Presented By: Berg Compliance Solutions

Summary of Industrial & Hazardous Waste Regulations Impacting TX Manufacturers

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Today's Agenda

We will be discussing:

- Why is it important?
- Definitions
- Generator Status
- Classifying Waste
  - Notification to TCEQ of Waste
  - Waste Determinations
  - Waste Codes
- Storage and Labeling of Waste
- Disposal of Waste
  - Manifests
  - Labeling Containers to be Shipped
- Important Recordkeeping

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Why Discuss Waste Management?

1) To properly dispose of waste from workplaces in order to conserve Texas environmental quality and, in turn, the health of Texans.

TCEQ Mission Statement:

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

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Why Discuss Waste Management?

Texas Commission on Environmental Quality

TCEQ

2) Regulatory Compliance with TCEQ Standards

Do you generate industrial and hazardous waste in Texas for treatment, storage and/or disposal???

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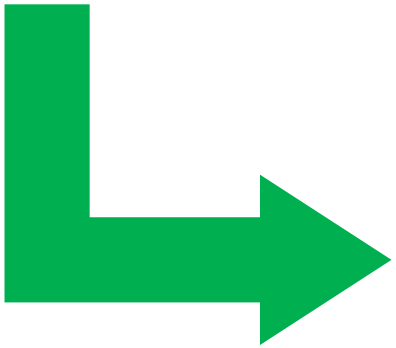
Definitions

- **Governing Bodies and Regulation:**
  - TCEQ
    - 30 Texas Administrative Code (TAC) Sections 335.501-.521 (Subchapter R)
    - Regulatory Guidance (RG)-022
    - 8-character Texas Waste Code
  - RCRA
  - "Cradle to Grave"

- **Waste Management**:
  - Waste Stream – Can be the accumulation of all waste from a site or a smaller subset of a type of waste coming from the site
  - Solid Waste
    - No longer be used for intended purpose
    - Will be disposed, reclaimed, or recycled
    - Can be hazardous/nonhazardous or industrial/nonindustrial (municipal)
  - Generator Statuses
  - Hazardous Waste
  - Nonhazardous Waste



Definitions – Waste Streams

IF you have WASTES that are …	AND they come from PROCESSES that are …	THEN the wastes are considered …
different	similar	**different** "waste streams"—for example, a sludge removed from an electroplating vat is not the same waste stream as a liquid removed from an electroplating vat.
similar	different	**different** "waste streams"—for example, methylene chloride used in a paint- stripping operation is not the same waste stream as methylene chloride used in laboratory analysis.
similar	similar	**the same** "waste stream"—for example, a site may have several paint booths that perform the same activities with the same materials, and each produces drop cloth waste. These drop cloth wastes, from the various locations at this site, could be considered one waste stream as long as they were all classified the same (for more on classification, see Chapter 3).
altered physically or chemically by treatment	N/A	**different** "waste streams"—for example, if a sludge is dewatered, it may produce two new waste streams, one a solid and the other a liquid.

Definitions - Industrial VS Non industrial

- **<u>Industrial Waste</u>**
  - Result from (or incidental to) operations of:
    - Industry
    - Manufacturing,
    - Mining,
    - Agriculture

- **<u>Nonindustrial Waste</u>**
  - Comes from sources such as:
    - Schools
    - Hospitals
    - Churches
    - Dry cleaners
    - Service stations
    - Labs serving the public

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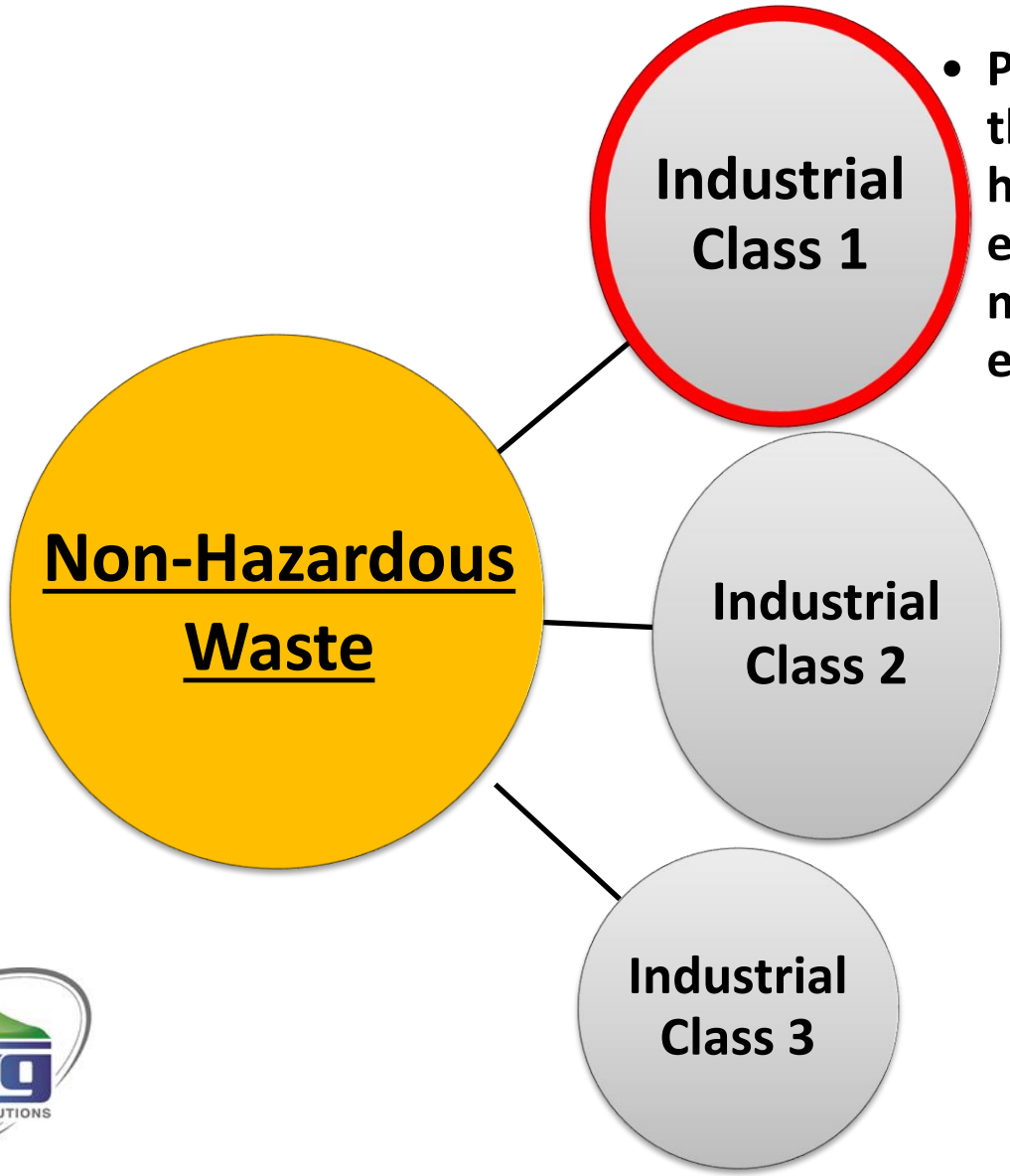
Definitions – Nonhazardous Waste



- **Potentially threatening to human health and the environment if not managed properly (eg. ethylene glycol)**

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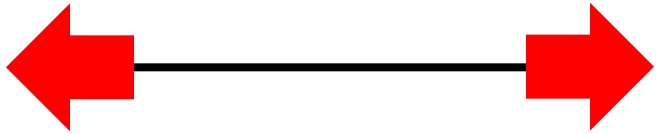
Definitions – Nonhazardous Waste

Class 1 Industrial Waste

- Contains polychlorobyphenyls (PCBs) >50 ppm;
- Contain total petroleum hydrocarbons (TPH) > 1,500 ppm;
- Regulated asbestos containing materials (RACM)

- 140°F 150°F

- Solids or semi-solids that when mixed with an equivalent amount of ASTM water, produce a solution with pH 2.0 pH 12.5.



