



2020 Department of Energy Analytical Services Program
Virtual Training Workshop Series

RCRA Laboratory Overview

Outline

- DoD/DOE Quality Systems Manual Assessment RCRA Related Findings
- Regulatory Framework
- Your Responsibilities as a Hazardous Waste Generator
- Categories of Generators: Large Quantity, Small Quantity and Very Small Quantity Generators (LQG, SQG and VSQG)
- Defining Solid Waste and Hazardous Waste
- Counting Hazardous Waste Quantities Generated Monthly
- Satellite Accumulation Points
- Large Quantity Generator Requirements
- Comparison of Requirements for Each Generator Type

DoD/DOE Quality Systems Manual Assessment RCRA Related Findings

- Waste characterization issues
- Records of waste disposal
- Retention of records
- Accumulation of waste in excess of the 55 gallon limit
- Labeling of wastes at the accumulation point
- Container condition-related
- Equipment (spill response and emergency response)-related
- Training-related

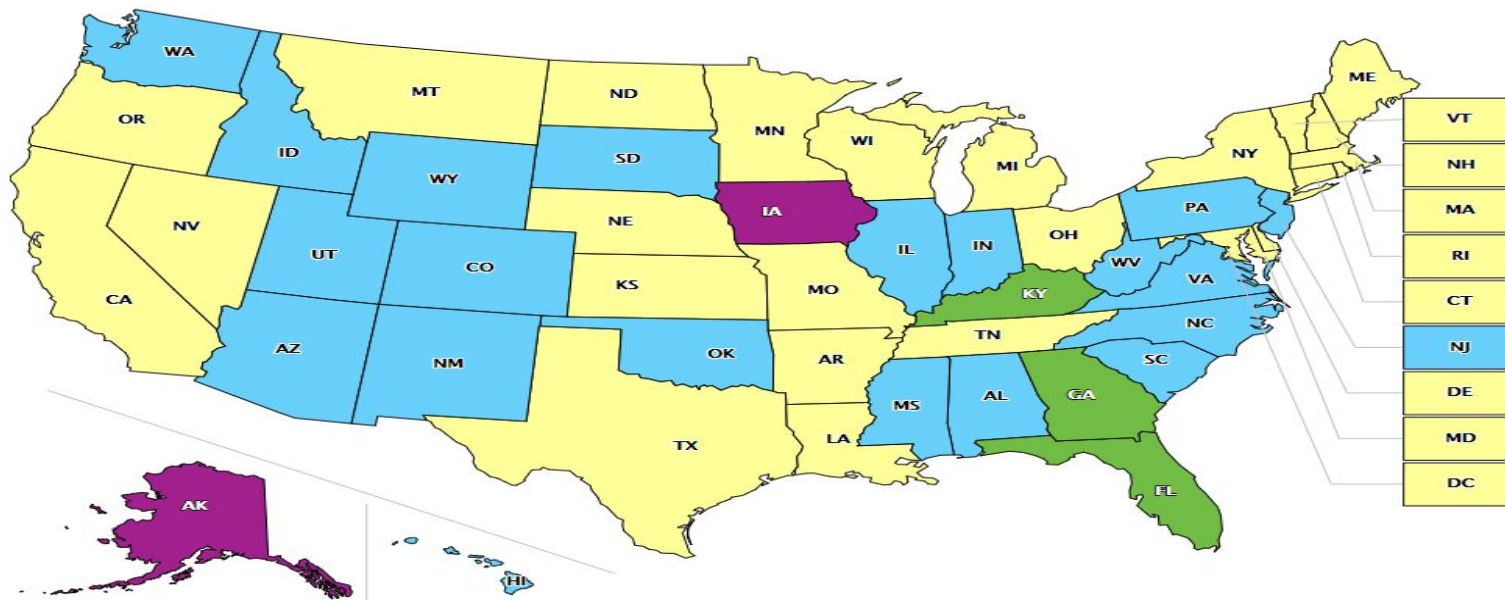
Regulatory Framework

- All of the federal hazardous waste regulations are located in Title 40 of the **Code of Federal Regulations (CFR)**, Parts 260 to 299 (www.ecfr.gov).
- Regulations most relevant for hazardous waste generators can be found in Part 262.
- Fundamentally, the regulations have a management component and a recordkeeping component.
- Note, these are regulations in the Code of Federal Regulations (CFR). Noncompliance with regulations can have consequences.
- Compliance with generator requirements exempts one from the need to comply with the much more burdensome storage requirements (40 CFR Part 264).

