ADEQ's
Hazardous Waste Unit

Webinar: *Hazardous Waste Determination and Generator Status*
February 14, 2017

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- The Western Sustainability Pollution Prevention Network
- The Arizona Department of Environmental Quality

Webinar Agenda

10:00 AM	Webinar Overview
10:05	Presentation
10:50	Q&A
11:00 AM	Adjourn

Presented by: Ethan Leiter

ADEQ Waste Webinar: Hazardous Waste Determination and Generator Status

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ADEQ Arizona Department of Environmental Quality

Civil Rights Program Policy

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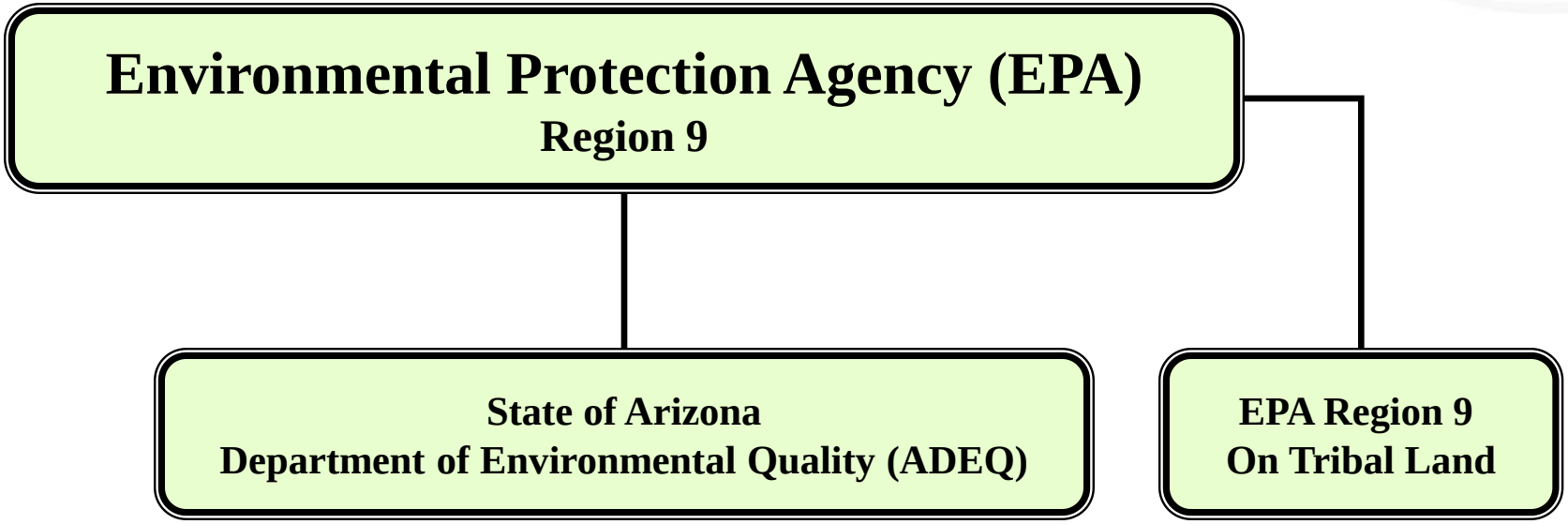
What is RCRA?

- Resource Conservation and Recovery Act (1976)
- 40 CFR § 260 – 40 CFR § 273
  - Subtitle C
- Federal program to manage hazardous waste from cradle to grave

Who Regulates RCRA in Arizona?



Types of Hazardous Waste Facilities

- Generators
  - Cause hazardous waste to exist
  - Cause hazardous waste to be regulated
- Transporters
  - Move hazardous waste off-site
- Treatment, Storage, and Disposal Facilities (TSDFs)
  - Treat, store, dispose of hazardous waste

Step 1 :