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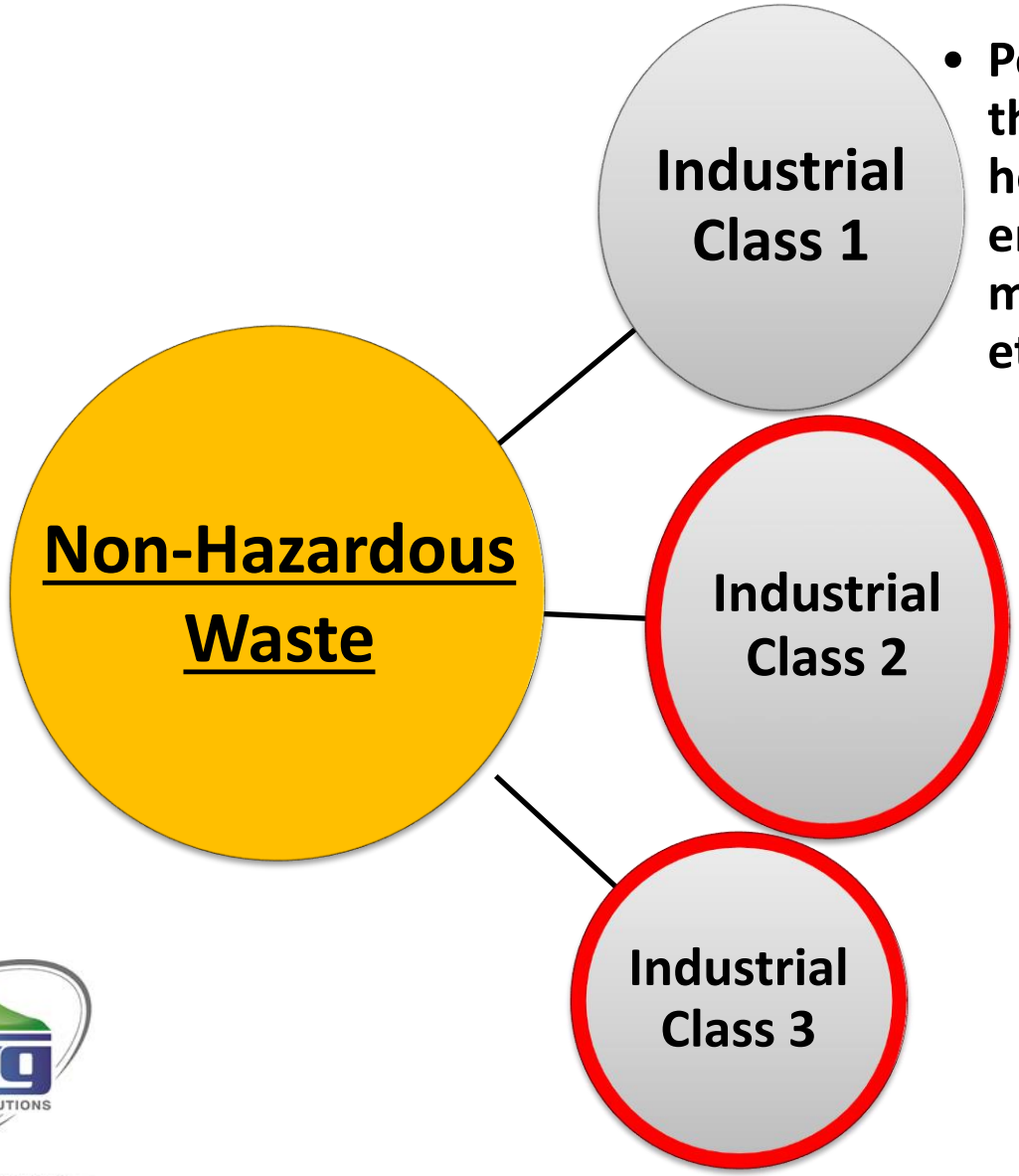
Definitions – Nonhazardous Waste



- **Potentially threatening to human health and the environment if not managed properly (eg. ethylene glycol)**

Definitions – Nonhazardous Waste

Class 2 Industrial Waste

- Empty containers < 5 gallons;
- Empty containers > 5 gallons, all residues removed (RCRA empty) and rendered unusable;
- Waste contaminated with < 50 ppm PBBs
- Waste contaminated with < 150 TPH
- Liquid waste with flash point > 65.6° (150°F).

Class 3 Industrial Waste

- Chemically inert
- Cannot be a liquid
- Does not decompose
- Essentially insoluble {30 TAC §335.507(4)}
- Not a hazardous or Class 1 waste

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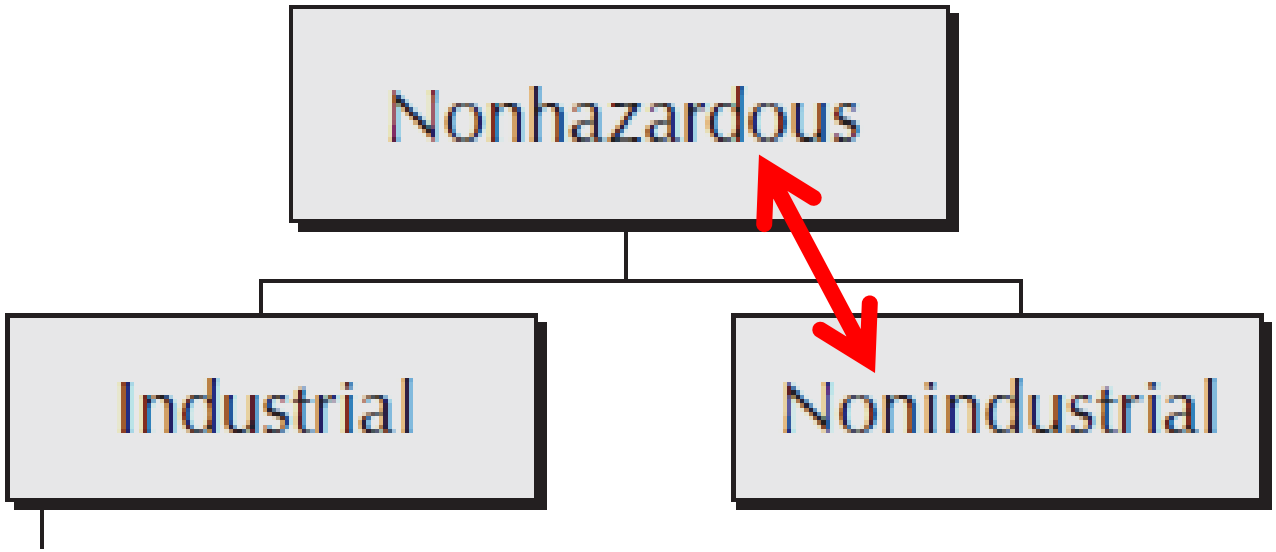
Exemptions



Nonhazardous + Nonindustrial waste =

EXEMPT FROM 30 TAC CHAPTER 335

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Texas Universal Waste (40CFRPart273)

Universal Waste - subcategory of hazardous waste that poses low risk to human health when handled and transported safe

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Texas Universal Waste (40CFRPart273)

Small Quantity-
Accumulates **< 5,000 kg** of waste at any time

Large Quantity-
Accumulates **> 5,000 kg** of waste at any time
** Retained through end of calendar year

General Requirements:

1. **Safe Handling Procedures**
2. **Labeling**
   - "UNIVERSAL WASTE – XXXX; ACCUMULATION START DATE"
3. **Training**
   - Background and Policy Information
   - Waste Accumulation/ Handling Procedures
   - Waste Handler Status
   - Shipping Policy
   - Waste Labeling Requirements
   - Response to Release Procedure
   - Procedures for Specific Universal Wastes
4. **Recordkeeping (minimum 3 years)**

