If **NO** – the waste is not classified as hazardous under RCRA Subtitle C. Nevertheless, if the waste still poses special hazards, go to Step #9.

Step 9 – Is the Solid Waste a Mutagen or Suspected Carcinogen or Otherwise a Possible Health or Environmental Hazard if Mismanaged?

Your solid waste is not a listed or characteristic hazardous waste, nor is it classified as hazardous due to the mixture rule, yet the material may still be dangerous to humans. The next step is to determine if the waste requires special handling as a "**non-regulated waste**," a category for wastes that present known hazards.

Certain wastes that are not characteristic hazardous wastes, yet contain chemicals that are included in EPA's P and U lists, are not classified as hazardous wastes because they are used materials or because there is more than one active ingredient. A common example is used dilute formaldehyde or formalin solution, since formaldehyde is a suspected human carcinogen. If on-site treatment is not practical or dilution and drain disposal is not acceptable to the local wastewater treatment authority, any such waste destined for off-site disposal would be classified as "non-regulated."

In other cases, certain wastes contain hazardous substances that are not included in EPA's P and U lists. This is the case with ethidium bromide, a strong mutagen and possible carcinogen. While not considered a RCRA Hazardous Waste, concentrated forms or significant quantities of such a waste may need to be either chemically treated on-site or classified as "non-regulated waste" for off-site disposal.

Consult with the EHS Office or follow established guidelines for safe handling and before selecting a treatment / disposal option.

Is the solid waste a Mutagen, Carcinogen or Other Hazard?

YES ☐ ☐ NO

If **YES** - the waste will be collected and submitted to the EHS Office and will be disposed of as a non-regulated waste.

If **NO** - Hazardous chemical waste accumulation and disposal procedures are not required.


IMPORTANT NOTE: Other wastes may have their own treatment and disposal requirements. Examples include biological and medical wastes, radioactive materials, pathological wastes (i.e., animal carcasses and parts), pharmaceuticals / controlled substances, and select agents. If the waste is any of these or another special waste, consult with the EH&S Office or follow established guidelines.

Universal Waste Management Program



Texas A&M University-Central Texas

Program Name: Environmental Management
Office Name: Safety & Risk Management
Doc. No.: ENVM-24-L2-S06-CH20-001
Rev. No.: 000

	Texas A&M University-Central Texas		
	Section 6. Solid & Hazardous Waste Chapter 20. Universal Waste	Program:	Environmental Management
		Doc. No.:	ENVM-24-L2-S06-CH20-001
		Rev No:	000
	Level 2	Date:	04/20/2016
Office:		Safety & Risk Management	

Concurrence and Approval

This Universal Waste document was developed for use by Texas A&M University-Central Texas and has been reviewed and approved by the following approvers.

Document Custodian:

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Safety & Risk Management Officer	Signature	Date

Approval:

Gaylene Nunn		
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Certification (if required by law or regulation)

RESERVED - Not Applicable

Change History

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Section 1. Introduction

Under Subtitle C of the Resource Conservation and Recovery Act (RCRA), the Environmental Protection Agency (EPA) has promulgated regulations setting forth the framework of the nation's hazardous waste management program. These regulations are found in Parts 260 through 279 of Title 40 of the Code of Federal Regulations, and the Texas Commission on Environmental Quality (TCEQ) version of the rules is found in Title 30, Chapter 335 of the Texas Administrative Code. These regulations identify what is a waste and how to determine if it is a hazardous waste. Requirements are then set forth for hazardous waste generators, transporters, and owners and operators of treatment, storage, and disposal facilities (TSDs).

In the hazardous waste identification rules, a material is a “solid waste” if it is “discarded” or no longer a usable substance that has value. “Discarded” means (a) disposed, burned, or incinerated, or accumulated, stored or treated before being disposed, or (b) recycled/used beneficially, burned for energy recovery, reclaimed in the usual sense of recycling, or accumulated speculatively because of possible value.


TIP: A product is considered to be discarded and thus a solid waste when it is decided that it is no longer a useful substance that has value. To minimize wastes, employees should attempt to completely use or expend products before discarding them. For example, unwanted paints or aerosol products might be turned over to other departments where the products may be of use.

Many solid wastes are classified further as “hazardous wastes” according to hazardous waste determination criteria because of their inherent threats to human health and the environment if mismanaged, and these hazardous wastes are subject to stringent “cradle to grave” treatment, storage and disposal requirements.

However, the EPA and the TCEQ recognize a large subclass of hazardous wastes that are termed “**universal wastes**” because they are generated in a wide variety of settings by a vast community. These wastes qualify for a streamlined set of rules to facilitate their environmentally sound collection and proper recycling or treatment with the objective of diverting their potentially hazardous constituents from disposal in municipal solid waste landfills. Universal wastes share several characteristics:

- They are frequently generated in a wide variety of settings other than the industrial settings usually associated with hazardous wastes (e.g., retail business, schools, government buildings).
- They are generated by a vast community, the size of which would pose compliance difficulties for both those who are regulated and the agencies charged with implementing the hazardous waste program.
- They may be present in significant volumes in non-hazardous waste management systems such as municipal solid waste landfills.

Therefore, this Universal Waste Management Program has been developed to guide the proper management of universal wastes, specifically: ***hazardous waste lamps, batteries, certain pesticides, and mercury-containing equipment*** (as defined by the EPA in 40 CFR §273 and TCEQ in 30 TAC §335.261).

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In addition, States have the option to expand the scope of their Universal Waste Programs. For example, Colorado has included aerosol cans. In Texas, the TCEQ has included hazardous *paint and paint-related wastes* (30 TAC §335.262) in the list of universal wastes.

Section 2. Scope

Management as Universal Waste is Optional. A “handler of universal waste” (including one who generates universal wastes) has the *option* of managing these wastes under the Universal Waste Rule or under the applicable EPA/TCEQ regulations for hazardous wastes. For small quantity and large quantity generators of hazardous wastes (SQGs and LQGs), there are several advantages to managing wastes as universal wastes:


- You don't need to register with the TCEQ if you generate or handle only universal waste.
- You don't need to include universal waste when you figure your hazardous waste generator status (Note: This may even reduce your generator status to a lower level (e.g., from LQG to SQG; from SQG to conditionally exempt small quantity generator (CESQG)).
- You don't have to identify universal waste on your facility's hazardous waste Notice of Registration (NOR).
- You don't have to report universal waste on your Annual (Hazardous) Waste Summary.
- You can accumulate universal waste for up to one year (sometimes longer if justified) before sending it for disposal or recycling.
- You don't need a manifest when shipping your universal waste in Texas.
- You don't need to use a registered waste hauler to transport your universal waste.
- You don't need to pay a hazardous waste generation fee.

CESQGs can benefit from managing designated wastes as universal wastes, for example ensuring proper and legal yet streamlined waste treatment, recycling and disposal and helping to maintain CESQG status.

Wastes Covered by this Program. Hazardous wastes that may be managed under the universal waste program include:

1. **Lamps** that are hazardous wastes because they contain leachable quantities of hazardous elements (e.g., mercury in fluorescent lamps).
2. **Batteries** (mostly the rechargeable types) that are hazardous wastes because they contain leachable quantities of hazardous elements (e.g., lead in lead-acid batteries; cadmium in NiCd batteries).
3. **Mercury-containing equipment** (i.e., a device or part of a device [including thermostats, but excluding batteries and lamps] that contains elemental mercury integral to its function),
4. **Pesticides** (recalled or unused).
5. **Paint and paint-related wastes (PPRW)** that are hazardous due to their ignitability (e.g., oil-based or alkyd paints and paint thinners) or due to the presence of leachable quantities of hazardous elements (e.g., lead-based paint; paint containing other hazardous/toxic metal pigments).

See waste-specific guide sheets for further explanation of eligible materials.

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Section 3. Operations / Departments Affected

This program pertains only to Small Quantity Handlers of Universal Waste (SQHUW), which are facilities that accumulate less than 11,000 pounds (5,000 kilograms) of universal waste (as described above) at any one time. The accumulated quantity is the aggregate sum of any or all five types of universal wastes.

There is no lower size limit to the definition of a SQHUW, so this standard applies to all Texas A&M University-Central Texas (A&M-Central Texas) facilities, ranging from the main university campus to as little as single, leased offices. Small facilities are normally CESQGs of hazardous waste, and both their hazardous wastes and universal wastes may be legally disposed in a municipal solid waste landfill permitted by TCEQ, a RCRA-permitted hazardous waste treatment, storage or disposal (TSD) facility and/or a universal waste destination facility (e.g., recycler). However, because A&M System environmental policy (24-01.4.2) states that members are to “model good practices,” operations and departments should strive, where practicable and economical, to implement all or parts of this universal waste program even if they are CESQGs. Refer to the universal waste decision flow chart (Figure 1) for how to integrate universal waste with the hazardous waste program.

NOTE: If $\geq 11,000$ pounds (5,000 kg) of universal wastes is ever allowed to accumulate on-site, the facility would be classed as a large quantity handler of universal waste (LQHUW), subject to written notification of UW management to the TCEQ to obtain an EPA identification number before accumulating or exceeding the 11,000 pound (5,000 kg) storage limit. Increased regulatory requirements accompany LQHUW status, so it is recommended that inventories be kept below the threshold. A likely scenario where this may present a compliance problem is a major re-lamping project or building demolition that produces a large quantity of spent lamps. In this case, the project manager must estimate the quantity, along with other UW already on campus, and, if need be, ensure that lamps are transported off-site before the 11,000 pound (5,000 kg) limit is reached or exceeded.

