
DEQ
VIRGINIA DEPARTMENT OF
ENVIRONMENTAL QUALITY

Webinar for Virginia Hospitals and Other Healthcare Facilities

Part 1 of 5. Defining the Problem. What's Broken?

Jim O'Leary and Lisa Ellis
Hazardous Waste Compliance Program

July 22, 2024

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

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Objectives of our five-part webinar series

Part 1 (Today) Define the problem! What's Broken?

- How are Virginia hospitals and **other healthcare facilities** doing in general in complying with the hazardous waste regulations?
- Discuss common non-compliance problems with the Hazardous Waste Regulations
- Identify the typical waste streams generated in Virginia hospitals and other healthcare facilities

Part 2 - Understand the baseline regulations for accurately identifying and managing the hazardous wastes that hospitals and other healthcare facilities generate. (July 29)

Part 3 - Understand the regulations for complying with the Hazardous Waste Pharmaceuticals rule (August 5)

Part 4 – Understand and make you aware of changes to the regulated medical waste (RMW) regulations (August 12)

Part 5 – To the Future and Back! Discuss best management practices and the do's and don'ts for managing hazardous waste in hospitals and other healthcare facilities (August 19)

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Types of hospital facilities we reached out to

- Ambulatory surgical
- Acute
- Children
- Rehabilitation
- Psychiatric
- Long Term Acute Care
- Critical Access
- University Medical Schools

Source: Virginia Health Info.org

What's Broken? Why are we here today?

- **Most Virginia hospitals** are having a difficult time complying with the hazardous waste regulations, including the Hazardous Waste Pharmaceuticals rule in Subpart P of 40CFR Part 266

- Recent inspections show that **40 percent** of Virginia hospitals had 10 or more hazardous waste violations and several were issued penalties including substantial fines in some cases.
  - One recent inspection of a Virginia hospital had 30 potential violations.

- Failure to comply also means potentially adversely affecting human health and the environment

What are the major challenges of hospitals with RCRA?

- Hospitals have multiple locations for hazardous waste generation/accumulation (med rooms on patient floors, ED, infusion, specialty floors (orthopedics and oncology), pharmacy, laboratory, maintenance, etc.)

- 24-7 operation
  - Hundreds of generators
  - Variable shifts/travelling workers
  - Thousands of pharmaceuticals in use daily & new ones each week

- Persons in charge of managing hazardous waste also typically have RMW, hospital laundry, solid waste, operating room equipment, etc. to manage

- Frequently have subcontractors who collect/manage hazardous waste

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Framework for Haz Waste regulations in hospitals and other healthcare facilities

RCRA hazardous waste regulations **vs** Hazardous Waste Pharmaceuticals in Subpart P

Hospitals are RCRA hazardous waste generators!
All hospitals generate **both PHARMs and Non-PHARMS hazardous wastes!**
Most hospitals will be SQGs **if they opt into Subpart P!**

- Any hazardous waste that is not a pharmaceutical waste must still be managed under the main RCRA hazardous waste regulations
- Only pharmaceutical wastes are managed under Subpart P

- We will now discuss the most common violations found during our inspections

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While violations span the range of the regulations, the most frequent violations include the following (by order of importance):

1. **Waste Identification (all generators)**
2. **Employee Training**
3. **Container Management**
    - Marking and Labeling
    - Closed containers
    - Weekly inspections (if SQG or LQG)
4. **Universal Waste Lamps (all generators)**
    - **Waste identification**
    - Packaging
    - Labeling
    - Dating date waste was generated
    - Crushing lamps

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

- Waste Identification is the most frequent violation found during inspections

- Failure to accurately identify all the hazardous wastes a facility generates means you most likely are mismanaging a hazardous waste, both on-site and off-site

- As a consequence, this violation can also lead to being cited as being in violation of other applicable regulations, only compounding the problem.

2. Employee Training (Just about as Important!)

- 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,** your facility will almost always be out of compliance with the applicable regulations.

- **Why is this important?** Your facility risks injury to personnel or patients, faces potential fines for non-compliance, and who wants to make the news when something goes wrong?

ANY QUESTIONS SO FAR??

3. Container Management (RCRA wastes outside of Subpart P)

The rules are pretty straightforward, but compliance is still a problem.

- Containers must always be closed unless adding or removing wastes
- Mark and label your containers in both the satellite and central accumulation areas
- Identify the date wastes first start being accumulated in the container in the central accumulation areas
- Only mixing of wastes that are compatible with each other and with the container too

Container Management: Laboratory Waste Accumulation:

Do you think that this would be considered a closed container?

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Container Management: More Laboratory Waste Accumulation:

No hazardous waste labels

No hazards of the waste

No emergency postings

Possibly no training too!

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No posting

No labels

Managing as a universal waste?