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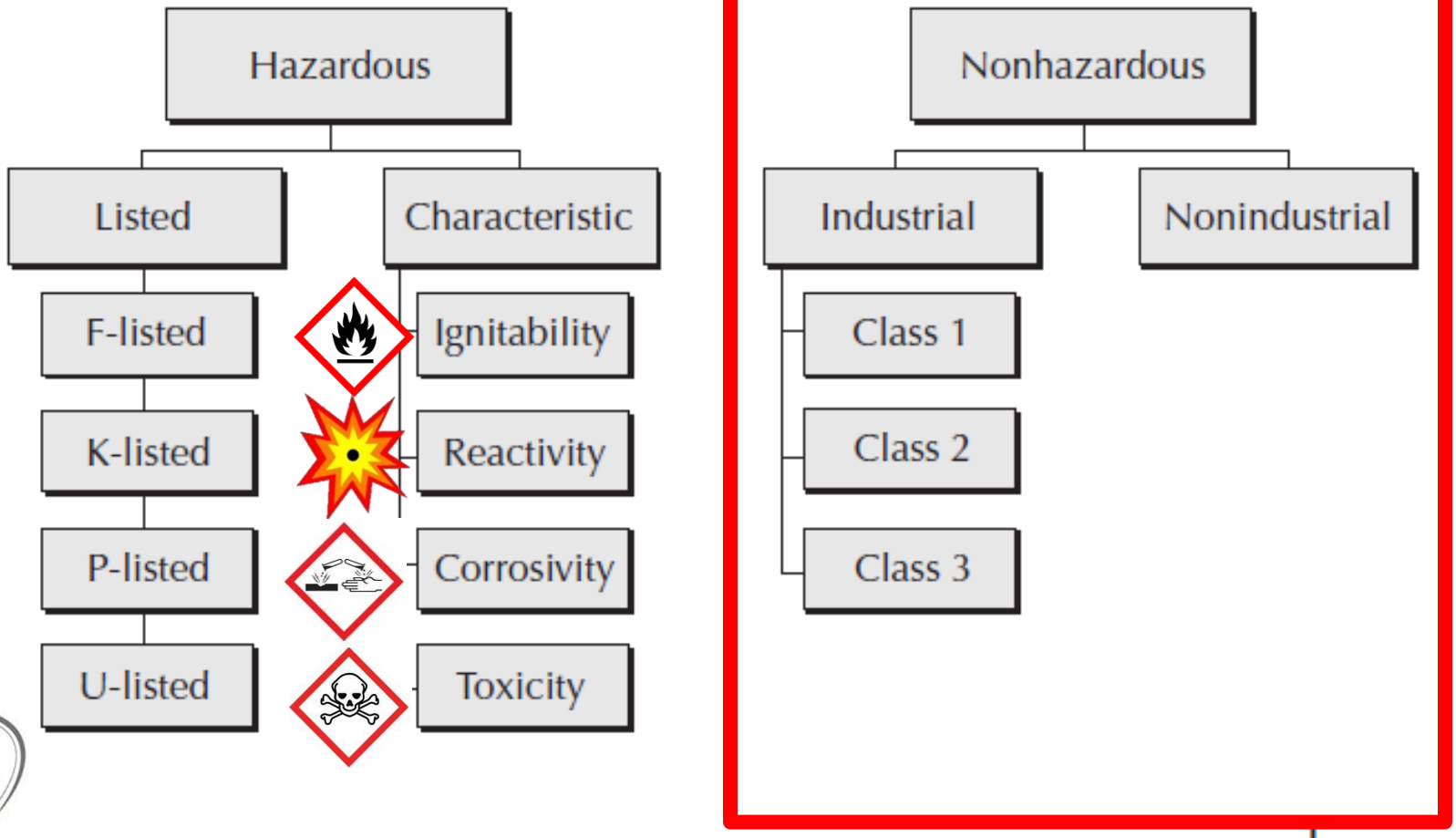
Hazardous Waste VS Nonhazardous Waste

Figure 1-1. Hazardous and Nonhazardous Wastes



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Definitions – Hazardous Waste

Hazardous Waste

Listed Waste

- **F List**
- **K List**
- **P List**
- **U List**

Characteristic Hazardous Waste

- **Ignitability** 
- **Reactivity** 
- **Toxicity** 
- **Corrosiveness** 

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Characteristically Hazardous Waste

Ignitable (D001)

- Liquid with flash point < 140° F
- Non-liquid that can readily catch fire under standard temp. & pressure
- Ignitable compressed gas

Corrosive (D002)

- pH ≤ 2.0 or pH ≥ 12.5
- Corrodes SAE 1020 steel at .25” or more/Year

Characteristically Hazardous

Reactive (D003)

- Normally unstable
- Reacts with water
- Generates toxic gas if exposed to water or corrosive materials

Toxic (D004 – D043)

- Toxicity Characteristic Leaching Procedure (TCLP)
- One or more constituents exceeds concentrations found in table 1 at Title 40 CFR Section §261.24, or Table 3-1 in RG-022.

Characteristically Toxic Waste

TCLP Regulatory Levels

Table 3-1. TCLP Regulatory Levels

arsenic —5.0 mg/l	1,4-dichlorobenzene — 7.5 mg/l	nitrobenzene — 2.0 mg/l
barium — 100.0 mg/l	1,2-dichloroethane — 0.5 mg/l	pentachlorophenol — 100.0 mg/l
benzene — 0.5 mg/l	1,1-dichloroethylene — 0.7 mg/l	pyridine — 5.0 mg/l
cadmium — 1.0 mg/l	2,4-dinitrotoluene — 0.13 mg/l	selenium — 1.0 mg/l
carbon tetrachloride — 0.5 mg/l	endrin — 0.02 mg/l	silver — 5.0 mg/l
chlordane — 0.03 mg/l	heptachlor (and its epoxide) — 0.008 mg/l	tetrachloroethylene — 0.7 mg/l
chlorobenzene — 100.0 mg/l	hexachlorobenzene — 0.13 mg/l	toxaphene — 0.5 mg/l
chloroform — 6.0 mg/l	hexachlorobutadiene — 0.5 mg/l	trichloroethylene — 0.5 mg/l
chromium — 5.0 mg/l	hexachloroethane — 3.0 mg/l	2,4,5-trichlorophenol — 400.0 mg/l
o-cresol — 200.0 mg/l	lead — 5.0 mg/l	2,4,6-trichlorophenol — 2.0 mg/l
m-cresol — 200.0 mg/l	lindane — 0.4 mg/l	2,4,5-TP (Silvex) — 1.0 mg/l
p-cresol — 200.0 mg/l	mercury — 0.2 mg/l	vinyl chloride — 0.2 mg/l
cresol — 200.0 mg/l	methoxychlor — 10.0 mg/l	
2,4-D — 10.0 mg/l	methyl ethyl ketone — 200.0 mg/l	

Definitions – Hazardous Waste

Hazardous Waste

Listed Waste

- **F List**
- **K List**
- **P List**
- **U List**

Characteristic Hazardous Waste

- **Ignitability** 
- **Reactivity** 
- **Toxicity** 
- **Corrosiveness** 

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Listed Hazardous Waste

Listed Wastes

F List (40 CFR 261.31)

- Non-Specific Sources (28 wastes)

- **COMMON**: benzene, carbon tetrachloride, methylene chloride, tetrachloroethylene, 1,1,1-trichloroethane, acetone, chlorobenzene, CFC's, cresols, MEK, methanol, xylene and toluene

K List (40 CFR §261.32)

- Manufacturing process waste from Industry-Specific Sources

- **COMMON**: wood preservation, pigment production, chemical production, petroleum refining, iron and steel production, explosive manufacturing, and pesticide manufacturing

P List (40 CFR §261.33)