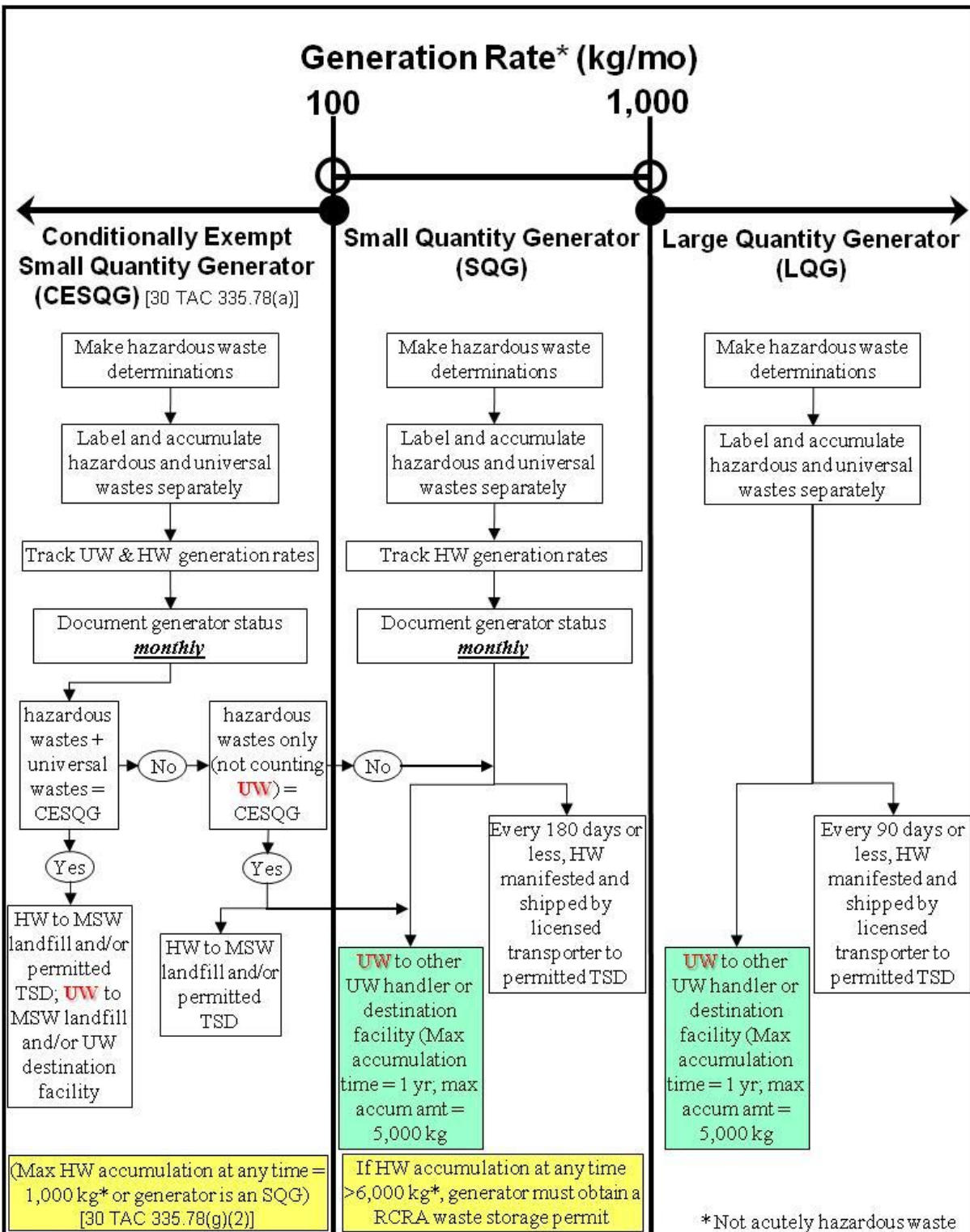


Texas A&M University-Central Texas

Section 6. Solid & Hazardous Waste
Chapter 20. Universal Waste

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Guide to Universal Waste Rule Implementation for Hazardous Waste Generators Who Are Also Small Quantity Handlers of Universal Waste (SQHUW)

The Texas A&M University System

Figure 1

File:

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Section 4. Regulatory and Policy References and Interpretations

Both state and federal regulations govern the management of universal wastes.

- **Federal:** Title 40 Code of Federal Regulations [PART 273--STANDARDS FOR UNIVERSAL WASTE MANAGEMENT](#).
- **State:** Title 30 Texas Administrative Code Chapter 335, [SUBCHAPTER H STANDARDS FOR THE MANAGEMENT OF SPECIFIC WASTES AND SPECIFIC TYPES OF FACILITIES, DIVISION 5 UNIVERSAL WASTE RULE](#).
 - [§335.261](#) Universal Waste Rule.
 - [§335.262](#) Standards for Management of Paint and Paint-Related Waste.

The TCEQ has published guidance for the management of universal waste in Texas, as follows:

- [RG-370 Managing Paint and Paint-Related Waste Under the Universal Waste Rule](#)
- [RG-377 Universal Waste Regulations for Hazardous Lamps and Mercury-Containing Equipment in Texas](#)

The EPA provides guidance and resources for universal waste management on its website at [Universal Wastes](#).


In addition, the electronics and battery manufacturing industries provide guidance and resources for management of universal waste batteries through a free service, the [Rechargeable Battery Recycling Corporation](#).

Section 5. Structure and Responsibilities

The CEO or designated representative (e.g., EH&S manager) is responsible for implementing and maintaining this program.

Day-to-day responsibilities may be delegated, in turn, among key departments (including contractors such as SSC Service Solutions) that generate significant quantities of universal wastes. Examples include:

- Physical plant paint shop, fine arts and performing arts (prop shop) department, and industrial technology department for paint and paint-related wastes (PPRW).
- Physical plant electrical shop for lamps.
- Transportation center and information technology department for batteries.
- Grounds maintenance and agriculture departments for pesticides.
- Facility maintenance and science departments for mercury-containing equipment.

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Section 6. Training Requirements

All employees who handle or have responsibility for managing universal waste must be informed of proper handling and emergency procedures appropriate to the type(s) of universal waste handled (40 CFR § 273.16).

Each affected employee, when hired or when newly assigned universal waste handling duties, must complete either an on-line or instructor-led universal waste training course (approximately 1 hour duration). To receive credit, an employee must successfully pass an end-of-course test, and record of successful course completion must be maintained in the employee's transcript. In addition, each affected employee must successfully complete documented refresher training every three years thereafter.

Examples of employees who should be assigned universal waste training include but are not limited to:

- Environment, health and safety staff.
- Physical plant staff/contractors (e.g., electricians, painters, maintenance workers, pesticide applicators, fleet mechanics).
- Information technology staff who maintain computer equipment.
- Academic faculty and staff who commonly use paints, batteries, mercury-containing equipment and/or pesticides, such as fine and performing arts, architecture, engineering, and industrial and agricultural technology.

In addition, universal waste awareness should be included in general environmental stewardship information that is disseminated to the campus community.

Section 7. Programs and Guidance

Supplementing this Universal Waste Program, there are two additional program elements, as follows:


- A set of five guidelines that provide detailed handling procedures for each subset of universal waste (attached to this program document).
- UW training (course and quiz offered through TrainTraq) for faculty and staff who generate and/or handle one or more classes of UW.

Section 8. Management of Universal Waste

Accumulation and management of universal wastes on-site is relatively easy. However, certain requirements of state and federal regulations must be followed, as described below.

8.1. Accumulation Time

In general, universal wastes may be accumulated on-site for no longer than one year from the date the waste is generated. However, if justified, waste may accumulate for longer than one year if it is accumulated in small quantities, multiple locations and/or at such slow rates that yearly collection for proper recovery, treatment or disposal is impractical.

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The length of time that waste has accumulated must be demonstrated. One or more of the following methods may be used, as appropriate:

1. **Mark the container start date**: For waste in a labeled container (see labeling requirements below), mark the container with the earliest date that a waste was placed therein (Note: This is the most common and practical method for most situations).
2. **Mark individual items**: Mark or label each individual item of universal waste (e.g., each intact battery) with the date it became a waste or was received (Note: This works well for larger items such as lead-acid batteries that are not stored in containers).
3. **Maintain an inventory system**: Maintain an inventory system on-site that identifies the date each universal waste, group of items or group of containers became a waste or was received (Note: Not generally practical for most universal wastes).
4. **Designate and mark accumulation areas**: Place the universal waste in a specific accumulation area and identify the earliest date that any universal waste in the area became a waste or was received.

8.2. *Storage and Handling*

In general, universal wastes must be managed in ways that prevent releases of any universal waste or waste component to the environment.

If containers are required (i.e., for leaking batteries, uncontained mercury, pesticides, breakable lamps, and/or paints), each container must be:

- Kept closed except when adding or removing waste.
- Structurally sound and reasonably able to prevent release of its contents.
- Compatible with the external and internal components of the wastes.
- Free of evidence of leakage, spillage, or damage that could cause leakage under reasonably foreseeable conditions.
- Labeled as indicated in Section 8.3 below.


Each universal waste subset (e.g. lamps, batteries, pesticides, mercury-containing equipment, and paint and paint-related waste) which is accumulated on-site must have a designated accumulation area(s), which will:

- Be labeled with a sign stating “Universal Waste – [enter type]” or the appropriate guidance sheet provided at the end of this program.
- Be located in an out-of-the-way area of infrequent use so as to prevent damaging or spilling the universal waste and presenting a trip hazard to employees.

8.3. *Labeling / Marking*

Universal wastes and/or containers used for storing universal wastes must, at a minimum, include the following label information:

Universal Waste – [insert waste type]
Container Start Date: [insert date]

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See the attached guidelines for each subset of universal waste for additional specific labeling requirements.

8.4. Response to releases

If conditions are deemed safe, all releases shall be immediately contained and the leaking container/item shall be over-packed using a container which will prevent further release. The leaked material shall be considered a newly generated waste and a hazardous waste determination will be required. If it is determined that any or all of the released material or residue is hazardous, it must be managed in accordance with the hazardous waste regulations and not the universal waste requirements.

