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VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

# Virginia Hospitals and Other Healthcare Facilities Managing RCRA Hazardous Waste

## Webinar Series Part 2 of 5

Jim O'Leary and Chris Archambeault

Hazardous Waste Compliance Program

**July 29, 2024**

# Objectives of our five part webinar series

- **Define the problem! What's Broken?** Discuss common non-compliance problems found in complying with the Hazardous Waste Regulations. Identify the variety of waste streams generated in Virginia hospitals **(Part 1 – Last Week)**
- **Understand the baseline regulations** for accurately identifying and managing the hazardous wastes hospitals and other healthcare facilities may generate. **(Part 2 - Today)**
- **Understand the regulations for complying with the Hazardous Waste Pharmaceuticals rule** (**Part 3**)
- Make you aware of changes to the **regulated medical waste regulations (Part 4)**
- **Discuss Best Management Practices** hospitals and other healthcare facilities can undertake to improve compliance and the do's and don'ts for managing hazardous waste safely (**Part 5**)

# Recap of Part 1

- **What's Broken? Why are we Here today?**

  - Identified and discussed problems that hospitals and other healthcare facilities are having in complying with hazardous waste regulations.
  - Provided examples of non-compliance

- **What wastes do hospitals and other healthcare facilities generate?**
  - Identified and discussed the types of wastes generated by hospitals and other healthcare facilities, and their sources

## Acronyms/terms to know today:

RCRA – Resource Conservation Recovery Act

Generator – a facility that creates/generates a hazardous waste

VSQG – very small quantity generator
SQG – small quantity generator
LQG- large quantity generator

HCF – healthcare facility
RMW – regulated medical waste
Subpart P – Hazardous Waste pharmaceuticals rule (40 CFR Part 266)
CAA – central accumulation area
SAA – satellite accumulation area

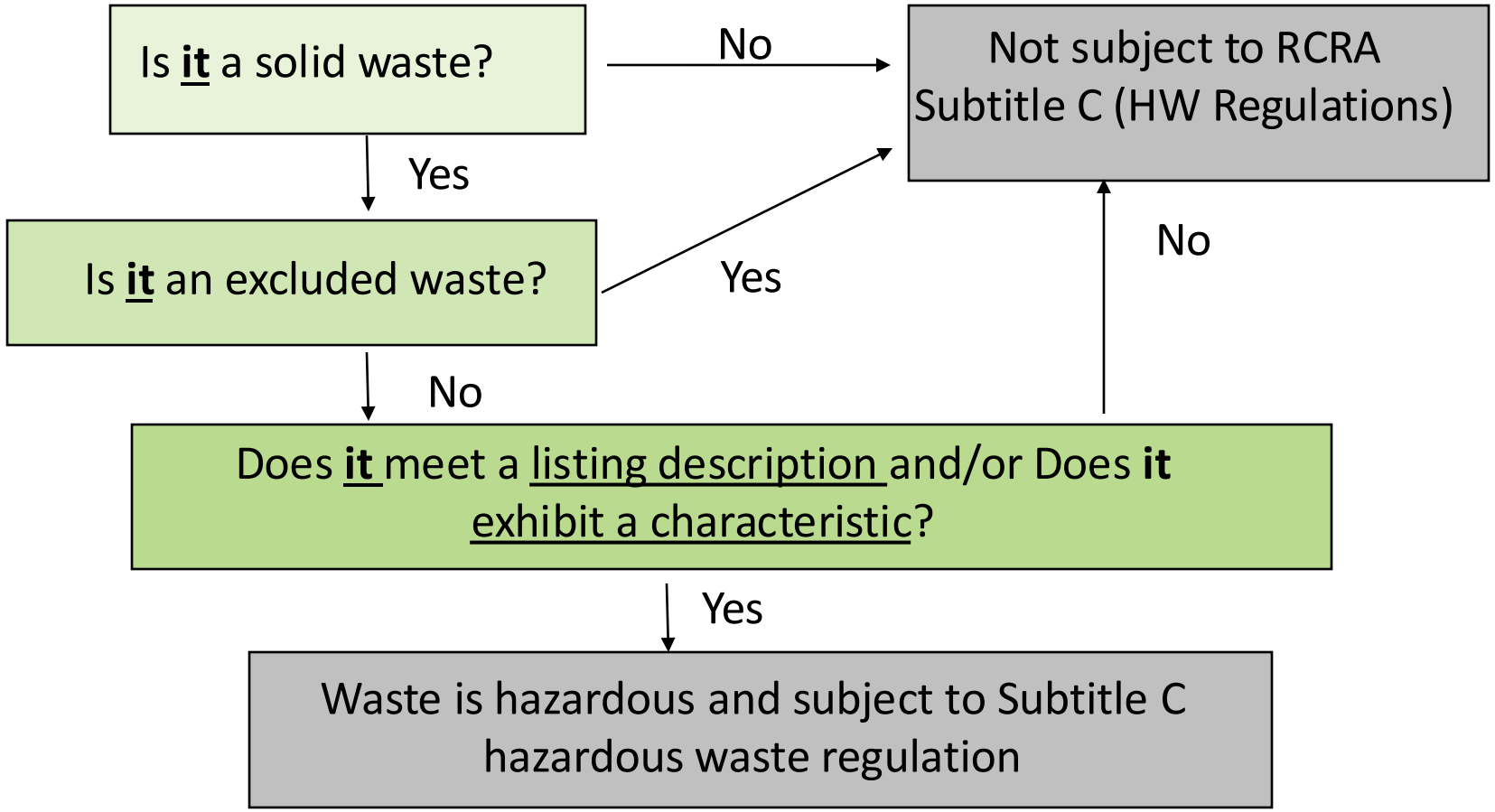
*Hazardous waste or haz waste PHARMS or pharmaceuticals