Identify Potential Hazardous Waste

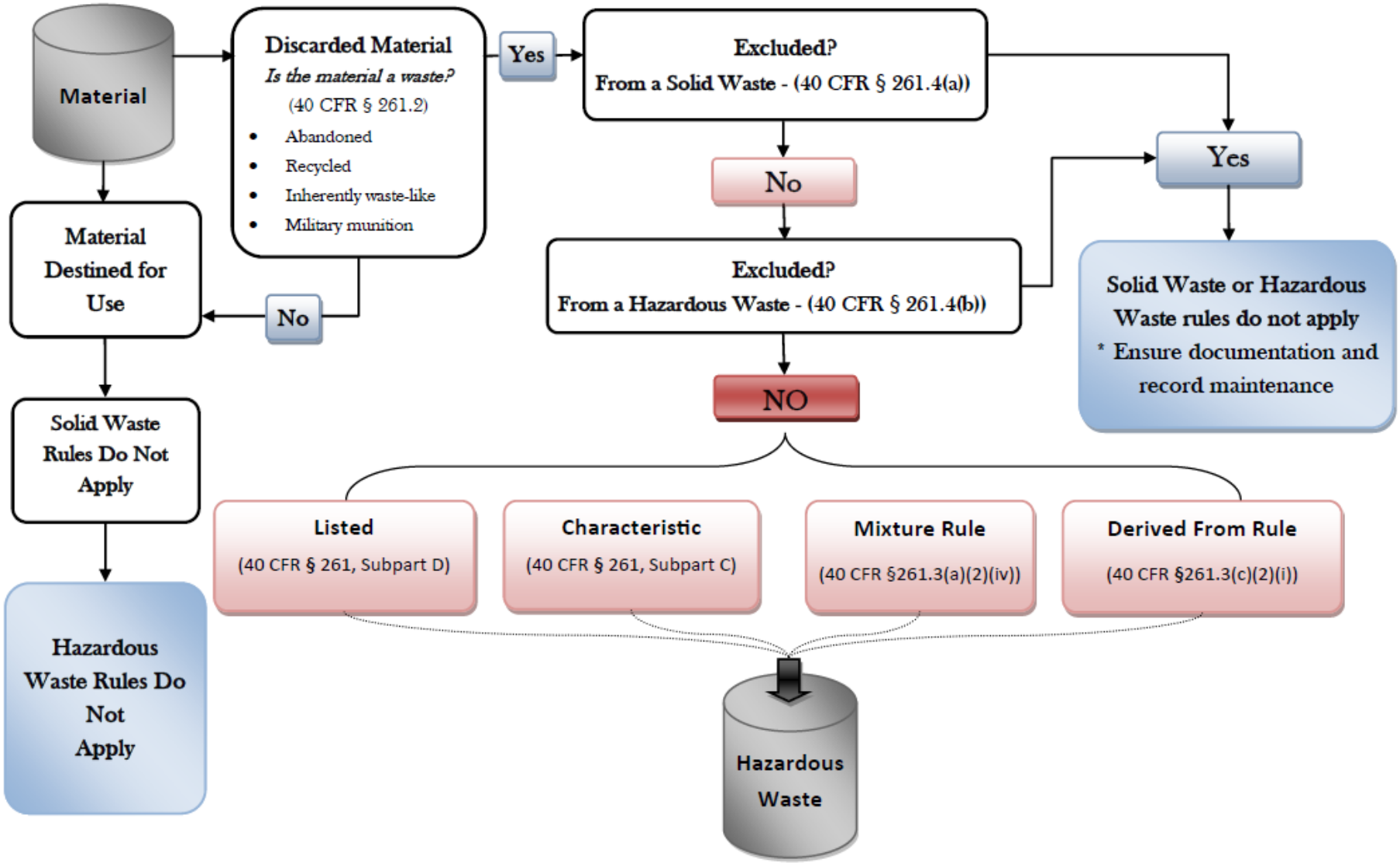
Generator must determine if the **material** is considered to be a **solid waste**

Topic: Waste Determination

- Ask yourself, “Is it a waste?” (at the point of generation)
  - Think of your facility and every type of product, material, and chemical that is on site, the processes they’re used in, and the outputs from the process.
  - Wastes are generally thought to be generated as an output from a process.
  - BUT WASTES CAN BE GENERATED AT ANY POINT.

INPUTS → PROCESS → OUTPUTS

Tips for Compliance: Waste Determination



http://www.azdeq.gov/environ/waste/hazwaste/download/steps_1.pdf

1. Determine if the material is a solid waste

a) Abandoned (40 CFR § 261.2(b))
   - Disposed, incinerated or burned, treated (but not recycled) or stored before being disposed*

b) Recycled in certain ways (40 CFR § 261.2(c))

c) Inherently waste-like materials (40 CFR § 261.2(d))

