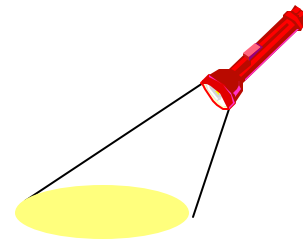
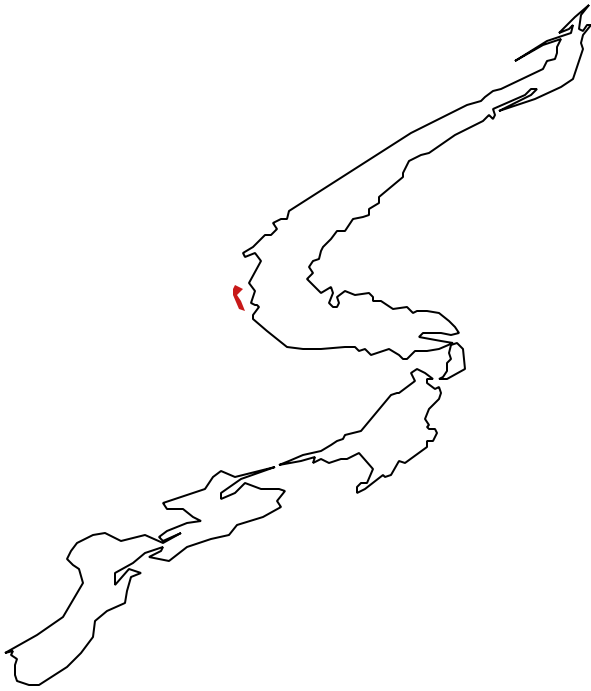


# Hazardous Waste Recycling



*The dreaded definition of solid waste table (40 CFR 261.2) and other equally confusing regulations*



# Why is hazardous waste recycling regulation so complicated?

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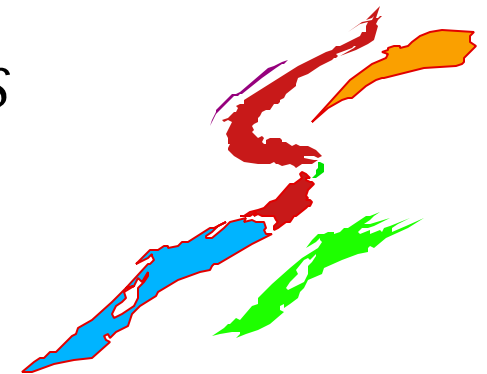
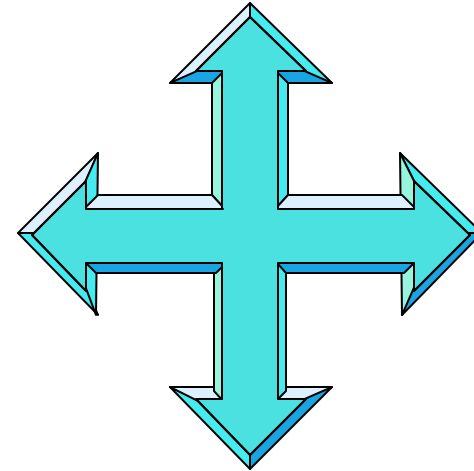
- *Must look in many places*

- *Multiple Regulations*
- *FR Notices*
- *Interpretive Memoranda*

- *Long history*

- *Must determine if material is a solid waste first. To do this must know BOTH what waste is AND how it will be recycled*

- *RCRA Statute not explicit on extent of Agency's authority*



# Where to look

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## ■ *Regulations*

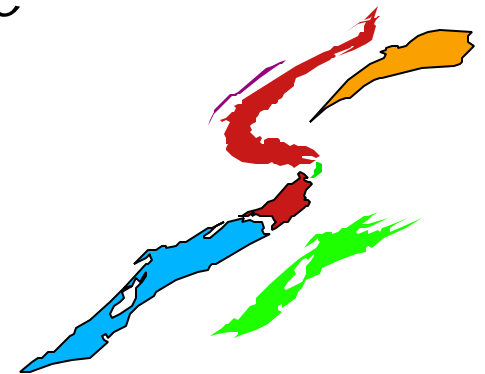
- *40 CFR 261*
- *40 CFR 266*
- *40 CFR 273*
- *40 CFR 279*

## ■ *FR Notices*

- *January 4, 1985 Definition of Solid Waste*

## ■ *Interpretive Memoranda*

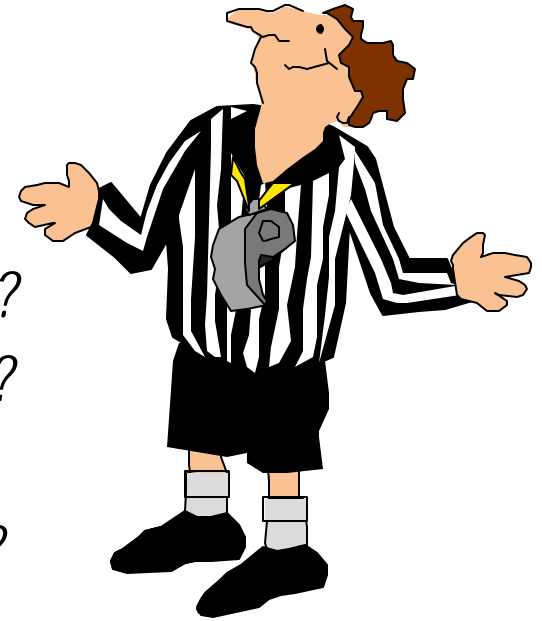
- *Sylvia Lawrence Memo on Sham vs. True Recycling (April 26, 1989)*



