

Iowa Strategic Goals Program Assistance Workshop

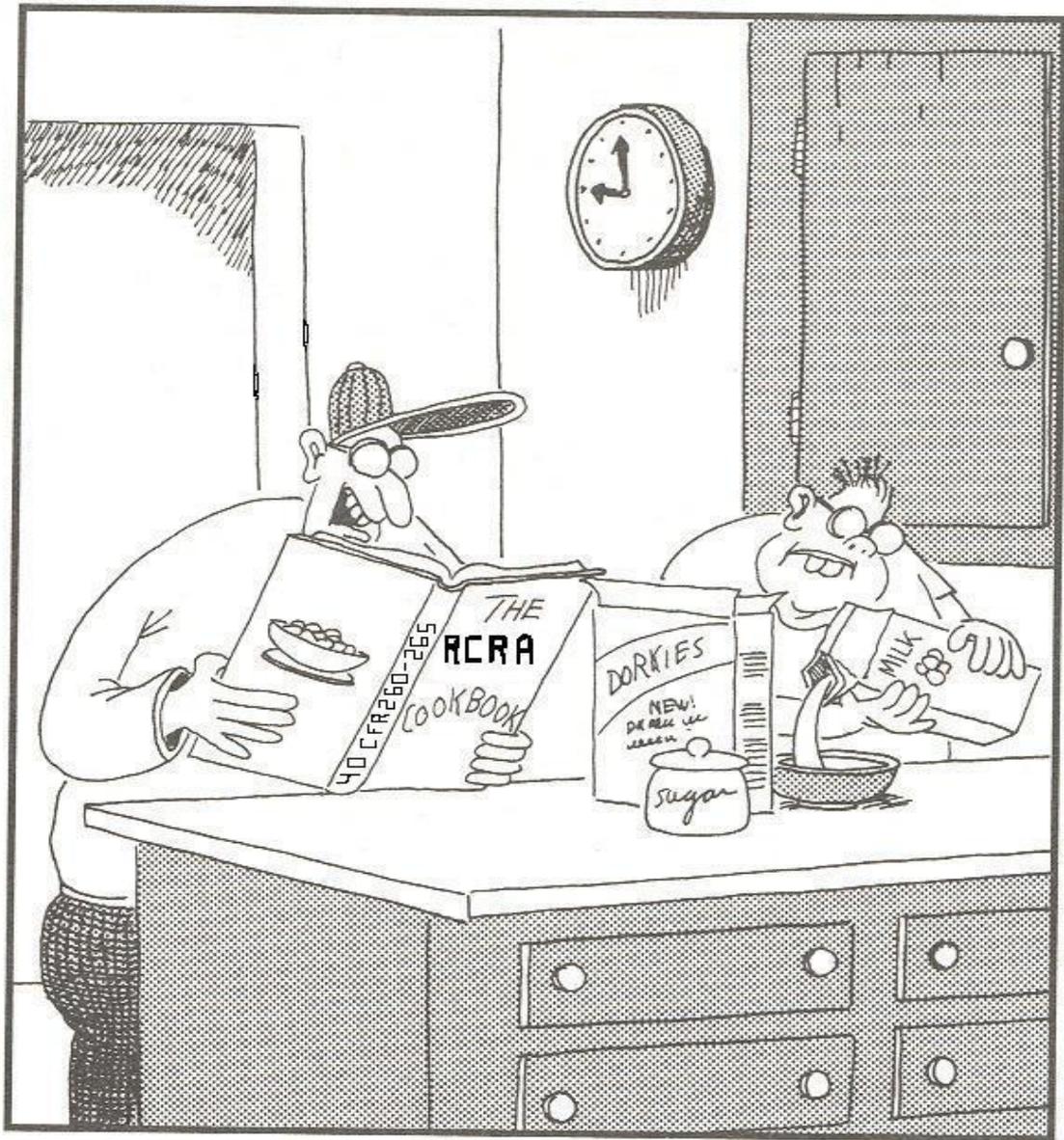
Hazardous and Solid Waste Compliance and Management

September 26, 2012



Purpose of the Presentation

- **Provide an overview of RCRA Subtitle C (Hazardous waste program)**
- **Provide information on how facilities should complete waste determinations**
- **Provide an overview of generator requirements**
- **Provide examples of violations**



“Oh, wait! Wait, Cory! ...
Add the cereal *first* and *then* the milk!”

