

# Hazardous Waste Determination



**ENVIRONMENTAL  
QUALITY**

**WASTE MANAGEMENT & RADIATION CONTROL**



# Definition of Solid Waste

## Solid Wastes

1. Solid Waste is a material that is discarded or abandoned by being disposed, incinerated, recycled or is considered inherently waste like
2. and is Not Excluded per Rules

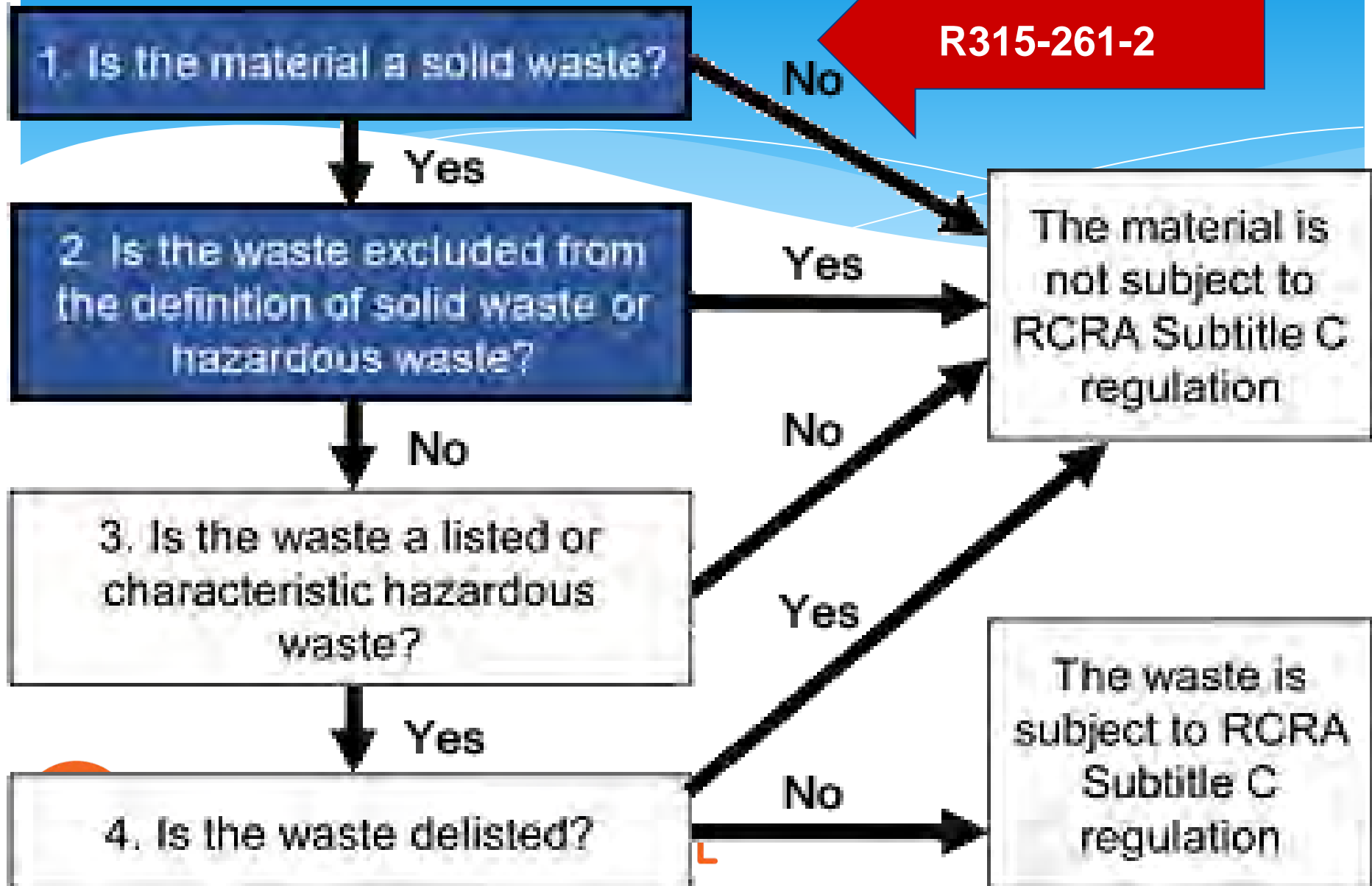
**Liquids, Semi-Solid, or  
Contained Gaseous Materials  
are Solid Wastes too!**