8.5. Off-Site Shipments

All universal waste must be sent to a universal waste handler or destination facility via a universal waste transporter who complies with 40 CFR §273 Subpart D--STANDARDS FOR UNIVERSAL WASTE TRANSPORTERS. If the universal waste meets the definition of a hazardous material defined in 49 CFR part 171 through 180, the materials must be packaged, labeled, marked and placarded in accordance with DOT regulations.

A universal waste handler may self-transport universal wastes provided that A&M-Central Texas utilizes its own personnel and vehicle. When self-transporting, it is not necessary to comply with DOT shipping regulations because the shipment is not “in commerce.”

The environmental compliance manager, certified DOT shipper, and/or qualified universal waste transporter may be contacted for further information and/or guidance.

8.6. Waste-Specific Guidelines


The attachments to this program provide detailed handling procedures for each subset of universal waste. If, as allowed by rule (40 CFR §273 Subpart G--PETITIONS TO INCLUDE OTHER WASTES UNDER 40 CFR PART 273), EPA or TCEQ later expands the list of universal wastes, additional guidelines will be developed.

NOTE: It is recommended that the handling guidelines be copied, laminated and placed conspicuously within the appropriate area(s) designated for accumulation of each universal waste subset.

Section 9. Records and Reporting

Universal waste, like all other hazardous wastes, requires documentation in the facility records of hazardous waste determinations. At least one determination should be prepared and kept on file for each class or type of universal waste.

State and federal universal waste rules do not require a small quantity handler of universal waste to keep records or report generation and shipment of universal waste. However, since generators are financially responsible for the cradle-to-grave management of all hazardous wastes, including universal wastes, under state and federal Superfund laws, it is recommended that waste shipment

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records, including shippers, intermediate handlers, and ultimate destination facilities, be maintained in perpetuity in facility files.

It ***is necessary***, if asked, to be able to demonstrate compliance with the SQHUW accumulation threshold (< 11,000 lbs/5,000 kg.) on-site at any one time), accumulation time (1 year) and employee training requirements. If accumulated quantities of UW often approach the 11,000 lbs/5,000 kg threshold, it may be necessary to maintain an inventory to document SQHUW status. Accumulation times may be demonstrated by ensuring that all items or containers are marked with the correct dates. If UW may be held for more than one year, a written justification should be prepared and kept in the records. Employee training may be documented with employee training transcripts.

Section 10. Change Management

The A&M-Central Texas Office of Safety and Risk Management (SRM) should be the subject matter expert who maintains and administers the overall program. The program should be reviewed and, if necessary, revised every five years. Any minor program modifications that occur before the five-year review should be handled as “Interim Changes,” numbered and documented on the “Change History” page of this document.

Document interim changes and revisions should be approved by the document custodian and by the A&M-Central Texas Office of SRM. Neither state nor federal rules require that the document include concurrence or certification by a designated official or that it be certified by a registered professional.

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Abbreviations, Acronyms and Definitions

Definitions

Ampule means an airtight vial made of glass, plastic, metal, or any combination of these materials.

Battery means a device, consisting of one or more electrically connected electrochemical cells, which is designed to receive, store, and deliver electric energy. An electrochemical cell is a system consisting of an anode, cathode, and an electrolyte, plus such connections (electrical and mechanical) as may be needed to allow the cell to deliver or receive electrical energy. The term battery also includes an intact, unbroken battery from which the electrolyte has been removed.

CESQG – Conditionally Exempt Small Quantity Generator: If you generate no more than 220 lbs (100 kg) of hazardous waste per month, you are a Conditionally Exempt Small Quantity Generator (CESQG). You must comply with three basic waste management requirements to remain exempt from the full hazardous waste regulations that apply to generators of larger quantities (SQGs and LQGs).

Destination facility means a facility that treats, disposes of, or recycles a particular category of universal waste, except those management activities described in §273.13 (a) and (c) and §273.33 (a) and (c). A facility at which a particular category of universal waste is only accumulated, is not a destination facility for purposes of managing that category of universal waste.

EPA – The Environmental Protection Agency: Mission is to protect human health and the environment.

FIFRA means the Federal Insecticide, Fungicide, and Rodenticide Act (7 U.S.C. 136–136y).


Generator means any person, by site, whose act or process produces hazardous waste identified or listed in part 261 of this chapter or whose act first causes a hazardous waste to become subject to regulation.

Lamp, also referred to as “universal waste lamp” is defined as the bulb or tube portion of an electric lighting device. A lamp is specifically designed to produce radiant energy, most often in the ultraviolet, visible, and infra-red regions of the electromagnetic spectrum. Examples of common universal waste electric lamps include, but are not limited to, fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps.

Large Quantity Handler of Universal Waste means a universal waste handler (as defined in this section) who accumulates 5,000 kilograms or more total of universal waste (batteries, pesticides, mercury-containing equipment, or lamps, calculated collectively) at any time. This designation as a large quantity handler of universal waste is retained through the end of the calendar year in which the 5,000 kilogram limit is met or exceeded.

LQG – Large Quantity Generator: Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Mercury-containing equipment means a device or part of a device (including thermostats, but excluding batteries and lamps) that contains elemental mercury integral to its function.

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On-site means the same or geographically contiguous property which may be divided by public or private right-of-way, provided that the entrance and exit between the properties is at a cross-roads intersection, and access is by crossing as opposed to going along the right of way. Non-contiguous properties owned by the same person but connected by a right-of-way which he controls and to which the public does not have access, are also considered on-site property.

Pesticide means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant, other than any article that:

- (a) Is a new animal drug under FFDCA section 201(w).
- (b) Is an animal drug that has been determined by regulation of the Secretary of Health and Human Services not to be a new animal drug.
- (c) Is an animal feed under FFDCA section 201(x) that bears or contains any substances described by paragraph (a) or (b) of this section.

RCRA – Resource Conservation and Recovery Act: The Resource Conservation and Recovery Act (RCRA) 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. The term RCRA is often used interchangeably to refer to the law, regulations and EPA policy and guidance.

Small Quantity Handler of Universal Waste means a universal waste handler (as defined in this section) who does not accumulate 5,000 kilograms or more of universal waste (batteries, pesticides, mercury-containing equipment, or lamps, calculated collectively) at any time.


SQG – Small Quantity Generator: A generator is a small quantity generator in a calendar month if the generator generates greater than 100 kilograms (220 pounds) but less than 1,000 kilograms (2,205 pounds) of non-acutely hazardous waste in that month. There are stricter limits on the generation of acute hazardous waste that apply to SQGs.

TCEQ – Texas Commission on Environmental Quality: The Texas Commission on Environmental Quality strives to protect Texas public health and natural resources consistent with sustainable economic development. Our goal is clean air, clean water, and the safe management of waste.

Thermostat means a temperature control device that contains metallic mercury in an ampule attached to a bimetal sensing element, and mercury-containing ampules that have been removed from these temperature control devices in compliance with the requirements of 40 CFR 273.13(c)(2) or 273.33(c)(2).

Universal Waste means any of the following hazardous wastes that are subject to the universal waste requirements:

- (1) Batteries as described in 40 CFR §273.2.
- (2) Pesticides as described in 40 CFR §273.3.
- (3) Mercury-containing equipment as described in 40 CFR §273.4;

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- (4) Lamps as described in 40 CFR §273.5.
- (5) Paint and paint-related waste as described in 30 TAC §335.262.

Universal Waste Handler:

(a) Means:

- (1) A generator (as defined in this section) of universal waste.
- (2) The owner or operator of a facility, including all contiguous property, that receives universal waste from other universal waste handlers, accumulates universal waste, and sends universal waste to another universal waste handler, to a destination facility, or to a foreign destination.

(b) Does not mean:

- (1) A person who treats (except under the provisions of 40 CFR 273.13 (a) or (c), or 273.33 (a) or (c)), disposes of, or recycles universal waste.
- (2) A person engaged in the off-site transportation of universal waste by air, rail, highway, or water, including a universal waste transfer facility.

Universal Waste Transfer Facility means any transportation-related facility including loading docks, parking areas, storage areas and other similar areas where shipments of universal waste are held during the normal course of transportation for ten days or less.

Universal Waste Transporter means a person engaged in the off-site transportation of universal waste by air, rail, highway, or water.

Acronyms and Abbreviations

CEO – Chief executive officer
 CESQG – Conditionally exempt small quantity generator (of hazardous waste)
 CFR – Code of Federal Regulations
 DOT – U.S. Department of Transportation
 SRM – Safety & Risk Management
 EPA – U.S. Environmental Protection Agency
 HW – Hazardous waste
 LQG – Large quantity generator (of hazardous waste)
 LQHUW – Large quantity handler of universal waste
 PPRW – Paint and paint-related waste
 RCRA – Resource Conservation and Recovery Act
 SQG – Small quantity generator (of hazardous waste)
 SQHUW – Small quantity handler of universal waste
 TAC – Texas Administrative Code
 TCEQ – Texas Commission on Environmental Quality
 TSDF – Treatment, storage or disposal facility (for hazardous waste)
 UW – Universal waste

Universal Waste Handling Guidelines

Universal Waste – Lamps


Scope

Spent or unwanted lamps that contain hazardous metals in leachable amounts using EPA's toxicity characteristic leaching procedure (TCLP) are hazardous wastes and, thus, may be managed as universal wastes. Mercury and lead are the toxic elements that most commonly cause spent lamps to be hazardous. Examples of common universal waste electric lamps include, but are not limited to, spent fluorescent, high intensity discharge, neon, mercury vapor, high pressure sodium, and metal halide lamps (all containing mercury) and incandescent lamps (containing leachable lead in end-cap solder). In general, for every class or type of lamp used in your facility, you should conduct a hazardous waste determination. Unless either the manufacturer's information lists a type of lamp as passing the TCLP or you have obtained your own laboratory test data to the contrary, you should assume that all lamps are hazardous and thus universal wastes. Therefore, with the exception of lamps described in the following paragraph, all light bulbs and tubes should be properly handled and packaged in accordance with these Universal Waste – Lamps guidelines.