RCRA is not easy!

**Sometimes the
requirements are
not obvious!**

Disclaimer!

- **This presentation is not intended to provide every RCRA requirement**
- **The facilities are responsible to ensure that their waste management is in compliance with RCRA!**

Resource Conservation and Recovery Act (RCRA) Waste Identification and Compliance Overview



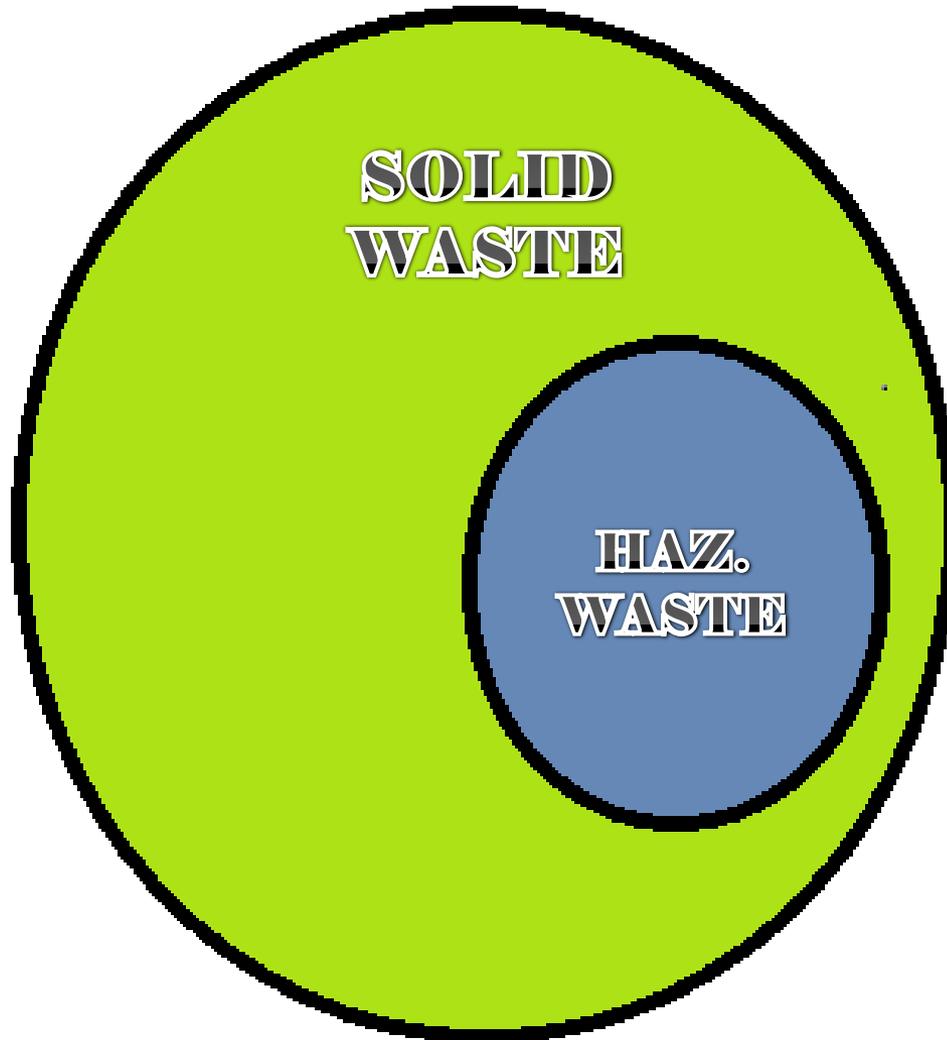
Solid Waste Disposal Act

- **Solid Waste Disposal Act (SWDA) of 1965**
 - **Enacted for the improvement of solid waste disposal methods**



Waste Universe

**NOT
WASTE!**



SWDA Amendments

- **Resource Recovery Act (1970)**
- **Resource Conservation and Recovery Act (RCRA) of 1976**
 - **To protect human health and the environment to reduce waste and conserve energy and natural resources to reduce or eliminate the generation of hazardous waste as expeditiously as possible**

What are the RCRA Subtitle C Requirements?