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Full Definition Solid Waste: [R315-261-2 UAC](#)  
Exclusions: [R315-261-4](#)

# The Hazardous Waste Identification Process

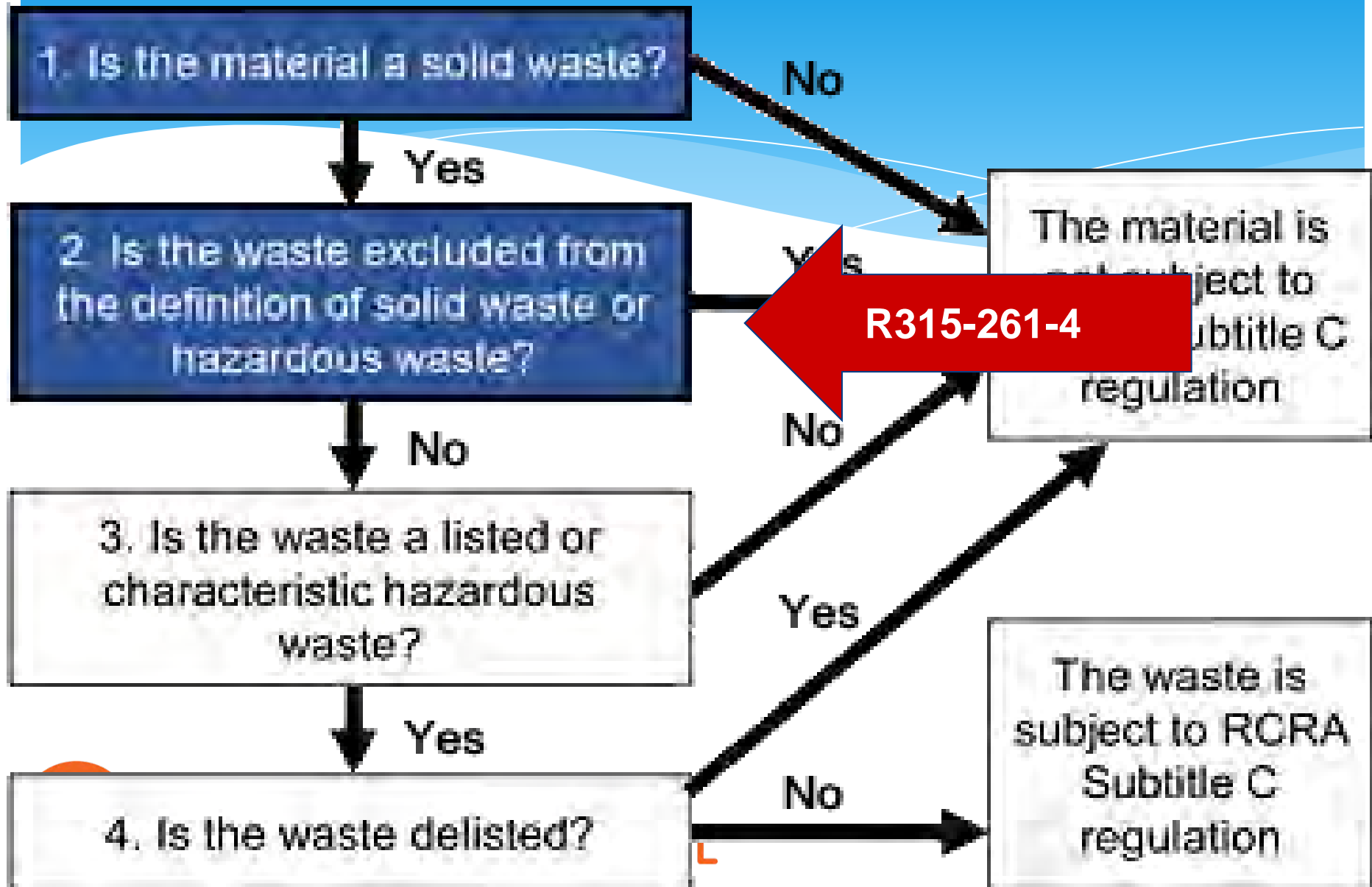


# Waste Streams

- ✓ Used Oil
- ✓ Non-Terne Used Oil Filters
- ✓ Antifreeze
- ✓ Lamps
- ✓ Batteries
- ✓ Tires
- ✓ Aerosol Cans
- ✓ Sump Water



