

# RCRA Compliance

HAZARDOUS WASTE DETERMINATIONS



# Some RCRA basics

- ▶ Hazardous waste is not regulated by IDNR other than as a solid waste
- ▶ Landfill disposal of hazardous waste is prohibited by IDNR
- ▶ 40 CFR Parts 260 – 279 regulate hazardous waste

# Hazardous Waste Determinations

## - Keystone to Waste Management

**40 CFR 262.11** – “A **person who generates** a solid waste, as defined in 40 CFR 261.2, must make an **accurate** determination as to whether that waste is a hazardous waste in order to ensure wastes are properly managed according to applicable RCRA regulations. A hazardous waste determination is made using the following steps:”

- ▶ “A person who generates” – responsibility falls upon the generator
  - ▶ Not the consultant
  - ▶ Not the waste hauler
- ▶ Solid waste – numerous exemptions
- ▶ “Accurate determination” – EPA looks at this

# Hazardous Waste Determination – What is a Solid Waste?

- ▶ Defined at **40 CFR 261.2** “A solid waste is any **discarded material** that is not excluded under § 261.4(a) or that is not excluded by a variance granted under §§ 260.30 and 260.31 or that is not excluded by a non-waste determination under §§ 260.30 and 260.34.”
- ▶ Can be solid, liquid, or contained gas
- ▶ A discarded material is any material which is:
  - ▶ Abandoned
  - ▶ Recycled
  - ▶ Inherently waste-like
  - ▶ Certain military munitions

# Abandoned

1. Disposed of
2. Burned or incinerated
3. Accumulated, stored, or treated (but not recycled) before or in lieu of being abandoned by being disposed of, burned, or incinerated
4. Sham recycling – defined as “not legitimate recycling.”  
§ 260.43



# Inherently Waste-Like

- ▶ Wastes specifically defined at § 261.2(d)
- ▶ EPA can add to this short list

# Military Munitions

- ▶ Defined at 40 CFR 266.202
- ▶ Provides a broad definition of “use”

# Recycled

Regulations do not define “recycle,” but it describes legitimate recycling.

- 1) Provides a useful contribution to the recycling process
- 2) Recycling process must produce a valuable product
- 3) Must manage the material as a valuable commodity
- 4) No hazardous constituents or characteristics not in analogous products

# Recycled

## Types of Recycling addressed by § 261.2

- 1) Use constituting disposal (applied to the land)
- 2) Energy recovery/fuel
- 3) Reclamation
- 4) Accumulated speculatively (must use 75% of stock in calendar year)



Table 1

An asterisk (\*) means it is a solid waste.

	Use constituting disposal (§ 261.2(c)(1))	Energy recovery/fuel (§ 261.2(c)(2))	Reclamation (§ 261.2(c)(3)), except as provided in §§ 261.4(a)(17), 261.4(a)(23), 261.4(a)(24) or 261.4(a)(27)	Speculative accumulation (§ 261.2(c)(4))
	1	2	3	4
Spent Materials	(*)	(*)	(*)	(*)
Sludges (listed in <u>40 CFR</u> Part 261.31 or 261.32)	(*)	(*)	(*)	(*)
Sludges exhibiting a characteristic of hazardous waste	(*)	(*)	—	(*)
By-products (listed in <u>40</u> <u>CFR 261.31</u> or <u>261.32</u> )	(*)	(*)	(*)	(*)
By-products exhibiting a characteristic of hazardous waste	(*)	(*)	—	(*)
Commercial chemical products listed in <u>40 CFR</u> <u>261.33</u>	(*)	(*)	—	—
Scrap metal that is not excluded under <u>40 CFR</u> <u>261.4(a)(13)</u>	(*)	(*)	(*)	(*)

Note: The terms “spent materials,” “sludges,” “by-products,” and “scrap metal” and “processed scrap metal” are defined in § 261.1.