- **Title 40 Code of Federal Regulations (40 CFR) Parts 260 through 279 (Hazardous waste)**
 - **Generators**
 - **Transporters**
 - **Treatment, Storage, and Disposal facilities (TSDF)**

What are the RCRA Requirements?

- **40 CFR Parts 240 through 259 (Subtitle D) – Solid Waste**
- **40 CFR Part 280 (Subtitle I) – Underground Storage Tanks (USTs)**
- **Other subtitles (A, B, E, F, G, H, and J)**

The Waste Identification and/or Determination



What is the #1 RCRA Violation?

- **40 CFR 262.11 – Failure to conduct a waste determination!**
- **Also, failure to make an adequate waste determination.**

Fundamental Questions

- **Do I generate solid wastes?**
- **Are the solid wastes I generate hazardous wastes?**
- **How should I manage my solid and hazardous wastes?**

Are My Wastes “Hazardous”?

- **EVERYONE** who generates a waste must make hazardous waste determinations to know how their wastes might be regulated unless explicitly excluded from the hazardous waste rules

Solid Waste Definition

As per 261.2(a)(1):

***A Solid Waste* is any discarded material that is not excluded by 261.4(a) or that is not excluded under 260.30 and 260.31 (variances from classification as a solid waste for recycled materials).**

Is The Material Discarded by Being Recycled??

As per 261.2(b):

- **Materials are solid waste if they are *abandoned* by being:**
 - **disposed**
 - **burned or incinerated**
 - **accumulated, stored or treated (but not recycled) or, in lieu of being abandoned by being disposed of, burned, or incinerated**

Is The Material Discarded?

As per 261.2(a)2 a *discarded* material is any material which is:

- **abandoned**
- **inherently waste-like**
- **recycled**

Is The Material Discarded by Being Recycled??

As per 261.2(c):

- **Materials are solid waste if they are *recycled*—or accumulated, stored, or treated before recycling—by being:**
 - **used in a manner constituting disposal**
 - **burned for energy recovery**
 - **accumulated speculatively**

Is The Material Discarded by Being Recycled??

As per 261.2(c):

- **Materials are solid waste if they are *recycled*—or accumulated, stored, or treated before recycling—by being:**
 - **reclaimed**

Is The Material Discarded by Being Recycled??

As per 261.2(c):

- **Materials are solid waste if they are inherently waste-like:**
 - **hazardous waste numbers F020 thru F023, F026, and F028**
 - **Secondary materials fed to a halogen acid furnace that are characteristic or listed hazardous wastes**
 - **Materials meeting criteria established by EPA**

Is The Material Exempt by Being Recycled??

As per 261.2(e)(1):

- **Materials are not solid waste if they are *recycled* by being:**
 - **used or reused as ingredients in an industrial process to make a product, provided that the materials are not being reclaimed**

Is The Material Exempt by Being Recycled??

As per 261.2(e)(1):

- **Materials are not solid waste if they are *recycled* by being:**
 - **Returned to the original process from which they are generated, without first being reclaimed or land disposed**

Is The Material Exempt by Being Recycled??

As per 261.2(e)(2):

- **Materials remain solid waste when *recycled* by being used, reused, or returned to original process if the recycling includes:**
 - **Used in a manner constituting disposal, or used to produce products that are applied to the land**



**F006 waste to be blended
into zinc fertilizer**

Is The Material Not Exempt by Being Recycled?

As per 261.2(e)(2):

- **Materials remain solid waste when *recycled* by being used, reused, or returned to original process if this recycling includes:**
 - **Burned for energy recovery, used to produce a fuel, or contained in fuels**

Is The Material Not Exempt by Being Recycled?

As per 261.2(e)(2):

- **Materials remain solid waste when *recycled* by being used, reused, or returned to original process if this recycling includes:**
 - **inherently waste-like**
 - **speculative accumulation**

Table 1

	Use Constituting Disposal (261.2(c)(1)) 1	Energy Recovery/Fuel (261.2(c)(2)) 2	Reclamation (261.2(c)(3)) 3	Speculative Accumulation (261.2(c)(4)) 4
Spent Materials	(*)	(*)	(*)	(*)
Sludges (listed in 40 CFR part 261.31 or 261.32)	(*)	(*)	(*)	(*)
Sludges exhibiting a characteristic of hazardous waste	(*)	(*)	(*)
Byproducts (listed in 40 CFR part 261.31 or 261.32)	(*)	(*)	(*)	(*)
Commercial chemical products listed in 40 CFR 261.33	(*)	(*)	(*)
Byproducts exhibiting a characteristic of hazardous waste	(*)	(*)
Scrap metal	(*)	(*)	(*)	(*)