d) Military munitions

2. Is it excluded?

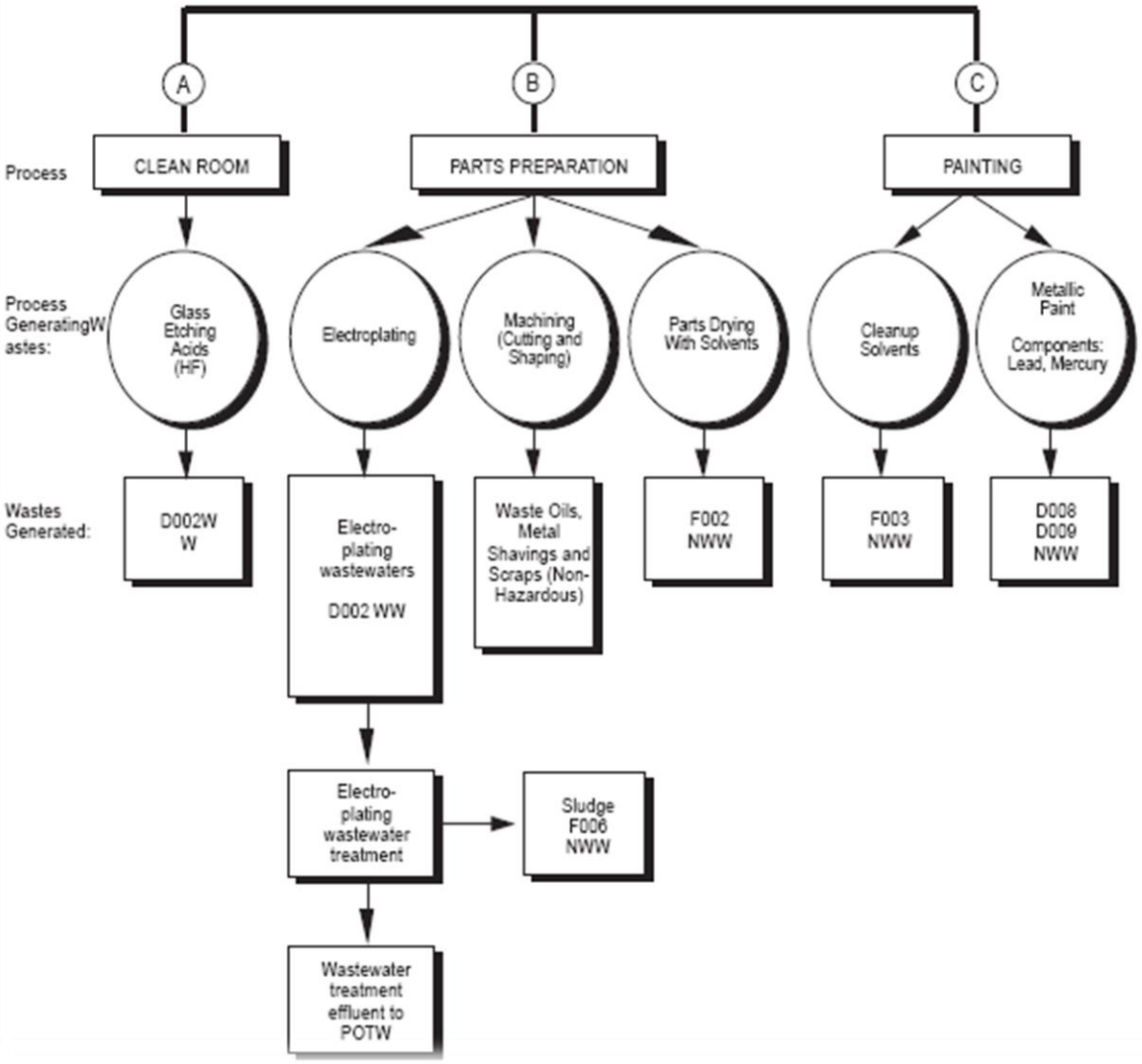
a) From a solid waste: 40 CFR § 261.4(a)

b) From a hazardous waste: 40 CFR § 261.4(b)

**If you no longer have a use for it and you will be disposing of it*

Tips for Compliance: Waste Determination

FIGURE 4-1
Thompson Manufacturing, Inc.
Waste Generation Scenario



Tips for Compliance: Waste Determination

TABLE 4-8
Thompson Manufacturing, Inc.
Identification/EPA Classification Of Hazardous Wastes Generated

①	②	③	④	⑤	⑥		⑦	⑧	
WASTES GENERATED	PROCESS GENERATING THE WASTE	BASIS FOR HAZARD CLASSIFICATION	EPA WASTE CODE	HAZARDOUS PROPERTIES OF WASTES	LDR		CHEMICAL ANALYSIS [1]	LDR TREATMENT	
					NWW	WW	Original Waste	Treatment Standard[2]	Designated Treatment Facility
Solvent waste	Parts preparation	Knowledge/testing	F002	Toxic	X		45% Trichlorofluoromethane	33	Sparky Incinerator
Waste water treatment sludge	Electroplating	Knowledge/testing	F006	Toxic, potentially reactive	X		CN 170 Cd 210 Cr 1,500 Pb 580 Ni 1,100 Ag <DL[5]	CN (total)[3] CN (amenable)[4] Cd 0.066 Cr 5.2 Pb 0.51 Ni 0.32 Ag 0.072	Solid Stabilization
Paint cleanup solvent waste	Painting process	Knowledge/testing	F003	Ignitable	X		Pure Acetone	160	Sparky Incinerator
Paint sludge	Painting process	Testing	D008, D009	Toxic	X		Pb 460 Hg 120	Pb 5 Hg 0.2	Solid Stabilization
Glass etching waste	Clean room operation	Testing	D002	Highly corrosive pH = 1.2		X	35% HF pH = 1.2	Deactivation	Corrosive Neutralization

[1] Represents the highest values detected in 30 samples. The values reported for metals are for the TCLP extract in mg/l. The values reported for other parameters are from total waste analysis in mg/kg.
[2] This standard must be achieved to meet LDR treatment standards, if applicable. The LDR treatment standards for metals are for the constituent concentrations in the TCLP extract of the waste in mg/l. All other standards are the concentration in the total waste analysis in mg/kg.
[3] LDR treatment standard value for F006 in WWTP sludge is 590 mg/kg.
[4] LDR treatment standard value for F006 in WWTP sludge is 30 mg/kg.
[5] DL = Detection Limit (0.01 mg/l).