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Not closed

Not connected or compatible

Not dated

No hazards identified

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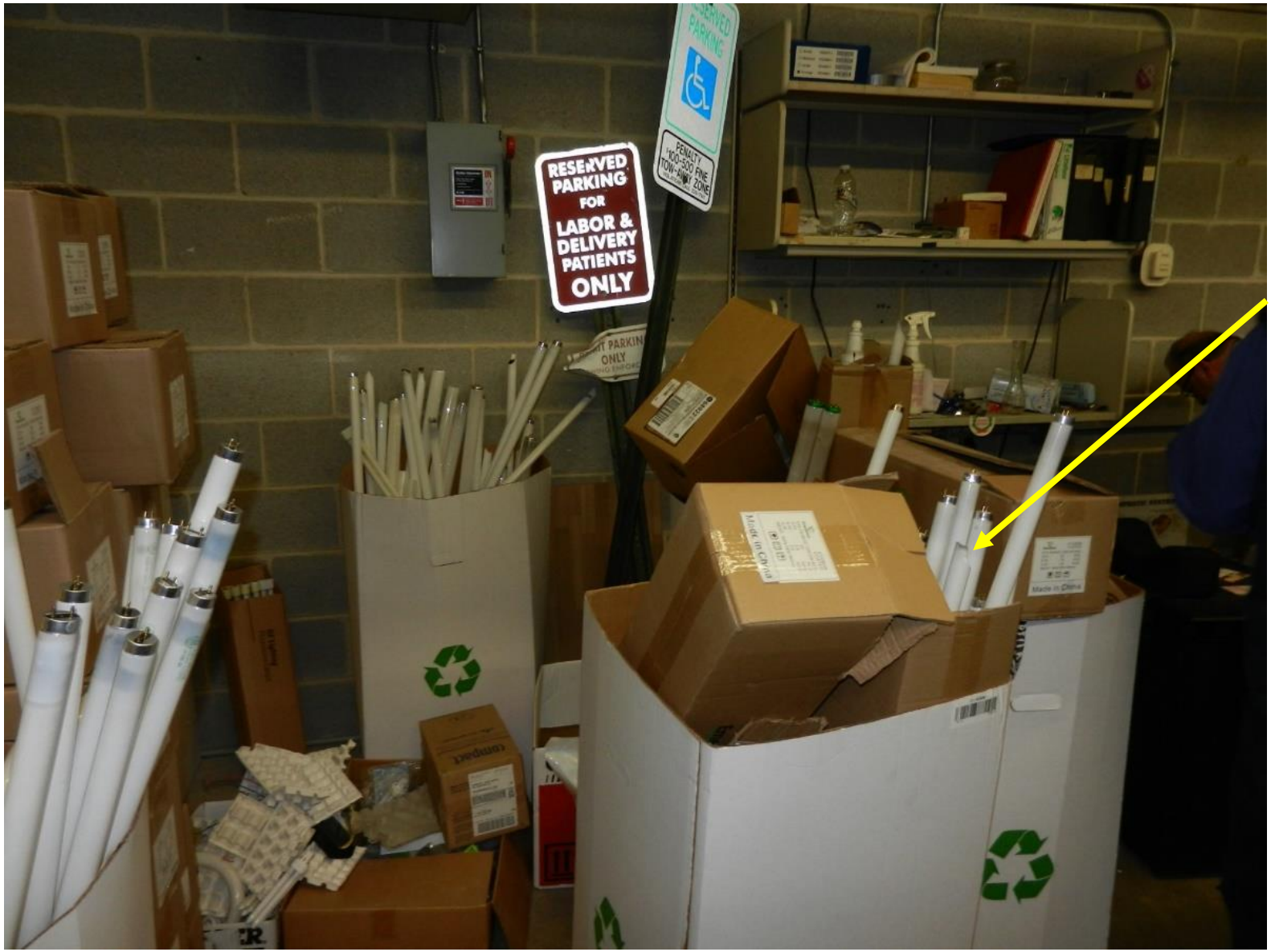
4. Universal Wastes – The Forgotten Waste!

- Most facilities are unaware that they may have generated a universal hazardous waste

- Examples include:
  - Fluorescent lamps
  - Aerosol cans*
  - Rechargeable batteries
  - Mercury thermometers

4. Universal Wastes – The Forgotten Waste! (Continued)

- **Waste identification (A common problem!)**
    - Many hospitals (and other facilities too) fail to realize that waste generated in support of facility or specific department operations can be a hazardous waste when discarded; e.g., aerosol cans, fluorescent lamps, and batteries
- Even if properly identified, the packaging, labeling and dating of universal wastes can be problematic
- Note: Even if you have a contractor remove your used lamps, for example, they are still your wastes until a certificate of recycling is received from your contractor. Do you know what your contractor does with them?
- **DEQ questions the viability of any hospitals crushing fluorescent lamps**



Open containers

Broken lamps

Nothing was labeled

No indication of accumulation start date

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Broken lamps on crushing unit

No records of crushing

No records of maintenance

Did not notify DEQ of crushing

Can you see why now most facilities stop crushing after they are inspected? Most look just like these photos unfortunately!