# What does a hospital need to know to comply with the applicable hazardous waste regulations?

1. Accurately identify all the hazardous wastes a hospital and other healthcare facility generates, including those that may be associated with hazardous waste pharmaceuticals
2. Accurately estimate the total volume of all hazardous wastes generated every calendar month
3. Based on 1 and 2 above, determine your generator category and identify the applicable regulations you need to comply with in that category

# Understanding the Hazardous Waste Identification Regulations

## Regulatory Framework to Solid and Hazardous Waste Determinations



## True or False

The Hazardous Waste Identification rules are the most important rules a generator, such as a hospital, needs to get right?

**Answer: Maybe!**

The only way a hospital or other healthcare facility can accurately identify the hazardous wastes it generates is first to be trained/educated about these rules. We'll discuss the training rules later.

# 1. Waste Identification – The Most Important Regulation You Need to Get Right! Why?

- Failure to accurately identify all of the hazardous wastes a facility generates means you most likely are mismanaging a hazardous waste,

- Which can potentially lead to adverse impacts on human health and the environment, and

- Also leads your facility to being cited as potentially being in violation of other applicable regulations, only compounding the problem.

# Four Ways that a Solid Waste can be Hazardous

1. “Listed” hazardous waste
2. “Characteristic” hazardous waste
3. Both “listed” and “characteristic”
4. A mixture of hazardous waste and solid waste

Note: If a waste is determined to be listed, the generator also needs to check to determine if it exhibits any hazardous waste characteristics

# Four Types of Listed Hazardous Waste

**F-listed**

- Hazardous wastes from **non-specific sources**
- **Example:** A spent solvent such as **Xylene (F003)**

**K-listed**

- Hazardous wastes from **specific sources**
- **Example:** Iron & Steel - Emission control dust/sludge from the primary production of steel in electric furnaces (K061)

# Four Types of Listed Hazardous Waste (Continued)

**P-listed** – Acute hazardous waste - Pure and commercial grade formulations of commercial chemical products (unused/ off-spec), container residues from these products, and spill residues from these products (acutely toxic)

**U-listed** – Non-acute hazardous waste - Pure and commercial grade formulations of toxic (unless otherwise specified) commercial chemical products (unused/ off-spec), container residues, spill residues

**P-and U-listed wastes must be discarded unused commercial products with a single active ingredient

**NOTE: This is where many hazardous waste pharmaceuticals are found**

# Examples of the Most Common P- and U-Listed Drugs

| Name of Drug | Medical Use | Hazardous Waste Code |
|---|---|---|
| Arsenic trioxide | Antineoplastic | P012 |
| Dalfampridine (4-aminopyridine) | Multiple sclerosis | P008 |
| Nicotine | Replacement therapy | P075 |
| Physostigmine salicylate | Glaucoma | P188 |
| Warfarin >0.3% | Blood thinner | P001 |
| Chloral hydrate (CIV) | Sedative | U034 |
| Cyclophosphamide | Antineoplastic | U058 |
| Daunomycin | Antineoplastic | U059 |
| Lindane | Lice, scabies | U129 |
| Melphalan | Antineoplastic | U150 |
| Mitomycin C | Antineoplastic | U010 |
| Selenium sulfide | Anti-fungal, dandruff | U205 |
| Streptozotocin | Antineoplastic | U206 |



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# P- and U-listed Waste

**The P- and U-lists designate as hazardous waste:**

1. Pure and commercial grade formulations of … (this includes lesser strengths of pure formulations)
2. …unused chemicals specifically found on the lists with a…
3. …sole active ingredient (no other "active" ingredients are present in the formulation ) that are…
4. …discarded or intended to be discarded

**ALL FOUR CRITERIA MUST BE MET FOR THE WASTE TO HAVE A P- OR U- LISTING!**

**Note:** The list of all P and U-Listed CCPs are found at 40 CFR 261.33 (e) and (f), respectively. **But be aware it may not be a complete list!**