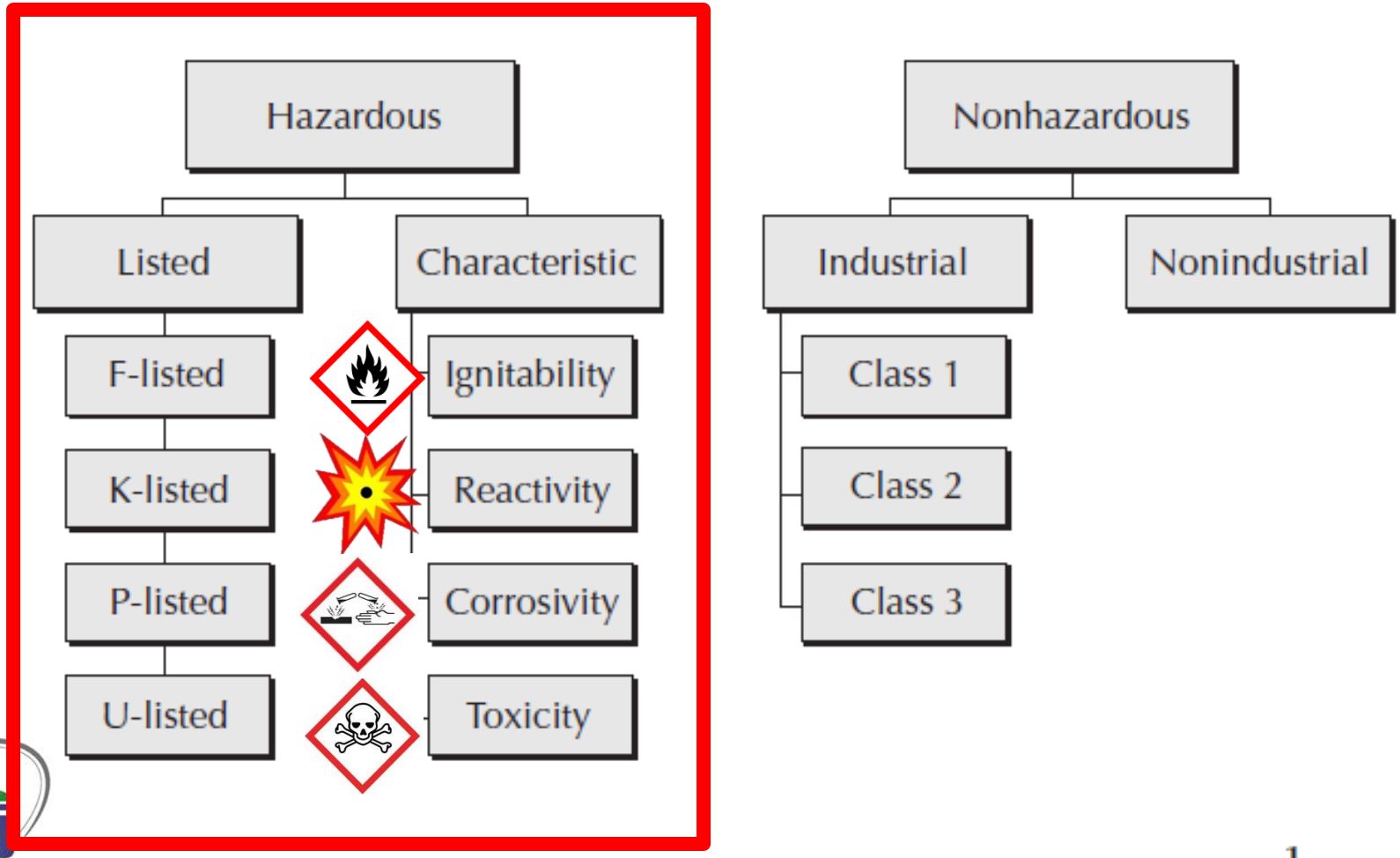
- P-list wastes contain unused acutely hazardous off-spec chemicals, container residues, and residues from chemical spills

U List (40 CFR §261.33)

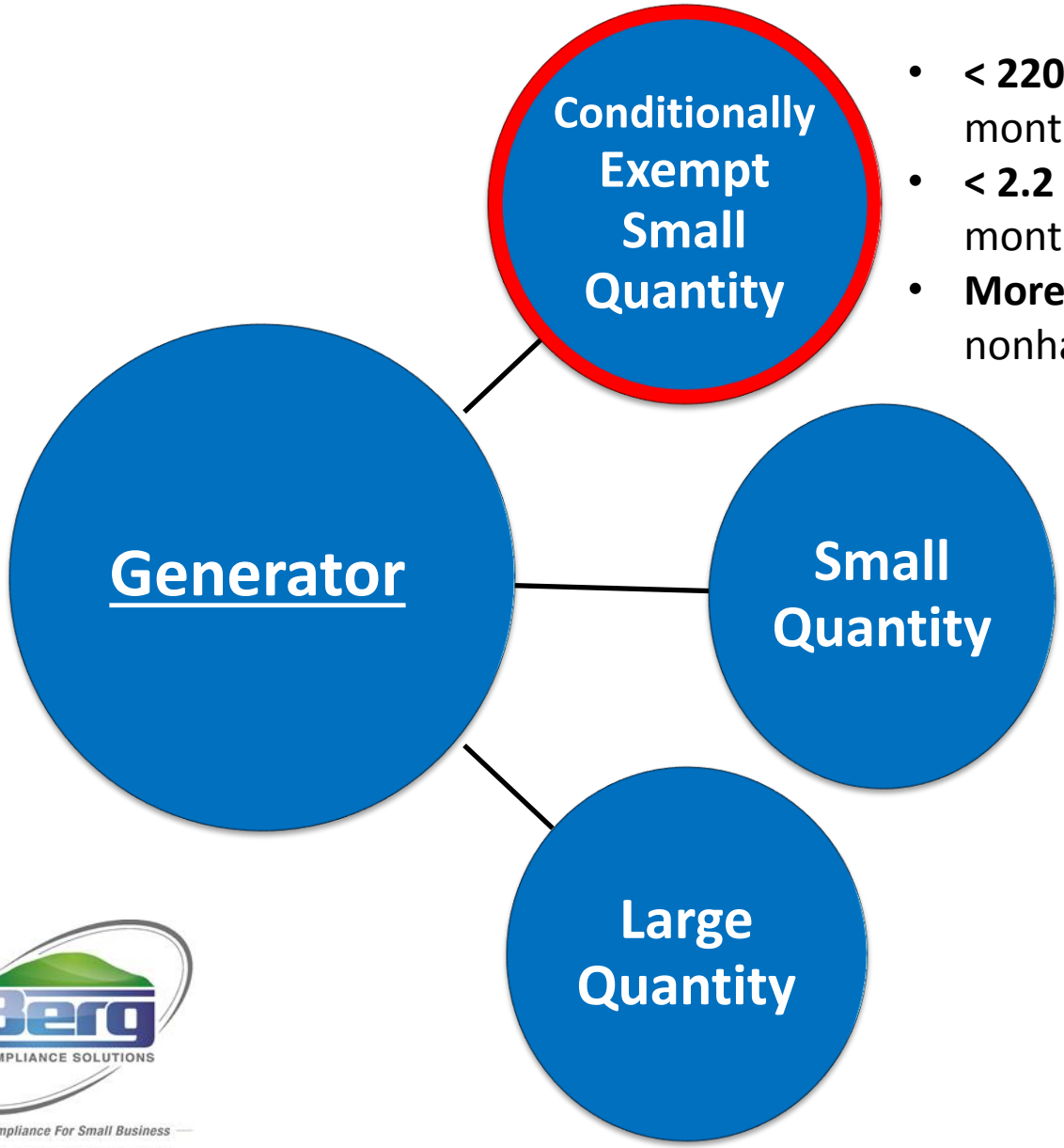
- U-list wastes contain unused toxic hazardous off-spec chemicals, container residues, and residues from chemical spills

Hazardous Waste VS Nonhazardous Waste

Figure 1-1. Hazardous and Nonhazardous Wastes



Generator Statuses – CESQG



- **< 220 lbs of hazardous waste** per month,
- **< 2.2 lbs of acutely hazardous waste** per month, or
- **More than 220 pounds of Class 1** nonhazardous waste per month.

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Primary Requirements

- **Conditionally Exempt Small Quantity Generator (CESQG):**

- Hazardous waste determinations and waste classifications on all waste streams.
- Do not accumulate more than 2,200 pounds of hazardous waste on your property at one time.
- Dispose of your waste at an authorized disposal facility.
- If your facility is a CESQG that generates more than 220 pounds (100 kilograms) of industrial Class 1 nonhazardous waste →
  - Obtain a Solid Waste Registration number by submitting (TCEQ Form 0002)
  - Report Class 1 nonhazardous waste generated on an Annual Waste Summary form (TCEQ Form 00436)
  - Maintain a Notice of Registration (NOR) to reflect current waste streams and waste management units.