Hazardous Waste Generator Categories

- 40 CFR defines three categories of generators based on the quantity of hazardous waste generated per month.
- The category you fall into determines what requirements you must comply with:
 - **Very small quantity generators (VSQGs)**, which generate less than 100 kilograms (kg) or 220 pounds (lbs) per month. (1/2 a drum).
 - **Small quantity generators (SQGs)**, which generate between 100 and 1,000 kg (220 and 2,200 lbs) per month (5 drums).
 - **Large quantity generators (LQGs)**, which generate more than 1,000 kg (2,200 lbs) per month or more than 1 Kg/month of acute hazardous waste. (more than 5 drums).

Generator Improvements Rule-Effective July 2019: Be aware of your host State's adoption of the rule



Blue=adopted
Yellow=neither adopted nor authorized
Green=authorized
Purple= administered by EPA

Last updated on February 18, 2020

In general, States must adopt more stringent regulations but can opt to adopt less stringent regulations

Examples of more stringent regulations:

- SQG re-notification
- Identifying hazards of wastes being accumulated & labeling
- Notification of facility closure
- Closure as a landfill for LQGs accumulating hazardous wastes in containers that cannot meet closure performance standards
- Biennial reporting for whole year, not just months the SQG was an LQG
- Biennial reporting for recyclers who don't store prior to recycling
- Quick Reference guide for contingency plans

Examples of less stringent regulations:

- VSQG consolidation
- Episodic generation (you can generate waste in episodes that don't change your generator category from VSQG or SQG)
- Waiver from 50-foot rule (ignitable waste placement in relation to property line)

First Steps

- Do we generate solid waste (hazardous waste is a subset of solid waste)?
- Do we generate hazardous waste?
- If we do generate hazardous waste, how much hazardous waste do we produce in one month?
- Determine which generator category you fall into (VSQG, SQG, LQG- see above) to learn the management requirements that apply to you.

Defining a Solid Waste/Hazardous Waste

- A solid waste is any material which is considered inherently waste-like or is disposed of, burned, incinerated, sham recycled, accumulated before or in lieu of being disposed of, is used in a manner constituting disposal or is accumulated speculatively.
- Examples from a lab setting:
 - Spilled chemicals including spillage that builds up in glove boxes or around balances or on the outside of bottles
 - Unknown chemicals
 - Chemicals one does not plan to use because of an expired shelf life

Types of Hazardous Waste: 1) Characteristics and/or 2) Listed Hazardous Waste

Characteristic Waste

- **Ignitable**- having a flash point of less than 140 o F (60 C) or defined as an oxidizer, or burns easily (such as metal dusts, chemically contaminated filter paper, etc)
- **Corrosive**- having a pH<2.0 or >12.5, or corrodes steel at a rate at a rate of 0.25 inches per year, or burns human tissue
- **Reactive**- unstable, reacts violently w/ water, generates toxic gases, vapors, or fumes, and/or explosive
- **Toxic**- having failed the toxic characteristic leaching procedure (TCLP),
 - **Examples:** Arsenic (5 mg/L), Barium (100 mg/L), Benzene (0.5 mg/L)

Listed Hazardous Waste

- **F-List waste**, (hazardous waste from non-specific sources that are activity-related like spent degreasing solvent);
- **K-List waste** , (hazardous waste from industry specific sources like distillation bottoms from aniline production);
- **U-List waste**, Discarded off-specification commercial chemical products which are referred to as “Toxic waste”; and,
- **P- List waste**, Discarded off-specification commercial chemical products which are referred to as “Acute toxic waste”.