Generator must determine if a solid waste is also a hazardous waste

3. Is it a Hazardous Waste?

- Characteristic (D-listed) (40 CFR § 261.21-24)
- Listed (F-, K-, P-, U-listed) (40 CFR § 261.31-33)
- Mixture Rule (40 CFR § 261.3(a)(2)(iv))
- The Derived-from Rule (40 CFR § 261.3(c)(2)(i))

What Kind of Characteristics?

- Characteristic Waste
  - **Ignitable** (D001)
    - It is a liquid and has flash point less than 60ºC (140ºF)
    - Not a liquid but causes fire through friction, absorption of moisture or spontaneous chemical changes
    - Ignitable compressed gas
    - Oxidizer
  - **Corrosive** (D002)
    - pH ≤ to **2**
    - pH ≥ **12.5**
    - Corrodes steel at a rate greater than 6.35 mm per year
  - **Reactivity** (D003)
    - Normally unstable and readily undergoes violent change without detonating
    - Reacts violently with water or caustics (causing explosion, gases, or fumes)
    - Capable of detonation (explosives)

Characteristic (Continued)

- **Toxicity** (D004-D043)

Exhibits the characteristic of toxicity using the Toxicity Characteristic Leaching Procedure (TCLP) Test Method 1311

JUST REMEMBER…

TOXICITY

REACTIVITY

IGNITABILITY

CORROSIVITY

TABLE 1—MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

EPA HW No. [1]	Contaminant	CAS No. [2]	Regulatory Level (mg/L)
D004	Arsenic	7440–38–2	5.0
D005	Barium	7440–39–3	100.0
D018	Benzene	71–43–2	0.5
D006	Cadmium	7440–43–9	1.0
D019	Carbon tetrachloride	56–23–5	0.5
D020	Chlordane	57–74–9	0.03
D021	Chlorobenzene	108–90–7	100.0
D022	Chloroform	67–66–3	6.0
D007	Chromium	7440–47–3	5.0
D023	o-Cresol	95–48–7	[4] 200.0
D024	m-Cresol	108–39–4	[4] 200.0
D025	p-Cresol	106–44–5	[4] 200.0
D026	Cresol		[4] 200.0
D016	2,4-D	94–75–7	10.0
D027	1,4-Dichlorobenzene	106–46–7	7.5
D028	1,2-Dichloroethane	107–06–2	0.5
D029	1,1-Dichloroethylene	75–35–4	0.7
D030	2,4-Dinitrotoluene	121–14–2	[3] 0.13
D012	Endrin	72–20–8	0.02
D031	Heptachlor (and its epoxide).	76–44–8	0.008
D032	Hexachlorobenzene	118–74–1	[3] 0.13
D033	Hexachlorobutadiene	87–68–3	0.5
D034	Hexachloroethane	67–72–1	3.0
D008	Lead	7439–92–1	5.0
D013	Lindane	58–89–9	0.4
D009	Mercury	7439–97–6	0.2
D014	Methoxychlor	72–43–5	10.0
D035	Methyl ethyl ketone	78–93–3	200.0
D036	Nitrobenzene	98–95–3	2.0
D037	Pentrachlorophenol	87–86–5	100.0
D038	Pyridine	110–86–1	[3] 5.0
D010	Selenium	7782–49–2	1.0
D011	Silver	7440–22–4	5.0
D039	Tetrachloroethylene	127–18–4	0.7
D015	Toxaphene	8001–35–2	0.5
D040	Trichloroethylene	79–01–6	0.5
D041	2,4,5-Trichlorophenol	95–95–4	400.0
D042	2,4,6-Trichlorophenol	88–06–2	2.0
D017	2,4,5-TP (Silvex)	93–72–1	1.0
D043	Vinyl chloride	75–01–4	0.2

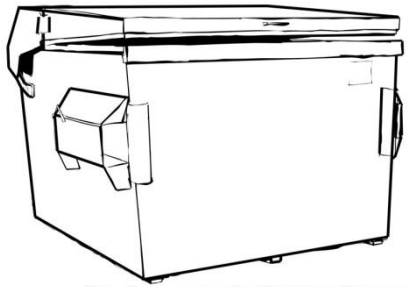
F, K, P, U Listed Waste

- F-Lists (Non-Specific Source Waste)
  - Manufacturing and industrial processes
- K-Lists (Specific Source Waste)
  - Iron and steel emission control dust/sludge
  - Some wastewater treatment sludges
- P and U Lists
  - Discarded Commercial Chemical Products & Off-spec species, residues, soil, debris, or spill residues Examples: pharmaceuticals & pesticides
  - P- List are Acutely Hazardous Wastes
    - More than 2.2 lbs (1kg) place you in LQG status