# Have You Generated a Listed HW?

Depends on:

- HOW the waste was generated
- WHAT materials were used in the process
- WHICH specific processes took place, and
- IF treatment of the waste occurs within the process system? (e.g., neutralization within a manufacturing process unit)

The How, What and Which are described in the Listing Descriptions found in the regulations, as well as other supporting information

**Note:** A generator can only determine if a listed HW has been generated through generator knowledge



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# Example of Regulatory Text:

**Found at 40 CFR 261.31**

**F003 Spent Solvent:**

The following **spent non-halogenated solvents**: Xylene, acetone, ethyl acetate, ethyl benzene, ethyl ether, methyl isobutyl ketone, n-butyl alcohol, cyclohexanone, and methanol; **all spent solvent mixtures/blends**, containing before use, only the above spent non-halogenated solvents, and all spent non-halogenated mixtures/blends, containing before use, one or more of the above spent non-halogenated solvents, and, **a total of ten percent or more (by volume) of those solvents** listed in F001, F002, F004, and F005; and **still bottoms** from the recovery of these spent solvents and spent solvent mixtures. (**Hazard Code I for ignitability**)


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**Question.** True or false. The P and U list of discarded CCPs found in the CFR represents the **complete list** of hazardous wastes CCPs that have pharmaceutical uses?

**Answer.** **False.** Because the P and U lists are based on chemical designations, the lists found in the regulations do not completely represent the total number of brand name pharmaceuticals that may actually be listed hazardous wastes. For example, the chemical substance cyclophosamide (Waste code U058 and Chemical Abstract No. 50–18–0) is also designated for the chemotherapy drugs CTX, Cytotoxan, Neosar and Procytox. **Therefore, your facility needs to carefully examine the list of constituents on the product label to determine if the pharmaceutical may be a P or U -listed hazardous waste when disposed.**


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**Question: When talking about P or U-listed wastes, the term "sole active ingredient" means:**

a. The one ingredient that makes the product perform its intended function
b. The ingredient used as a filler
c. The ingredient that reacts with other chemicals
d. A chemical on the TCLP list

**Answer:**

a. The one ingredient that makes the product perform its intended function


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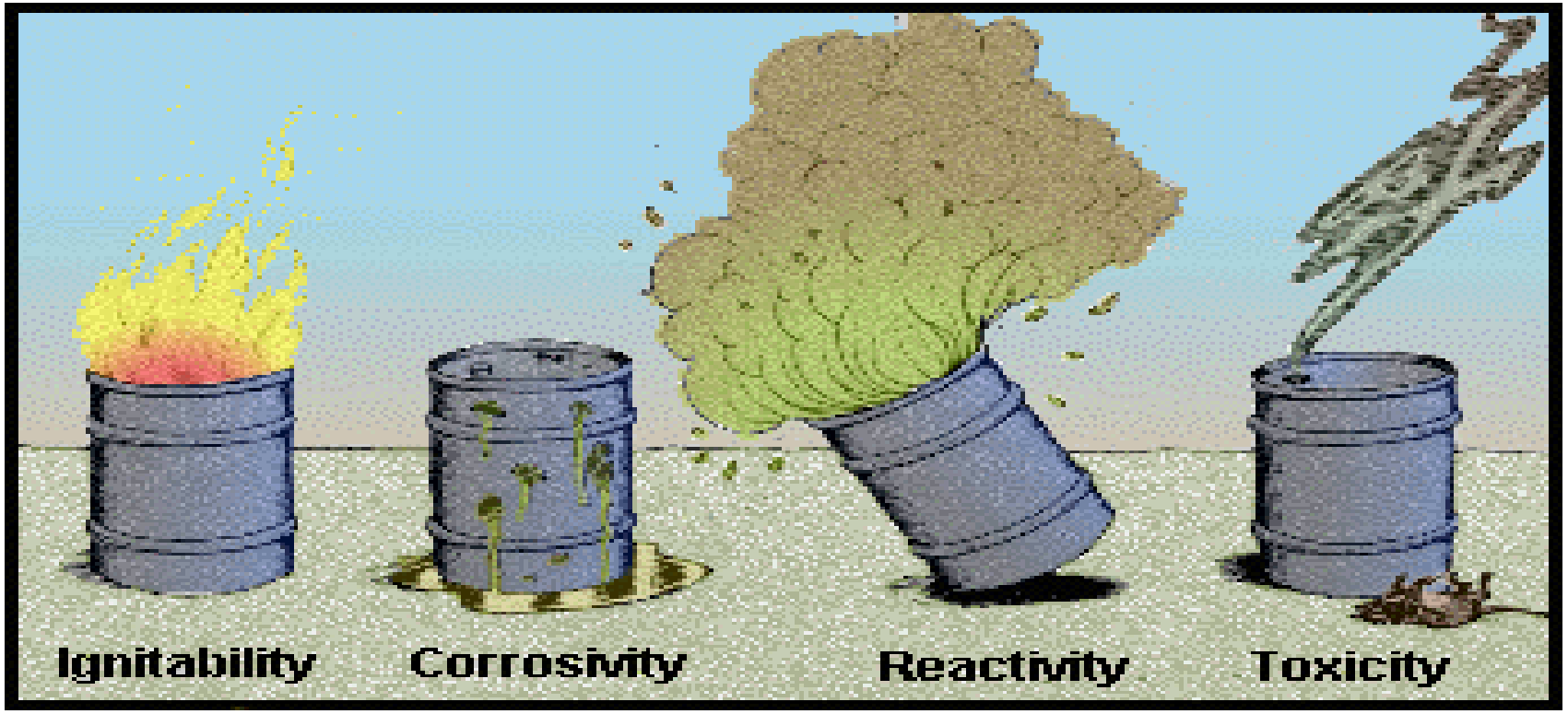
# Have You Generated a Characteristic Hazardous Waste?