# What are the regulated community's most common questions?

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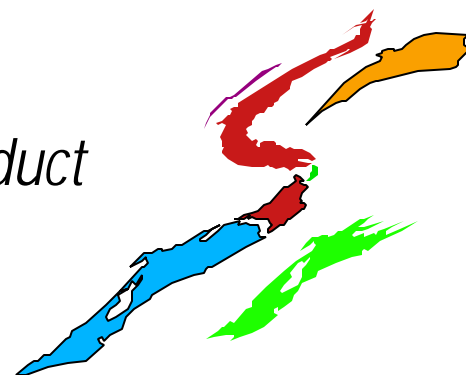
- *If I recycle, can I get out of all regulation?*
- *How can I recycle (insert any waste here) and not have to manage it as hazardous waste?*
- *Do I count recycled waste in my monthly generator totals?*
- *Why can't I make fence posts out of my hazardous waste?*
- *How can I recycle listed hazardous wastes (such as F006)?*
- *What is an unlisted off-specification product?*
- *What's the difference between recycling and an exclusion?*
- *What's the difference between recycling and delisting?*



# First things first-Definitions (40 CFR 261)

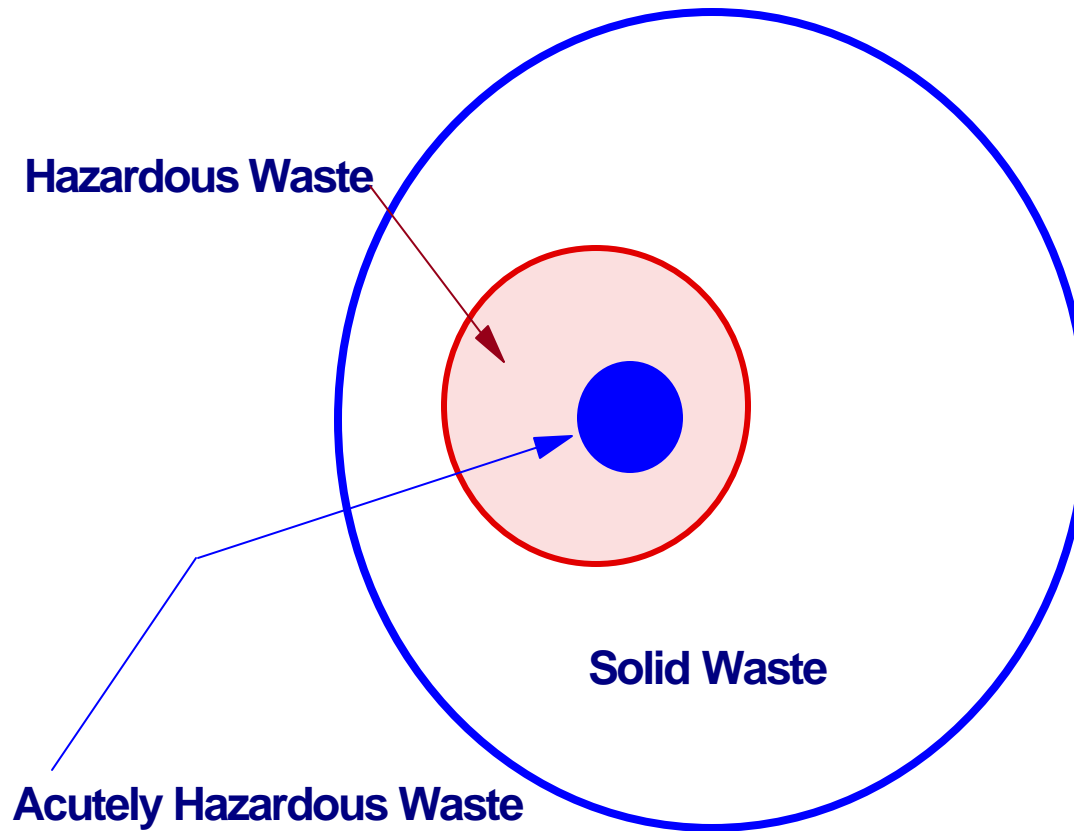
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- Solid Waste - any discarded material that is not excluded
  - Discarded Material - any material which is abandoned, recycled, considered inherently waste-like, a military munition
    - Abandoned - disposed, burned or incinerated, accumulated speculatively
    - Recycled - used, reused, or reclaimed
      - ▶ Used or Reused - employed as an ingredient in an industrial process to make a product (no separate recoverable end products) or employed as an effective substitute for a commercial product
      - ▶ Reclaimed - processed to recover a usable product or regenerated

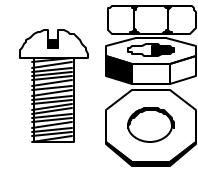


# The Universe of Solid Waste

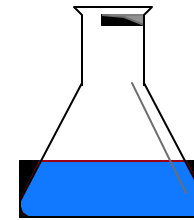
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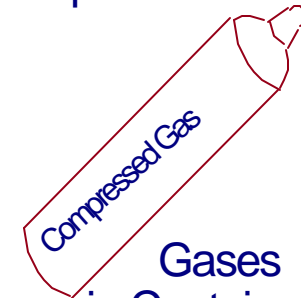
## SOLID WASTE