Mixture and *Derived-from* Rules

- **Mixture Rule**
  - Any mixture consisting of *listed hazardous waste* and any other *solid waste* is still considered to be a hazardous waste
- **Derived-from Rule**
  - Any waste generated from the treatment, storage, or disposal of a hazardous waste is also a hazardous waste

***Mixture* Rule**



- Any mixture consisting of *listed hazardous waste* and any other *solid waste* is still considered to be a hazardous waste
- The *listed* waste code then applies to the *entire* mixture
  - **Example**: If you take discarded aldrin, a P004 listed hazardous waste, and mix it with trash in a dumpster (a *solid* waste), then the *entire* mixture is now a *listed* hazardous waste with a P004 hazardous waste code.
- Unless, the waste was F-, K-, or U-*listed* ONLY because it exhibited ignitability (I), corrosivity (C), or reactivity (R), and the mixture no longer exhibits that characteristic.

***Derived-from* Rule**

WHAT IS THE DERIVED-FROM RULE?

- Any *solid* waste generated from the treatment, storage, or disposal of a *hazardous* waste is a *hazardous* waste.
  - There are exceptions (discussed in next slides)

WHY IS IT IMPORTANT?

- residue could be different from the original listed waste but the residue could be just as or even **more dangerous *(constituents and risks could even be more concentrated).***

***Derived-from* Rule**

EXAMPLES OF THE DERIVED-FROM RULE:

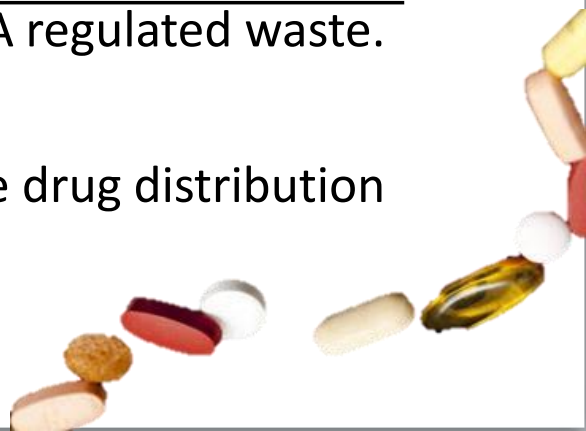
- Waste disposed in a landfill generates a **leachate;**
- What if you store a waste and it **solidifies**--is that still hazardous?;
- What if treating inside a container, remove the waste, but there's a **residue** leftover from the treatment? or
- What if you treat some waste, and generate a **sludge**?

A hazardous waste can stop being a hazardous waste if:

- A characteristic waste no longer exhibits a characteristic
  - If treating waste on-site to make non-hazardous, must comply with LDR standards.
- A listed waste is “delisted” through petition to EPA
- A listed wastes that was listed solely because it exhibited the characteristic of I, C, or R, and no longer exhibits the characteristic.

Examples of Non-RCRA Regulated Wastes

- **Household hazardous waste**
  - Not regulated per RCRA regulations
  - Take to a household hazardous waste collection center/event
  - Can be disposed as a solid waste'
  - See http://www.epa.gov/osw/conserve/materials/hhw.htm
- **Epinephrine (syringes only)** – So long as the contents of the syringes are not a characteristic hazardous waste - not considered to be a RCRA regulated waste. (See EPA RCRA Online guidance doc)
- **Nitroglycerin** – So long as the medical nitroglycerin does not exhibit the reactivity characteristic - not considered to be a RCRA regulated waste. (See EPA RCRA Online guidance doc)
- **Unused medication -** Unused tablets sent back to the drug distribution company for potential recycling (take back programs)
- **Used Oil**



Tips for Compliance: Waste Determination

- **Wastes can come from a variety of sources on your site.**
  For example:
  - Rinse waters in processes such as plating, product preparation/finishing, or battery, vehicle and equipment washing
  - Medical waste including expired, unused, or discarded pharmaceuticals, contaminated PPE, and some biohazardous and chemotherapy waste
  - Spent acetone stored before being recycled in a distillation unit
  - Spent x-ray cassettes containing toxic metals

Tips for Compliance: Waste Determination

- For example:
  - Excess material from a manufacturing process that is unusable and to be discarded (i.e. coatings, adhesives, metal shavings, overspray)
  - Commercial chemical products that may be off-specification, expired, or unusable to your facility, and should be discarded
  - Material being evaluated for reuse or recycle rather than for disposal (speculative accumulation, 40 CFR 261.1(c)(8))
  - Items mistaken for trash, such as PPE used to handle hazardous materials, solvent wipes, aerosol cans, old paint, filters, paint chips, lab disposables, cleaning products)