- (*) indicates material is a solid waste
- (.....) indicates material is not a solid waste

Solid Waste Exclusions

- **Is your waste excluded according to 40 CFR 261.4?**
 - **wastes not meeting regulatory definition of “solid waste”**
 - **domestic sewage & wastes going to treatment plants**
 - **NPDES-permitted industrial wastewater discharges**
 - **household waste (residences, motels, campgrounds, etc.)**



**Household HW and
White Goods Collection Center for Joplin
Tornado Disaster Response**

Solid Waste Exclusions

- **Is your waste excluded according to 40 CFR 261.4?**
 - **agricultural waste used as fertilizer**
 - **certain production wastes (mining, petroleum, mfg. processes)**
 - **certain arsenical-treated wood wastes**
 - **petroleum contaminated media & debris from underground storage tank remediation (40 CFR 280)**



**Air emission equipment removed
from service and abandoned
in the bone yard**



**Lead contaminated soil pile
from truck accident/spill**

**Lead concentrate contaminated
soil from truck accident/spill**

21 3:27PM

Stained soil from solvents drained/spilled from hoses. De Minimus spills/releases or?



Solid Waste Exclusions

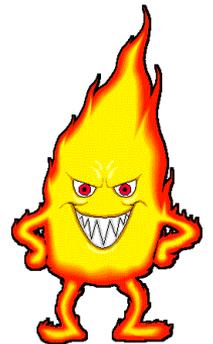
- **Is your waste excluded according to 40 CFR 261.4?**
 - **non-termed plated used oil filters that have been properly drained**
 - **certain other specific types of wastes**

Hazardous Waste

- **Two broad categories:**
 - **RCRA Characteristic Wastes – Ignitable, Corrosive, Reactive, and Toxic as defined at 40 CFR 261 Subpart C**
 - **RCRA Listed Hazardous Wastes – F, K, P, and U-listed hazardous wastes as defined at 40 CFR 261 Subpart D**

Ignitable Characteristic

- **D001 characteristic waste code**
- **A liquid waste having a flash point less than 140°F (60°C)**
- **An oxidizer or ignitable compressed gas (DOT defined)**
- **“spontaneously combustable” materials**



A large, conical pile of light-colored, granular material, identified as diamateaceous earth, is contained within a black-lined trough or bin. The material has a fine, sandy texture. The background shows an industrial or construction site with various structures and equipment.

Filter media:
diamateaceous earth

Burning DE media at a landfill caused by spontaneous combustion. Is it an D001 hazardous waste?



Burning DE media at a landfill
caused by spontaneous
combustion. Is it an D001
hazardous waste?





**Chemical/Solvent fire
in Des Moines**



Chemical Tank Farm after explosion and fire



12 12:08

Tank farm filling station after fire



12 11:59

**Pump that was in use at the time
of the explosion and fire**



Corrosive Characteristic

- **D002** characteristic waste code
- A liquid waste with a pH less than or equal to **2.0** (acidic)
- A liquid waste with pH equal to or greater than **12.5** (alkaline)
- A liquid waste that corrodes steel at rate greater than **0.25 in./yr.**



Reactive Characteristic

- **D003 characteristic waste code**
- **Includes wastes that are:**
 - **unstable or explode**
 - **produce noxious fumes, gases, or vapors when mixed with water or under conditions such as heat or pressure.**



Toxic Characteristic



- **D004 through D043 characteristic waste codes**
- **Wastes determined by laboratory analysis (TCLP, or Toxicity Characteristic Leaching Procedure) to contain any of 40 specified constituents above threshold concentrations listed in 40 CFR 261.24**

F-Listed

- **Non-specific sources**
- **“F_{xxx}” listed waste codes**
- **Halogenated or non-halogenated solvents or solvent mixtures used in cleaning or degreasing and containing $\geq 10\%$ solvent constituent, before use.**