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ANY QUESTIONS?

How do you identify your facility's waste streams?

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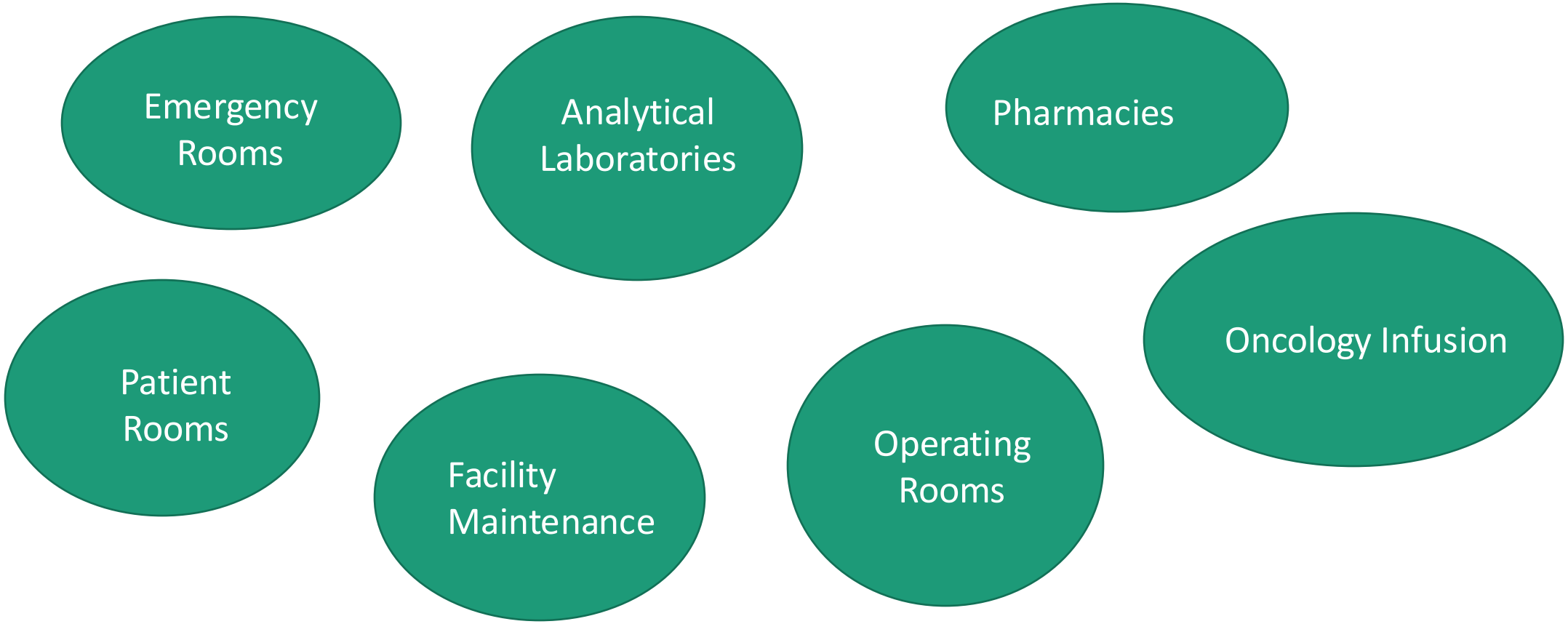
By Location? Where are wastes generated at a Hospital or other HCF?

In your position, are you aware of the potential sources of wastes at your HCF?



