

2010 RCRA Hazardous Waste Webinar for Federal Facilities

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2010 RCRA Hazardous Waste Webinar for Federal Facilities

Proper Management of Some Waste Streams



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Outline

- Universal Wastes
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Proper Management of Some Waste Streams

Universal Wastes



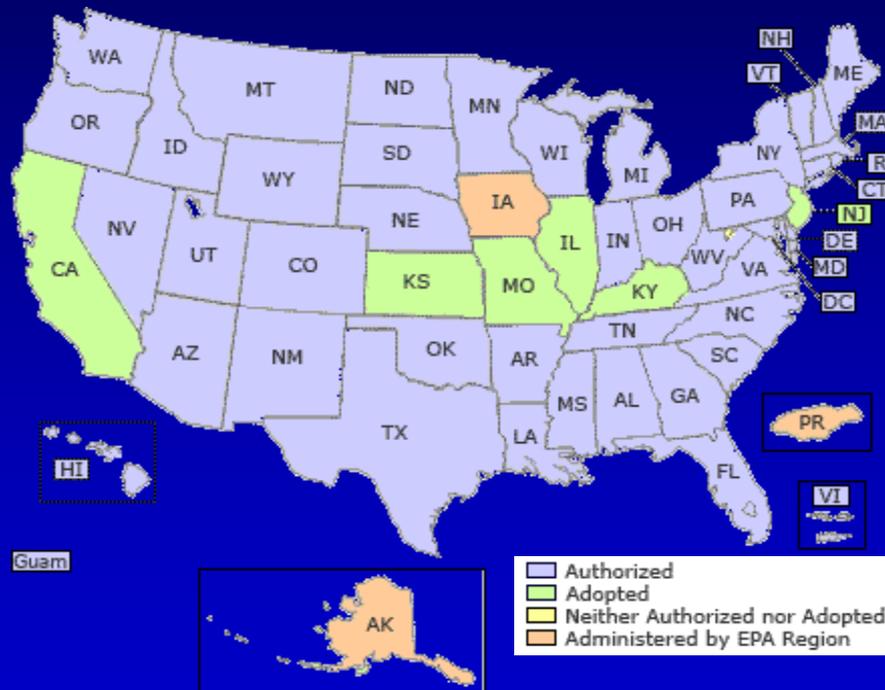
Universal Wastes

- The Universal Waste Rule
 - Amendment to the Resource Conservation and Recovery Act (RCRA) regulations
 - Eases regulatory burdens
 - Promotes proper recycling or disposal of hazardous waste batteries, pesticides, mercury-containing equipment, and lamps which will reduce the amount of hazardous waste items in the municipal solid waste stream
 - Facilitates collection, management, and proper disposal/recycling of these wastes, including combined universal and household hazardous waste programs



Universal Wastes

- The Universal Waste Rule
 - Differences in State Adoption



Universal Wastes

- What are Universal Wastes
 - Hazardous Waste Pesticides
 - Pesticides that are either recalled (e.g., suspended or canceled under FIFRA Section 6) or collected in waste pesticide collection programs. State agricultural agencies often conduct collection programs. The Universal Waste Rule allows farmers to ship their wastes to such a collection program to conduct cost effective, yet safe, disposal by the agencies. Pesticides not meeting the universal waste requirements may still be subject to other RCRA regulation.
 - Hazardous Waste Lamps (bulbs)
 - Lamps containing mercury and sometimes lead, cadmium, and reactive materials (D003), are found in businesses, government facilities, and households. Examples of common types of lamps include fluorescent, high intensity discharge (HID), neon, mercury vapor, high pressure sodium, and metal halide lamps.



Universal Wastes

- What are Universal Wastes
 - Hazardous Waste Batteries
 - Nickel-cadmium (Ni-Cd), mercury oxide, and small sealed lead-acid batteries, which are found in many common items in the business and home setting, including electronic equipment, mobile telephones, portable computers, and emergency backup lighting.
 - EPA already has an exemption commonly used by facilities that store lead-acid batteries prior to reclamation (40 CFR Part 266 Subpart G). While Part 273 does not alter these requirements, it does apply to lead-acid batteries that are not being managed under Subpart G.