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Primary Requirements

- **Conditionally Exempt Small Quantity Generator (CESQG):**

- Maintain the following documentation:
  - Monthly waste generation records demonstrating you are a CESQG;
  - Bills of lading or documentation showing your facility disposed of waste at an authorized facility; and
  - Waste determinations showing the facility classified its waste.

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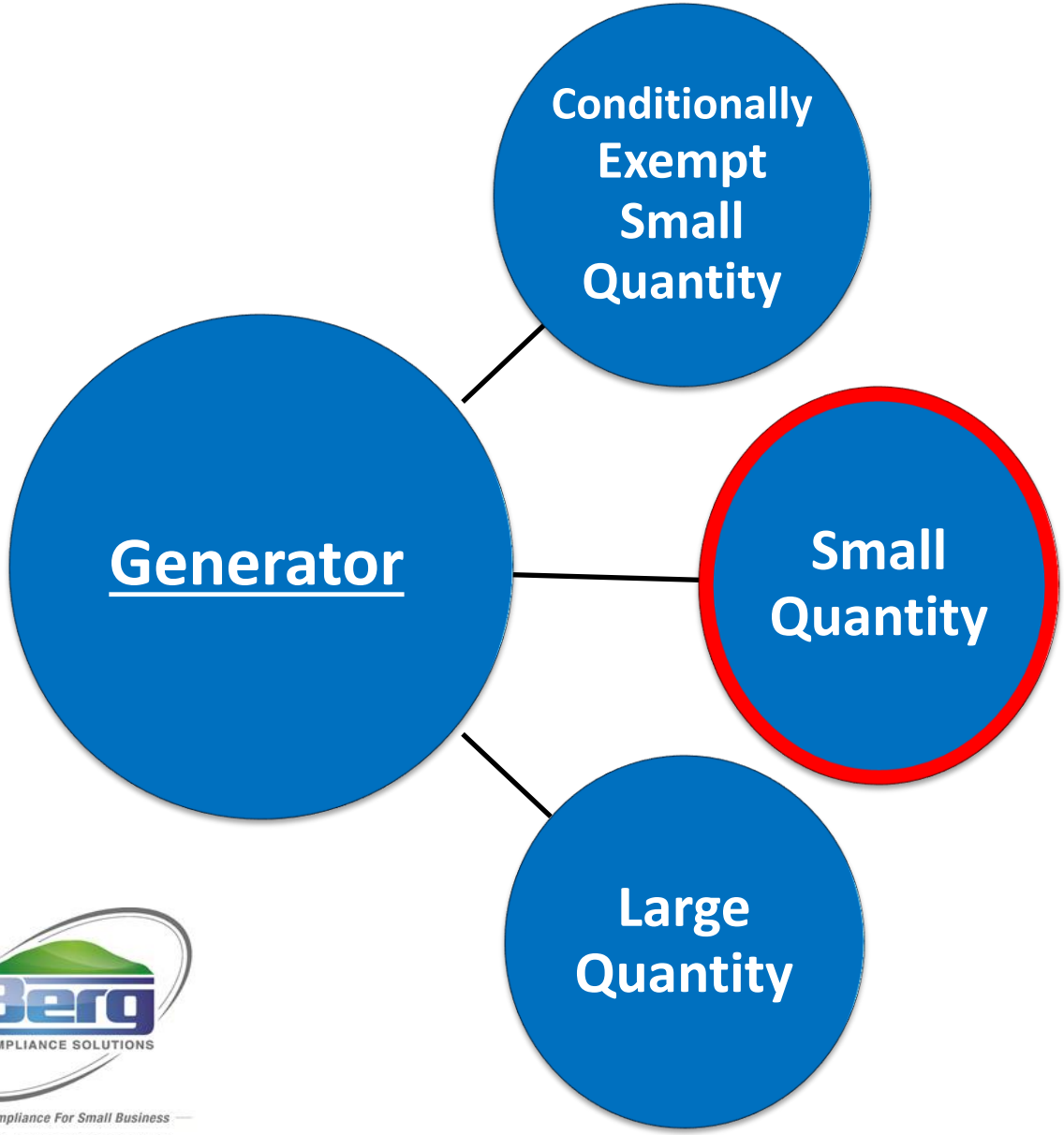
Generator Statuses – Small Quantity



- **220 lbs< SQG < 2,200 lbs hazardous waste per month**
- **Up to 2.2 pounds of acutely hazardous waste per month.**

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Primary Requirements

- **Small Quantity Generator:**
  - Use **Uniform Hazardous Waste Manifests** for shipments of hazardous and Class 1 nonhazardous waste streams;
  - Submit waste generation activities to the TCEQ through an **Annual Waste Summary** (TCEQ Form 00436) for hazardous and Class 1 wastes;
  - Maintain and update your **Notice of Registration** to reflect active waste streams and waste management units;
  - Maintain **Land Disposal Restriction** records (demonstrating hazardous waste is properly treated by a Treatment, Storage, and Disposal Facility prior to disposal);

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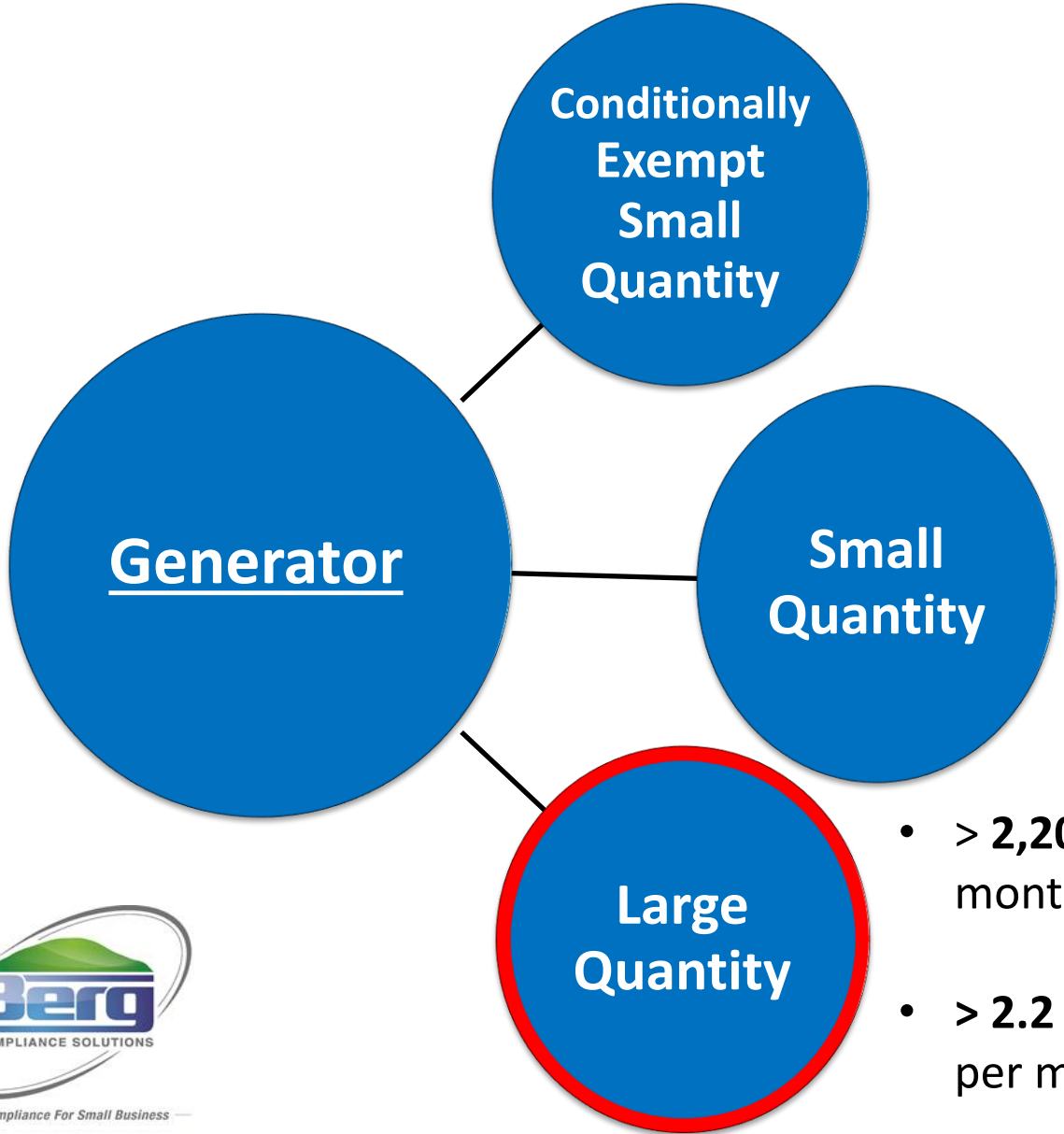
Generator Statuses – Large Quantity