Solids



Liquids

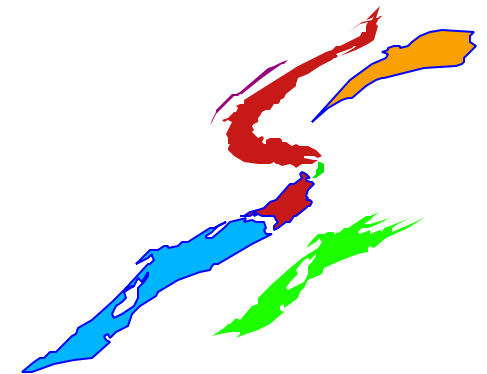


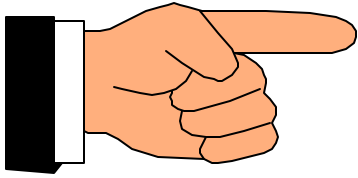
Gases  
in Containers

# First things first (continued)

---

- *Recycled materials are solid wastes! (Some anyway).*
- *Spent Material - any material that has been used and as a result of contamination can no longer serve the purpose **for which it was produced** without processing*
- *Recyclable Material - hazardous waste that is recycled*
- *Definition found in 1/4/85 Federal Register:*
  - *Secondary Material - a material that potentially can be a solid and hazardous waste when recycled (e.g. spent materials, sludges, by-products, scrap metal, ccps)*





# Examples

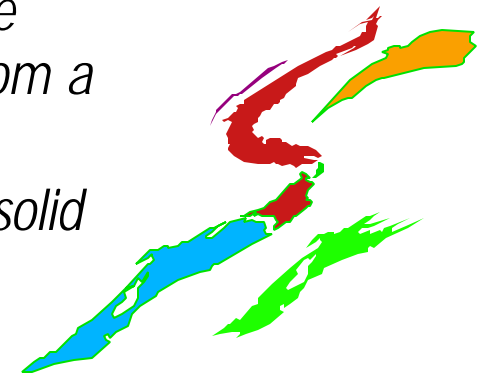
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## ■ *Spent Materials -*

- *spent solvents*
- *spent acids*
- *wastewater*
- *used, contaminated equipment that exhibits a characteristic*

## ■ *Reclamation -*

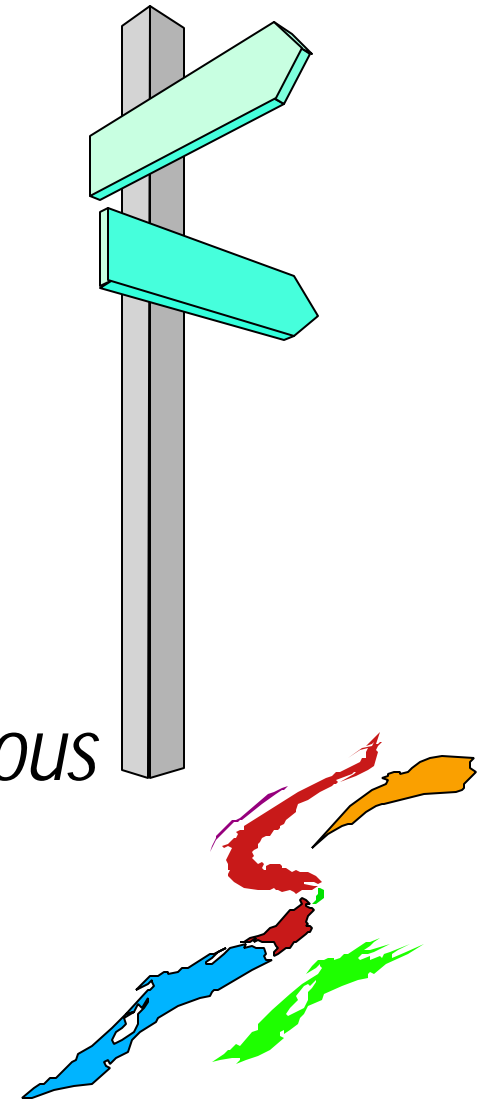
- *regeneration (processed to remove contaminants)*
- *recovery - (e.g. secondary smelting)*
- *treatment*
- *Note: Reclaimed metals that only have to be refined to be useable are products, not wastes (e.g. mercury drained from a thermometer).*
- *Note: Minimally processed (reclaimed) wastes are STILL solid wastes until fully reclaimed.*



# Summary of Sham vs. True Recycling

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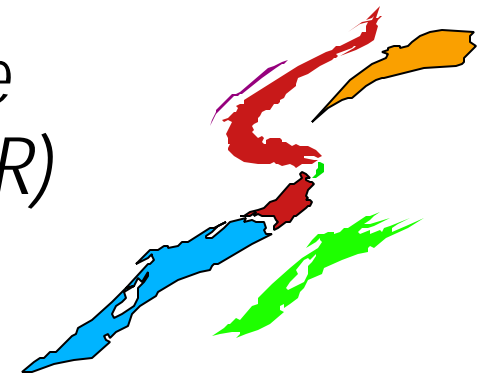
- *Is it sham recycling*
  - *Yes - (really disposal or treatment)*
  - *No - how is it regulated?*
- *Key issue: Is secondary material "commodity-like" (i.e. is it likely to be abandoned or mismanaged prior to reclamation?; is it likely to pose environmental risks greater than analogous raw materials/products?)*