Examples of Liquid Waste from a Laboratory that Could be Considered Hazardous Waste

- Liquid solvent waste
- Liquids associated with [HPLC](#) analyses
- [Sample vials](#) containing liquids for digestion, extraction, or preservation
- Biological specimens in preservatives (Formalin, formaldehyde, paraformaldehyde, alcohol, etc.)
- Unused portions of laboratory reagents which are no longer needed
- Laboratory reagents which have been left behind or abandoned by previous users of the lab

Generator Requirement to Perform the Hazardous Waste Determination

- The determination can be made by testing or using process knowledge.
- The determination must be made at the point of generation.
- Waste “counting:”
 - **Do count waste** accumulated before disposal. Wastes packaged and transported away from your lab. Waste placed directly in a disposal unit at your place of business. Waste generated as **still bottoms** or **sludges** and removed from product storage **tanks**.
 - **Do not count waste** reclaimed continuously without storage before reclamation, waste managed in a wastewater treatment unit without being stored first, waste discharged to public owned treatment works regulated under the Clean Water Act and for a VSQG and SQG waste generated during an infrequent episodic event.

Satellite Accumulation Points

- In general, VSQGs, SQGs, and LQGs can make use of satellite accumulation points.
- Satellite accumulation points typically feed wastes to central accumulation points. These accumulation points must meet preparedness and prevention requirements.
- Containers in satellite accumulation areas must be in good condition, must be compatible with the waste being added to the container, must be kept closed and be marked with the words “hazardous waste” and the hazards of the contents.
- The total amount of waste that may be accumulated at a satellite area is limited to 55 gallons. Once the 55 gallon limit has been exceeded, you have to *date when the excess occurred* and then you have 3 calendar days to transfer the amount over the 55 gallon limit to your designated central accumulation area (also known as a 180 day accumulation point if a SQG or a 90 day accumulation point if a LQG).

Requirements for a Large Quantity Generator (LQG)

- Obtain an EPA Identification Number.
- Identify the hazardous waste you generate.
- Mark containers with the words “hazardous waste” and the hazards of the contents using a nationally recognized labeling system.
- Do not accumulate of hazardous waste on site for more than 90 days.



Requirements for a LQG (continued)

- Ensure delivery of your hazardous waste to a regulated treatment storage and disposal facility or a legitimate recycler.
- Wastes from a VSQG can also be delivered to a Large Quantity Generator under the control of the same person as the VSQG.
- That VSQG-LQG transfer must be preceded by a notice to the implementing agency.
- At least weekly, a LQG must inspect central accumulation areas.

Requirements for a LQG (continued)

- A LQG must have an internal communication or alarm system capable of providing emergency instruction.
- A device such as a telephone available capable of summoning emergency assistance from local entities.
- Portable fire extinguishers and water at adequate volume and pressure for fire suppression.
- Equipment must be maintained and tested to ensure proper operation.
- Aisle space for unobstructed movement of personnel and equipment must be maintained.

Requirements for a LQG (continued)

A LQG must have a formal training program to address waste characterization, waste handling and emergency response:

- Training to be completed within 6 months of the date of assignment
- Training to include procedures to inspecting, repairing and replacing response equipment; response to fires; shutdown
- A written description of the type and amount of training
- A written job description of positions to include requisite skill, education or other qualifications
- Records documenting training
- Records to be retained until closure of the facility
- Training records to be maintained 3 years from the date of last employ

Requirements for a LQG (continued)

A LQG must address Preparedness and Prevention regulations:

- Preparedness and prevention requirements can be addressed by having a plan to submit to participating authorities. Such a plan can be used to document that you have made an attempt to make arrangements with local authorities (emergency response teams, local hospitals etc. commensurate with your needs).
- One needs to maintain records documenting arrangements or otherwise documents that attempts were made but there was no response from the authorities.

Requirements for a LQG (continued)

- LCG must have a written contingency plan (how you would respond to an emergency) as well as address “preparedness and prevention” to include names and phone numbers of persons qualified to act as an emergency coordinator “this list must be kept up to date”.
- That plan must include a list of all emergency response equipment at the facility (like fire extinguishers, spill control equipment, communications systems and where the equipment is required. “The list must be kept up to date”.
- Must include an evacuation plan for generator personnel.
- Copies of plan to be submitted to local emergency responders.
- Per the generator improvement rule, generators must submit a quick reference guide in updates after May 2017 to include: amounts of hazardous waste present, unique exposure risks, a map of the generator accumulation area, a street map, the location of water supply, locations of notification systems.
- The contingency plan is to be reviewed and amended per regulatory triggers.