Tips for Compliance: Waste Determination

- Ask yourself, “Is it a waste?”
- List or catalogue your waste streams
- Know what a hazardous waste is
- Classify each waste in your list as haz/non-haz
- Keep supporting documentation on file (i.e. SDS, laboratory analysis, etc.) (required)
- Updated accordingly
  - Anytime your products/process change
  - ADEQ recommends to update profile every 3 years

Universal Waste

The goal of the universal waste regulations are to facilitate environmentally sound collection and proper recycling or treatment by providing an alternative set of hazardous waste management standards in lieu of regulation under *40 CFR Parts 260 through 272*.
Can be managed as Hazardous wastes under 40 CFR Part 261.

Universal Waste (40 CFR § 273)

Four Types of Universal Waste:

Lamps – Fluorescent, high intensity discharge, mercury vapor, neon, metal halide, high pressure sodium

Mercury containing equipment – Thermostats, switches

Batteries – lead-acid, others (also see Subpart G),

Pesticides

**Conditionally Exempt Small Quantity Generators have the option of managing universal waste under the § 261.5 regulations or as universal waste (§ 273.8)*

Determining Generator Status

Step 2: Counting Hazardous Waste

- 3 Generator Classes
- Waste determinations facilitate determining generator status (LQG, SQG, CESQG)

- How many drums is that?

TIPS

Substance	lbs. per gallon	lbs. per drum
Water	8.340	458.7
Lead	94.659	5,206.25
Methylene chloride	11.134	612.37
Acetone	6.605	363.275

This chart shows different weights per gallon and per drum.

KEY:*  = 55 gallon drum
= 440 pounds (water)
= 200 kg (water)

CONDITIONALLY EXEMPT SMALL QUANTITY GENERATOR (CESQG)

<1/2 drum or
<27.5 gallons or
<220 pounds or
<100 kg

Per calendar month

SMALL QUANTITY GENERATOR (SQG)

1/2 to 5 drums or
27.5 to 275 gallons or
220 to 2,200 pounds or
100 to 1,000 kg

Per calendar month

LARGE QUANTITY GENERATOR (LQG)