# Summary of Sham vs. True Recycling (continued)

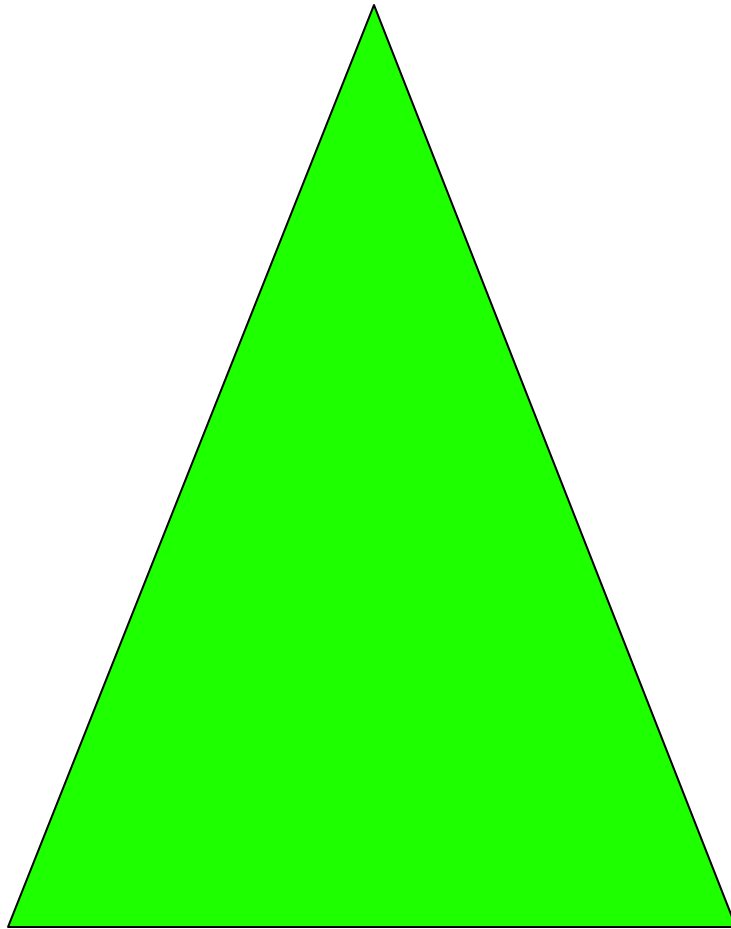
---

- *Six criteria for evaluating sham vs. true recycling:*
  - *Similar to analogous raw material?*
  - *Degree of processing required?*
  - *Material value?*
  - *Guaranteed market for end product?*
  - *Handled similarly to raw material?*
  - *Other factors such as economics of entire process and toxics along for the ride (TOR)*

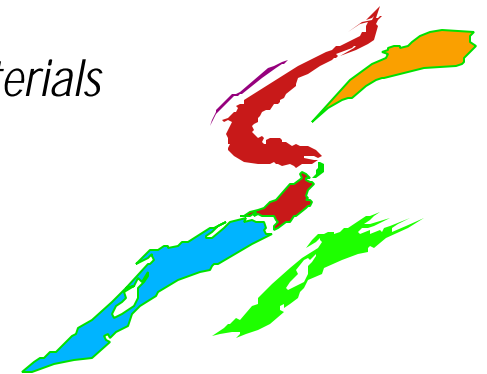


# Hierarchy of Recycling

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- *Not a solid waste by definition 261.2*
- *Excluded from definition of solid waste 261.4(a)*
- *Excluded from definition of hazardous waste 261.4(b)*
- *Recyclable Materials (hazardous waste) 261.6*
  - *Part 266*
  - *Specific Exclusions*
  - *Used Oil Part 279*
  - *All other recyclable materials*
- *Universal Waste 261.9*
  - *Part 273*

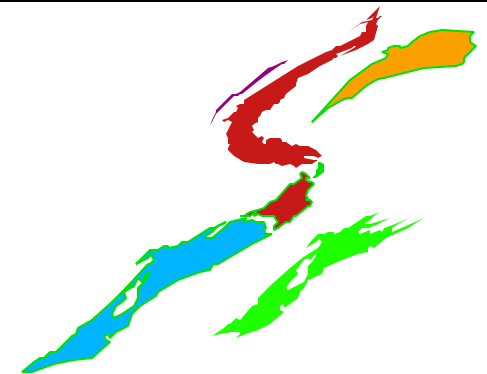


# 261.2 Table 1

	Use Constituting Disposal 261.2(c)(1)	Energy Recovery/ Fuel 261.2(c)(2)	Reclamation 261.2(c)(3) except for mineral processing	Speculative Accumulation 261.2(c)(4)
Spent Materials	*	*	*	*
Sludges F and K Lists	*	*	*	*
Sludges Characteristic	*	*	----	*
By-Products F and K Lists	*	*	*	*
By-Products Characteristic	*	*	----	*
Commercial Chemical Products P and U listed Wastes	*	*	----	----
Scrap Metal	*	*	*	*

Materials with a \* ARE solid wastes.

Materials with a ---- are NOT solid wastes.



# Not a solid waste by definition 261.2 (No regulation)

---

- *The dreaded table*
  - *ONLY the following are NOT solid wastes:*
    - *Reclaimed characteristic sludges*
    - *Reclaimed characteristic by-products*
    - *Reclaimed listed and unlisted commercial chemical products*
  - *ALL materials that are:*
    - *Used in manner constituting disposal*
    - *burned for energy recovery*
    - *accumulated speculatively (except for ccps)*
    - *reclaimed and not mentioned above*

*ARE solid wastes and hence can be hazardous wastes (i.e. elements of discard).*

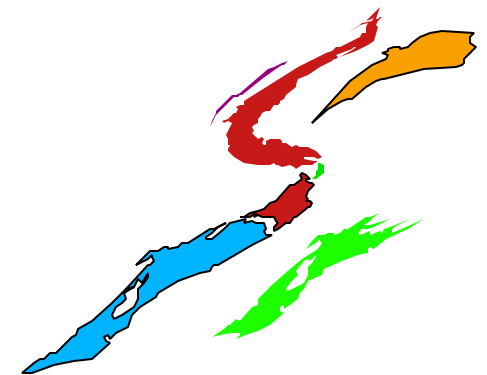


# Not a solid waste by definition

## 261.2 (No Regulation; continued)

---

- *Materials NOT solid waste when recycled (e.g. more product/manufacturing-like):*
  - *used or reused in an industrial process to make a product provided the material is not being reclaimed*
  - *used or reused as effective substitute for a commercial product*
- *EXCEPT if materials are (e.g. more disposal-like):*
  - *used in a manner constituting disposal*
  - *burned for energy recovery*
  - *accumulated speculatively*
  - *inherently waste-like (dioxins)*