Universal Wastes

- What are Universal Wastes
 - Mercury-containing Equipment
 - A device or part of a device that contains elemental mercury integral to its function, including thermometers, barometers, sphygmomanometer, gauges, gas regulator valves, medical tubes that use mercury as a weight, and switches in homes, offices and automobiles. Mercury must remain sealed in the ampule or housing. Free mercury, or spilled mercury can not be managed as universal. Mercury ampules/housings can be removed and managed as universal (e.g., mercury switch ampules from scrapped autos).

Universal Wastes

- State-specific Universal Wastes
 - Electronics, including
 - Cathode Ray Tubes (CRTs), Cellphones, Printers, Copiers, & Computers
 - Oil-Based finishes
 - Thermostats (other mercury-containing equipment allowed via enforcement discretion memo)

Universal Wastes

- **State-specific Universal Wastes**

- **Aerosol Cans**

- California, Colorado

- **Antifreeze**

- Louisiana, New Hampshire

- **Ballasts**

- Maine, Maryland, Vermont

- **Barometers**

- New Hampshire, Rhode Island

- **Cathode Ray Tubes (CRTs)**

- Maine, New Hampshire, Rhode Island, New Jersey

- **Electronics**

- Arkansas, California, Colorado, Connecticut, Louisiana, Michigan, Nebraska, New Jersey

- **Oil-Based Finishes**

- New Jersey

- **Paint/Paint-Related Wastes**

- Texas

- **Haz Waste Pharmaceuticals**

- Michigan



Universal Wastes

- What are not Universal Wastes

- Cathode Ray Tubes (CRTs)

- CRTs, the video display components of television and computer monitors, typically containing lead, are governed by the CRT final rule,* intended to encourage recycling:
 - “Used, intact CRTs . . . are not solid wastes within the United States unless they are disposed, or unless they are speculatively accumulated . . . by CRT collectors or glass processors.”

* This final rule was effective on January 29, 2007.



Universal Wastes

- General Requirements
 - Notification to EPA (Large Quantity Handlers only)
 - Accumulation Time Limits (1 year)
 - Paperwork (quantity, time limit, etc.)
 - Labeling/Marking
 - Training
 - Contain accidental releases
 - Send UW only to other handlers or destination facilities
 - Comply with applicable DOT requirements (primarily a transporter concern)



Universal Wastes

- Who is Affected by the Universal Waste Rule?
 - Universal wastes are generated by small and large government organizations, businesses and other facilities that are regulated under RCRA and have been required to handle these materials as hazardous wastes. The Universal Waste Rule eases the regulatory burden on organizations that generate these wastes. Specifically, it streamlines the requirements related to notification, labeling, marking, prohibitions, accumulation time limits, employee training, response to releases, offsite shipments, tracking, exports, and transportation.



Universal Wastes

- Who is Not Directly Affected by the Universal Waste Rule?
 - Conditionally Exempt Small Quantity Generators
 - EPA encourages these businesses to participate voluntarily in collection and recycling programs by bringing these wastes to collection centers for proper treatment and disposal.
 - Note: CE-SQGs are required to insure proper disposal of their hazardous wastes, which includes universal wastes. Managing these wastes under the Universal Waste Rules insures proper disposal.
 - Individual states may not exempt CE-SQGs
 - Households
 - Universal wastes also are generated by individual households, which are not regulated under RCRA and are allowed to dispose of these wastes in the trash. While new, lined MSW landfills are designed to handle small amounts of hazardous wastes, these wastes can be better managed in a designated program for collection or recycling. EPA encourages residents to take these items to collection sites located at nearby businesses and other centers for proper recycling or disposal.



Universal Waste Handler Requirements

	SQHUU (part 273 subpart B)	LQHUU(part 273 subpart C)
Classification	A universal waste handler who accumulates up to, but not including, 5,000 Kg on-site at any one time (§273.6)	A universal waste handler who accumulates 5,000 Kg or more on-site at any one time (§273.6)
EPA Identification Number	Not Required (§273.12)	Required, though no separate notification required if you already have an EPA RCRA ID (§273.32)
On-Site Accumulation Limit	Less than 5,000 Kg of universal waste at any one time (§273.6)	No limit
Manifest	Not Required* (§273.19)	Not required, but must keep basic shipping records* (§273.39)
Employee Training	Proper handling and emergency procedures (§273.16)	Training geared towards employee responsibilities (§273.36)

* While not explicitly stated, both SQHUU and LQHUU must be able to demonstrate the type and quantity of universal wastes generated and stored, demonstrate that that it was stored less than one year, and that it was sent to an appropriate destination facility.