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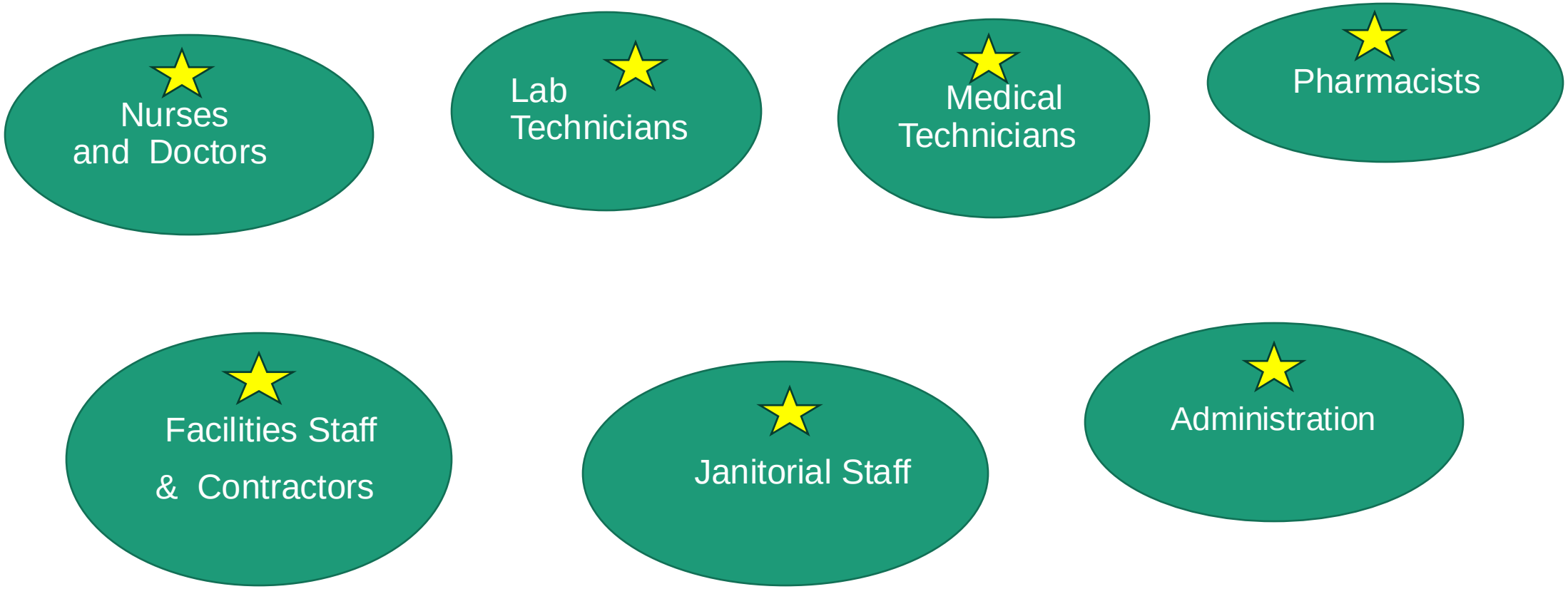
By Position? Examples of Healthcare Staff that may Generate/Manage HW:



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By Types of Potential Hazardous Wastes Generated at a Hospital?

Can you associate with any of the wastes identified below with your position at your facility?

- Prescription Medications/ Chemo Waste
- Lab wastes
- Empty Aerosol cans
- Spent Batteries
- Lead Aprons X-Ray wastes
- Spill Clean up
- Spent Fluorescent Lamps – Bulbs and Crushed Bulbs
- Expired Hand Sanitizers

Any other wastes we may have missed? RMW??

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Let’s talk briefly about RMW.

We will have an entire session dedicated to this topic (Part 4)

Types of Regulated Medical Waste

Contaminated sharps (Needles, etc.)

Human Pathological & Anatomical Waste

Cultures and Stocks

Human Blood & Body Fluids

Items Contaminated with Human Blood & Body Fluids

Category A Waste

And ANY solid waste suspected by the health care professional in charge of being capable of producing infectious disease in humans

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ANY QUESTIONS??

Helpful questions you should be asking yourself today

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Where do you start?

- Do you generate regulated medical waste (RMW) and sharps?
- **Do you have machines** that do analytical testing of blood or other fluids? Do you add any liquids to the machines? Do you clean them?
- Do you administer or supply pharmaceuticals? How about vaccinations?
- Do you take X-rays?
- Do you have/use fluorescent lamps, rechargeable batteries, or mercury thermometers?

All these activities can generate hazardous wastes, including HW PHARMS, that must be managed correctly from the moment of generation through offsite disposal. Do you think that you are managing everything correctly?

What wastes might you generate during patient care?

- Do you administer medications and vaccines during patient visits, in the emergency room, or operating room? **What do you do** if there is some left over that wasn't used or a medication that is dropped or spills on the floor?
- What do you do with controlled substance wastage?
- Do you clean any surfaces with isopropyl alcohol or solvents? Do you clean with disposable wipes?
- Do you have excess chemicals, reagents, or test kits that expire or go bad and can't be used?

Do you know if any of these wastes are a hazardous waste?

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What wastes might you generate in the laboratory?

- Do you have stain or dye wastes after tissue prep?
- Do you have machines that use solvents/liquids to process samples?
  - Do you remove any spent liquids from the machines?
- What do you use to clean testing areas? Isopropyl alcohol or solvents?
  - Do you use a wipe to do this? Is it prepackaged or do you spray the cleaner on a surface and then wipe?
- What happens if you spill a liquid? What do you do with the cleanup materials?

Do you know if any of these wastes are a hazardous waste?

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What wastes might you generate in performing X-Rays or scans?

- Do you have digital or traditional X-Ray equipment?
  - Traditional will generate liquid developer and fixer wastes
  - Do you have a silver recovery unit?
- Do you inject any dyes to see better imaging? Is there any left over?
- The lead aprons, once expired or damaged must be disposed, right?

Do you know that the concentration of lead in the apron makes it a hazardous waste?

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What about pharmaceutical wastes?

If it is a NIOSH hazardous drug, does that equate to it also being a hazardous waste?