# The Hazardous Waste Identification Process



# Exclusions

## R315-261-4(a)

### Materials which are Not solid wastes 27 Categories

Examples: Domestic Sludge  
Industrial Wastewater discharges regulated under CWA  
Excluded scrap metal

## R315-261-4(b)

### Solid Wastes that are Not hazardous wastes 18 Categories

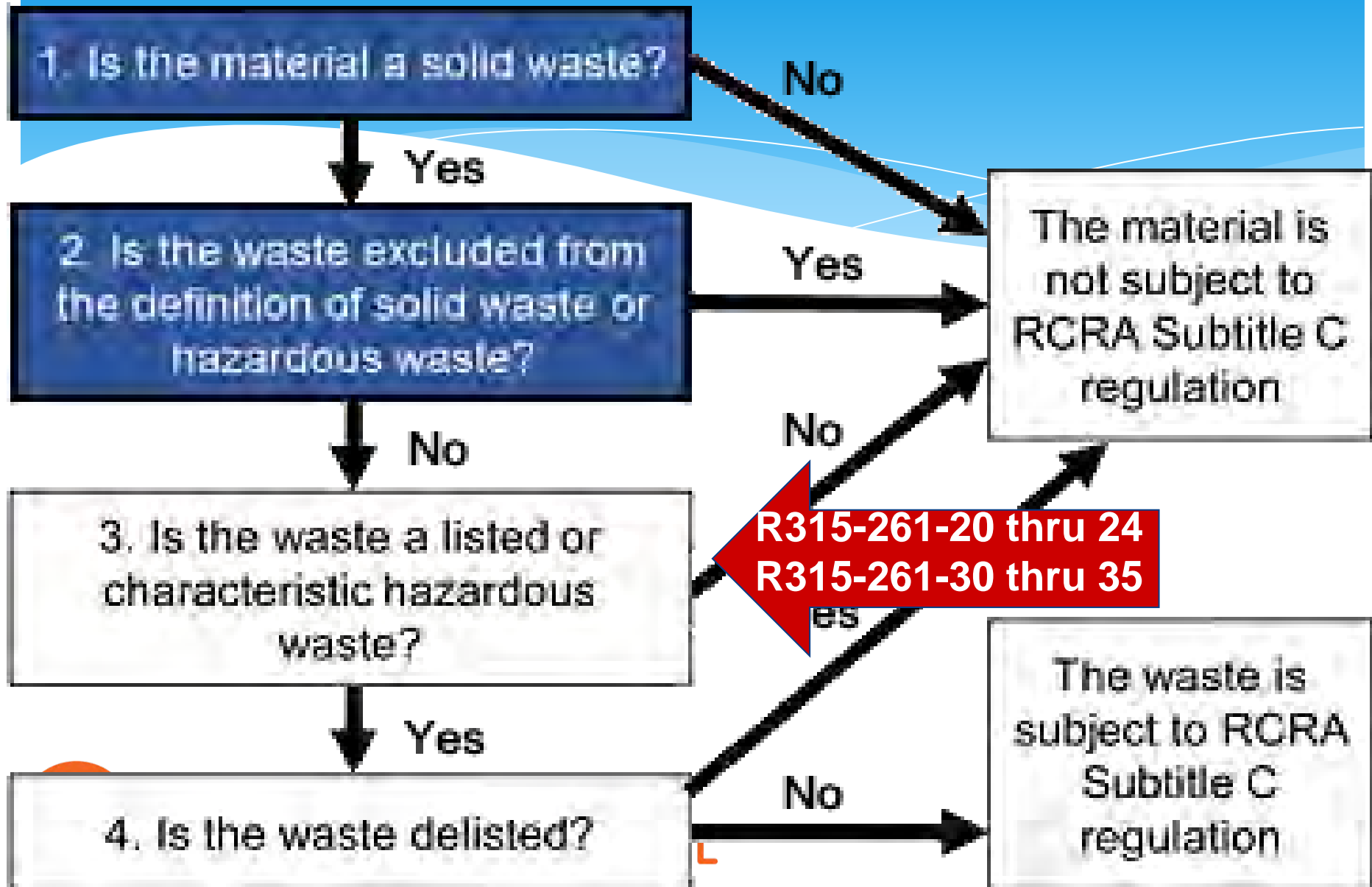
Household hazardous waste

Mining overburden returned to mine site



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# The Hazardous Waste Identification Process