Examples of Universal Waste - Lamp(s) - and Why They Are Hazardous


These contain mercury

Fluorescent




Low Pressure Sodium

High Pressure Sodium

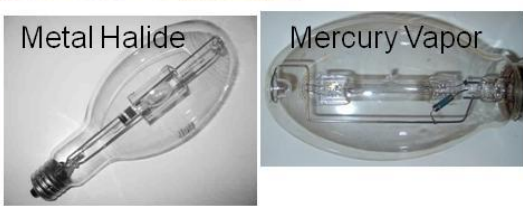


Halogen




Metal Halide

Mercury Vapor



These contain lead



Incandescent

Exceptions. Lamps that do not contain hazardous metals (see manufacturer's data sheets) or that pass the TCLP criteria are not hazardous wastes and, thus, not universal wastes. Nonhazardous lamps can be legally disposed in licensed municipal solid waste (MSW) landfills. The most common examples are modern "green" fluorescent lamps. All fluorescent lamps, irrespective of design, contain the toxic element mercury, but manufacturers have refined their designs to reduce both the total amount and leachability of mercury in their "green" lamps. These lamps are identified by their green-colored paint or markings (e.g., Phillips *Alto*® lamps with green end caps; SYLVANIA ECOLOGIC® with green printing; and GE *Ecolux*® lamps with green printing). However, while legal, some local landfills will not take them, especially in large numbers from relamping projects, so you should check with your local solid waste authority to obtain clearance for local landfill disposal. Therefore, even green lamps may be optionally managed as universal wastes using the following procedures.



For EPA information about mercury-containing lamps, see:
<http://www.epa.gov/osw/hazard/wastetypes/universal/lamps/index.htm>

Handling

Used or discarded lamps shall be placed in the box that the lights originally came in or a box specially designed for spent lamps (available from lamp recyclers) that will protect the bulbs from breakage.

When spent lamps are accumulated slowly within a building due to occasional change-outs, the box(es) may be placed in a designated area such as a janitorial closet, mechanical room, or basement to minimize the potential for breakage. When full, the boxes may then be transported to a central accumulation area. Alternatively, when lamps are changed only by electricians or other physical plant personnel, they may be placed in boxes as they are collected and immediately transported back to a designated central accumulation area.



Boxes used to contain spent lamps shall be of cardboard or fiberboard construction and shall have a label affixed to or handwritten on the box that indicates the following information:

Universal Waste – Lamp(s)
 Container Start Date: [Insert Date]



Example labels

UNIVERSAL WASTE	
<input type="checkbox"/>	BATTERIES
<input type="checkbox"/>	LAMPS
<input type="checkbox"/>	MERCURY-CONTAINING EQUIPMENT
<input type="checkbox"/>	PESTICIDES
<input type="checkbox"/>	PAINT & PAINT-RELATED WASTES
Container Start Date: _____	
<small>TEXAS & FEDERAL LAW PROHIBIT IMPROPER DISPOSAL THESE MATERIALS ARE REGULATED BY 40 CFR §175.102 AND 26 USC §1251-2-20. SHIPMENTS MUST COMPLY WITH APPLICABLE TCEQ REGULATIONS OF CRR Part 17.100.</small>	
HANDLE WITH CARE!	

If the box is not structurally sound or could not reasonably prevent release of contents, the box shall be over-packed using a fully encapsulating, structurally sound container.

According to regulations, **lamp boxes must be kept closed except to add or remove lamps**. For convenience when using original lamp boxes to accumulate spent lamps, affix a piece of tape on the flap to hold the box closed.

NOTE: Some campuses have opted to purchase and use lamp crushers (e.g., Aircycle's Bulb Eater®) for spent fluorescent lamps. Their main advantage is that they save storage space. However, the drummed crushed lamps (and mercury-saturated air filters) must still be sent to a lamp recycler, so the total cost of recycling is not reduced. Before use, bulb crushers must be permitted by the TCEQ due to their possible mercury air emissions.

Maximum Accumulation Period

- 1 year in central accumulation areas.
- >1 year in outlying locations (e.g., custodial closets; mechanical rooms) where lamps slowly accumulate from as-needed lamp change-outs (NOTE: A plan justifying longer holding times needs to be documented).

Shipping

Once full, each container shall be closed and taped to avoid discharge of either glass or powder and collected at a central accumulation area (e.g., physical plant storage room or shed). At least annually, arrangements should be made with a qualified Universal Waste Transporter to have the material taken to a qualified Universal Waste Destination Facility. Because spent lamps in boxes are bulky items, they are often stacked on pallets and secured with plastic stretch wrap for shipping.

Transporters and destination facilities should be audited by the A&M System or a system member to help ensure compliance and prevent possible future financial liabilities. Keep a record of past and current contract(s) or purchase orders, along with audit findings, vendor insurance certificates, and shipping papers in the UW files.

Alternatively, small A&M-Central Texas facilities that generate relatively low numbers of spent lamps may self-transport spent lamps in accordance with DOT hazardous materials shipping rules to approved collection centers (e.g., local waste recycling centers or hazardous waste collection events; a larger, nearby A&M System member campus) or to an approved universal waste handler, transfer station, or destination facility. A list of lamp recyclers that will commercially accept spent lamps may be found at Earth911 (<http://earth911.com/>).

Breakage

If conditions are deemed safe, leaked materials must be immediately contained. If a light bulb or tube breaks, the fragments and residues would be considered newly generated waste and a hazardous waste determination would need to be made. According to UW regulations (40 CFR § 273.17), if it is determined that any or all of the released material or residue is hazardous, it must be managed in accordance with the hazardous waste regulations and not the universal waste requirements.

In the case of fluorescent lamps, “eco-friendly green” lamps typically contain less than 10 mg of mercury in a 4 ft T12 lamp, but the older standard lamps may contain up to 100 mg. Breakage will cause an immediate release of volatile mercury to the air. However, the release rate drops rapidly and, even after several weeks, more than half of the mercury is still likely to be present. Therefore, if a broken lamp is a “green” lamp, it may be collected and disposed in the regular trash; however, an older style, non-green lamp should still be considered hazardous and must be collected in a sealed container for accumulation, transport and disposal as a hazardous waste (EPA waste code D009) rather than UW (*Note: All A&M Central Texas fluorescent lamps are eco-friendly green lamps and may be disposed of in the regular trash*).

--- Proper safety precautions shall be taken when working with/around mercury. ---

Universal Waste Handling Guidelines

Universal Waste – Batteries

Scope

A NOTE ON LARGE LEAD-ACID BATTERIES: Although large lead acid batteries (e.g. automotive and marine batteries) may be handled as a universal waste, EPA recognizes that the current system, which allows for lead acid batteries to be returned to a seller for recycling is effective and sees no reason to enforce an alternate system (see rules under 40 CFR §266, Subpart G). A&M-CENTRAL TEXAS recommends that large lead acid batteries be purchased from companies that will accept and regenerate returned lead acid batteries. Used/Bad/Expired lead acid batteries must be stored in secure locations or, if containerized, in leak-proof, compatible containers while at the facility, regardless of the intended regeneration/recycling/disposal method.

Spent or unwanted batteries may be hazardous wastes for one or more reasons:

- They may contain leachable hazardous metals (typically lead, cadmium or mercury) based on EPA's toxicity characteristic leaching procedure (TCLP) (e.g., rechargeable NiCad batteries).
- They may exhibit the characteristic of corrosivity (i.e., very high or low pH) due to caustic or acidic electrolyte solutions (e.g., sulfuric acid in lead-acid batteries).
- They may exhibit the characteristic of reactivity (i.e., can cause explosions, toxic fumes, gases, or vapors) due to electrolyte chemistry (e.g., certain lithium ion batteries).



In general, the most common types of hazardous waste batteries are the rechargeable types. Hazardous waste batteries may be classified and managed as universal wastes.

Since batteries are small and too numerous and varied to test or to categorize using manufacturer's data, one could safely assume that all spent or unwanted batteries are universal wastes and handle them according to the following guidelines. However, there are notable exceptions: (1) large (>2 lb.) lead-acid batteries managed under EPA's lead-acid battery recycling rules and (2) common single-use dry cells such as consumer alkaline batteries (e.g., AA, AAA, C, D), which present no significant environmental risks and may be legally disposed with the regular trash. To help you decide, consult the following charts.





If in doubt, look for the RBRC recycling symbol on the battery, which may include a notation of the elemental content. If it says Ni-Cd, or Pb, it is an EPA hazardous waste. However, all batteries bearing the RBRC symbol are accepted by RBRC and recycled free of charge, irrespective of whether they are hazardous waste.