F-Listed

- **F-listed wastes include:**
 - **trichlorethylene (TCE), methylene chloride, chlorinated fluorocarbons (F001)**
 - **xylene, acetone, methyl isobutyl ketone (MIBK) (F003)**
 - **toluene, methyl ethyl ketone (MEK), benzene (F005)**
 - **materials, such as rags or sorbants, contaminated with these solvents**

K-Listed

- **Specific sources**
- **“Kxxx” listed waste codes**
- **various types of treatment sludges**
- **certain distillation wastes**
- **specific types of manufacturing wastes**

P- and U-Listed

- **discarded commercial chemical or off-specification product listed in 40 CFR 261.33**
- **container residues or spill cleanup waste from such products**
- **“Pxxx” listed waste codes for acute hazardous wastes**
- **“Uxxx” listed waste codes for non-acute hazardous wastes**



Specially regulated categories of waste

- **Universal Wastes**
- **Used Oil**
- **Reclaimed lead-acid batteries**

Universal Waste

- **Four specified categories of hazardous waste under the Universal Waste Rule (40 CFR 273):**
 - **Universal Waste—Batteries**
 - **Universal Waste—Pesticides**
 - **Universal Waste—Mercury Containing Equipment**
 - **Universal waste—Lamps**

Universal Waste Advantage

- **Less stringent management requirements than for fully regulated hazardous waste. Hazardous waste managed as Universal Waste is not counted toward total monthly hazardous waste generation rate**

Universal Waste Batteries

- discarded primary (non-rechargeable) & secondary (rechargeable) batteries that contain elements such as cadmium, lead, or mercury
- Examples: Ni-Cad, mercury-oxide, lead-acid batteries