There are four hazardous waste characteristics:



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# Definition of HW - Characteristic Hazardous Wastes

**Characteristic Hazardous Wastes and associated RCRA Waste Codes**

- **I**gnitable– D001 Waste Code
- **C**orrosive – D002 Waste Code
- **R**eactive – D003 Waste Code
- **T**oxic – D004-D043 Waste Codes

**I Can Remember That!**



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# Determining whether a facility has generated a waste that exhibits a hazardous waste characteristic can be accomplished through:

1. Using a specified test method found in the regulations (SW-846), **and/or**

2. Generator knowledge such as a safety data sheet (SDS) or manufacturer specifications

# A Hazardous Waste Determination for Hazardous Characteristics Must be Made Regardless of Listing Status

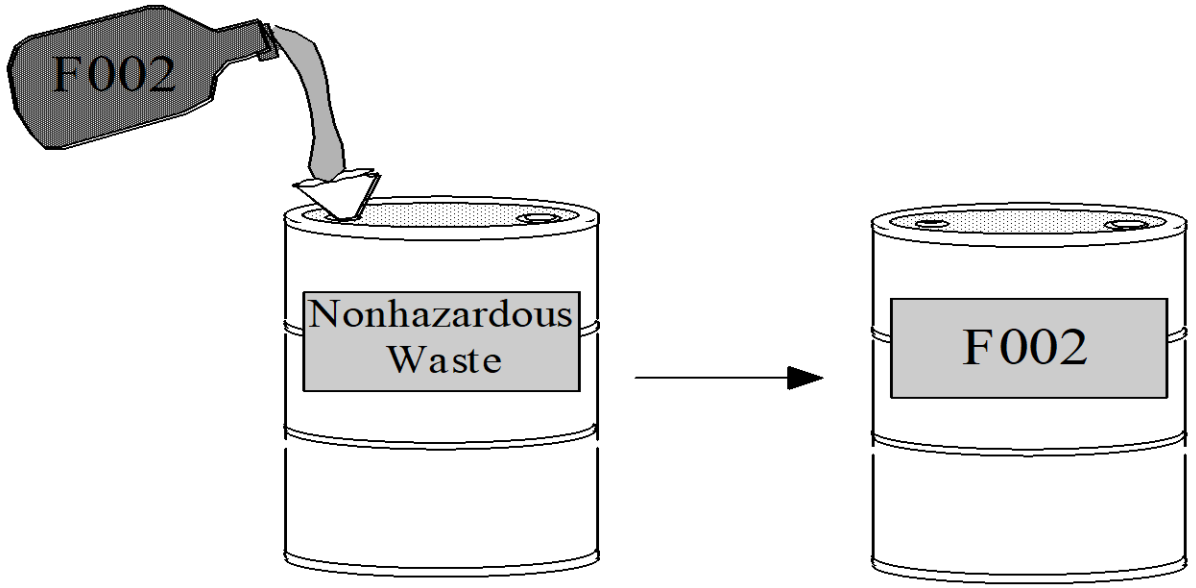
Even if the waste is listed, the generator must still determine if the waste exhibits a characteristic

Need the full list of applicable hazardous waste codes for each hazardous waste generated to ensure the waste is treated effectively before being land disposed