# 40 CFR 261.4(a) Materials which are not solid wastes.

- (1) Domestic sewage
- (2) Industrial wastewater
- (3) Irrigation return flows
- (7) Spent sulfuric acid used to produce virgin sulfuric acid
- (8) Secondary materials that are reclaimed and returned to original process
- (13) Excluded scrap metal
- (23) Hazardous secondary material . . . provided that . . .
- (26) Solvent contaminated wipes sent for cleaning and reuse . . . provided that . . .



# Hazardous Waste Determinations

40 CFR 262.11 (a) – “The hazardous waste determination for each solid waste 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.”

- ▶ Made at the Point of Generation – **Physical and Chronological**
- ▶ Before dilution, mixing, or alteration
- ▶ If it has been changed

# Hazardous Waste Determinations

40 CFR 262.11(b) – “A person must determine whether the solid waste is **excluded** from regulation under 40 CFR 261.4.”

- ▶ 261.4(a) Exclusion from being solid waste
- ▶ 261.4(b) Exclusion from being hazardous waste (still solid waste)
- ▶ 261.4(c-h) Various specific exclusions



# 40 CFR 261.4(b) Solid wastes which are not hazardous wastes.

- (1) Household hazardous waste
- (3) Mining overburden returned to the mine site
- (6) Fails TCLP for trivalent chromium and nothing else
- (12) Reclaimed chlorofluorocarbon refrigerants
- (13) Non-terne plated used oil filters that have been drained per . . .
- (18) Solvent contaminated wipes sent for disposal . . . provided that . . .

# Hazardous Waste Determinations

40 CFR 262.11(c) – “If the waste is not excluded under 40 CFR 261.4, the person must then **use knowledge** of the waste to determine whether the waste meets any of the listing descriptions under subpart D of 40 CFR Part 261. Acceptable knowledge that may be used in making an accurate determination as to whether the waste is listed may include waste origin, composition, the process producing the waste, feedstock, and other reliable and relevant information.”

- ▶ 261.31 – F List Non-Specific Sources (e.g., F003 specific spent solvents)
- ▶ 261.32 – K List Specific Sources (e.g., K047 Pink water from TNT operations)
- ▶ 261.33(e) – P List Commercial Chemical Products (acute hazard) (P075 Nicotine)
- ▶ 261.33(f) – U List Commercial Chemical Products (U144 Lead Acetate)

# Listed Wastes

F and K lists identifies wastes from common manufacturing and industrial processes

**F-list are wastes from non-specific sources (7 groups):**

<b>F001-F005</b>	Spent Solvent Wastes
<b>F006-F012, F019</b>	Wastes from electroplating and other metal finishing operations
<b>F020-F023, F026-F028</b>	Dioxin-bearing wastes
<b>F024-F025</b>	Wastes from the production of certain chlorinated aliphatic hydrocarbons
<b>F032, F034, F035</b>	Wastes from wood preserving
<b>F037-F038</b>	Petroleum refinery wastewater treatment sludges
<b>F039</b>	Multisource leachate

# Listed Wastes

**K-list are source-specific waste (13 categories):**

1. Wood preservation
2. Inorganic pigment manufacturing
3. Organic chemicals manufacturing
4. Inorganic chemicals manufacturing
5. Pesticides manufacturing
6. Explosives manufacturing
7. Petroleum refining
8. Iron & steel production
9. Primary aluminum production
10. Secondary lead processing
11. Veterinary pharmaceuticals manufacturing
12. Ink formulation
13. Coking



# Listed Wastes

P and U lists unused chemicals that are being disposed:

- P-list identifies acute hazardous waste from discarded commercial chemical products
- U-list identifies hazardous waste from discarded commercial chemical products
- Also includes residues of materials remaining in “non-empty” containers, contaminated soil, water, or other debris resulting from clean-up of spills



# Hazardous Waste Determinations

40 CFR 262.11(d) – “The person then must also determine whether the waste exhibits one or more **hazardous characteristics** as identified in subpart C of 40 CFR part 261 by following the procedures in paragraph (d)(1) or (2) of this section, or a combination of both.”