Common batteries that are Hazardous Wastes and thus may be managed as UW

Battery Type	Commonly Found In	Recycling/Disposal
Nickel Cadmium 	<ul style="list-style-type: none"> • Alarm Clocks • Calculators • Flashlights • TV remote controls • Remote control toys 	<ul style="list-style-type: none"> • Toxic • <i>MUST be recycled or discarded as either hazardous waste or Universal Waste</i>
Small Sealed Lead Acid 	<ul style="list-style-type: none"> • Mobility Scooters • Fire Emergency Devices • Emergency Exit Signs • UPS Back-Up Batteries 	<ul style="list-style-type: none"> • Toxic • <i>MUST be recycled or discarded as either hazardous waste or Universal Waste</i>

Common consumer batteries that are *NOT* Hazardous Wastes and thus *NOT* UW

Battery Type	Commonly Found In	Recycling/Disposal
Alkaline 	<ul style="list-style-type: none"> Alarm Clocks Calculators Flashlights TV remote controls Remote control toys 	<ul style="list-style-type: none"> May be discarded in regular trash without special requirements Recycling is not cost-effective and is unnecessary
Lithium Primary 	<ul style="list-style-type: none"> Car keyless entry remotes Watches Pacemakers Fire alarm devices Automated external defibrillators (AEDs) 	<ul style="list-style-type: none"> Is a fire hazard. Should be recycled or discarded in regular trash only after bagging each separately or taping terminals
Nickel Metal Hydride 	<ul style="list-style-type: none"> Cellphones Cordless Power Tools Cordless Phones Digital Cameras Two-Way Radios 	<ul style="list-style-type: none"> May be discarded in regular trash without special requirements If recycled, requires extra collection effort
Lithium Ion 	<ul style="list-style-type: none"> Cellphones Cordless Power Tools Cordless Phones Digital Cameras Laptop Computers Two-Way Radios 	<ul style="list-style-type: none"> Is a fire hazard – Should be recycled or discarded in regular trash only after bagging each separately or taping terminals

Handling

Preferred Method. Spent rechargeable and small lead-acid batteries should be placed in Rechargeable Battery Recycling Corporation (RBRC) rechargeable battery / cell phone recycling boxes (shown) as per instructions printed on the boxes. Used cell phones may also be collected in these boxes for recycling by RBRC. The RBRC is operated under the trade name “Call2Recycle,” and program information may be found at their website: <http://www.call2recycle.org/home.php>



Alternate Method. Spent rechargeable and small lead-acid batteries shall be placed in a leak-proof container, which is compatible with the external and internal battery constituents (e.g. a plastic tote or a five-gallon bucket [both with tight sealing lids]). Due to the risk of fire if the terminals of loose batteries that are not fully discharged should come in contact, each battery **must** be placed in an individual bag **or** have its terminals taped over before it is placed in a bulk container. For many battery types, separation by individual packaging or taping is required by DOT hazardous materials shipping rules. For example, lithium ion batteries, while not EPA hazardous wastes, have been the cause of numerous fires while in transport.

The alternate (non-RBRC) container shall have a label that indicates the following information:

Universal Waste – Battery(ies)
 Container Start Date: [Insert Date]



Example labels

UNIVERSAL WASTE	
<input type="checkbox"/>	BATTERIES
<input type="checkbox"/>	LAMPS
<input type="checkbox"/>	MERCURY-CONTAINING EQUIPMENT
<input type="checkbox"/>	PESTICIDES
<input type="checkbox"/>	PAINT & PAINT-RELATED WASTES
Container Start Date: _____	
<small>TEXAS & FEDERAL LAW PROHIBIT IMPROPER DISPOSAL THESE MATERIALS ARE REGULATED BY 49 CFR 173.101 AND 49 CFR 173.102 IMPROPER HANDLING COMPLIES WITH APPLICABLE CALIFORNIA REGULATIONS (CERCLA/CLU) 173.101</small>	
HANDLE WITH CARE!	

Maximum Accumulation Period

- 1 year in central accumulation areas
- >1 year in outlying locations (e.g., shops; IT departments; campus collection receptacles) where small, rechargeable batteries are not generated in large-enough numbers to rapidly fill RBRC or other containers (NOTE: A plan justifying longer holding times needs to be documented)

Shipping

Once full, the RBRC or other container shall be sealed and shipped in accordance with DOT hazardous materials shipping procedures. RBRC boxes, if filled, sealed and shipped according to instructions, are designed to comply with DOT rules. These boxes come with affixed prepaid shipping labels (shown) so that there is no cost to the generator who participates in the program. Contact RBRC for replacement boxes.



For alternate containers, once full, each container shall be closed and taped to prevent leakage and collected at a central accumulation area (e.g., physical plant storage room or shed). Annually, arrangements should be made with a qualified Universal Waste Transporter to have the material taken to a qualified Universal Waste Destination Facility.

Alternatively, small A&M-Central Texas facilities that generate relatively low numbers of spent rechargeable batteries may self-transport the batteries (not in commerce and therefore DOT exempt) to approved collection centers (e.g., local waste recycling centers or hazardous waste collection events; participating local businesses) or to an approved universal waste handler, transfer station, or destination facility. A list of nearby businesses that are willing to accept universal waste – batteries may be found at Earth911 (<http://earth911.com/>).

Transporters and destination facilities should be audited by the A&M System or a system member to help ensure compliance and prevent possible future financial liabilities. Keep a record of past and current contract(s) or purchase orders, along with audit findings, vendor insurance certificates, and shipping papers in the UW files. If the free RBRC program is utilized instead, the RBRC membership information should be kept on file.

Spills and Leakage

If conditions are deemed safe, leaked materials must be immediately contained and the leaking batteries must be over-packed using a container, which under reasonable circumstances would prevent further release (e.g. a heavy-duty, sealable plastic bag). The leaked material would be considered newly generated waste, and a hazardous waste determination would need to be made. According to UW regulations (40 CFR § 273.17), if it is determined that any or all of the released material or residue is hazardous, it must be managed in accordance with the hazardous waste regulations and not the universal waste requirements.

It is unlikely that a battery would be the source of a spill, except possibly leakage from a sealed lead-acid battery, where the electrolyte is sulfuric acid with dissolved lead (EPA waste codes D002 [corrosive] and D008 [lead]).

Proper safety precautions shall be taken while working with/around batteries. For example,

- Take care to prevent lithium-ion battery terminals from coming in contact, as the heat generated has been known to cause fires.
- Lead-acid batteries may leak hydrogen gas and explode if there is a spark or other source of ignition. Also follow correct procedures when using cables to jump-start a vehicle.

Universal Waste Handling Guidelines

Universal Waste – Mercury-Containing Equipment

Scope

Mercury-containing equipment means a device or part of a device (including thermostats, but excluding batteries and lamps) that contains elemental mercury integral to its function. This category includes a variety of instruments that are used throughout electric utilities and other industries, municipalities, and households. Some commonly recognized devices are thermostats, barometers, manometers, temperature and pressure gauges, and mercury switches, such as light switches in automobiles and tilt switches in older equipment and appliances such as electric irons.



Mercury-containing equipment must be managed in a way that prevents release of mercury or a component containing mercury to the environment and is in accordance with the following guidelines.

Note: Mercury-containing equipment may be managed as universal wastes. If not handled as universal waste, then these materials must be managed as hazardous waste once discarded (i.e., when no longer useful or of value).

Handling

A mercury-containing device may be removed from equipment, but should not be disassembled. Once it is decided that mercury-containing equipment shall be discarded, the equipment shall remain intact and the entire unit shall be placed in a closed, structurally sound and compatible container.

The container shall have a label indicating the following information:

Universal Waste – Mercury-Containing Equipment
Container Start Date: [Insert Date]



Example labels

UNIVERSAL WASTE	
<input type="checkbox"/>	BATTERIES
<input type="checkbox"/>	LAMPS
<input type="checkbox"/>	MERCURY-CONTAINING EQUIPMENT
<input type="checkbox"/>	PESTICIDES
<input type="checkbox"/>	PAINT & PAINT-RELATED WASTES
Container Start Date: _____	
<small>TEXAS & FEDERAL LAW PROHIBIT IMPROPER DISPOSAL THESE MATERIALS ARE REGULATED BY 40 CFR §173 AND BY TAC §15.201 & 202</small>	
<small>SHIPMENTS MUST COMPLY WITH APPLICABLE U.S. DOT REGULATIONS (49 CFR Parts 171-180)</small>	
HANDLE WITH CARE!	

Maximum Accumulation Period

One year (although >1 yr is allowed under limited circumstances, A&M-Central Texas recommends that arrangements be made to have mercury-containing equipment shipped off site as soon as practicable when it becomes a universal waste.)

Shipping

The equipment or its removed mercury device should be placed in a secure shipping container that is sealed to avoid leakage and arrangements made with a qualified Universal Waste Transporter to have the material taken to a qualified Universal Waste Destination Facility, normally a company that specializes in mercury recovery. A list of businesses that are willing to accept universal waste – mercury-containing equipment may be found at Earth911 (<http://earth911.com/>).

Spill and Leakage

If conditions are deemed safe, leaked materials must be immediately contained and the leaking/broken mercury-containing equipment must be over-packed using a container which under reasonable circumstances would prevent further release (e.g. a heavy-duty, sealable plastic bag). For spilled mercury, follow recommended mercury abatement methods (e.g., mercury vacuums; amalgam; follow-up air testing). The leaked material would be considered newly generated waste, and a hazardous waste determination would need to be made.

--- Mercury is a neurotoxin.

Proper safety precautions shall be taken while working with/around mercury. ---

Universal Waste Handling Guidelines

Universal Waste – Pesticides

Scope

Pesticide means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, or intended for use as a plant regulator, defoliant, or desiccant, other than an animal drug or feed. Only under a two situations can pesticides be managed as Universal Wastes:

1. **Recalled** [suspended or cancelled] **pesticides** or
2. **Unused pesticides managed under a waste pesticide collection program.**



If you no longer utilize a pesticide being stored at your facility, you should contact your Compliance Manager to determine if it should be managed as non-hazardous, universal, or hazardous waste. The following information sources may aid the determination.



Agricultural Waste Pesticide Collections. To take advantage of agricultural waste pesticide collections held in various parts of Texas, check with TCEQ <http://www.tceq.state.tx.us/assistance/AgWaste/agwaste.html>).

Suspended Pesticides Search. The list of EPA-suspended pesticides is located at <http://www.epa.gov/opp00001/regulating/registering/suspensions.htm>. The list is subject to change, so PA should be contacted to verify information on a specific product.