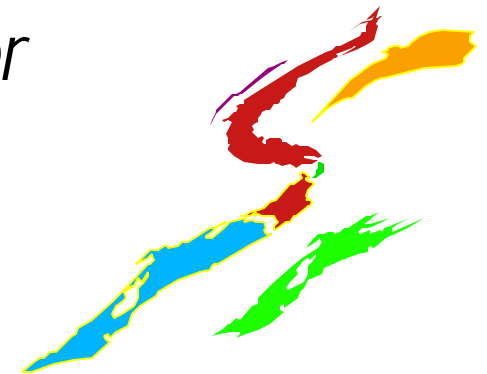




# Examples

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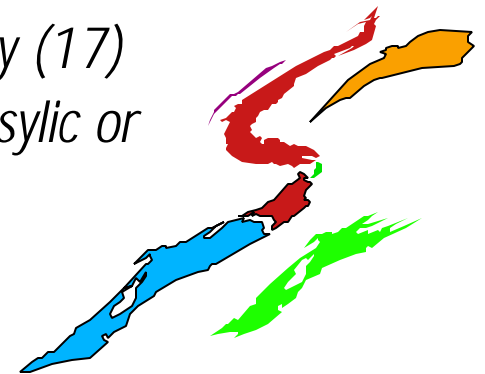
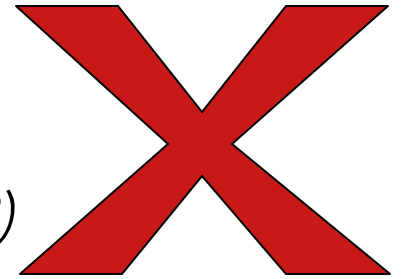
- *Used or reused to make a product -*
  - *Use of chemical industry still bottoms as feedstock*
- *Used as an effective substitute -*
  - *Use of hydrofluorosilicic acid (an air emission control dust) as a drinking water fluoridating agent*
  - *use of spent pickle liquor as a wastewater conditioner*



# Excluded from definition of solid waste 261.4(a) (No regulation)

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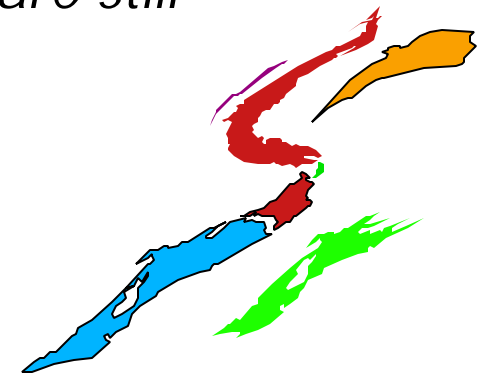
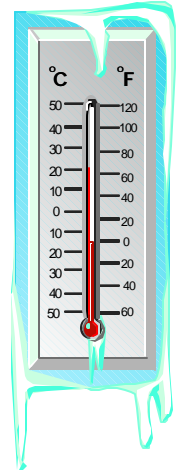
- *Pulping liquors reclaimed and returned to process (6)*
- *Spent sulfuric acid used to produce virgin sulfuric acid (7)*
- *Secondary materials reclaimed and returned (closed-loop recycling) (8)*
- *Spent wood preserving solutions reclaimed and reused (9)*
- *Coke by-products (K-wastes) recycled to coke ovens (10)*
- *Recovered oil from organic chemical manufacturing & petroleum industry returned to refining process (12, 18)*
- *Recycled excluded scrap metal (13)*
- *Recycled shredded circuit boards (14)*
- *Recycled secondary materials from mineral processing industry (17)*
- *Spent caustics from petroleum refining used to make cresylic or naphthenic acid (19)*



# Excluded from definition of hazardous waste 261.4(b) (Minimal regulation)

---

- *Used chlorofluorocarbon refrigerants reclaimed for further use (12)*
- *Used oil distillation bottoms used as feedstock to manufacture asphalt (14)*
- *Use of contaminated solvents for similar purpose (continued-use). FR January 4, 1985*
  - *Example: solvents used to clean circuit boards are no longer pure enough for that continued use, but are still pure enough for use as metal degreasers*



# Recyclable Materials (hazardous waste)

## 261.6

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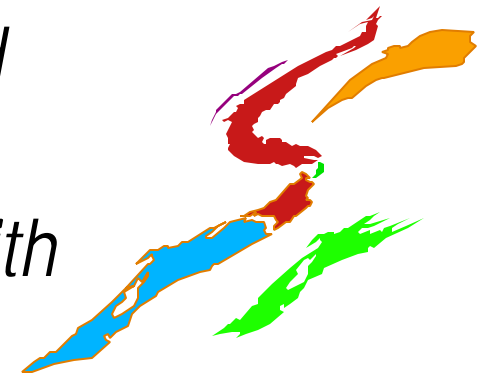
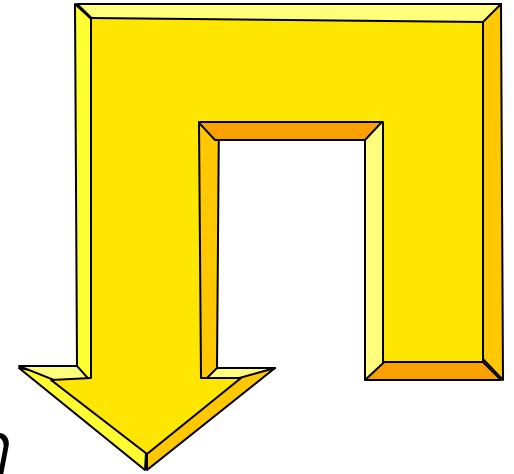
- *Part 266 - None to Full regulation*
- *Specific Exclusions - No regulation*
- *Used Oil 279 - Moderate regulation*
- *All other recyclable materials-Full regulation*