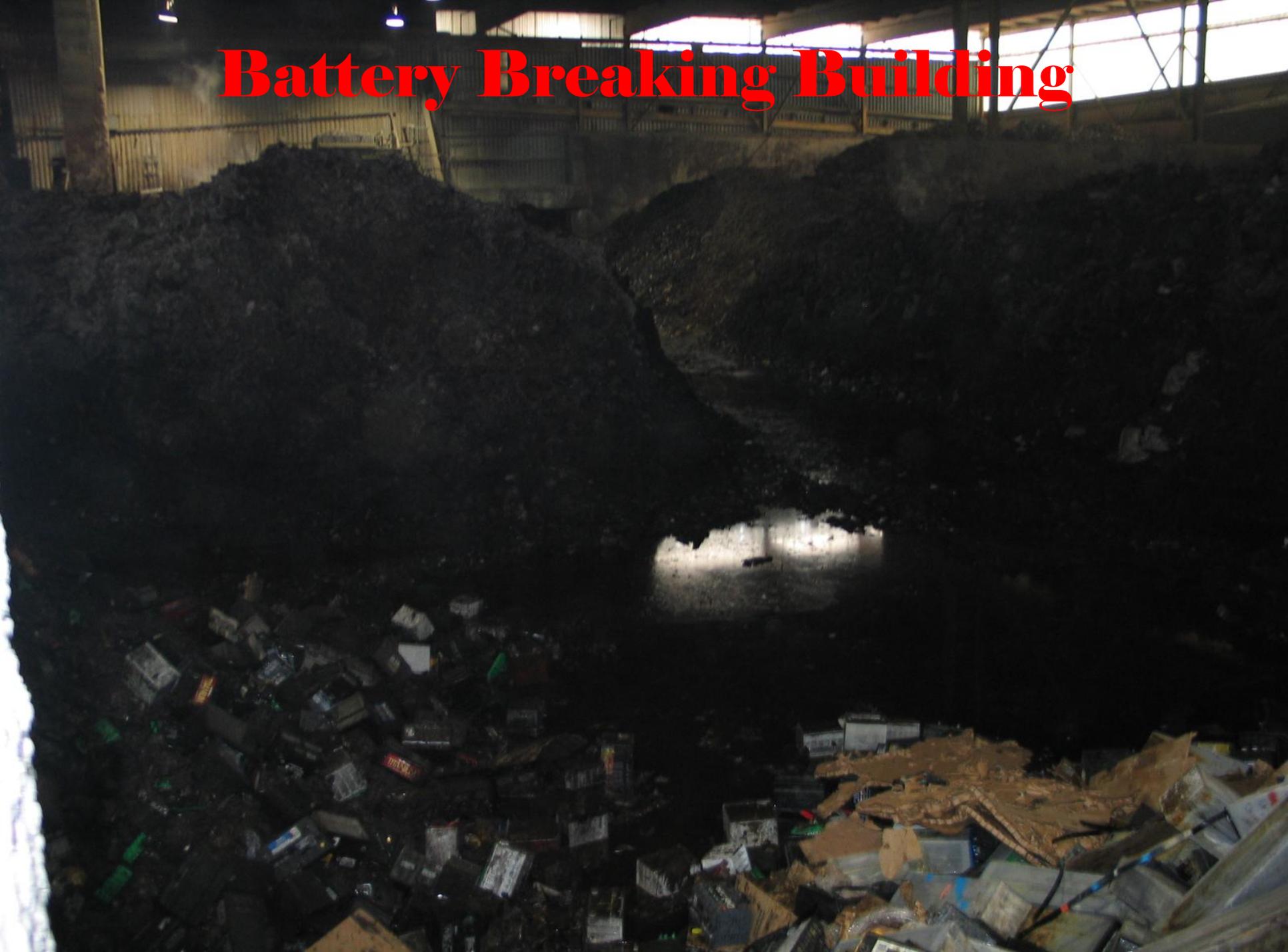
Reclaimed Lead-Acid Batteries

- **handling for reclamation by generators, transporters, collectors, storers, or regenerators is exempt from most hazardous waste requirements (40 CFR 266.80(a))**

Reclaimed Lead-Acid Batteries

- a battery reclaimer who stores batteries prior to reclamation is subject to most hazardous waste standards (40 CFR 266.80(b))
- lead-acid batteries may *alternatively* be managed as universal waste

Battery Breaking Building



▶ **Battery and battery parts
disposed on and in the ground**



Universal Waste Pesticides

- **Particular classes of discarded pesticides**
- **Usually involves a recall**



Universal Waste Mercury Containing Eq.

- Includes thermostats, mercury switches, barometers, gauges, etc., that contain mercury