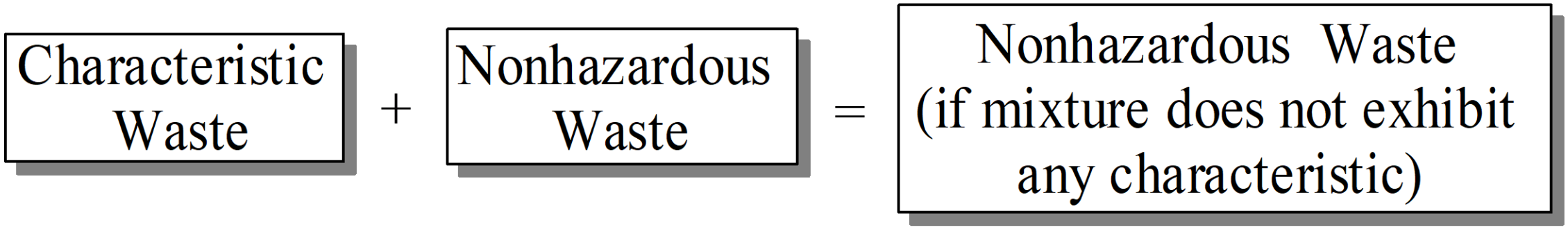
Example: The Listed solvent benzene (F005) may also be characteristically hazardous if the concentration (mg/L) is 0.5 ppm or greater in which case the waste would also carry the waste code D018

# Mixing a non-hazardous waste with a listed waste usually generates a larger volume of listed hazardous waste

Listed Waste + Nonhazardous Waste = Listed Waste



# The Mixture Rule also Applies to Characteristic Hazardous Wastes




Mixtures of characteristic waste and nonhazardous waste are nonhazardous waste if the resulting mixture does not exhibit a characteristic

Note: There has to be a functional reason in mixing a solid waste with a hazardous waste. Otherwise dilution is occurring which is prohibited.



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**Question.** True or False. It's OK to mix regulated medical waste with other pharmaceutical wastes in order to save time and money?

**Answer.** **False.** Hospitals and other healthcare facilities should not mix a hazardous waste with a regulated medical waste capable to producing an infectious disease and possibly spreading an infectious disease even further.


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# When must a generator make a solid and hazardous waste determination?

A solid and HW determination must be **made at the point of waste generation, before any dilution, mixing, or other alteration of the waste occurs, and at any time in the course of its management** that it has, or may have, changed its properties as a result of exposure to the environment or other factors that may change the properties of the waste such that the RCRA classification of the waste may change.

See 40 CFR 262.11(a)



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**Question:** **True or False:** It's OK to manage a waste you have generated as non-hazardous until you determine through testing your waste or obtaining additional knowledge of the waste that the waste is hazardous.

**Answer:** **False.** You need to play it safe and always manage an undetermined waste as a hazardous waste once generated because otherwise you may inadvertently cause an adverse health or environmental incident.



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# So you have generated a hazardous waste. Now what?

## What rules must you comply with?

**Start counting**…how much, **and what type** of hazardous waste you generate **in each calendar month** to determine your generator category

**Your generator category determines what regulations you must comply with**

**Be aware: The volume of hazardous waste you generate can change from month to month possibly impacting generator category**



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# Why/how do we count our hazardous wastes?

1. It is required in the regulations for all types of generators
   - If you don't document it, how can you prove it?
   - You can't just divide the amount generated between disposal pick-ups!
2. How do I document it without creating more work?
   - Look at the process and find the easiest way (i.e. if solvents in the laboratory are collected into a 5-gallon container, measure the weight of the container full and keep a log (on the wall or in the computer) with the date and weight. Then add this up for a monthly total)
3. Training and procedures are key!

*There are many exceptions and exclusions to wastes being hazardous. We will not be discussing those today due to limited time.

# How the generator regulatory program works:

Independent Requirements vs. Conditions for Exemption from Permitting

**Independent requirements** - requirements that any generator generating hazardous waste must meet that is not tied to waste accumulation

**Conditions from exemption from permitting** - conditional requirements that a generator who also accumulates waste must meet only if it wants the benefits of an exemption from RCRA storage facility permitting (or interim status) requirements

# Examples

## Examples of Independent Requirements:

- Hazardous waste determinations
- Generator Category determination
- Using a manifest to ship hazardous waste offsite
- Recordkeeping

## Examples of <u>Conditions for Exemption</u>:

- Hazardous waste container and tank standards
- Preparedness and prevention requirements
- Marking and labeling of containers and tanks