Universal Waste Handler Requirements

	SQHUU and LQHUU (part 273 subparts B and C)
Prohibitions	Disposing of, diluting, or treating universal waste, although some exceptions apply (§273.11 or §273.31)
Waste Management	Must manage universal waste in a way that prevents releases into the environment -specific standards apply to each type (§273.13 or §273.33)
Labeling/Marking	Must label or mark universal waste or containers of universal waste to identify universal waste type (§273.14 or §273.34)
Accumulation Time Limit	One year unless for proper recovery treatment or disposal (§273.15 or §273.35) – [must be able to track/demonstrate storage time]
Response to Releases	Must immediately contain releases and handle residues appropriately and make hazardous waste determination on material resulting from release (§273.17 or §273.37)
Shipments	Must send universal waste only to other handlers, destination facilities or foreign destination (§273.18 or §273.38)



Universal Wastes

- Case Study: Federal Facility, Region 2
 - April 2005, EPA conducted an inspection
 - EPA inspection findings included:
 - Failure to make hazardous waste determinations 40 CFR § § 261.5 and 262.11
 - » Fluorescent light bulbs used at the facilities were disposed of as solid waste by building maintenance contractors.
 - » Past practice of trash disposal of traffic paint wastes, containing lead.
 - Failure to ensure proper disposal, 40 CFR § 261.5(g)(3)
 - EPA follow-up information request
 - RCRA § 3007 covered all management and/or disposal of spent fluorescent and HID light bulbs and/or computers and computer components, including monitors in every GSA managed facility in the U.S. Virgin Islands.



Universal Wastes

- Case Study: Federal Facility, Region 2
– April, 2005, EPA Inspection



Universal Wastes

- Case Study: Federal Facility, Region 2
 - Consent Agreement and Final Order, Dec, 2007
 - Penalty
 - Injunctive relief
 - Coverage included all GSA facilities in Puerto Rico, U.S. Virgin Islands, New York, and North New Jersey
 - Required GSA to recycle all mercury-containing fluorescent light bulbs, including “low mercury bulbs” (green- tip bulbs)
 - Required GSA to convert standard fluorescent bulbs currently in use at these covered buildings to “low mercury” fluorescent bulbs



Proper Management of Some Waste Streams

Medical/Pharmaceutical Waste



Medical/Pharmaceutical Waste Management

- Applies to:
 - pharmacies,
 - hospitals,
 - physicians' offices,
 - dentists' offices,
 - outpatient care centers,
 - ambulatory health care services,
 - residential care facilities,
 - veterinary clinics, and
 - other facilities that generate hazardous pharmaceutical wastes



Medical Waste

- Congress enacted the Medical Waste Tracking Act in November 1988, which added medical waste tracking provisions to RCRA Subtitle J.
- The Medical Waste tracking Act of 1988 defines medical waste as "any solid waste that is generated in the diagnosis, treatment, or immunization of human beings or animals, in research pertaining thereto, or in the production or testing of biologicals."
This definition includes, but is not limited to:
 - blood-soaked bandages
 - culture dishes and other glassware
 - discarded surgical gloves
 - discarded surgical instruments
 - discarded needles used to give shots or draw blood (e.g., medical sharps)
 - cultures, stocks, swabs used to inoculate cultures
 - removed body organs (e.g., tonsils, appendices, limbs)
 - discarded lancets
- The Act directed EPA to establish a two-year demonstration program for the tracking of medical waste.
 - Currently, the program expired and no federal tracking regulations are in effect. States, however, have become active in managing medical waste.
- While medical waste is not regulated under the current federal RCRA regulations, there are federal requirements for medical waste under the Clean Air Act (CAA) for medical waste incinerators and under the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) for pesticides and chemicals used in medical waste treatment technologies.

Pharmaceutical Waste

Definition:

- Any chemical product, vaccine or allergenic
 - including any product with the primary purpose to dispense or deliver a chemical product, vaccine or allergenic, not containing a radioactive component, that is intended for use in the diagnosis, cure, mitigation, treatment, or prevention of disease or injury in man or other animals;
- or any chemical product, vaccine or allergenic
 - including any product with the primary purpose to dispense or deliver a chemical product, vaccine or allergenic, not containing a radioactive component, that is intended to affect the structure or function of the body in man or other animals.
- This definition includes products such as transdermal patches, and oral delivery devices such as gums or lozenges.