# Hazardous Waste

Definition: R315-261-3

- ★ Must be a Solid Waste
- ★ Not Excluded
- ★ Listed
- ★ Characteristic



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# Characteristics

(R315-261-20 through R315-261-24)



**Ignitable**



**Corrosive**



**Reactive**



**Toxic**



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# Ignitability

## Hazardous Waste No. **D001**

- \* Liquid with a flashpoint less than 140°F
- \* Non-liquid capable of causing fire through friction, absorption of moisture, or spontaneous combustion
- \* Ignitable compressed gas
- \* Oxidizers



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# Examples

- \* Paint Removers and Strippers
- \* Solvents
- \* Oil Based Paints
- \* Adhesives
- \* Gasoline
- \* Alcohol
- \* White or Red Phosphorus



# Corrosivity

## Hazardous Waste No. **D002**

- \* Aqueous with a pH less than or equal to 2 or greater than or equal to 12.5
- \* Liquid that corrodes steel at a rate of greater than 0.25 inches per year



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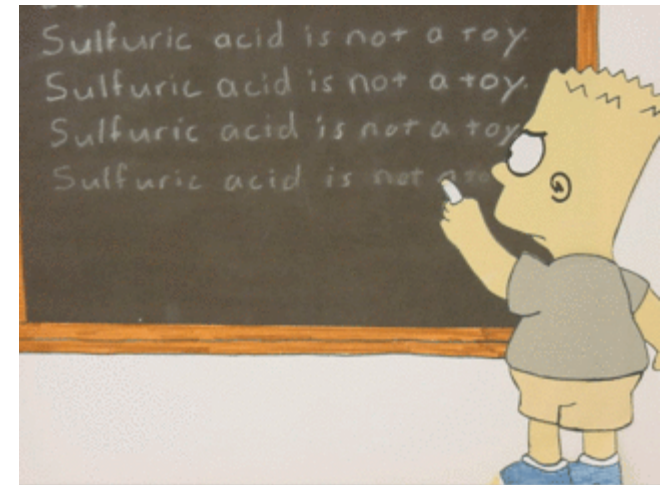
# Examples

## \* Acids

- \* Hydrochloric
- \* Nitric
- \* Sulfuric

## \* Bases

- \* Bleach
- \* Lye
- \* Sodium Hydroxide



# Reactivity

- \* **Hazardous Waste No. D003**
- \* Material that is normally unstable
- \* Undergoes rapid or violent reaction when exposed to water, shock, heat or pressure – an explosion
- \* Generates toxic gases, fumes or vapors



# Examples

- \* Sodium azide – car airbags
- \* Black powder
- \* TNT
- \* Picric acid – shock sensitive when dry
- \* Military propellants
- \* Metallic Sodium
- \* Sodium Cyanide
- \* Peroxide Forming Chemicals





# Toxicity

## Hazardous Waste Numbers **D004 through D043**

- \* Harmful or fatal when ingested or absorbed
- \* Material that after testing contains any of the contaminants listed in the regulations at concentrations equal to or greater than the value listed. (R315-261-24(b))



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# Toxicity

- \* **8 Heavy Metals**

Arsenic, Barium, Cadmium, Chromium, Lead, Mercury, Selenium, Silver

- \* **10 Pesticides/Herbicides**

Examples: Chlordane, 2,4-D, Endrin, Lindane, Toxaphene, Pentachlorophenol

- \* **22 Organic Chemicals**

Examples: Carbon tetrachloride, Chloroform, Cresol



## Liquid TCLP Samples

If the waste is liquid (contains  $< 0.5$  percent filterable solids), the waste itself, after filtering through a 0.6 to 0.8 filter, is considered to be the extract. You do not divide the result by 20 for the final concentration.

If the material is 100% solid. Total analysis (dry weight basis) is divided by 20 and compared to the regulatory limit.



# Multi-phase Samples

$$\frac{* [A \times B] + [C \times D]}{B + [20 \text{ (L/kg)} \times D]} = E$$

Where:

A = Concentration of the analyte in liquid portion of the sample (mg/L)

B = Volume of the liquid portion of the sample (L).

C = Concentration of the analyte in solid portion of the sample (mg/kg)

D = Weight of the solid portion of the sample (kg)

E = Maximum theoretical concentration in leachate (mg/L)

The value obtained (E) can be used to show that the maximum theoretical concentration in a leachate from the waste could not exceed the concentration specified in the toxicity characteristic (TC) (R315-261-24).