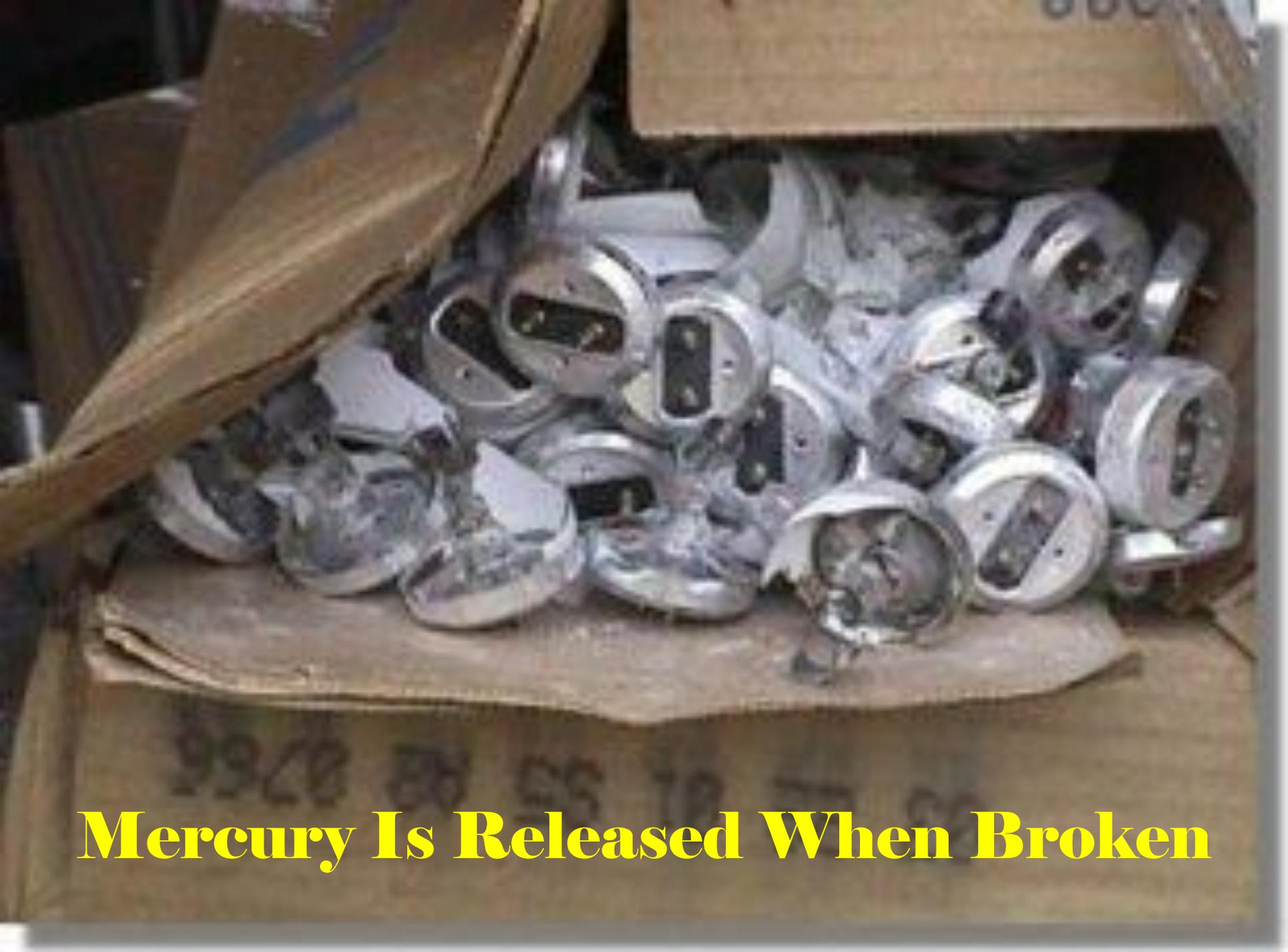
Universal Waste Lamps

- **any discarded lamps which contain elements (such as mercury or lead) which may make them a characteristic hazardous waste**
- **Includes fluorescent lamps, HID lamps, sodium lamps**





**Open and unlabeled containers
of spent fluorescent lamps**



Mercury Is Released When Broken

Doing the Waste Determination

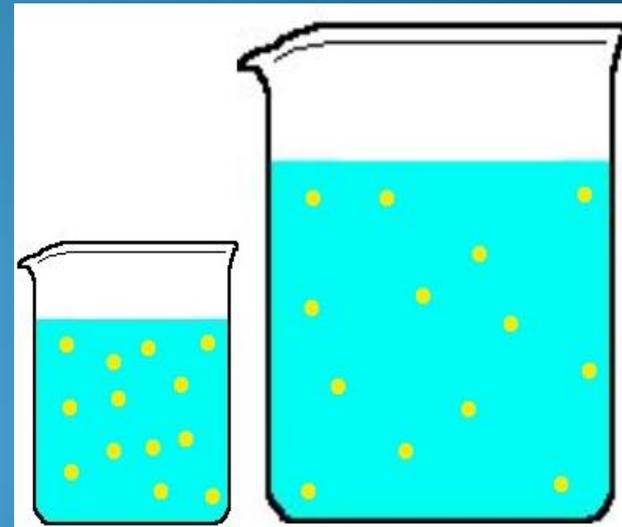
- A waste determination may be performed either by:
 - laboratory testing (TCLP) of a representative sample of the waste
 - applying knowledge of the substances or processes producing the waste
 - Be able to verify or justify your waste determination.

Mixing Hazardous and Nonhazardous Wastes

- **When hazardous and non-hazardous wastes are mixed, the entire mixture is regulated as hazardous if:**
 - **the hazardous waste was a “listed” hazardous waste**
 - **the hazardous waste was “characteristic,” and the mixture retains the “characteristic”**

Dilution of Hazardous Wastes

- **Dilution of a hazardous waste is prohibited treatment and is subject to significant penalties under the RCRA rules.**





**Frozen lead left in process vessel
for more than 180 days**

Land Disposal Restrictions (40 CFR §268)

- **Wastes must meet LDR treatment standards prior to land disposal**
- **LDR establish treatment standards for each HW codes**
- **Applies to anyone disposing of HW in land disposal units**

Land Disposal Restrictions (40 CFR §268)

- **Treatment is required prior to disposal (40 CFR §268, Subpart D)**
- **Dilution is prohibited as a substitute for treatment**