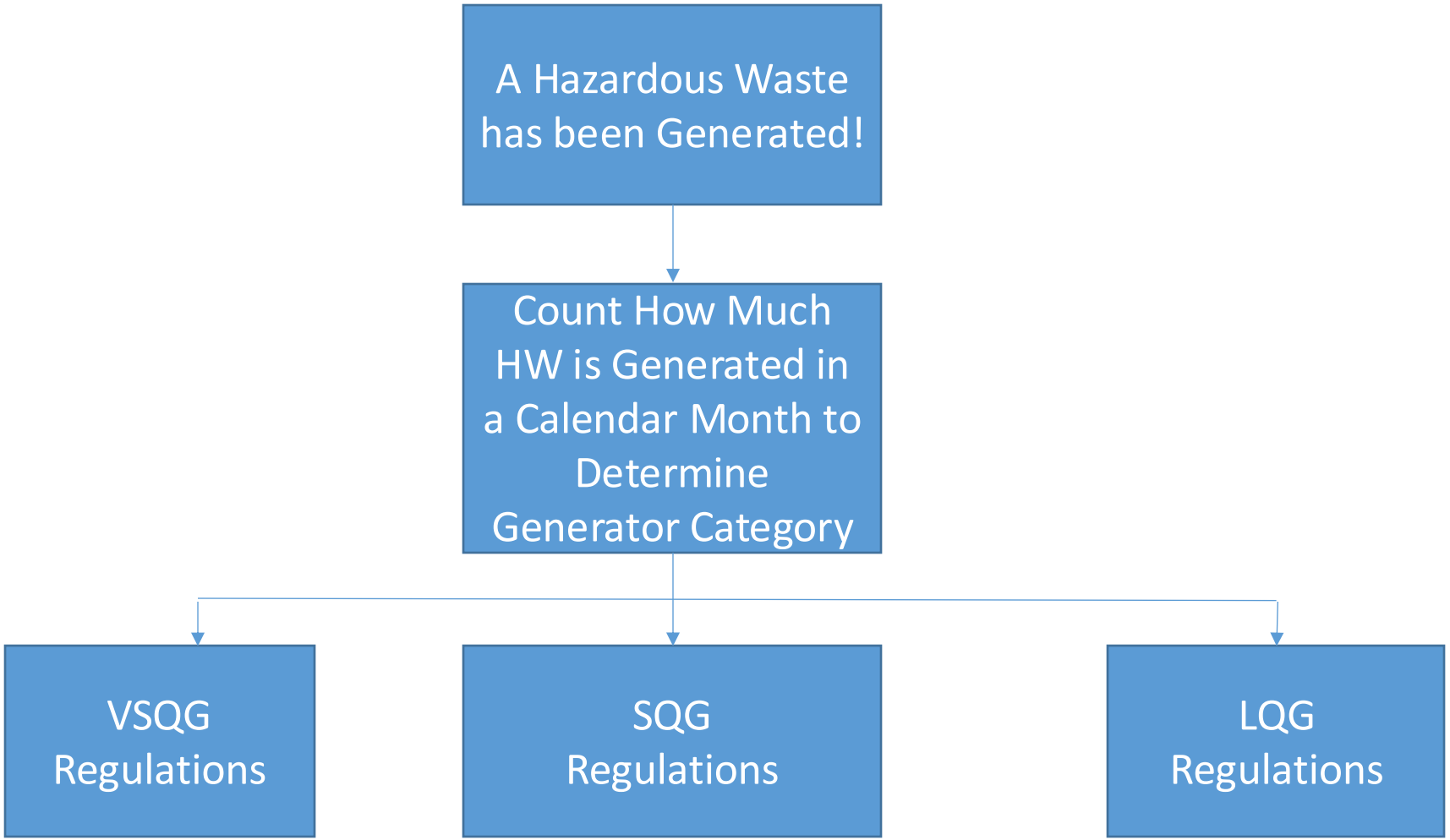
# Hazardous Waste Generator Categories

- **VSQG - Very Small Quantity Generator –** formerly known as Conditionally Exempt Small Quantity Generator (CESQG) - Generates ≤ 220 lbs. non-acute HW and ≤ 2.2 lbs. of acute HW and ≤ 220 lbs of acute HW spill residue per calendar month, and accumulates up to 2,200 pounds at any one time

- **SQG - Small Quantity Generator -** Generate > 220 lbs. of non-acute and < 2,200 lbs. of non-acute HW per calendar month, and able to accumulate up to 13,200 lbs. within 180 days of generating the waste, or 270 days if sending the waste to a TSDF over 200 miles away

- **LQG - Large Quantity Generator -** Generate ≥ 2,200 lbs. of non-acute HW or > 2.2 lbs. of acute HW or > 220 lbs. of acute HW spill residue per calendar month, and has up to 90 days to accumulate a HW once generated before sending the waste to a TSDF.

# The “Life Cycle” of Managing a Hazardous Waste (HW)



# Summary of Baseline VSQG, SQG and LQG Conditions & Requirements

| Conditions (C) and Independent Requirements (IR) | VSQG | SQG | LQG |
|---|---|---|---|
| **HW Determinations (C for VSQGs and IR for SQGs and LQGs)** | X | X | X |
| Managing HW in Satellite Accumulation Areas (C) | | X | X |
| **Managing HW in containers, tanks, drip pads and containment buildings (C)** | | X | **Y** |
| **Accumulation time limit (C)** | | X | X |
| **Accumulation volume limits (C)** | X | X | |
| **Labeling and Marking of containers and Tanks (C)** | | X | X |
| Preparedness and Prevention (C) | | X | **Y** |
| Land Disposal Restriction Requirements (C) | | X | X |
| Pre-Transport Requirements (IR) | | X | X |
| Manifest requirements (IR) | | X | X |
| Recordkeeping and Reporting (IR) | | X | **Y** |
| Off-site management of hazardous waste (C) | X | X | X |
| Closure (C) | | | X |