Cancelled Pesticides Search. EPA does not maintain a list of cancelled pesticides, but the registration, transfer or cancellation status of specific products may be found in the National Pesticide Information Retrieval System maintained by Purdue University. Conduct product queries at: <http://ppis.ceris.purdue.edu/htbin/ppismenu.com>

The following procedure pertains only to pesticides which may be managed as universal wastes.

Handling

Discarded pesticides shall remain in the original manufacturer's container provided that it is structurally sound and not leaking. If leakage is probable, the container shall be over-packed in a container which will prevent further release. Containers shall be maintained in a location/secondary container that will contain potential leakage.

The container shall have a label indicating the following information:

Universal Waste – Pesticide(s)
Container Start Date: [Insert Date]



Example labels

UNIVERSAL WASTE	
<input type="checkbox"/>	BATTERIES
<input type="checkbox"/>	LAMPS
<input type="checkbox"/>	MERCURY-CONTAINING EQUIPMENT
<input type="checkbox"/>	PESTICIDES
<input type="checkbox"/>	PAINT & PAINT-RELATED WASTES
Container Start Date: _____	
<small>TEXAS & FEDERAL LAW PROHIBIT DISPOSAL OF THESE MATERIALS IN LANDFILLS OR BY INCINERATION. SHIPMENT MUST COMPLY WITH APPLICABLE U.S. DOT REGULATIONS (49 CFR PART 177-180).</small>	
HANDLE WITH CARE!	

This label **shall not** be placed over the original manufacturer's label. If, due to over-packing or age, the original manufacturer's label is not visible, a DOT or state-approved label shall be used (for further guidance contact your Compliance Manager).

Maximum Accumulation Period

One year after the pesticide is determined to be recalled or unwanted and deemed to be a universal waste.

Shipping

Prior to one year after being deemed universal waste, the container shall be sealed to avoid leakage and arrangements made with a qualified Universal Waste Transporter to have the material taken to a qualified Universal Waste Destination Facility that handles recalled pesticides.

If pesticides are to be sent to a TCEQ agricultural waste pesticide collection site, they may be self-transported by an employee driving a university-owned vehicle. Since the materials would not be “in commerce,” DOT hazardous materials shipping rules would *not* apply.

Spill and Leakage

If conditions are deemed safe, leaked materials must be immediately contained and the leaking container over-packed using a container which under reasonable circumstances would prevent further release (e.g. a heavy-duty, sealable plastic bag, can or drum). The leaked material would be considered newly generated waste, and a hazardous waste determination would need to be made.

--- Proper safety precautions shall be taken while working with/around pesticides. ---

Universal Waste Handling Guidelines

Universal Waste – Paint & Paint-related Waste

Scope

Note: Texas regulations (30 TAC §335.262) classify paint and paint-related waste as Universal Waste, if managed within the state of Texas. EPA and other states do not recognize this waste classification as universal waste

Paint and paint-related wastes (PPRW) that can be managed as universal wastes in Texas are those spent or unwanted painting products that would otherwise be classified as hazardous wastes due to:

- Ignitability (e.g., used or unused oil based paints; spent solvents used in painting; thinner-wet rags, brushes or debris used in painting; cleanup residues from paint spills [flash point <140°F; EPA Waste Code D001]). To estimate ignitability, check the safety data sheet (SDS) for flash point <140°F.
- Toxicity (e.g., paint and paint-related wastes having leachable metals that fail the EPA's toxicity characteristic leaching procedure [TCLP]). To determine if the material would likely fail TCLP, check the SDS for the presence of arsenic, barium, cadmium, chromium, lead, mercury, selenium or silver (EPA Waste Codes D004 – D011).

Unused ignitable thinners and solvents are not universal wastes and must be managed as hazardous wastes.

Water-based or latex paints, unless they contain leachable hazardous metal pigments, are not hazardous wastes and are, therefore, not universal wastes. Latex paints that cannot be used or given away must be dried before being disposed with the regular trash.

The following universal waste procedure pertains only to PPRW that is classed as universal wastes.

Handling

Liquid paint and paint-related waste should be accumulated in fire-resistant safety cans or in sealable cans or drums that meet UN/DOT standards for shipping hazardous materials. Containers should be kept closed at all times except when adding or removing waste. Ignitable solids, such as rags or wipes wet with thinners or oil-based paint, should be accumulated in fire-resistant oily waste cans with the lid kept tightly closed. If leakage is probable, the container shall be over-packed in a container which will prevent further release. Containers shall be maintained in a location (e.g., no floor drains) or in secondary containment that will contain potential leakage.

The container shall have a label indicating the following information:

Universal Waste – Paint & Paint-related Waste
Container Start Date: **[Insert Date]**



Example labels

UNIVERSAL WASTE	
<input type="checkbox"/>	BATTERIES
<input type="checkbox"/>	LAMPS
<input type="checkbox"/>	MERCURY-CONTAINING EQUIPMENT
<input type="checkbox"/>	PESTICIDES
<input type="checkbox"/>	PAINT & PAINT-RELATED WASTES
Container Start Date: _____	
TEXAS & FEDERAL LAW PROHIBIT IMPROPER DISPOSAL. THESE MATERIALS ARE REGULATED BY 40 CFR 261 AND 30 TAC 335.261 & 335.262.	
DISPOSMENT COMPLY WITH APPLICABLE U.S. DOT REGULATIONS AND 30 TAC 335.261 & 335.262.	
HANDLE WITH CARE!	

If old containers are reused to contain mixed or spent wastes, remove or deface the original label before placing the universal waste label. If the waste is unused product in its original container, retain the manufacturer's label and add the universal waste label, using care not to cover the original label information.

Maximum Accumulation Period

- 1 year in central accumulation areas.
- >1 year in locations (e.g., shops; art departments) where PPRW is not generated rapidly enough to fill containers (NOTE: A plan justifying longer holding times needs to be documented).

Shipping and Disposal

Once full, or prior to one year, arrangements should be made with a qualified Universal Waste Transporter to have the material taken to a qualified Universal Waste Destination Facility.

Transporters and destination facilities should be audited by the A&M System or a system member to help ensure compliance and prevent possible future financial liabilities. Keep a record of past and current contract(s) or purchase orders, along with audit findings, vendor insurance certificates, and shipping papers in the UW files. In most cases, the same contractor used for hazardous waste services can also be utilized to ship the PPRW as universal waste. Much PPRW has a high Btu content and can be burned for energy recovery in cement kilns.


Spill and Leakage

If conditions are deemed safe, leaked materials must be immediately contained. Then, the contents of the leaking container should be transferred to a sound container, or the leaking container should be placed in an overpack salvage drum to prevent further release. The leaked material would be considered newly generated waste, and a hazardous waste determination would need to be made. However, if only small amounts of paint are leaked, it would be satisfactory to allow the paint to dry so that it is no longer ignitable and thus not hazardous, allowing the cleanup residues to be disposed in the regular trash.

--- Proper safety precautions shall be taken while working with/around ignitable wastes (e.g., wear proper personal protective equipment; keep PPRW away from sources of ignition). ---

Minimizing Universal Waste - Paint & Paint-Related Wastes (PPRW)


1. Choose the right paint
 - Minimize use of ignitable oil / petroleum-based paints and thinners
 - Avoid using oil-based aerosol paints
2. Use paint wisely
 - Use it all, leaving little to waste
 - Use aerosol cans until empty or no longer usable (can is at atmospheric pressure). **Do not throw in trash!** Collect empty or unneeded aerosol cans for safe puncturing, draining, and scrap recycling by EH&S or physical plant personnel.
 - Use leftover paint or give it away. Don't throw it away.
3. Conserve thinners.
 - Reuse thinner until it becomes thick with paint residues.
 - Consider disposable brushes to reduce thinner usage.
4. Avoid saturating rags and wipers with solvents/thinners. If you do have ignitable rags, store them in lidded waste rag containers for laundering or disposal.
5. Air dry paint-wet or thinner-wet brushes and personal protective equipment (PPE) and dispose of the non-ignitable waste in the regular trash.

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Solvent-Contaminated Wipes Guide

This chart summarizes the federal regulations in regards to managing solvent-contaminated wipes under 40 CFR §261.4(a)(26), which conditionally excludes from the definition of solid waste solvent-contaminated wipes that are cleaned and reused (“reusable wipes”), and under 40 CFR §261.4(b)(18), which conditionally excludes from the definition of hazardous waste solvent-contaminated wipes that are disposed (“disposable wipes”).