Requirement	Large Quantity Generators
<p>Accumulation Time Limits Determine amount of time hazardous waste is allowed to accumulate on site.</p>	<p>≤90 days §262.17(a)</p>
<p>Accumulation Requirements Manage hazardous waste in compliance with certain technical standards.</p>	<p>Full compliance for management of containers, tanks, drip pads or containment buildings §§262.17(a)(1)-(4)</p>
<p>Personnel Training Ensure appropriate personnel complete classroom or on-the-job training</p>	<p>Required §262.17(a)(7)</p>
<p>Contingency Plan and Emergency Procedures</p>	<p>Full plan required Part 262 subpart M (from §262.17(a)(6))</p>
<p>Preparedness and Prevention</p>	<p>Required Part 262 subpart M (from §262.17(a)(6))</p>

Requirement	Large Quantity Generators
<p>Air Emissions Control hazardous air emissions from tanks and containers</p>	<p>Required Part 265 subparts AA, BB and CC from §262.17(a)(1) and (2)</p>
<p>Land Disposal Restrictions Meet requirements for certifications, notifications, and waste analysis plans</p>	<p>Required Part 268 from §262.17(a)(9) (include the statement “This hazardous waste may or may not be subject to the LDR treatment standards. The treatment facility must make the determination.”)</p>
<p>Manifest Tracking hazardous waste shipments using the multiple-copy manifest -</p>	<p>Required Part 262 subpart B</p>
<p>Waste Minimization</p>	<p>Program in place required §262.27</p>
<p>Pre-Transport Requirements Package and label hazardous waste for shipment off site to a RCRA facility</p>	<p>Required §§262.30-262.33</p>
<p>Biennial Report Report data from off-site shipments</p>	<p>Required submit by March 1 of even numbered years §262.41</p>

Requirement	Large Quantity Generators
<p>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</p>	<p>Required §§262.42 and 262.43</p>
<p>Recordkeeping Maintain records of waste testing, manifests, biennial reports and exception reports.</p>	<p>Required, retain for 3 years §262.11(f) and §262.40</p>
<p>Facility Type Send off-site shipments to appropriate facilities for mgnt.</p>	<p>RCRA permitted/interim status facility- Parts 264/265, 266/267 and 270</p>
<p>Closure Close equipment, structures, soils and units by meeting specified performance standards and disposal and decontamination requirements</p>	<p>“Clean closure “ Required provide closure notification - General §262.17(a)(8)</p>

Additional Generator Requirements

- Ignitable waste must be kept 50' from the property line. However new generator improvements rule does allow exemption if agreed upon by emergency responders.
- Must submit quick reference guide to contingency plan to local emergency response authorities.
- SQG/LQG must notify EPA/State regarding status as generators SQGs must re notify EPA by September 1 using Form 8700-12 9 LQGs must re notify EPA by March 1 of each even-numbered year using Form 8700-12 as part of their biennial report.

Requirement	Very Small Quantity Generators	Small Quantity Generators	Large Quantity Generators
<p>Quantity Limits The amount of hazardous waste generated per month determines how a generator is categorized and what regulations must be complied with.</p>	<p>≤100 kg/month, and ≤1 kg/month of acute hazardous waste, and ≤100 kg/month of acute spill residue or soil §260.10</p>	<p>>100 and <1,000 kg/month §260.10</p>	<p>≥1,000 kg/month, or >1 kg/month of acute hazardous waste, or >100 kg/month of acute spill residue or soil §260.10</p>
<p>EPA ID Number that identifies generators by site.</p>	<p>Not required</p>	<p>Required §262.18</p>	<p>Required §262.18</p>
<p>On-Site Accumulation Quantity Determine amount of hazardous waste generators are allowed to "accumulate" on site without a permit.</p>	<p>≤1,000 kg or ≤1 kg acute hazardous waste or ≤100 kg of acute spill residue or soil §§262.14(a)(3) and (4)</p>	<p>≤6,000 kg §262.16(b)(1) (the intent is to allow sufficient accumulation to make up a shipment load)</p>	<p>No limit</p>