**Y - LQGs have additional requirements over and above SQGs – discussed at another time**

# Very Small Quantity Generator (VSQG) Requirements

- **Generates** ≤ 100 kg non-acute HW and ≤ 1 kg acute HW and ≤ 100 kg acute HW spill residue per calendar month
- **Accumulates** 2,200 lbs or less of non-acute hazardous waste
- **Accumulates** 2.2 lbs or less of acute hazardous waste
- **Complies with waste determination regulations at** §262.11(a) through (d)
- **Treats or disposes of its hazardous waste either in an on-site facility or ensure delivery to an off-site treatment, storage, or disposal facility**.

# Conditions and Requirements Common to SQGs and LQGs

- Personnel Training
- Accumulation of HW in Containers
- Marking and Labeling
- Emergency Preparedness, Planning and Response
- Off-site management of hazardous waste

# Conditions and Requirements Common to SQGs and LQGs (Continued)

We will not talk about the following today. These are specific requirements and we have limited time:

- Accumulation of HW in Tanks, Drip Pads and Containment Buildings
- Satellite Accumulation Areas (SAAs) and Central Accumulation Areas (CAAs)
- Land Disposal Restrictions
- Pre-Transport Requirements
- Recordkeeping and Reporting
- Manifesting

**Note:** For purposes of today's webinar we will primarily discuss those regulations associated with the problems or most frequent violations identified and discussed in Part 1.

If you are interested in a webinar that just addresses the hazardous waste generator regulations, send us an email or call us and if we get enough interest, we'll schedule another webinar in the future.

# Personnel Training

- If employees responsible for wastes do not understand, or are not familiar with the hazardous waste regulations, then both the identification and subsequent management of any hazardous wastes generated becomes problematic!

- **Without knowledgeable leadership, training, and written procedures,** y**our facility will almost always be out of compliance with the applicable regulations.**

# Personnel Training Requirements Predicated on your Generator Category

**Very Small Quantity Generators (VSQGs)**
There is no requirement for training, but we do recommend appropriate training based on their role with hazardous waste generation to prevent non-compliance.

**Small Quantity Generators (SQGs)**
……must ensure that all employees are thoroughly familiar with proper waste handling and emergency procedures relevant to their responsibilities during normal facility operations and emergencies; **(See 40 CFR 262.16 (b)(9)(iii))**

**<u>Note:</u> The personnel training requirements for facilities opting into the Hazardous Waste Pharmaceuticals rule under Subpart P are very similar to SQG requirements.**

# Personnel training for LQGs much more comprehensive

- Facility personnel must successfully **complete a program of classroom instruction, online training** (*e.g.,* computer-based or electronic), or on-the-job training that teaches them to perform their duties in a way that ensures compliance with this part.
- Program must be **directed by a person trained in hazardous waste management procedures,** and must include instruction which teaches facility personnel hazardous waste management procedures……
- **At a minimum, the training program must be designed to ensure that facility personnel are able to respond effectively to emergencies**
- Facility personnel must successfully **complete the program required in paragraph (a)(7)(i) of this section within six months after the date of their employment or assignment to the facility, or to a new position at the facility, whichever is later**……
- Annual training required
- **Maintain applicable records and documents**

See 40 CFR 262.17 (a)(7) for details

# Summary of Conditions for SQGs and LQGs Accumulating Hazardous Waste in Containers

- **Containers** holding hazardous waste must be in good condition, must be made of or lined with materials that will not cause a reaction, and are otherwise compatible with the hazardous waste to be accumulated, containers holding hazardous waste must always be closed during accumulation, except when it is necessary to add or remove waste, etc., and must not be opened, handled, or accumulated in a manner that may rupture the container or cause it to leak.
- **At least weekly, the generator must inspect CAAs** where hazardous waste is being accumulated in containers. The generator must look for leaking containers and for deterioration of containers caused by corrosion or other factors.
- CAA containers must be marked with accumulation start date.



**Note:** Specific regulations found at **§ 262.16 (b)(2)**

# Summary of SQG and LQG Conditions for Marking and Labeling of HW

- Marking and labeling requirements apply throughout the HW regulations
- Container labels must have the words “Hazardous Waste” and must also indicate the hazards of the contents of the accumulation units
- SQGs and LQGs may accumulate waste in satellite accumulation areas that are close to the point of generation as well as a central accumulation area prior to shipment.