- The National Institute for Occupational Safety and Health (NIOSH) considers a drug to be hazardous if it exhibits one or more of the following characteristics in humans or animals: carcinogenicity, teratogenicity or developmental toxicity, reproductive toxicity, organ toxicity at low doses, genotoxicity, or structure ...

- A RCRA hazardous waste is a waste with properties that make it potentially dangerous or harmful to human health or the environment.

The answer is not all NIOSH hazardous drugs are RCRA hazardous wastes and not all RCRA hazardous wastes are identified as NIOSH hazardous

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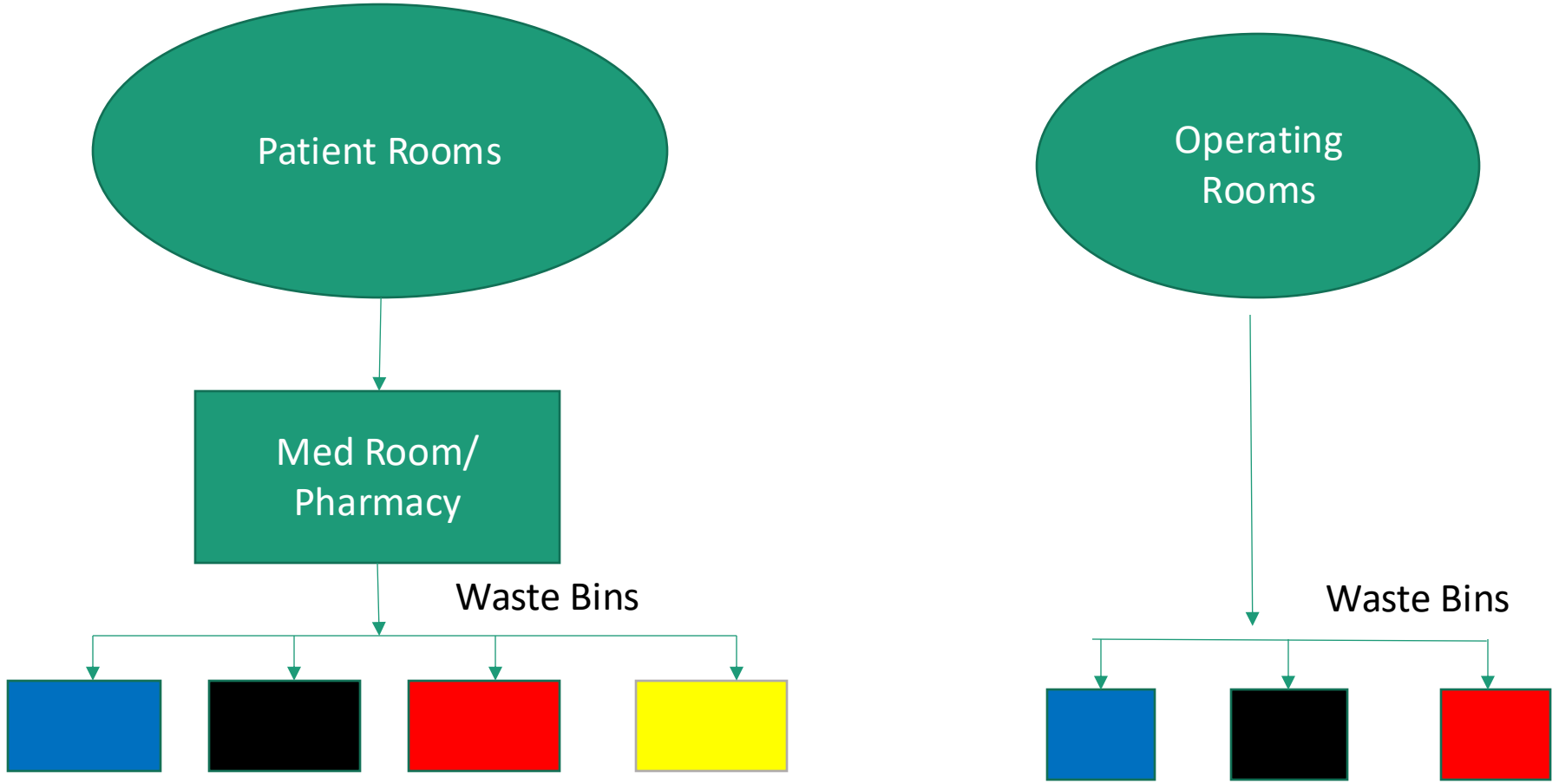
Pharmaceutical wastes (Continued)

Do you know what meds are hazardous waste when disposed/spilled/opened?

- In the Pharmacy, what do you do with expired and undispensed meds?
- Do you accept meds back from patients for disposal?
- Do you accept meds back as donations? What do you do if the donated meds expire?
- What about small spills of liquid meds?
- What about unused or expired vaccines?
- Where are unused meds accumulated in patient rooms, operating rooms, emergency areas?
- Do you use controlled substances?