# Recyclable Materials - Part 266

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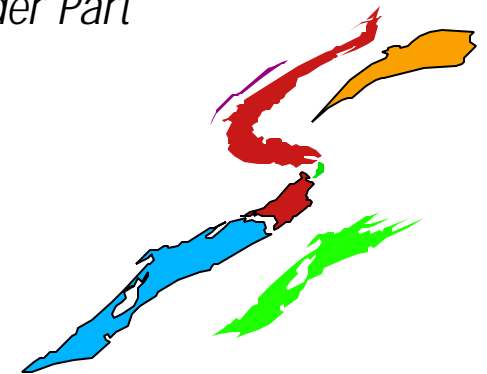
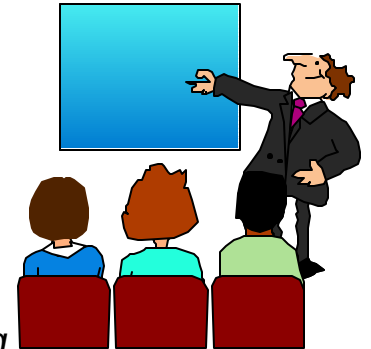
- ***Recyclable Materials Used in a Manner Constituting Disposal - Moderate to Full Regulation***
  - *Product must meet LDR to be exempt from regulation*
  - *K061 made into fertilizer is exempt from LDR*
  - *Generator (must count), Transporter, and Storer regulations apply*
  - *Use of waste or used oil contaminated with dioxin prohibited*



# Case Study - Poly Pacific Inc.

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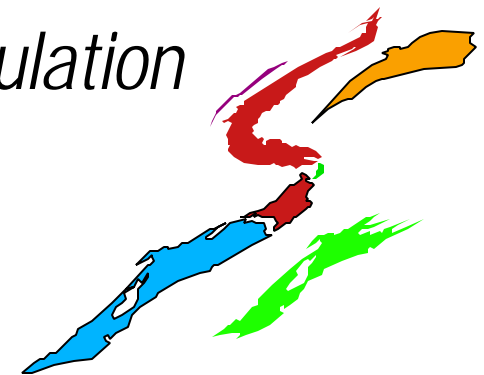
- *Petitioner requested determination of recycling spent plastic blasting material (lead-contaminated) to make fence posts*
  - *material will be recycled therefore is a discarded material*
  - *is characteristic for lead therefore hazardous*
  - *material will be used to make a product without reclamation (261.2(e)) therefore NOT a solid waste UNLESS product used in a manner constituting disposal*
  - *material will be used to make fence posts which fits definition of used in a manner constituting disposal*
  - *material IS a solid waste, IS hazardous, and will be recycled; therefore material is a recyclable material (261.6)*
  - *recyclable materials applied to or placed on land are regulated under Part 266 as Use Constituting Disposal*
    - *under 266 generator and storer regs apply*
- *Poly-Pacific chooses to make table tops*



# Recyclable Materials - Part 266

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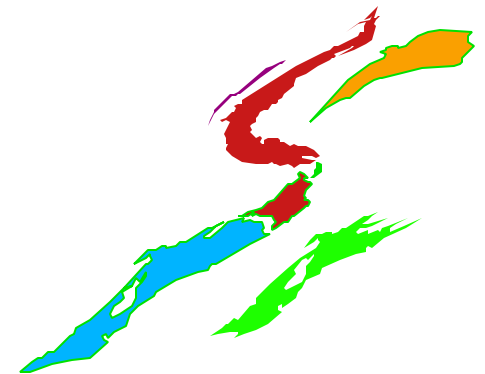
- ***Recyclable Materials Utilized for Precious Metal Recovery - Moderate Regulation***
  - *Notification*
  - *Manifesting only for generators (must count), transporters, and storers*
  - *Import/Export applies*
  - *Storers must prove no speculative accumulation*
  - *Recycler does NOT have to have permit*



# Case Study - Hospital

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- *ADEQ referred Hospital that stores spent x-ray fixer in tanks. What are storage requirements for this waste and the tanks?*
  - *Spent fixer is a spent material that is sent for reclamation of silver*
  - *Fixer is a solid waste and characteristic for silver therefore a HW*
  - *Fixer is a recyclable material (261.6) being sent for precious metal reclamation (266)*
  - *Part 266 ONLY requires notification and manifesting. No reference to part 262 accumulation requirements which in turn refer to storage in tanks (265 part J)*
  - *EPA does not regulate storage of PM because they are so valuable (economic incentive to proper storage)*