# Examples of Labels that indicate the “Hazards”

## Hazard communication consistent with DOT





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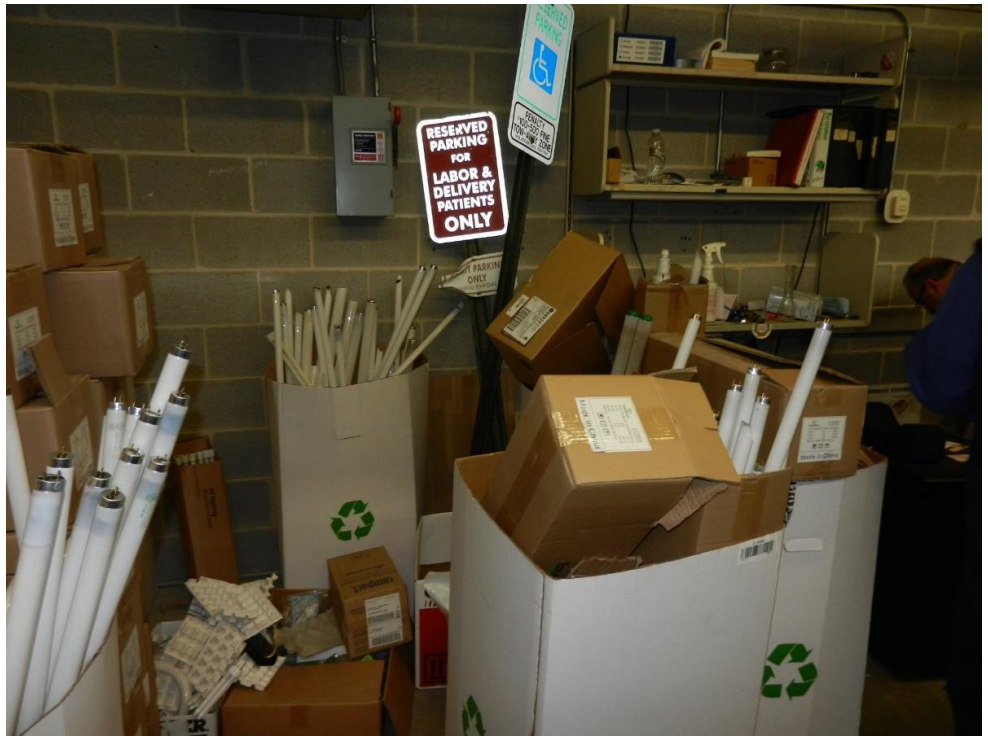
# Examples of Labels that indicate the “Hazards”

## Hazard statement or pictogram consistent with OSHA

# Summary of SQG and LQG Preparedness, Prevention, and Emergency Procedures

- SQGs and LQGs must maintain their facilities with appropriate emergency equipment and alarms, must test and maintain this equipment, maintain required aisle space in storage areas, make arrangements with local emergency responders and notify them of your types of hazardous waste, Identify a primary environmental coordinator to be responsible if there is an emergency, an employees must be trained based on their involvement with the generation or management of hazardous waste.
- The facilities must maintain certain documentation from activities above and also manifests, waste profiles, spills, and training for three years.

# Let’s Talk Briefly About Universal Wastes




# Summary of Universal Waste Regulations for Small Handlers

- Manage wastes to prevent releases
- Label or mark the container accumulating the waste with such words as "Universal Waste – Lamps", or "Used Aerosol Cans"
- Accumulate the waste for no longer than one year from when the waste is first generated
- Be able to demonstrate through marking or labeling when the waste first started to be accumulated
- Inform or make employees aware of their responsibilities for managing the waste safely
- Immediately contain any releases that may occur
- Send wastes only to another waste handler, destination facility or foreign destination

BENEFITS: You do not have to count any universal wastes generated towards your generator category

# Additional Requirements for LQGs Only*

- Accumulating HW in containers
- Personal Training for LQGs
- Preparedness, Prevention, and Emergency Procedures
- Biennial Report
- Closure

*** Not discussed today**

**Question:** When dealing with only non-acute hazardous waste, your generator category is based on:

a. The amount you ship
b. The average amount you generate over the course of a year
c. The amount you have stored in satellite areas only
d. The amount you generate in each calendar month of the year

**Answer:** d. The amount you generate in each calendar month of the year

**Question:** A facility that ships up to 2,200 lbs or less than 1,000 kilograms of hazardous waste is either:

a. A very small quantity generator
b. A small quantity generator
c. A large quantity generator
d. All of the above

**Answer:** This was a trick question. Your generator status is based on your monthly generation and not monthly shipping. However, VSQGs can only accumulate up to 2,200 pounds on site at any time or they are a SQG.

# Any Questions? Comments?

Jim O'Leary at james.oleary@deq.virginia.gov or
(703) 595-6476

Chris Archambeault at
christina.archambeault@deq.virginia.gov or
(571) 866- 6096