- ▶ (d)(1) – “The person must apply knowledge of the hazard characteristic of the waste in light of the materials or the processes used to generate the waste.”
- ▶ (d)(2) – “When available knowledge is inadequate to make an accurate determination, the person must test the waste according to the applicable methods set forth in subpart C . . . or according to an equivalent method approved by the Administrator . . .”

# Hazardous Waste Determinations

40 CFR 262.11(d) – “The person then must also determine whether the waste exhibits one or more **hazardous characteristics** as identified in subpart C of 40 CFR part 261 by following the procedures in paragraph (d)(1) or (2) of this section, or a combination of both.”

- ▶ Subpart C characteristics are:
  - ▶ Ignitability (D001) – flash point  $<60^{\circ}\text{C}$  ( $140^{\circ}\text{F}$ ), self-ignites, ignitable compressed gas, oxidizer
  - ▶ Corrosivity (D002) –  $\leq 2$  pH,  $\geq 12.5$  pH, steel corrosion test
  - ▶ Reactivity (D003) – violent change without detonating, reacts violently with water, generates toxic gases, explodes
  - ▶ Toxicity (D004 – D043) – Toxicity Characteristic Leachate Procedure test (TCLP)

# TCLP Rule of 20

- ▶ TCLP measures contaminant levels in a leachate obtained from a solid material
- ▶ TCLP limits are measured in mg/L
- ▶ Totals analysis is not the regulatory accepted method
- ▶ If totals analysis result (mg/kg) is less than 20 times the TCLP limit, the waste will likely pass TCLP.
- ▶ What method will give you an “accurate” determination?

# Rule of 20 - Example

- ▶ TCLP limit for Arsenic is 5.0 mg/L
- ▶ Totals analysis of the waste shows arsenic levels at 95 mg/kg.
- ▶ 20 times the TCLP is 100 mg/kg
- ▶ Is that a sufficient difference to make the generator confident its waste is not hazardous?



# Hazardous Waste Determinations

40 CFR 262.11(e) – “If the waste is determined to be hazardous, the generator must refer to parts 261, 264, 265, 266, 267, 268, and 273 of this chapter for other possible exclusions or restrictions pertaining to management of the specific waste.”



# Hazardous Waste Determinations

40 CFR 262.11(f) – “A small or large quantity generator must maintain **records** supporting its hazardous waste determinations, including records that identify whether a solid waste is a hazardous waste, as defined by 40 CFR 261.3. Records must be maintained for at least **three years** from the date that the waste was last sent to on-site or off-site treatment, storage, or disposal. . . “

# Hazardous Waste Determinations

262.11(g) – “If the waste is determined to be hazardous, small quantity generators and large quantity generators must identify **all applicable** EPA hazardous waste numbers (**EPA hazardous waste codes**) in subparts C and D of part 261 of this chapter. Prior to shipping the waste off site, the generator also must mark its containers with **all applicable** EPA hazardous waste numbers (EPA hazardous waste codes) according to § 262.32.”

# Notable Exclusions and Inclusions



## Exclusions

- ▶ Waste water treatment units
- ▶ Clean Water Act permits
- ▶ Manufacturing process units
- ▶ Household hazardous waste
- ▶ Scrap metal
- ▶ Used oil
- ▶ Universal waste