- > **2,200 lbs of hazardous waste** per month
- **> 2.2 lbs of acutely hazardous** waste per month

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Primary Requirements

- **Large Quantity Generator:**
  - Develop a written **contingency plan**.
  - Maintain a **personnel training record** of the following:
    - Name, job title, and job description of each employee in a position related to hazardous waste management;
    - Written description of type and amount of training required of each position; and
    - Documentation and record of training given to each employee.
  - Mark the **accumulation start date** on all hazardous waste containers and tanks
  - Ensure waste is shipped off-site **within 90 days of accumulation**.
  - If the facility manages hazardous waste in tanks, operate the tanks in compliance with **40 CFR Part 265 Subpart J** and potentially 40 CFR Part 265 **Subparts AA**, **BB**, and **CC** (air regulations for equipment leaks and organic air emissions)

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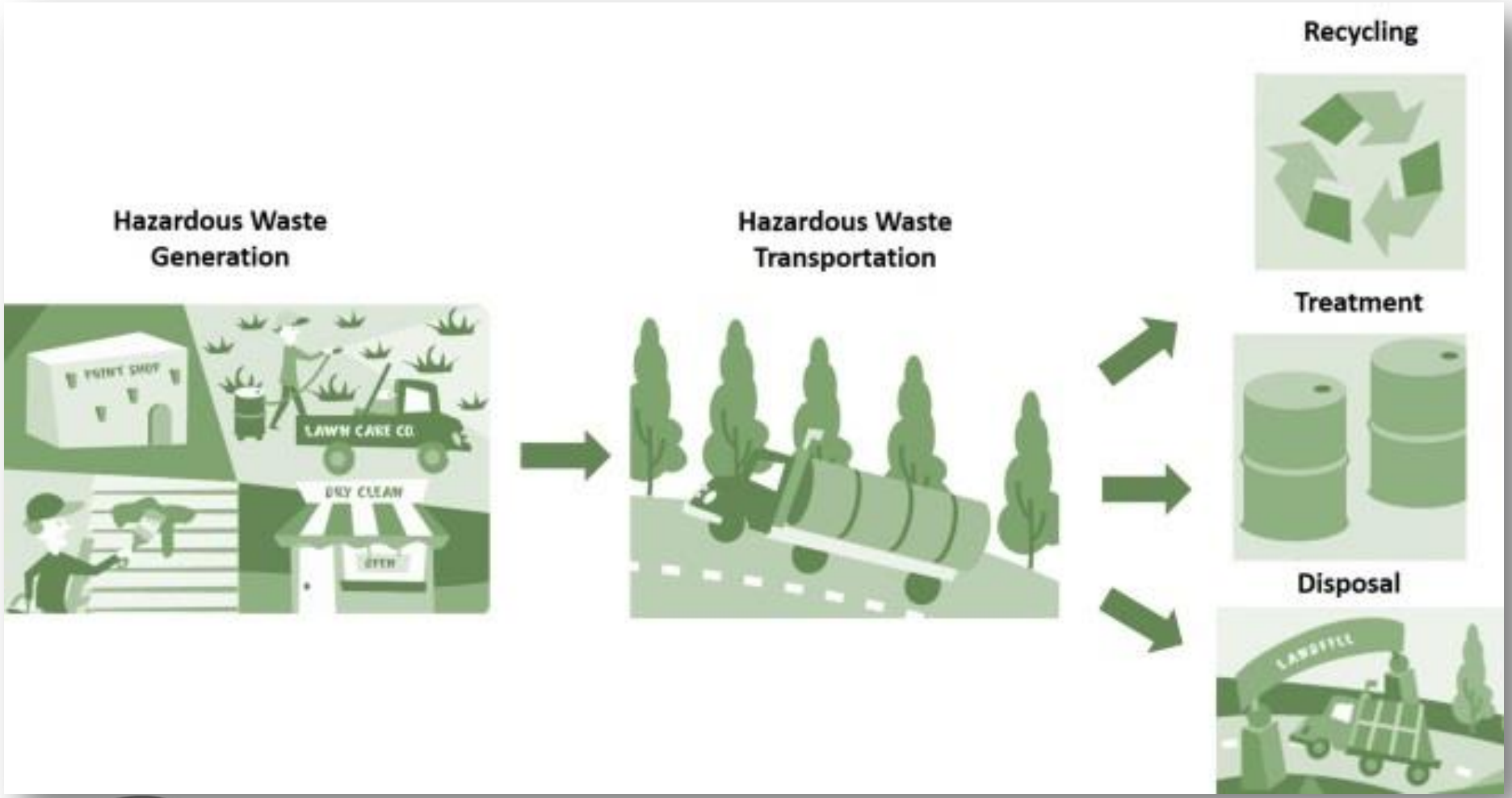
Generator Quick View Summary

Generator Status	Hazardous Waste/Month	Acute Waste	Amount	Storage Time
CESQG	Up to 220 lbs.	Up to 2.2 lbs.	Up to 2,200 lbs.	No time limit
SQG	220-2200 lbs.	Up to 2.2 lbs.	Up to 13,300 lbs.	180 days (270 days if 200+ miles away)
LQG	Over 2200 lbs.	Over 2.2 lbs.	Any amount	90 days

Timeline – “Cradle To Grave”



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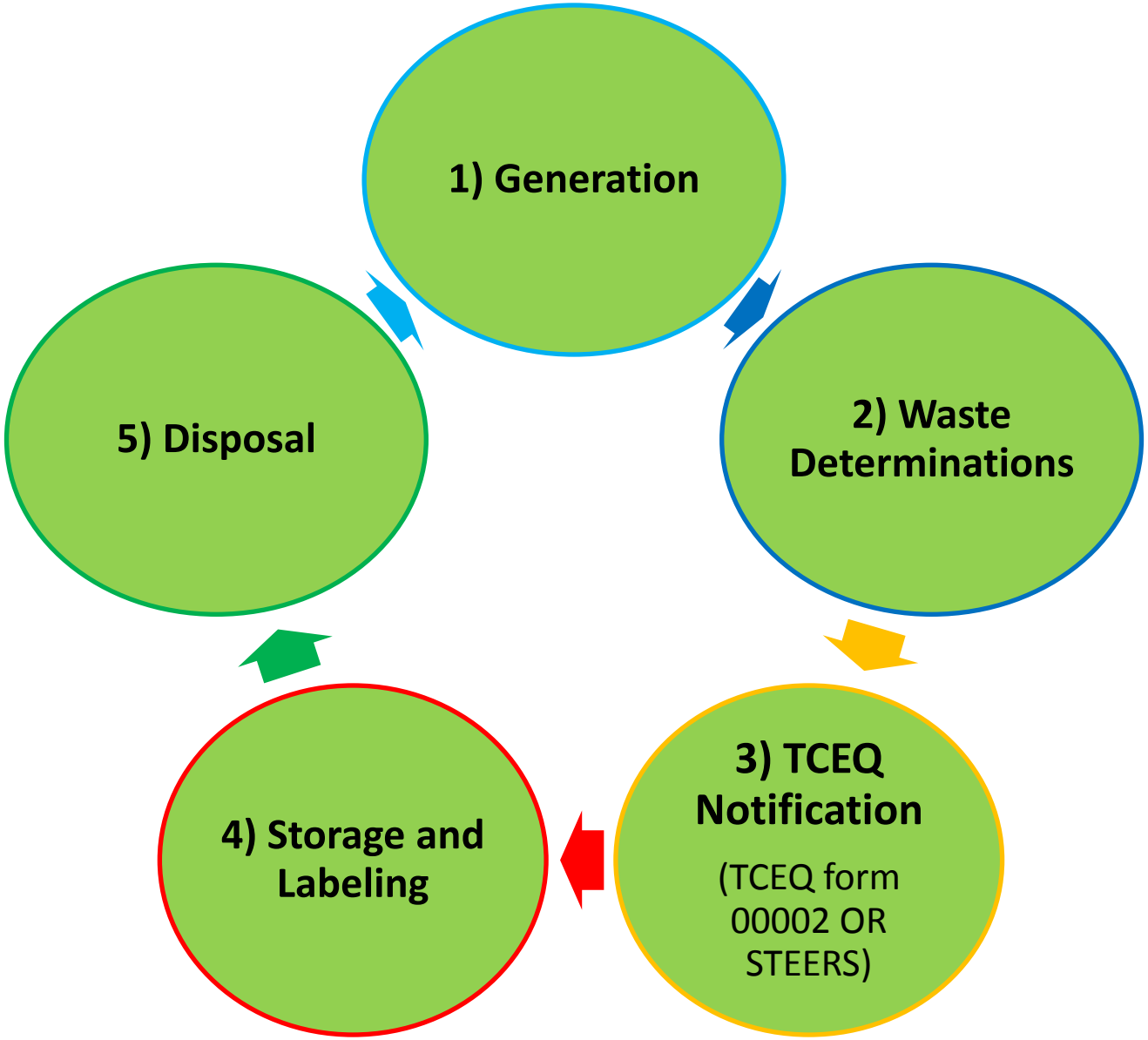
Timeline