Does anyone put wastes down the drain? Hope not!

Accumulation of Pharmaceutical Waste in Hospitals



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The Bottom Line:

- The hazardous waste regulations, including the Hazardous Waste Pharmaceuticals rule, are numerous and complex

- The only way to be successful in complying with the many hazardous waste rules is to **ensure proper processes and procedures are in place** with **strong communication** mechanisms, particularly in hospitals with so many locations where a hazardous waste can be generated.

    - We'll discuss these issues in one of our later webinars

Questions for the presenters?

- Jim O'Leary, Environmental Specialist – james.oleary@deq.virginia.gov

- Lisa Ellis, Hazardous Waste Compliance Coordinator – lisa.ellis @deq.virginia.gov

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References

Here are two great references that give a great background on RCRA and provide details on Subpart P application at a variety of facilities.

- A 10-Step Blueprint for Managing Pharmaceutical Waste in US Healthcare Facilities:

https://www.epa.gov/system/files/documents/2022-10/10_step_blueprint_guide_final_9-22.pdf

- Managing Your Hazardous Waste: A Guide for Small Businesses:

https://www.epa.gov/hwgenerators/managing-your-hazardous-waste-guide-small-businesses

EXTRA SLIDES NOT USED IN PART 1 PRESENTATION

Doesn't work here

This is an example of great signage! It provides detailed information at the point of generation. This is the best way to best ensure compliance.

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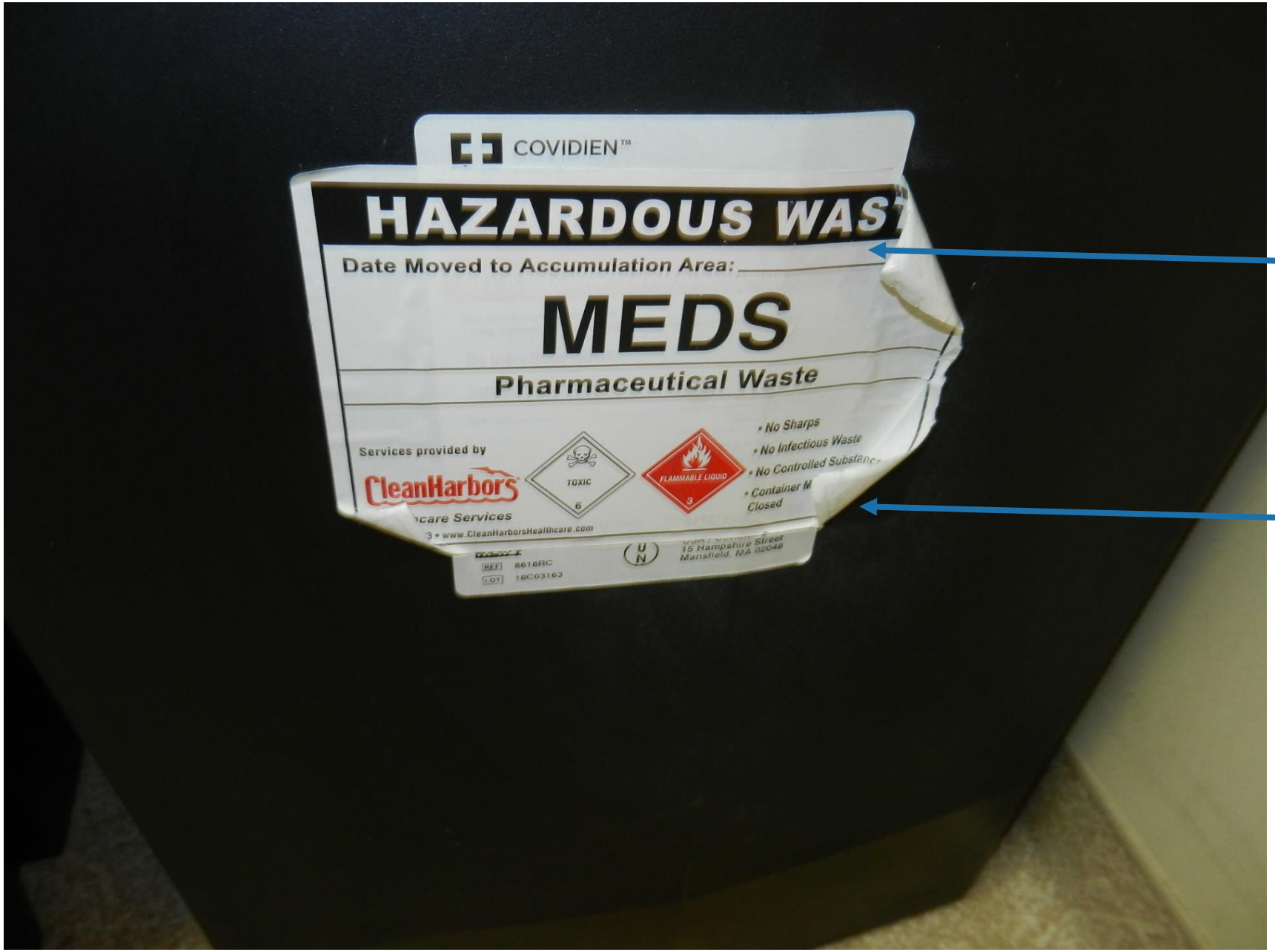
Guess the potential Subpart P violations in the following photos of actual HCF