In addition, if the total constituent analysis results themselves are below the TC limits without dividing by 20, then the same argument holds true, i.e., the maximum theoretical concentration in the leachate could not exceed the TC limits.



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# Listed Wastes

\* Listed by EPA or the State of Utah (R315-261-30 through R315-261-33)



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# Listed Wastes Examples

**F listed solvents:** Toluene, MEK, Xylene

**P-Listed chemicals:** Nicotine, Sodium Azide

**U-Listed chemicals:** Acetone, Carbon Tetrachloride, DDT

**K-Listed wastes:** Crude Oil Storage Tank Sediment from  
Petroleum Refining Operations



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# Utah Listed Wastes

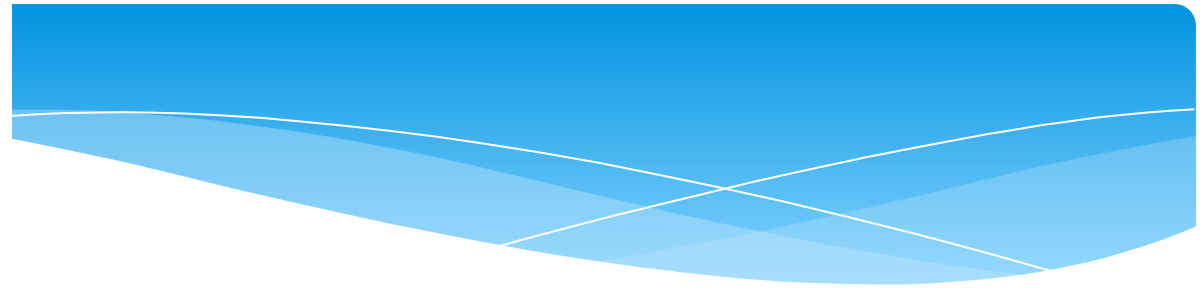
F999

Residues from demilitarization, treatment and testing of nerve, military and chemical agents

P999 Nerve, Military and Chemical Agents



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1. Needs to be Accurate & Representative
2. Made at the Point of Generation Before Dilution, Mixing, Other Alteration
3. Made at Any Time the Waste Has or May Have Changed its Properties





# Methods



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# Point of Generation Examples

- \* When a waste-containing material is spent and a decision is made to discard or recycle it
- \* When a decision is made to discard a P-or U-listed chemical
- \* When the waste exits a manufacturing process unit
- \* When a treatment residue exits a treatment unit, e.g an incinerator
- \* When a residue exits a unit that that is exempt from RCRA permitting requirements (e.g., a recycling unit, wastewater treatment unit, elementary neutralization unit or totally enclosed treatment unit)



# Hazardous Waste Determination Change of Properties Examples

A Facility Generates a Wash Water stream that contains a solvent.  
At the POG, the Wash is Well Mixed, Not Listed, Not Characteristic  
After Storing the Container, the Waste Separates into Two Phases  
Solvent Phase Exhibits Ignitability Characteristic Requiring the D001  
Waste Code

The Waste is Now a Hazardous Waste and Must be managed as  
such



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# Hazardous Waste Determination Documentation/Recordkeeping

## Generator Must Make an Accurate Waste Determination:

- \* Analytical Testing
- \* Generator Knowledge
- \* Waste Profile/LDR Notification
- \* **All Documentation must be kept for inspection**



# Reminder

The **point of generation** for hazardous waste is when it is **first produced or first becomes subject to hazardous waste regulations, not after the generator receives the waste analysis results.** The hazardous waste generator regulations in R315-262 apply **as soon as waste is generated**, and the accumulation period applies either as soon as the waste is generated or when waste is removed from the satellite accumulation area (Memo, Lowrance to Axtell; April 21, 1989 ([RCRA Online #11424](#))).



# “Cradle to Grave”

As the Generator, **YOU** are Responsible for an Accurate Waste Determination and Verifying the Final Disposition of your waste.



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# Waste Streams

- ✓ Used Oil      Burned in Space heater
- ✓ Non-Terne Used Oil Filters- Recycled
- ✓ Antifreeze- Universal Waste
- ✓ Lamps – Universal Waste or Possibly Solid Waste
- ✓ Batteries- Universal Waste or Reclaimed per R315-266-80(a)
- ✓ Tires – Recycled
- ✓ Aerosol Cans- Universal Waste
- ✓ Sump Water – Tested Non-Hazardous Waste (Solid Waste)



# Thank You- Next Up



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