This definition does not include sharps or other infectious or biohazardous waste, dental amalgams, medical devices not used for delivery or dispensing purposes, equipment, contaminated personal protective equipment or contaminated cleaning materials.



Pharmaceutical Hazardous Waste

- There are approximately 31 commercial chemical products listed on RCRA's P- and U-lists that have pharmaceutical uses.
- As the P- and U-lists are based on chemical designations, this number does not completely represent the total number of brand name pharmaceuticals that may actually be listed hazardous wastes.
 - For example, the following chemotherapy drugs, CTX, Cytotoxan, Neosar and Procytox, are U058 (cyclophosamide).

Pharmaceutical Hazardous Waste

- **Characteristic pharmaceutical wastes:**
 - Include those that exhibit the ignitability characteristic, such as solutions containing more than 24% alcohol.
 - An example of a pharmaceutical that may exhibit the reactivity characteristic is nitroglycerine.
 - Pharmaceuticals exhibiting the corrosivity characteristic are generally limited to compounding chemicals, including strong acids, such as glacial acetic acid, and strong bases, such as sodium hydroxide.
 - Depending on the concentration in different pharmaceutical preparations, pharmaceuticals may also exhibit the toxicity characteristic because of the use of arsenic (D004), barium (D005), cadmium (D006), chloroform (D022), chromium (D007), lindane (D013), m-cresol (D024), mercury (D009), selenium (D010), and silver (D011).
- **As thousands of over-the-counter or prescription drugs are currently approved for sale in the U.S., it is difficult to provide a precise number of pharmaceuticals that are listed and/or characteristic under RCRA (for a complete listing of FDA-approved drugs, please see FDA's Orange Book.**



Amendment to the Universal Waste Rule: Addition of Pharmaceuticals

- December 2, 2008-Federal Register/Vol 73, No. 232,
 - EPA is proposing to add hazardous pharmaceutical wastes to the Universal Waste Rule.
- January 30, 2009-Federal Register/ Vol 74, No. 19,
 - Extension of comment period, closed on March 4, 2009



Pharmaceutical Universal Waste Under the Proposed Rule

- A pharmaceutical universal waste is defined as a pharmaceutical that is a hazardous waste as defined in § 261.3, and containers.
 - e.g., bottles, vials, IV bags, tubes of ointment/gels/creams, ampules, etc., which have held any hazardous pharmaceutical waste and which would be classified as hazardous waste under § 261.7.
- The Agency decided to define “pharmaceutical universal waste” to ensure that any container which has held hazardous pharmaceutical wastes (and thus is also considered a hazardous pharmaceutical waste, unless that container is considered “RCRA-empty”) could also be managed in the universal waste system.



Rulemaking Considerations

- EPA believes that hazardous pharmaceutical wastes meet the factors considered when determining whether a waste is appropriate for inclusion in the Universal Waste Rule.
- Most hazardous pharmaceutical wastes present a relatively low risk during accumulation and transport due to their form and packaging, which is typically in small, individually packaged dosages, such as pills or capsules.
- Hazardous pharmaceutical wastes are frequently generated in a wide variety of settings, including hospitals, pharmacies, long-term care facilities, veterinary offices and by reverse distributors, as well as in households.



What are the major requirements under the proposed universal waste rule?

- The proposed Pharmaceutical Universal Waste Rule is designed to streamline and reduce the complexity of the RCRA hazardous waste collection requirements.
- EPA expects management of hazardous pharmaceutical wastes to improve, while decreasing the regulatory burden for many hazardous pharmaceutical waste generators, large and small.
- Universal waste program includes modified requirements for storage, labeling, shipment off site, employee training, responses to releases, and notification.
 - For example, the streamlined standards include modified requirements for storage up to a year.



When will this rulemaking go into effect?

- As established by the Administrative Procedure Act, this rulemaking must undergo the notice and comment process. Once public comments are received, comments will be reviewed and the proposed rulemaking will be re-evaluated to determine if changes are warranted.
- Then, EPA will develop and publish a final rule.
 - However, because this rule is less stringent than current RCRA generator regulations, authorized states are not required to modify their programs to adopt this regulation. Therefore, the regulated community cannot choose to manage their pharmaceutical wastes as universal wastes until the rule is adopted in their particular states.