Requirement	Very Small Quantity Generators	Small Quantity Generators	Large Quantity Generators
Accumulation Amount/Time Limits Determine amount of time hazardous waste is allowed to accumulate on site.	No time limit/generate <100 kg/month	≤180 days or ≤270 days (if transporting greater than 200 miles)- §§262.16(b)-(d)	≤90 days §262.17(a)
Accumulation Requirements Manage hazardous waste in compliance with certain technical standards.	None	Basic requirements with technical standards for containers, tanks, drip pads or containment buildings- §§262.16(b)(2)-(5)	Full compliance for management of containers, tanks, drip pads or containment buildings-§§262.17(a)(1)-(4)
Personnel Training Ensure appropriate personnel complete classroom or on-the-job training	Not required	Basic training required §262.16(b)(9)(iii)	Required §262.17(a)(7)
Contingency Plan and Emergency Procedures	Not required	Basic planning required §§262.16(b)(9)	Full plan required-Part 262 subpart M (from §262.17(a)(6))
Preparedness and Prevention	Not required	Required-§262.16(b)(8)-(9)	Required-Part 262 subpart M (from §262.17(a)(6))

Requirement	Very Small Quantity Generators	Small Quantity Generators	Large Quantity Generators
Air Emissions Control hazardous air emissions from tanks and containers	Not required	Not required	Required Part 265 subparts AA, BB and CC from §262.17(a)(1) and (2)
Land Disposal Restrictions Meet requirements for certifications, notifications, and waste analysis plans	Not required	Required Part 268 from §262.16(b)(7)	Required Part 268 from §262.17(a)(9)
Manifest Tracking hazardous waste shipments using the multiple-copy manifest -	Not required	Required Part 262 subpart B	Required Part 262 subpart B
Waste Minimization	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	Only if required by the DOT or the state	Required §§262.30-262.33	Required §§262.30-262.33
Biennial Report Report data from off-site shipments	Not required	Not required (unless LQG quantity is generated for 1 month)	Required submit by March 1 of even numbered years §262.41 §262.41

Requirement	Very Small Quantity Generators	Small Quantity Generators	Large Quantity Generators
<p>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</p>	Not required	Required §§262.42(b) and 262.43	Required §§262.42 and 262.43
<p>Recordkeeping Maintain records of waste testing, manifests, biennial reports and exception reports.</p>	Not required	Required (except biennial reports) - §262.11(f) and §262.40(a) and (d)	Required retain for 3 years §262.11(f) and §262.40
<p>Facility Type Send off-site shipments to appropriate facilities for mgnt.</p>	Facilities noted in §§262.14(a)(5)	RCRA permitted/interim status facility- Parts 264/265, 266/267 and 270	RCRA permitted/interim status facility- Parts 264/265, 266/267 and 270
<p>Closure Close equipment, structures, soils and units by meeting specified performance standards and disposal and decontamination requirements</p>	Not required	Required for tanks, drip pads and containment buildings-- Tanks only §262.16(b)(3)(vi)- Unit specific Part 265, subpart W and DD for drip pads and containment buildings	Required provide closure notification - General §262.17(a)(8) - Unit specific Part 265, subpart W for drip pads

A Note about Episodic Events for SQG and VSQG Categories

- Episodic generation allows generators to maintain their category if parameters are met:
 - One event per calendar year
 - One can petition for a second event
 - An event can be unplanned
 - EPA must be notified 30 days prior to a planned event or within 72 hrs of an unplanned event
 - Episodic event must be completed within 60 days
 - VSQG must obtain an ID #, label episodic waste containers, ID an emergency coordinator and maintain records
 - SQG must comply with SQG regulations and maintain records documenting the episodic event

Resources

- RCRA Online
 - <https://rcrapublic.epa.gov/rcraonline/>
- Generator Improvements Rule
 - <https://www.epa.gov/hwgenerators/final-rule-hazardous-waste-generator-improvements>
- General hazardous waste management practices
 - http://www.ehs.ufl.edu/programs/chemrad_waste/lab-chem-waste-mgmt/
- Managing hazardous waste a guide for small businesses
 - <https://www.epa.gov/hwgenerators/managing-your-hazardous-waste-guide-small-businesses>
- Hazardous waste regulatory summary
 - <https://www.epa.gov/hwgenerators/hazardous-waste-generator-regulatory-summary>

Questions

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