AND…This label actually does not say “Hazardous Waste Pharmaceuticals”

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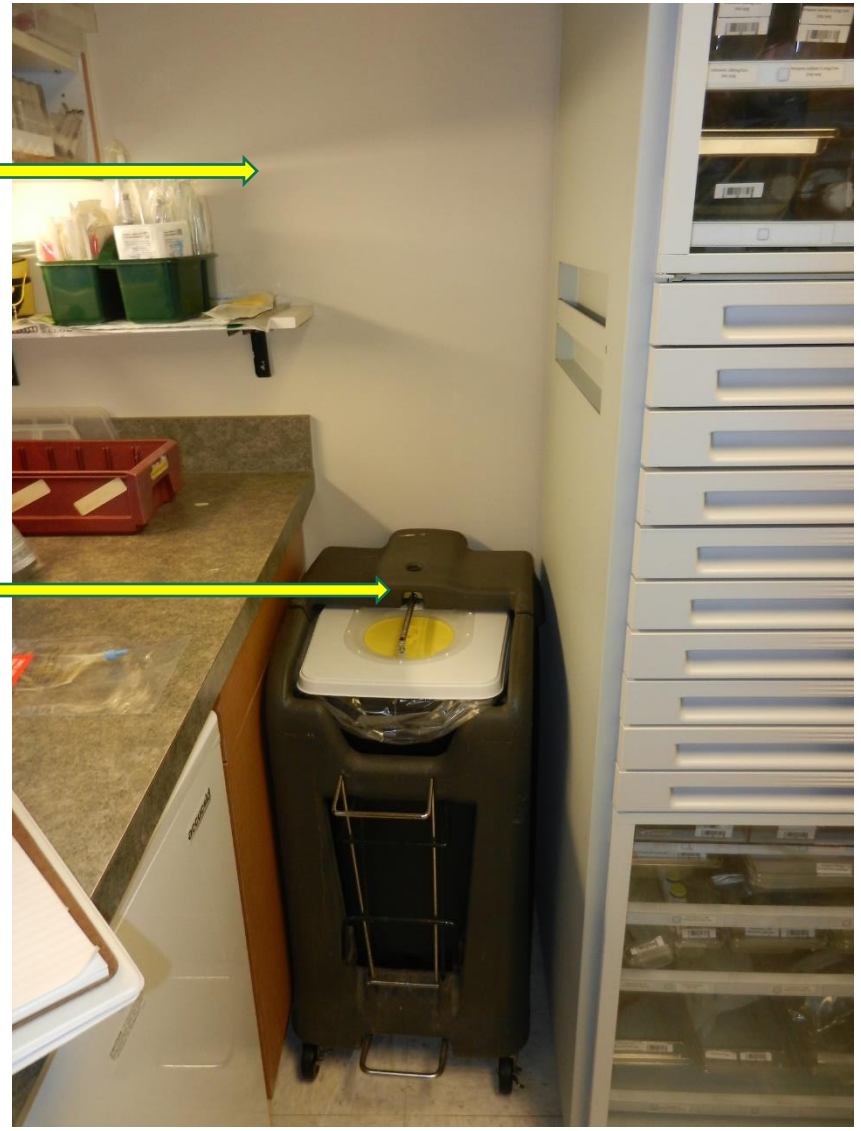
A sign here would also be helpful to prevent non-compliance.

We can’t see a label or a date on this container



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Not only is this container open, but there's a lot inside that isn't a pharmaceutical waste

Do you know the definition of an empty container and how to manage them?

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How do we assess your level of compliance?

Where do we start?

Chris, I copied this slide and the next 4-5 slides and put them in our Part 5 webinar

With respect to your hospital: This and next 2 slides Moved to Part 5

- Does your hospital have a list/inventory of all chemicals that it uses, such as pharmaceuticals, chemicals used in laboratories, patient and operating rooms, supporting facility maintenance operations, etc.?

- Does your hospital have a process in place to continually update and maintain this inventory to account for changes, such as the introduction of new pharmaceuticals, or discontinued pharmaceuticals, as well as other types of chemicals used in its operations?