	Solvent-Contaminated Reusable Wipes	Solvent-Contaminated Disposable Wipes
Regulation Citation	40 CFR §261.4(a)(26) (Solid Waste Exclusion)	40 CFR §261.4(b)(18) (Hazardous Waste Exclusion)
Description	Solvent-contaminated wipes that are sent for cleaning and reuse are not solid wastes, provided the conditions of the exclusion are met.	Solvent-contaminated wipes that are sent for disposal are not hazardous wastes, provided the conditions of the exclusion are met.
Includes	➤ Wipes containing one or more F001-F005 listed solvents listed in §261.31 or the corresponding P- or U- listed solvents found in §261.33, including:	
	<ul style="list-style-type: none"> – Acetone – Isobutyl alcohol – Benzene – Methanol – n-Butanol – Methyl ethyl ketone – Chlorobenzene – Methyl isobutyl ketone – Creosols – Methylene chloride 	<ul style="list-style-type: none"> – Cyclohexanone – Tetrachloroethylene – 1,2-Dichlorobenzene – Toluene – Ethyl acetate – 1,1,2- Trichloroethane – Ethyl benzene – Trichloroethylene (*For reusable wipes only.) – 2-Ethoxyethanol – Xylenes
	➤ Wipes that exhibit a hazardous characteristic resulting from a solvent listed in part 261. ➤ Wipes that exhibit only the hazardous characteristic of ignitability when containing one or more non-listed solvents.	
Does not include	➤ Wipes that contain listed hazardous waste other than solvents. ➤ Wipes that exhibit the characteristic of toxicity, corrosivity, or reactivity due to non-listed solvents or contaminants other than solvents.	➤ Wipes that contain listed hazardous waste other than solvents. ➤ Wipes that exhibit the characteristic of toxicity, corrosivity, or reactivity due to non-listed solvents or contaminants other than solvents. ➤ Wipes that are hazardous waste due to the presence of trichloroethylene.
Storage Requirements	Wipes must be accumulated, stored, and transported in non-leaking, closed containers that can contain free liquids, should they occur.	
Labeling	Containers must be labeled “Excluded Solvent-Contaminated Wipes.”	
Accumulation Time	Generators may accumulate wipes up to 180 days from the start date of	

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	Solvent-Contaminated Reusable Wipes	Solvent-Contaminated Disposable Wipes
Limits	accumulation prior to being sent for cleaning or disposal.	
Recordkeeping	Generators must maintain documentation that includes: <ul style="list-style-type: none"> • name and address of the laundry, dry cleaner, landfill, or combustor • documentation that the 180-day accumulation time limit is being met • description of the process the generator is using to meet the “no free liquids” condition. 	
Condition of Wipes Prior to Transport	Wipes must contain no free liquids prior to being sent for cleaning or disposal and there may not be free liquid in the container holding the wipes. “No free liquids” condition is defined in 40 CFR §260.10 and is based on the EPA Methods Test 9095B (Paint Filter Liquids Test) or other authorized state standard.	
Management of Free Liquids	Free liquids removed from the wipes or from the wipes container must be managed according to applicable hazardous waste regulations in 40 CFR parts 260 through 273.	
Eligible Handling Facilities	Must go to a laundry or dry cleaner whose discharge, if any, is regulated under sections 301 and 402 or section 307 of the Clean Water Act.	Must go to a combustor regulated under section 129 of the Clean Air Act or to a hazardous waste combustor, boiler, or industrial furnace regulated under 40 CFR parts 264, 265, or 266 subpart H. Must go to a municipal solid waste landfill regulated under 40 CFR part 258 (including §258.40) or to a hazardous waste landfill regulated under 40 CFR parts 264 or 265.
Storage at Handling Facilities	Must store wipes in non-leaking, closed containers that are labeled “Excluded Solvent-Contaminated Wipes.” Containers must be able to contain free liquids should they occur.	
Management of Free Liquids by Handling Facilities	Free liquids removed from the wipes or from the container holding the wipes must be managed according to applicable hazardous waste regulations in 40 CFR parts 260 through 273.	


LABORATORY GLASSWARE DISPOSAL

DO NOT discard glassware directly into normal trash cans!
Glass may be disposed as regular trash after it has been safely packaged and labeled.

Broken glassware poses a genuine hazard and should be cleaned up immediately and properly discarded to avoid injuries to lab occupants and custodial staff! Each laboratory should have a small brush and dust pan ready for such incidents. Forceps or tape can also be used to pick up smaller pieces of broken glass. Alert all laboratory occupants of the hazard to prevent injury.

LABORATORY GLASSWARE is any item that could puncture regular trash bags and potentially cause injuries to someone handling the trash bag. Laboratory Glassware includes: Empty glass containers and unserviceable, unwanted or broken glassware such as bottles, flasks, vials apparatus, and pipettes not used for bio-hazardous or infectious materials. Broken plasticware may also be included if it has potential to cause injury during handling. In general, plastic pipette tips do not have potential to cause injury and may be disposed directly into the regular trash. "Laboratory glassware" does not include "sharps," which are objects that can be reasonably anticipated to penetrate the skin or any other part of the body and to result in a bloodborne pathogen exposure incident, such as needle devices, scalpels, lancets, broken capillary tube, exposed ends of dental wire or dental knives, drills, or burs. (Note: Injuries from sharps that are contaminated with human blood or body fluids must be reported to the Texas Department of State Health Services.)

PROCEDURES FOR DISPOSAL OF LABORATORY GLASSWARE

- Containers.** Any cardboard box may be used as a laboratory glassware receptacle, provided it is sturdy, has a sealable lid, is plastic-lined to prevent leakage and is of a size that will not weigh more than 20 pounds when full. If desired, various vendors sell special-purpose broken-glassware boxes. Plastic buckets with lids are also acceptable. Containers must be lined with plastic or heavy duty plastic bags. **Never use a "red bag"** (the universal symbol for infectious waste) to line the container.
 
- Labeling.** Clearly label the box "CAUTION: BROKEN GLASSWARE," "BROKEN GLASS DISPOSAL" or similar wording. Position the box so that the label remains readily visible. This label communicates (1) what may be placed in the box and (2) the potential hazard to anyone who may handle the container.
- Accepted glassware.** Any clean, empty and unlabeled glassware/plasticware, either intact or broken, may be placed in the container, **except "sharps"** (as defined in the bloodborne pathogens rules). Empty product containers (e.g., reagent bottles) must first have labels removed or defaced before being placed in a glass disposal container.
- Prohibited materials.** Contaminated or foreign materials (non-glass/plastic) must not be placed in a glass disposal container. NEVER USE THESE BOXES FOR THE DISPOSAL OF:


→ Contaminated laboratory glassware/plasticware	→ Sharps
→ Bio-hazardous or infectious materials	→ Radioactive materials
→ Liquid wastes	
- Disposal.** Once full, (1) twist and tape closed the bag top, (2) close the container lid and tape it shut, ensuring that the label remains visible after the box/container has been sealed, and (3) carry the sealed, labeled container directly to the dumpster outside of your building, or, if you prefer, have custodial staff dispose the box in the dumpster.

Questions?

Contact the Safety & Risk Management Office at 254-519-5771.

(<https://www.tamuct.edu/departments/operations/index.php>)



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Aerosol Cans

Why They May Be Hazardous Wastes

Aerosol cans may be hazardous waste for at least one of three reasons:

1. **The propellant** – Propellant may cause an aerosol can to be a hazardous waste for two main reasons. The propellant may be a flammable (“ignitable” in RCRA hazardous waste parlance) gas, and the pressure of the propellant plus product may cause it to be reactive or explosive under some conditions (e.g., when exposed to heat)
2. **The product** – A wide array of products are packaged in aerosol cans, ranging from benign (e.g., air fresheners; compressed air for cleaning computers) to toxic (pesticides). If the product in a can is either an EPA-listed or characteristic hazardous waste, then the aerosol can and its contents is a hazardous waste.
3. **The container** – In rare cases, the container itself may be a hazardous waste if it is constructed of or contains enough of a hazardous metal, such as lead, that it would fail the TCLP test for the toxicity characteristic.

Because of the various types of propellants, products and cans, there is no easy answer as which aerosol cans are or are not hazardous if disposed while still full or partially full.


EPA’s Position

Puncturing, Draining and Recycling

A steel aerosol can that does not contain a significant amount of liquid would clearly meet the definition of scrap metal (40 CFR §261.1 (c)(6)), and thus would be exempt from RCRA regulation under 40 CFR §261.6(a)(3)(iv) if it were to be recycled. Therefore, a determination of reactivity or any other characteristic would not be relevant. Aerosol cans that have been punctured so that most of any liquid remaining in the can may flow from the can (e.g., at either end of the can), and drained (e.g., with punctured end down), would not contain significant liquids. If the steel cans are being recycled, it is not necessary to determine whether they are “empty” under the criteria listed in 40 CFR §261.7 however, any liquids or contained gases removed from aerosol cans may be subject to regulation as hazardous wastes if they are listed in Subpart D of 40 CFR Part 261 or if they exhibit any characteristics of hazardous waste as described in Subpart C of 40 CFR Part 261.

Disposal as Non-Hazardous Waste

In order to dispose of a can as non-hazardous waste (rather than recycle it), a generator would have to determine that the can is empty under 40 CFR §261.7 (or that the product it contained was not hazardous), and that the can itself is not hazardous. See text box below for the rules on what constitutes “RCRA empty.”


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40 CFR § 261.7 Residues of hazardous waste in empty containers.

- (a) (1) Any hazardous waste remaining in either: An empty container; or an inner liner removed from an empty container, as defined in paragraph (b) of this section, is not subject to regulation under parts 261 through 268, 270, or 124 this chapter or to the notification requirements of section 3010 of RCRA.
- (2) Any hazardous waste in either a container that is not empty or an inner liner removed from a container that is not empty, as defined in paragraph (b) of this section, is subject to regulation under parts 261 through 268, 270 and 124 of this chapter and to the notification requirements of section 3010 of RCRA.
- (b) (1) A container or an inner liner removed from a container that has held any hazardous waste, except a waste that is a compressed gas or that is identified as an acute hazardous waste listed in §§ 261.31 or 261.33(e) of this chapter is empty if:
- (i) All wastes have been removed that can be removed using the practices commonly employed to remove materials from that type of container, e.g., pouring, pumping, and aspirating, and
 - (ii) No more than 2.5 centimeters (one inch) of residue remain on the bottom of the container or inner liner, or
 - (iii) (A) No more than 3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is less than or equal to 119 gallons in size; or
(B) No more than 0.3 percent by weight of the total capacity of the container remains in the container or inner liner if the container is greater than 119 gallons in size.
- (2) A container that has held a hazardous waste that is a compressed gas is empty when the pressure in the container approaches atmospheric.
- (3) A container or an inner liner removed from a container that has held an acute hazardous waste listed in §§ 261.31 or 261.33(e) is empty if:
- (i) The container or inner liner has been triple rinsed using a solvent capable of removing the commercial chemical product or manufacturing chemical intermediate;
 - (ii) The container or inner liner has been cleaned by another method that has been shown in the scientific literature, or by tests conducted by the generator, to achieve equivalent removal; or
 - (iii) In the case of a container, the inner liner that prevented contact of the commercial chemical product or manufacturing chemical intermediate with the container, has been removed.