# Recyclable Materials - Part 266

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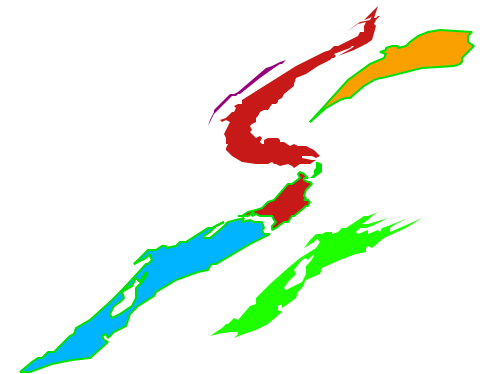
- ***Spent Lead-Acid Batteries being Reclaimed*** - *No regulation*
  - *No regulation of generators (do not count), transporters, collectors, regenerators, or storers as long as batteries are reclaimed or regenerated*
  - *If not reclaimed or regenerated then storers must meet interim status or permitted storage requirements.*



# Recyclable Materials - Part 266

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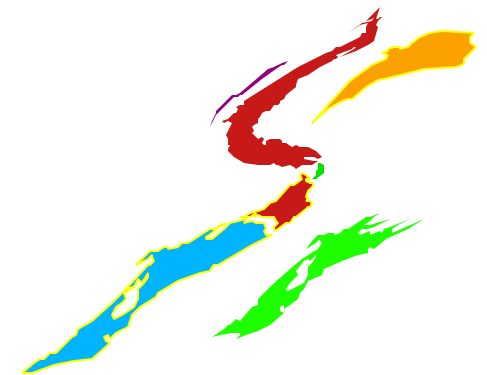
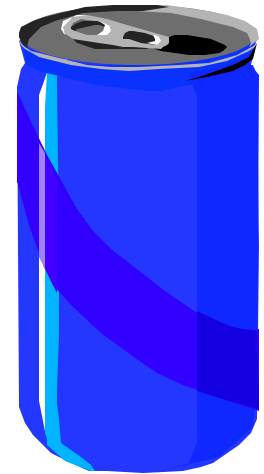
- ***Hazardous Waste Burned in Boilers and Industrial Furnaces - Fully Regulated***
- *More "disposal-like" than "recycling"*
  - *Generators subject to 262 (must count)*
  - *Transporters are subject to 263*
  - *Storage facilities subject to full TSD regulation*
  - *Burners subject to full Part 266 permit requirements*



# Recyclable Materials -Specific Exclusions (no regulation)

---

- *The following are exempt (do not count):*
  - *Industrial ethyl alcohol that is reclaimed*
  - *Scrap metal that is not excluded under 261.4(a)*
  - *Fuels produced from the refining of oil-bearing hazardous waste not excluded under 261.4(a)*
  - *Petroleum coke from refinery hazardous wastes unless characteristic*

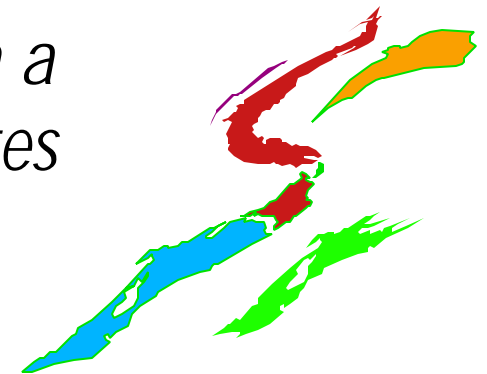


# Recyclable Materials - Used Oil

## Part 279 - Moderate regulation

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- *Used oil that is recycled by being: reused, re-refined, reclaimed, burned for energy recovery, or reprocessed*
- *Used oil only; does not include mixtures of used oil and characteristic or listed hazardous waste (rebuttable presumption: more than 1,000 ppm total halogens presumed to be hazardous)*
- *Materials reclaimed from used oil that are beneficially used and are not burned or used in a manner constituting disposal are not solid wastes*

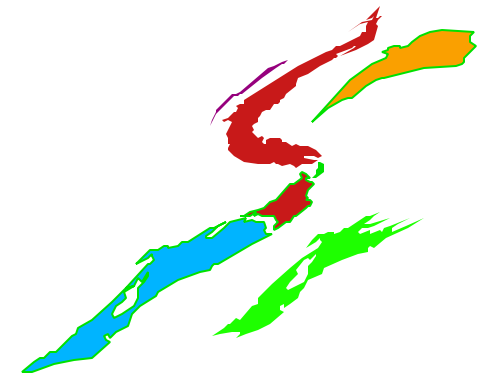


# Recyclable Materials - Used Oil

## Part 279 - continued

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- *Materials produced from used oil that are burned for energy recovery are subject to part 279*
- *Materials derived from used oil that are disposed of or used in a manner constituting disposal are not used oil, are solid wastes, and subject to full regulation if hazardous*
- *Wastewater subject to CWA with de minimis quantities of used oil are not regulated*



# Recyclable Materials - Used Oil

## Part 279 - continued

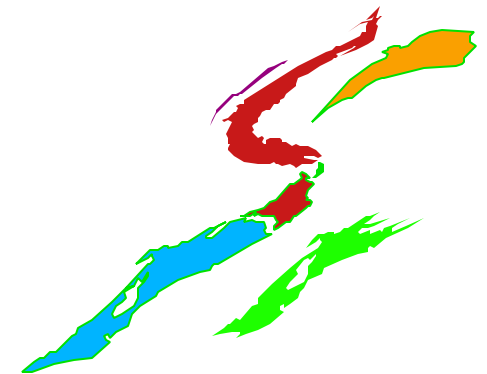
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### ■ *Generators:*

- *Do not count waste generated*
- *Subject to SPCC requirements*
- *Must comply with UST Part 280 if storage in tanks*
- *Specific reduced storage requirements*
- *Can burn in onsite space heaters*
- *Self transport up to 55 gallons w/o ID number*
- *No ID number required if subject to a tolling agreement*