With respect to your hospital (Continued)

- Does your hospital know which pharmaceuticals and other chemicals used on site may become hazardous wastes upon disposal? What was the source of that information? Is it reliable? If so, did in-house staff develop this list? Pharmaceutical and other chemical suppliers? Both?
- Does your hospital have in place the necessary processes and procedures, such as signage, for describing what:
  - **nurses, pharmacists, etc.** should do with discarded pharmaceuticals, and other chemicals that may become hazardous wastes when disposed?
  - **laboratory technicians and diagnosticians** for wastes generated as part of laboratory testing operations?
  - **doctors and other medical staff** handling patient and chemical wastes?
  - **facility maintenance staff** handling used lamps and batteries?

With respect to your hospital (Continued)

- Do you and your facility staff, particularly those that handle and manage pharmaceuticals and other chemicals, understand the RCRA hazardous waste identification rules and how they may affect healthcare facility operations, i.e., whether your hospital may be generating a hazardous waste? Is there at least **one person at your facility that has the necessary RCRA training appropriate for the types and amounts of hazardous waste your hospital generates?** Can you identify those on your staff in need of training?

- Is periodic training provided to all pertinent staff (pharmacists, nurses, doctors, maintenance staff) to help them either be aware of or safely manage wastes that are hazardous when no longer needed, discarded, disposed?

If the answer to any of these questions is no, then you are in luck! DEQ has created two additional webinars to help your facility identify and properly managed your hazardous wastes. Stay tuned!

DRAFT

Looking forward to Part 2 of our webinar series:

Identifying and Managing RCRA Hazardous Wastes

Chris, I don't think we need this slide and Slides 42- 47

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Top Inspection Violations by Order of Importance

DRAFT

1. **Waste Identification** (Sin of Omission)

2. **Employee Training** (Sin of Commission)

3. **Container Management** (Sins of Commission)
   - Marking and Labeling
   - Closed containers
   - Weekly inspections (if SQG or LQG)

4. **Universal Waste Lamps** (Sins of Commission)
   - **Waste identification**
   - Packaging
   - Labeling
   - Dating date waste was generated
   - Crushing lamps

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

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

- Can potentially lead to adverse impacts on human health and the environment

- Can also lead to being cited as being in violation of other applicable regulations, only compounding the problem.

So you have generated a hazardous waste. Now what? I'd move to next webinar. We seem to be jumping around too much

DRAFT

What rules must you comply with?

How do you determine what rules to 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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Hazardous Waste Counting Process (Same here. Move to next webinar)

Generators required to count monthly

Generator Category	Quantity of non-acute HW per calendar month
VSQG	≤ 100 kg (~220 lbs)
SQG	> 100 kg and < 1,000 kg (~2,200 lbs)
LQG	≥ 1,000 kg (~2,200 lbs)

Note: This is a simplified table. Counting volume of hazardous waste also involves counting any acute hazardous waste generated as well as any residues from cleanup of acute HW per calendar month**. Generating more than 2.2 pounds of acute HW or 220 pounds of acute residues from cleanups results in facility becoming an LQG**

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2. Employee Training (I moved up in Problem section)

- 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, your facility will almost always be out of compliance with the applicable regulations.**

In Summary (I'd address in next webinar)

All generators of hazardous waste must do the following:

(1) Identify all the hazardous wastes a facility may generate – never an easy process!
(2) Determine your facility's generator category by "counting" the volume or quantity of hazardous waste, and type (i.e., acute and non-acute) generated in a calendar month
(3) Ensure that all hazardous wastes are managed properly on-site by complying with the applicable regulations for your generator category
(4) Ensure that any hazardous waste sent off-site are treated and disposed of appropriately by complying with the applicable regulations for your generator category, **and for healthcare facilities in particular**
(5) Ensure you comply with the relevant requirements of the **Hazardous Waste Pharmaceuticals Rule**

Examples of Pharmaceuticals that are P-Listed Hazardous Waste When Discarded

Pharmaceutical	Use	RCRA Waste Code
Arsenic trioxide	Chemotherapy	P012
Phentermine (CIV)	Weight loss/anoretics	P046
Epinephrine base*	Asthma	P042
Physostigmine	Glaucoma	P204
Warfarin >.3%	Heart disease - Blood clots	P001
Nitroglycerine**	Angina – Heart	P081

*Epinephrine salts excluded from regulation as hazardous waste.
Instead manage as regulated medical waste

**Weak medicinal nitroglycerine also excluded from regulation.

Up Next: Part 2 – Understanding the hazardous waste identification and waste management regulations

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Types of potential hazardous wastes at a HCF

Can you associate with any of the wastes identified below with your position at your facility?

- Prescription Medications/ Chemo Waste
- Lab wastes
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- Spill Clean up
- Fluorescent Lamps – Bulbs and Crushed Bulbs
- Expired Hand Sanitizers

Any other wastes we may have missed?

Types of Regulated Medical Waste

Contaminated sharps (Needles, etc.)

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Human Blood & Body Fluids

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And ANY solid waste suspected by the health care professional in charge of being capable of producing infectious disease in humans

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