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1) Generation (Example)

What do we know???

- **Waste generated** - Aqueous acid waste
  - Solid waste
  - Industrial waste
  - Not listed under F,K,P, or U
  - FP > 200
  - TCLP = below regulatory levels for applicable TCLP Contaminants
  - pH = 1.9
  - 230lbs/month

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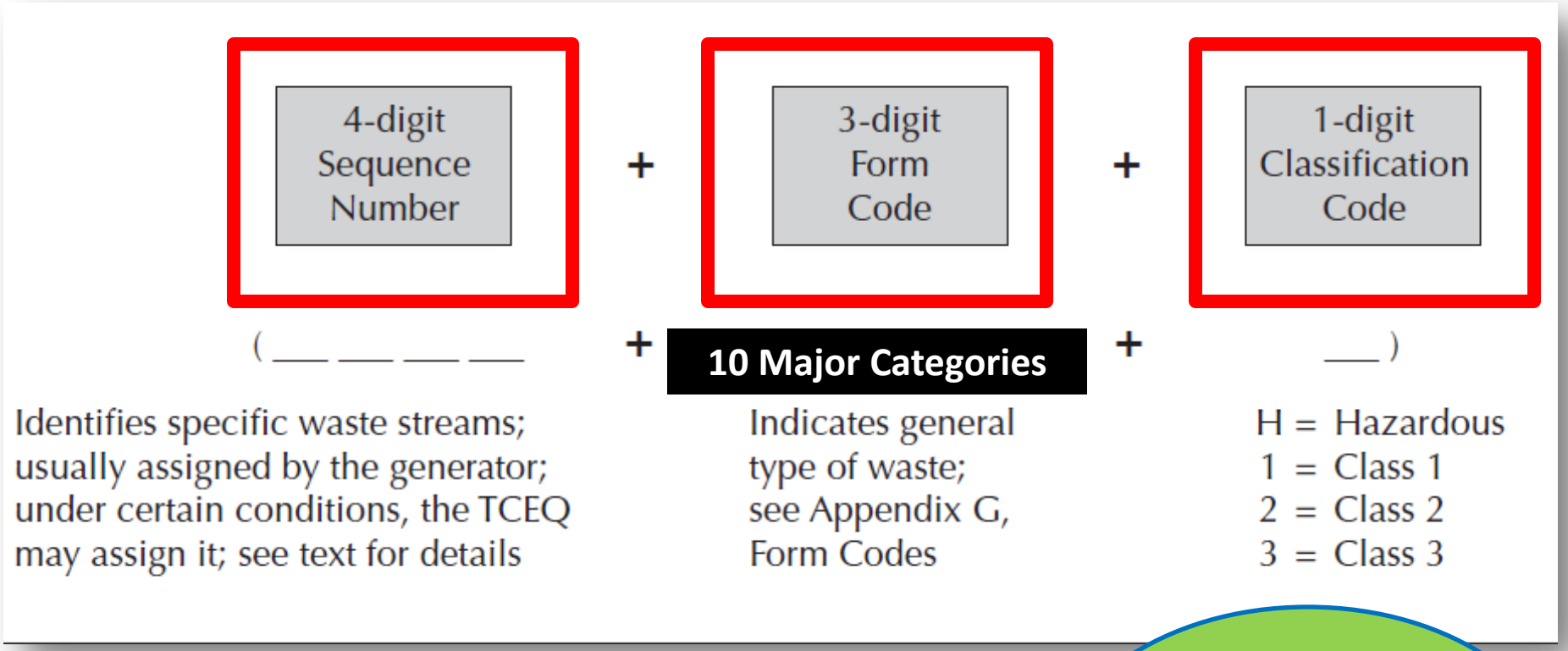
2) **8-character Texas Waste Codes**



- **SPIL** – spill wastes under emergency response program
- **OUTS** – outside of TX
- **CESQ** – Municipal hazardous and industrial CESQGs

2) Waste Determinations

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2) *Appendix G – Form Codes*

10 Major Categories

1. **Lab Packs,**
2. **Inorganic Liquids,**
3. **Organic Liquids,**
4. **Inorganic Solids,**
5. **Organic Solids,**
6. **Inorganic Sludges,**
7. **Organic Sludges,**
8. **Inorganic Gases,**
9. **Organic Gases,**
10. **Plant Trash**

Code	Waste Description
	— Lab Packs —
	Lab Packs *— Lab packs of mixed wastes, chemicals, lab wastes*
001	Lab packs of old chemicals only
002	Lab packs of debris only
003	Mixed lab packs
004	Lab packs containing acute hazardous wastes
009	Other lab packs (Specify in Comments)
	— Liquids —
	Inorganic Liquids *— Waste that is primarily inorganic aqueous), with low suspended inorganic solids and low organic content*
101	Aqueous waste with low solvents
102	Aqueous waste with low other toxic organics
103	Spent acid with metals
104	Spent acid without metals
105	Acidic aqueous waste
106	Caustic solution with metals but no cyanides
107	Caustic solution with metals and cyanides
108	Caustic solution with cyanides but no metals
109	Spent caustic
110	Caustic aqueous waste
111	Aqueous waste with reactive sulfides
112	Aqueous waste with other reactives (e.g., explosives)

Code	Waste Description
113	Other aqueous waste with high dissolved solids
114	Other aqueous waste with low dissolved solids
115	Scrubber water
116	Leachate
117	Waste liquid mercury
119	Other inorganic liquids (Specify in Comments)
198	Nonhazardous photographic chemical wastes (inorganic)
199	Brine solution that could also bear the form code 113
	Organic Liquids *— Waste that is primarily organic and low inorganic solids content and low-to-moderate water content*
201	Concentrated solvent-water solution
202	Halogenated (e.g., chlorinated) solvent
203	Non-halogenated solvent
204	Halogenated/non-halogenated solvent mixture
205	Oil-water emulsion or mixture
206	Waste oil
207	Concentrated aqueous solution of other organics
208	Concentrated phen
209	Organic paint
210	Adhesives
211	Paint thin
212	Reactive
219	Other or
296	Ethylene g

2) Waste Determinations

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2) Waste Determination (Example)

What do we know???

- Process knowledge
- Analytical testing
- **SQG**

4-digit Sequence Number	+	3-digit Form Code	+	1-digit Classification Code

Source Code = 0001 Form Code = 105 Hazard Code = H

Texas Waste Code: 0001105H

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3) Notification (Example)

What do we know???