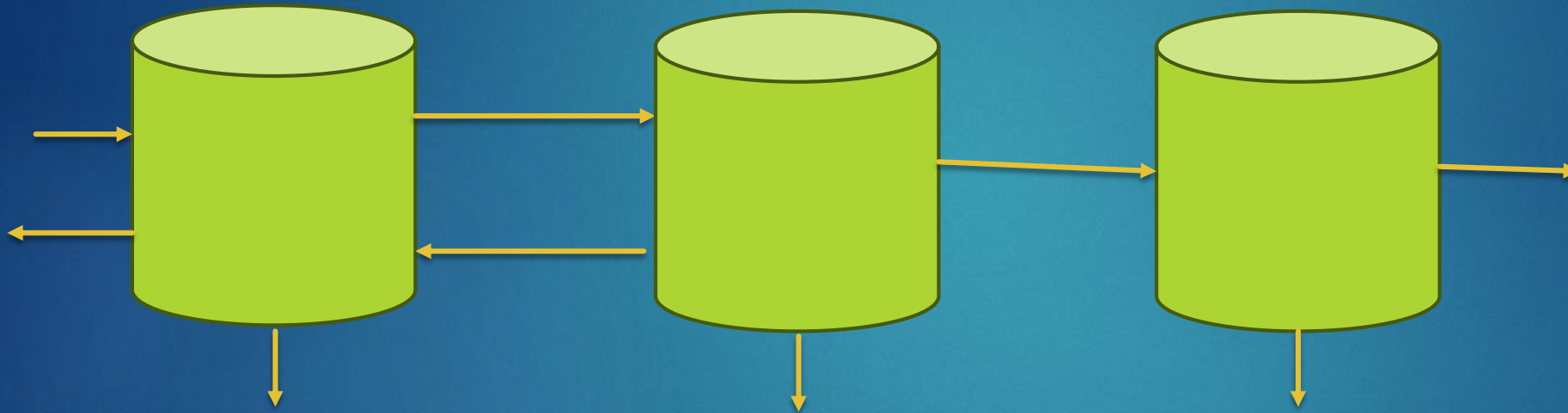
## Inclusions

- ▶ Air emissions from hazardous waste equipment
- ▶ Containerized gases

# Point of Generation

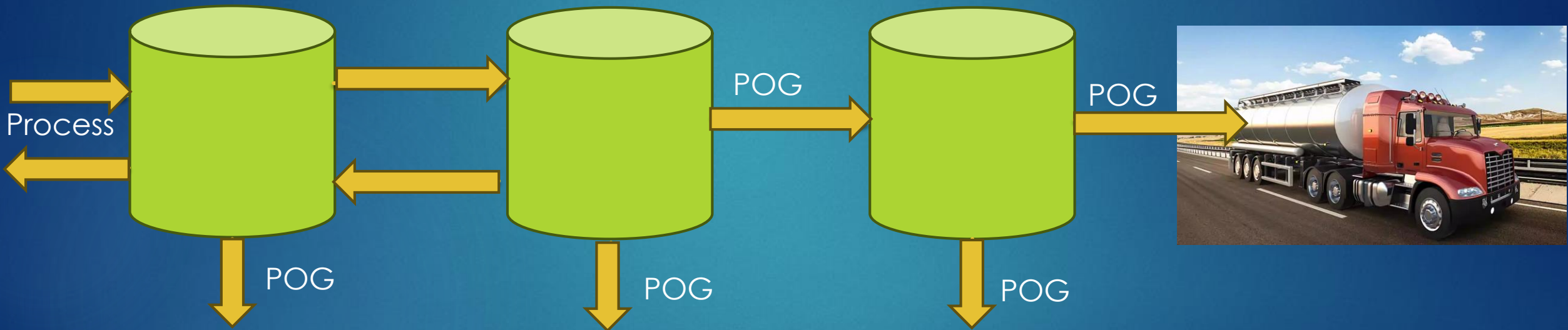
- ▶ Where the material becomes a waste
- ▶ When the material becomes a waste

# Point of Generation





# Point of Generation









- ▶ Material on floor from process
- ▶ Not immediately cleaned up.





- ▶ Unused laboratory
- ▶ Materials left in fume hood two years ago





# Resources

- ▶ [Fact Sheet: The EPA's Civil Enforcement Program | US EPA](#)
- ▶ [Hazardous Waste Generators | US EPA](#)
- ▶ [eCFR :: 40 CFR Chapter I Subchapter I -- Solid Wastes](#)
- ▶ [Frequent Questions About Implementing the Regulations for Solvent-Contaminated Wipes | US EPA](#)
- ▶ [Document Display | NEPIS | US EPA](#) Handbook for HW Containers

# I'll answer your questions

Edwin G. Buckner, PE  
Compliance Officer  
US EPA Region 7, ECAD/CB/RCRA  
11201 Renner Blvd  
Lenexa, KS 66219  
913-551-7621  
Buckner.Edwin@epa.gov