Protocol for Unwanted Aerosols

- USE it all! The first and best option for aerosol products is to use the entire contents of the container. Provided that there is no malfunction (e.g., clogged spray head; exhausted propellant with significant product left inside), using the entire product brings the can to **atmospheric pressure** with only **minimal residual** remaining. This condition is considered RCRA empty. The empty can may be safely disposed in the regular trash, if the can itself is nonhazardous (usually the case). *(Note: If the product is not usable, do not empty the can merely to dispose of the contents – this is illegal.)*
- If the can is NOT empty, follow the decision flow chart below to make a hazardous waste determination. If the remaining product cannot be used either because it has no further value or because of a malfunction, notify SRM to have it picked up.
- Non-empty aerosols collected by SRM or facilities services may be:

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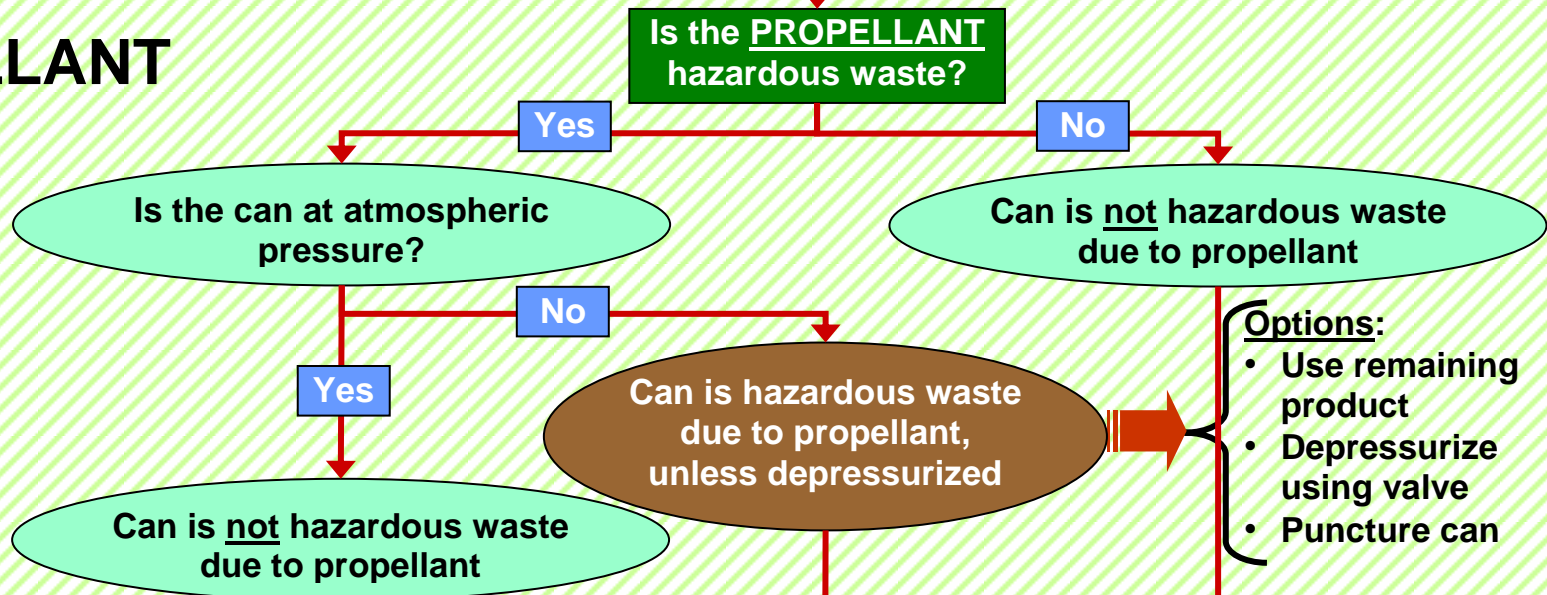
- (a) Punctured and drained using a device designed for that purpose, with scrap metal recycled or disposed and collected liquids managed/disposed according to their waste code(s); or
- (b) Drummed, manifested, shipped and disposed by A&M-Central Texas' waste contractor.

AEROSOL CANS – Hazardous Waste Determination

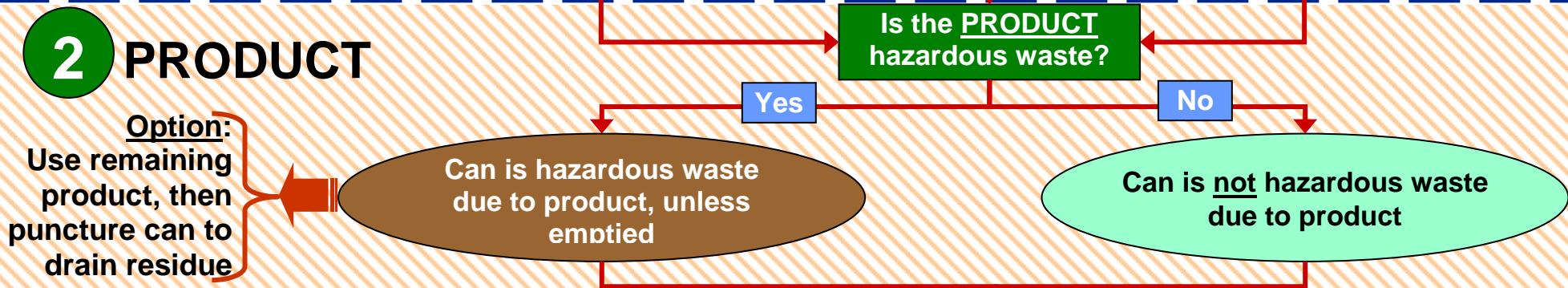
IMPORTANT! If usable product remains, the can is not waste unless it is unwanted

You are disposing of an aerosol CAN containing PROPELLANT and PRODUCT

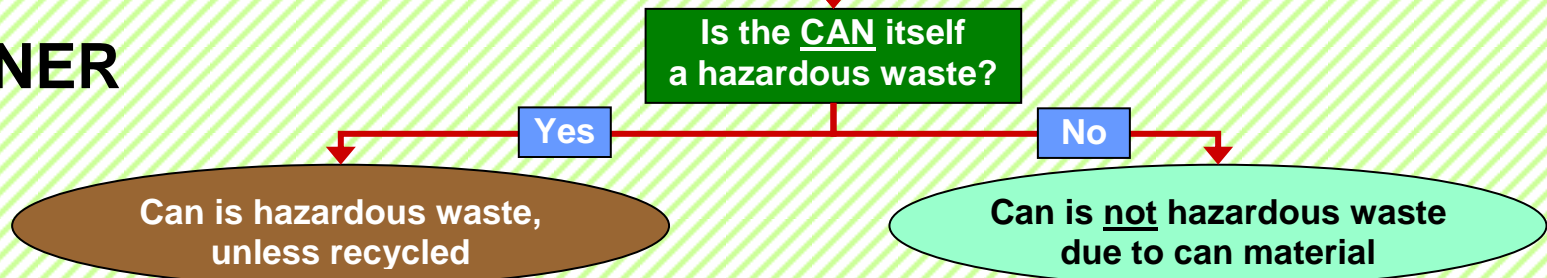
1 PROPELLANT



2 PRODUCT



3 CONTAINER



**Point of contact:**

Texas A&M University-Central Texas
 Safety & Risk Management
 For guidance, call: 254-519-5771



This sink discharges to the Killeen Chapparral Road WWTP, which then discharges to the Lampasas River and Stillhouse Hollow Lake.

Strive to discharge **soap and water only!** If other chemicals must be discharged, restrict them to the following list:

Sink Releasable Chemicals*

Small quantities of dilute solutions containing these chemicals can be released to the sink with running water.

***Unless listed below, the Office of Safety & Risk Management must evaluate all other wastes before discharging to the sewer.**

Organic chemicals

Acetates: Ca, Na, NH₄, and K
Acetic, boric, and oxalic acids
Amino acids and their salts
Citric acid and its salts: Na, K, Mg, Ca, and NH₄
Lactic acid and its salts: Na, K, Mg, Ca, and NH₄
Sugars and sugar alcohol (ethanol)

Inorganic chemicals

Bicarbonates: Na, K, Mg, and Ca
Borates: Na, K, Mg, and Ca
Bromides: Na and K
Carbonates: Na, K, Mg, and Ca
Chlorides: Na, K, Mg, NH₄ and Ca
Fluorides: Ca
Hypochlorite: 10% solution (bleach)
Iodides: Na and K
Oxides: Mg, Ca, Al, Si, and Fe
Phosphates: Na, K, Mg, Ca, and NH₄

pH of drain discharges must be between 6 and 9.

GENERAL PROHIBITIONS

A person may not discharge pollutants that cause:

- (1) upset or damage to the sewage treatment plant, interference with its operation, or a violation of its water discharge, air quality, or sludge disposal permit limits;
- (2) pass through or contribute to pollution of receiving waters;
- (3) a hazard to property, public health, or safety;
- (4) a flow rate or quantity that exceeds the carrying capacity of the collection system.

SPECIFICALLY PROHIBITED POLLUTANTS

- (1) flammable or explosive liquid, solid, or gas
- (2) a noxious or malodorous substance
- (3) a substance that can emit toxic gases, vapors, or fumes
- (4) petroleum or mineral oil
- (5) a viscous pollutant, fat oil or grease that could clog a sewer line
- (6) radioactive materials in concentrations greater than allowed by regulations
- (7) a high concentration of a RCRA-regulated toxic metal (As, Ba, Cd, Cr, Pb, Hg, Se, Ag)