- **Notify TCEQ of Waste within 90 Days of initial (Notice of Registration)**
  - after the waste's initial generation and before handling, shipment, or disposal;
    - TCEQ form 00002
    - State of Texas Environmental Electronic Reporting System (STEERS) software

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4) Storage and Labeling (Example)

What do we know???

- **SQG Storage of Waste Drums on Site:**
  - (**STORAGE**) Proper container type and condition
  - (**LABELING**) ID of chemical & Accumulation start date & “Hazardous Waste”
  - (**STORAGE**) No more than 13,200 lbs at any one time
  - (**STORAGE**) No more than 180 days on site (270 if going 200+ miles away)

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4) Storage and Labeling (Example)

What do we know???

- **SQG Storage of Waste Drums on Site:**
  - (**STORAGE**) Containers that are deteriorating (e.g., cracked, rusted) or leaking must not be used. Transfer if defective. (§264/265.171).
  - (**LABELING**) ID of chemical & Accumulation start date & "Hazardous Waste"
  - (**STORAGE**) Containers used to store hazardous waste must be made of or lined with materials that will not react with and are otherwise compatible with the waste in the container(§264/265.172).
  - (**STORAGE**) Incompatible wastes and materials must not be placed in the same container (§264/265.177).
    - Appendix V in Part 264/265 for potentially incompatible wastes

4) Storage and Labeling (Example)

What do we know???

- Secondary containment provides a backup system to prevent a release into the environment should primary containment (i.e., the container) fail. 40 (CFR § 264.175)

The containment system must have sufficient capacity to **contain 10% of the volume of containers**

OR

the volume of the largest container, whichever is greater.

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4) Satellite Accumulation Areas (Example)

Collect and store up to 55 gallons of hazardous waste or one quart of acutely hazardous waste without triggering the accumulation time limits imposed in Central Accumulation Areas (CAAs)

- **Satellite accumulation areas (SAA)**
  - Good location near point of generation
  - Closed when not in use
  - Control of operator
  - "Hazardous Waste" & Type of waste
  - Up to 55 gallons (maximum) hazardous waste and 1 quart of acutely hazardous waste)

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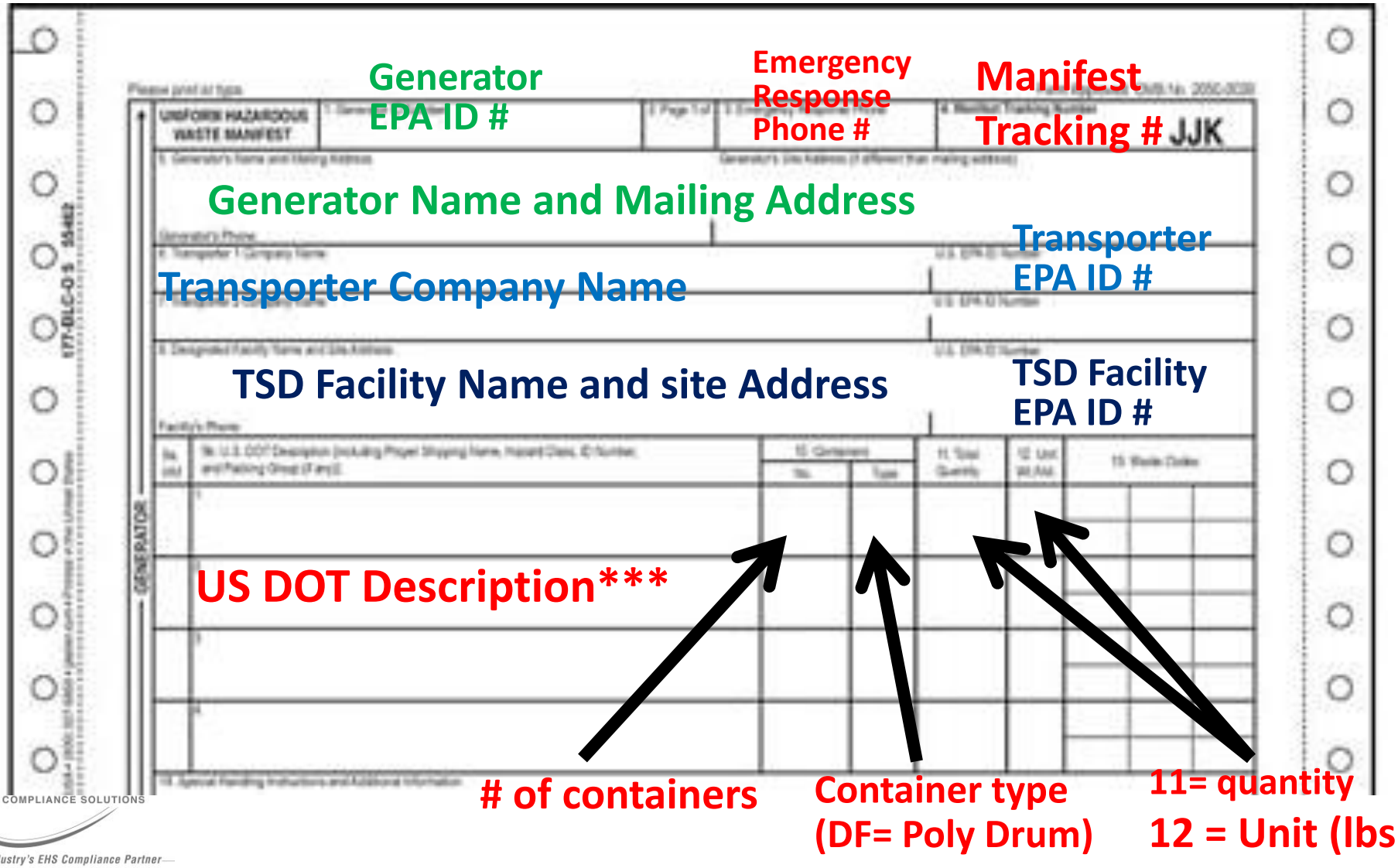
5) Disposal(Example)

Uniform Hazardous Waste Manifest



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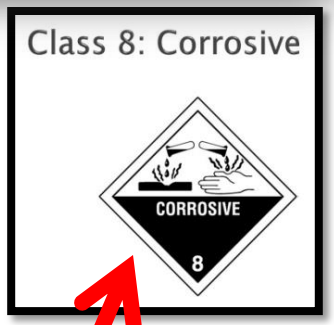
5) Disposal - Proper Shipping Name

UN No.	Name and description	Class or division	Subsi-diary risk	UN packing group	Special provi-sions	Limited and excepted quantities		Packagings and IBCs		Portable tanks and bulk containers	
								Packing instruction	Special packing provisions	Instruc-tions	Special provisions
(1)	(2)	(3)	(4)	(5)	(6)	(7a)	(7b)	(8)	(9)	(10)	(11)
-	3.1.2	2.0	2.0	2.0.1.3	3.3	3.4	3.5	4.1.4	4.1.4	4.2.5 / 4.3.2	4.2.5
1549	ANTIMONY COMPOUND, INORGANIC, SOLID, N.O.S.	6.1		III	45 274	5 kg	E1	P002 IBC08 LP02	B3	T1	TP33
1550	ANTIMONY LACTATE	6.1		III		5 kg	E1	P002 IBC08 LP02	B3	T1	TP33



UN1789, WASTE HYDROCHLORIC ACID SOLUTION, 8, PG II

PROPER SHIPPING NAME:

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When Handling Hazardous Chemicals, Wear Appropriate PPE!!

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Questions????

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References

- **Hazardous Materials Table** – Student Workbook (DOT Resource)

- https://www.google.com/search?q=machine+injuries+during+maintenance&num=20&source=lnms&tbm=isch&sa=X&ved=0ahUKEwjOwbqIz6XgAhVQKawKHepRCroQ_AUIDigB&biw=1536&bih=768#imgrc=fvO3WxbXwCUeWM:
- https://www.esfi.org/resource/lockout-tagout-your-life-depends-on-it-544
- https://www.osha.gov/laws-regs/regulations/standardnumber/1910

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