Proper Management of Some Waste Streams

Solvent-Contaminated Industrial Wipes (Rags)



Solvent-Contaminated Industrial Wipes (Rags)

- Past EPA Policy
 - Listed Hazardous Waste Solvents
 - If listed F001-F005 hazardous wastes are poured onto the equipment to be cleaned, the contaminated rag is a listed hazardous waste
 - If listed F001-F005 hazardous wastes are poured onto the rag first, the resultant contaminated rag is not a listed hazardous waste, though it still may be a characteristic hazardous waste (e.g., ignitable, toxic)

Solvent-Contaminated Industrial Wipes (Rags)

- **Modifications to RCRA Rules Associated With Solvent-Contaminated Industrial Wipes**
 - Final Rule: Published in FR 04/2012 (projected)
 - Provisions include:
 - Conditionally exclude from the definition of hazardous waste disposable industrial wipes that are contaminated with hazardous solvents and are going to disposal
 - Conditionally exclude from the definition of solid waste reusable industrial shop towels and rags that are contaminated with hazardous solvents and are sent for laundering or dry cleaning (hereinafter referred to as disposable industrial wipes and reusable industrial wipes, respectively)



Solvent-Contaminated Industrial Wipes (Rags)

- Modifications to RCRA Rules Associated With Solvent-Contaminated Industrial Wipes, cont.
 - This proposal affects contaminated industrial wipes being sent to both landfill and non-landfill (e.g., laundries and combustion) facilities and is applicable to:
 - industrial wipes exhibiting a hazardous characteristic (*i.e.*, ignitability, corrosivity, reactivity, or toxicity) due to use with solvents
 - industrial wipes contaminated with F001-F005 spent F-listed solvents or comparable P- and U-listed commercial chemical products that are spilled and cleaned up with industrial wipes



Solvent-Contaminated Industrial Wipes (Rags)

- Used Oil Rags

- Rags containing or otherwise contaminated with used oil that have been wrung out such that no visible signs of free-flowing oil remain in or on the material:

- Are not used oil
 - Are subject to the hazardous waste regulations (e.g., must make a hazardous waste determination)

Proper Management of Some Waste Streams

Bulb Crushers



Bulb Crushers

- Lamps being managed under the Universal Waste Rule may not be crushed. If you wish to crush your lamps, you will need to manage the lamps under the traditional hazardous waste regulations.
- Some states allow crushing of bulbs under their Universal Waste program (e.g., Colorado).

How is Bulb Crushing Regulated?

- Lamp crushing is considered waste treatment because it:
 - changes the physical form of the waste;
 - reduces volume to make storage and transport safer and easier; (40 CFR 260.10 and 64 FR 36477-78, 7/6/99).
- Hazardous Waste treatment usually requires a RCRA waste treatment permit.
 - Exception: Waste generators may treat wastes without a RCRA treatment permit, under 40 CFR 262.34 accumulation regulations (51 FR 10168, 3/24/86; 57 FR 37194, 8/18/92).
- Lamps crushed under this provision cannot subsequently be handled as UW.
- States may require air or other permits for bulb crushers:
 - e.g., Michigan, New Jersey



How is Bulb Crushing Regulated?

- Bulbs may be crushed in a 90- or 180-day container without a permit (51 *FR* 10168), if crushing takes place in a container that must be closed except when necessary to add or remove the waste. This can be accomplished by crushing the bulbs simultaneously as they are added to the container (265.173(a)).
 - Certain states, such as California, Maine, Massachusetts, Connecticut, Rhode Island and Missouri, have more narrow exemptions to the RCRA permit requirements

What Are Bulb Crushing Environmental Concerns?

- Potentially exposed individuals include:
 - The crusher operator
 - Other people in the same work area
 - Other people working in spaces sharing the HVAC system
- Release to the environment

Bulb Crushing Considerations

- There are some interest in bulb crushing to reduce volume and save transportation cost.
- Bulb crushing can create new exposures:
 - Crusher operator
 - Co-worker exposures
 - Exposures to the general public
 - Release to the environment
- EPA study and guidance: ensure public health and control environmental release (*Mercury Lamp Drum-Top Crusher Study*, EPA/530/R-06/002, or <http://www.epa.gov/epawaste/hazard/wastetypes/universal/drumptop/index.htm>)

Proper Management of Some Waste Streams

Aerosol Cans



Aerosol Cans Destined for Recycling

- A steel aerosol can that does not contain a "significant" amount of liquid (e.g., a can that has been punctured and drained) would meet the definition of "scrap metal" and, if recycled, would be exempt from regulation under §261.6(a)(3)(ii).
- A determination of reactivity or any other characteristic would not be relevant.... It should be noted that since the process of emptying the aerosol cans is part of a recycling process (i.e., scrap steel recycling), this activity would be exempt from RCRA regulation under §261.6(c) (except as specified in §261.6(d))."
- Any liquids and propellants (contained gases) removed from the aerosol cans are subject to regulation as hazardous wastes if they are listed or if they exhibit a characteristic.