OR MORE

>5 drums or
>275 gallons or
>2,200 punds or
>1,000 kg

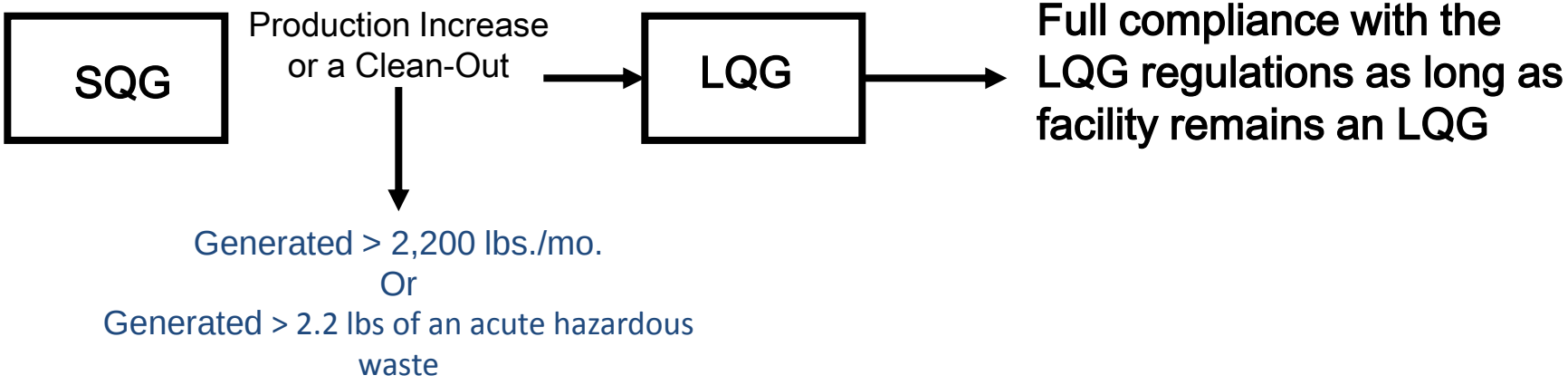
Per calendar month

**This is for guidance purposes only. Not all chemicals have the same density.*

Episodic Generators

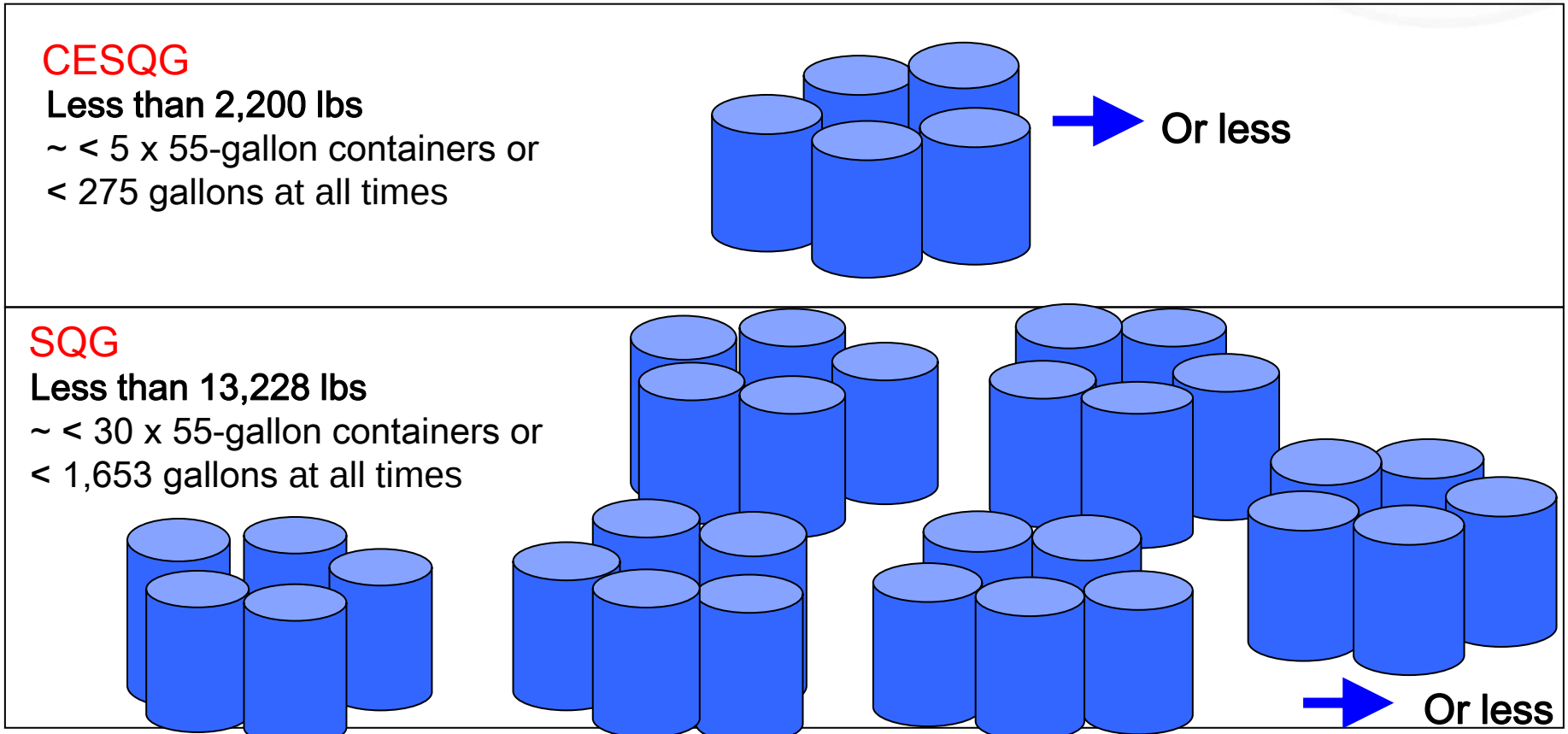
- Generation determined on a monthly basis
- If a generator goes up in status they remain that generator for the entire year
- Generator's status can change from month to month based on waste generated in a particular month
- Generator must comply with the respective regulatory requirements

Example



Generator Storage Limits

- CESQG: No Storage Time Limit <2,200 lbs. on-site at all times
- SQG: <180 days <13,228 lbs. on-site at all times
- LQG: <90 days No Storage Maximum Limit



Tips for Compliance: Generator Status

- Waste determinations facilitate determining generator status (LQG, SQG, CESQG)
- Keep a hazardous waste generation log

MONTHLY HAZARDOUS WASTE LOG

MONTH: YEAR:

***Note: Each time waste is discarded into the solid or liquid hazardous waste drum all waste MUST be weighed and dated onto this chart accordingly. Also drum straps must be secured at all times after waste is discarded.*

LIQUID WASTE (PERC)

NUMBER OF DRUM FILLS	DATE	WEIGHT (LBS)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
MONTHLY TOTAL		
MONTHLY AVERAGE		
PREVIOUS YTD TOTAL		
CURRENT YTD TOTAL		
CURRENT YTD AVERAGE		

SOLID WASTE (FILTERS)

NUMBER OF DRUM FILLS	DATE	WEIGHT (LBS)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
MONTHLY TOTAL		
MONTHLY AVERAGE		
PREVIOUS YTD TOTAL		
CURRENT YTD TOTAL		
CURRENT YTD AVERAGE		

Topic: On-Site Management

This depends on the facility's generator status.