### ■ *Transporters, Processors, and Refiners*

- *Subject to specific reduced requirements*



# Recyclable Materials - All other materials (Fully regulated)

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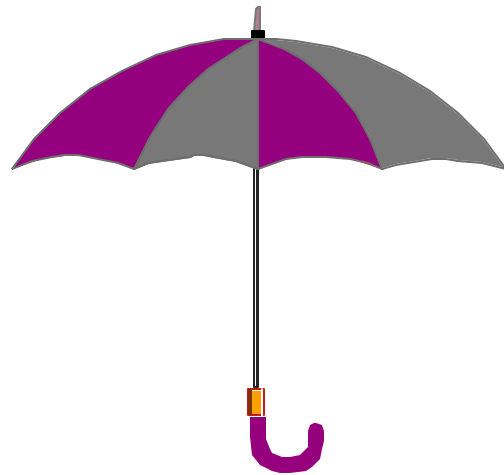
- *Recyclable Materials are subject to hazardous waste regulation*
  - *Generators (must count) and Transporters subject to all requirements*
  - *Storers prior to recycling are subject to all TSD requirements*
- *Recycling facilities that DON'T store\* are subject to reduced requirements*
  - *Notification*
  - *Manifesting*

*\* Storage is not defined, it is case-specific. It generally includes anything that is NOT conveyance (typically 24 hours)*



# Universal Waste - Part 261.9

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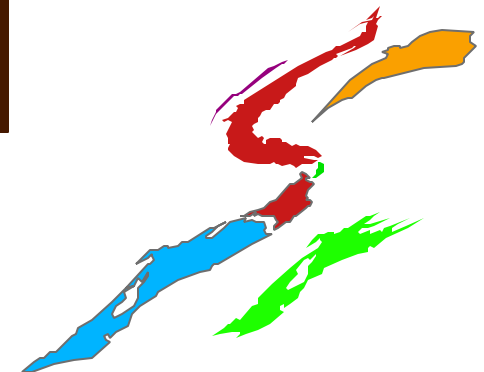
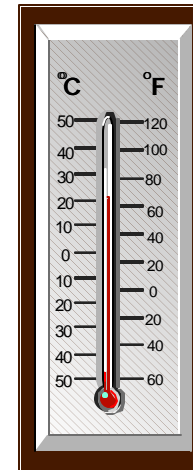
- *The following are exempt from parts 262 through part 270 and subject only to part 273:*
  - *batteries*
  - *pesticides*
  - *thermostats*
  - *mercury-containing lamps (newly added!)*



# Universal Waste - Part 273

---

- *Batteries include:*
  - *Those NOT managed under 266*
  - *Must be wastes (e.g. discarded or reclaimed)*
  - *Must be hazardous*
- *Pesticides include:*
  - *Recalled pesticide stocks*
  - *Unused pesticides*
  - *Must be wastes*
  - *Must be hazardous*
- *Thermostats include:*
  - *Must be wastes*
  - *Must be hazardous*

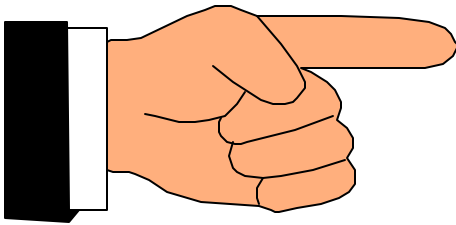


# Universal Waste - Part 273

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■ *Universal standards for householders, CESQGs, small quantity **handlers** ( $\leq 5,000$  kg at any time):*

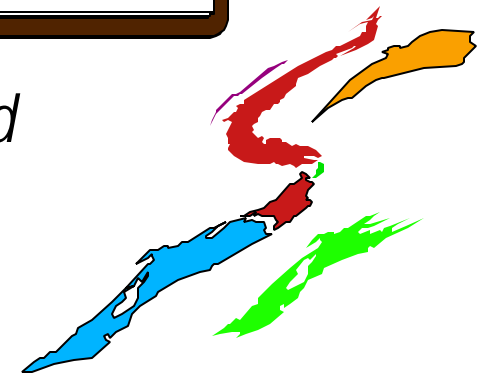
- *Do not count*
- *No notification*
- *Contain leaks*
- *Labeling/Marking*
- *Accumulation (one year)*
- *Employee training*
- *DOT packaging*
- *No manifests or bills of lading*
- *Must send to a destination facility*



# Universal Waste - Part 273

---

- *Universal standards for large quantity **handlers** (> 5,000 kg at any time)*
  - *Do not count*
  - *Notification*
  - *Contain leaks*
  - *Labeling/Marking*
  - *Accumulation (one year)*
  - *Employee training*
  - *DOT packaging*
  - *Records (any type) of wastes received and shipped*
  - *Must send to a destination facility*



# Universal Waste - Part 273

---

## ■ *Transporters:*

- *Must comply with DOT*
- *Accumulation (10 days)*
- *Release Response*
- *Must send to a destination facility*

## ■ *Destination Facilities:*

- *If NO storage prior to recycling then only subject to 261.6 and keep a record*
- *If storage then fully regulated as TSD*



# What are the regulated community's most common questions?

---

- *If I recycle, can I get out of all regulation?*
- *How can I recycle (insert any waste here) and not have to manage it as hazardous waste?*
- *Do I count recycled waste in my monthly generator totals?*
- *Why can't I make fence posts out of my hazardous waste?*
- *How can I recycle listed hazardous wastes (such as F006)?*
- *What is an unlisted off-specification product?*
- *What's the difference between recycling and an exclusion?*
- *What's the difference between recycling and delisting?*