Aerosol Cans Destined for Recycling

- If an aerosol can is to be disposed rather than recycled, a hazardous waste determination must be made (for both the can itself and its contents). (RO 11782, 11806)
According to EPA, a discarded aerosol can is a hazardous waste if:
 - The can is not empty as defined in §261.7 and contains a commercial chemical product that is listed in §261.33(e) or (f) or contains a material that exhibits one or more of the hazardous waste characteristics; and/or
 - The can itself exhibits any of the characteristics of hazardous waste (i.e., reactivity). (RO 13225, 14656)



Aerosol Cans: Liquid Material

- The liquid material removed from aerosol cans that are punctured, crushed, or shredded may be subject to RCRA hazardous waste regulation if
 - it is a commercial chemical product, such as a solvent, listed in §261.33(e) or (f), or
 - it exhibits any hazardous waste characteristic. (RO 14656)
- If the materials are recovered for repackaging and beneficial use, or other legitimate recycling or reclamation, are not solid wastes, and consequently are not subject to the RCRA regulations. (RO 12020)

Proper Management of Some Waste Streams

Fuel Waste/Filters



Fuel Waste/Filters

- Fuel Waste

- An off-specification commercial chemical product is not a solid waste as long as:
 - it is used for its original purpose (e.g., if it was a fuel it may be burned as a fuel)
 - It is reclaimed
- Ignitable sludges and by-products are not solid wastes as long as:
 - They are reclaimed
- Comparable fuels exclusion, 40 CFR §261.38
 - Wastes that meet the following are not solid wastes:
 - Heating value must exceed 5,000 BTU/lb
 - Viscosity must not exceed 50 centiStokes (cS), as-fired
 - Constituent specifications (40 CFR §261.38 Table 1)
 - Additional requirements are met (40 CFR §261.38(c))

Fuel Waste/Filters

- Fuel Filters
 - Properly drained metal fuel filters meet the regulatory definition of scrap metal
 - Must no longer contain a significant liquid component
 - If recycled, are exempt from hazardous waste regulation
 - If disposed of, must make a hazardous waste determination
 - If not drained, fuel filters remain fully regulated

Proper Management of Some Waste Streams

E-Waste



E-Wastes

- **Electronic Wastes (E-Wastes)**
 - Some electronics are hazardous wastes when disposed of
 - Color Cathode Ray Tube (CRT) Computer Monitors
 - Color CRT TVs
 - Certain electronic circuit boards
 - Many cell phones
 - Others
 - Some E-Wastes or E-waste components are Universal Wastes
 - Batteries
 - State-specific wastes
 - Some have special rules
 - CRT Final Rule
 - Otherwise, E-Wastes are governed by hazardous waste regulations

E-Wastes

- **Electronic Wastes (E-Wastes)**
 - Example E-Wastes hazardous waste regulation
 - **Circuit boards**
 - Whole unused circuit boards are considered unused commercial chemical products, which are unregulated.
 - Whole used circuit boards meet the definition of spent materials but also meet the definition of scrap metal. Therefore, whole used circuit boards that are recycled are exempt from the hazardous waste regulations.
 - Shredded circuit boards are excluded from the definition of solid waste if they are containerized (i.e., fiberpaks) prior to recovery. These shredded circuit boards cannot contain mercury switches, mercury relays, nickel cadmium batteries, or lithium batteries. If these materials are not treated this way, then they are considered hazardous waste and must be treated as such.

E-Waste Case Study

- Cell Phone Waste



E-Waste Case Study

- Cell Phone Waste



Batteries:
cadmium, cobalt, lithium,
organic solvents

Springs & Contacts:
beryllium

Solder:
lead

Capacitors &
Semiconductors:
arsenic, tantalum

Plastics:
brominated flame
retardants

In Conclusion

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