CESQG SQG LQG

GENERATOR CLASS COMPARISON CHART			
	Conditionally Exempt Small Quantity Generator	Small Quantity Generator	Large Quantity Generator
Monthly Generation Rate	≤ 100 kg (220 lbs.) - or- ≤ 1 kg (2.2 lbs.) of Acute waste - or - ≤ 100 kg (220 lbs.) Acute residue, debris, soil	> 100 kg (220 lbs.) - and - ≤ 1000 kg (2,200 lbs.)	> 1000 kg (2,200 lbs.) -or - > 1 kg (2.2 lbs.) of Acute waste- or - > 100 kg (220 lbs.) Acute residue, debris, soil
Maximum Amount Stored	≤ 1000 kg (2,200 lbs.) of total (acute + non-acute waste) - or - ≤ 1 kg Acute waste (2.2 lbs.) - or- ≤ 100 kg (220 lbs.) Acute residue, debris, soil	≤ 6000 kg (~13,228 lbs.) total (acute + non acute waste) - or - ≤ 1 kg (2.2 lbs.) Acute waste - or - ≤ 100 kg (220 lbs.) Acute residue, debris, soil	**No Amount Limit** - but - < 20,000 kg (~44,100 lbs.) for F006 ~2 roll-offs 15 yds. each; ~1 standard 44,000 lb. truck load
Storage Time Limit	No Time Limit	≤ 180 days ≤ 270 days if greater than 200 miles to treatment, storage, disposal facility (TSDF) 30 day extension with prior ADEQ approval	≤ 90 days ≤ 180 days for F006 sludge when within 200 miles to TSDF 30 day extension with prior ADEQ approval
ADEQ Registration and Generation Fees	Not Required No Fees	$100 Annual Fee $67.50 Generation Fee per ton (* No more than $200,000/generator/yr./site/hazardous waste generated)	$300 Annual Fee $67.50 Generation Fee per ton (* No more than $200,000/generator/yr./site/hazardous Waste generated)
EPA ID Number	Not Required, but recommended	Required per 40 CFR § 262.12 (3010; 8700-12 form)	Required per 40 CFR § 262.12 (3010; 8700-12 form)
Facility Annual Report	Not required	Facility Registration Form for Hazardous Waste is the Facility Annual Report (FAR)	**Required Federal Long Form** [AAC R18-8 262.H] EPA Form 8700-13 due March 1st of the current year for generator waste activity for the previous year
RCRA Subtitle C	Site identification form required for any facility when initially registering with ADEQ or to update change to initial form (8700-12)		
Contingency Plan	Not Required	Basic Information posted by Phone	Full Plan Required (40 CFR §265 Subpart D)
Personnel Training	Not Required	Basic Training (40 CFR §262.34(d)(5)(iii))	Required (40 CFR §265.16)
Preparedness and Prevention	Not Required	Required (40 CFR §265 Subpart C)	Required (40 CFR §265 Subpart C)
Manifest	Not Required	Required [AAC R18-8-262.F & I]	Required [AAC R18-8-262.F & I]
Exception Report	Not Required	Required after **60 Days** (40 CFR §262.42(b))	Required after **45 Days** (40 CFR §262.42(a)(2))
Satellite Containers	Allowed	Allowed (40 CFR §262.34 (c)(1))	Allowed (40 CFR §262.34 (c)(1))
Storage Requirements	**Limited requirements**. Identify all hazardous wastes; comply with quantity limits; ship to approved solid or hazardous waste facility; do not discharge to soil/ water/air.	Comply with the technical standards under **40 CFR §265 Subpart I** for containers, except 265.176 (50 foot setback for ignitables) and 265.178 (air emissions). Comply with reduced **Subpart J** requirements for tanks.	Comply with the technical standards under **40 CFR Subpart I** for containers including air emission standards. Comply with full **Subpart J** requirements for tanks.
General Reference	40 CFR §25[illegible]	40 CFR §262.34(d)&(e)	**40 CFR §262.34(a)&(b)**

NEED HELP?

- Contact the HWICT for regulatory interpretations or Technical Assistance (TA) Meetings.
- Review the lists of major and minor violations found in the Compliance & Enforcement Handbook.
- Consult ADEQ or EPA website
- Look to your specific industry for tips on how to comply with the regulations.
- Call the HWICT for assistance!!!

Resources

- https://public.govdelivery.com/accounts/AZDEQ/subscriber/new
- **ADEQ Hazardous Waste's Website (inspection checklists)** http://www.azdeq.gov/environ/waste/hazwaste/index.html
- **Managing Hazardous Waste, a Handbook for Small Businesses (2014)** http://www.azdeq.gov/environ/waste/hazwaste/download/managehw.pdf
- **Fact Sheet: Managing Universal Waste Lamps for Businesses (2014)** http://www.azdeq.gov/environ/waste/hazwaste/download/ADEQ_FS-14-10.pdf

Questions?

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- Thank you!