

# ELI Summer School

## *Hazardous Sites and Substances:*

# RCRA

Anna Kuperstein  
Keller and Heckman LLP

June 29, 2011

# Major U.S. Environmental Laws

- 1947 - Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)
- 1965 - Solid Waste Disposal Act (SWDA)
- 1970 - Clean Air Act (CAA)
- 1970 - Environmental Protection Agency (EPA)
- 1970 - National Environmental Policy Act (NEPA)
- 1972 - Clean Water Act (CWA)
- 1974 - Safe Drinking Water Act (SDWA)
- 1976 - Resource Conservation and Recovery Act (RCRA)
- 1976 - Toxic Substances Control Act (TSCA)
- 1980 - Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund)
- 1986 - Emergency Planning and Community Right-to-Know Act (EPCRA)

# Impetus for RCRA

- Expansion of industrial manufacturing and metropolitan centers leads to more waste generated in the US
- Correlation between waste and disease
- Lax disposal practices require expensive cleanup
- End-point regulation already existed through CAA and CWA, but loop of hazardous substances/waste remained open
  - *“The federal government is spending billions of dollars to remove pollutants from the air and water, only to dispose of such pollutants on the land in an environmentally unsound manner.”*

# Legislative History

- 1965 - Solid Waste Disposal Act (SWDA)
  - 42 U.S.C. § 6901 et seq.
- 1976 – SWDA amended by Resource Conservation and Recovery Act (RCRA)

# Legislative History (selected amendments)

- RCRA amended by the Hazardous and Solid Waste Amendments of 1984
  - Regulation of underground storage tanks (USTs) under RCRA.
  - Covered small quantity generators of hazardous waste.
  - Established requirements for hazardous waste incinerators and the closing of substandard landfills.
- RCRA amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA)
  - Required owners and operators of USTs to ensure corrective action for tanks when necessary.
  - Addressed cleanup of leaking USTs and other leaking waste storage facilities.
  - Established the Leaking Underground Storage Tank (LUST) Trust Fund to pay for the cleanup of leaking UST sites where responsible parties cannot be identified.
- RCRA amended by the Federal Facility Compliance Act in 1992
  - Waived sovereign immunity with regard to fines and penalties on federal facilities.
  - Addressed application of RCRA to radioactive mixed wastes, public vessels, waste munitions.
- RCRA amended by the Land Disposal Program Flexibility Act of 1996
  - Allowed some flexibility in the procedures for land disposal of certain wastes.

# Goals of RCRA

- Protect human health and the environment from the potential hazards of waste disposal
- Manage hazardous byproducts from industrial activities
- Manage land disposal of waste in an environmentally sound manner, and prevent contamination of groundwater
- Strengthen federal regulation of hazardous waste, but retain state control of nonhazardous solid waste
- Reduce generated waste by encouraging manufacturing processes that minimize waste
- Reduce landfill waste and conserve resources by encouraging recycling and treatment of waste instead of disposal

# RCRA vs. CERCLA

- RCRA focuses on **BEFORE**
  - Control waste streams to prevent contamination, through regulation.
- CERCLA focuses on **AFTER**
  - Dealing with sites that have already been contaminated by hazardous waste, through liability.
- But both have provisions to require cleanup of contaminated sites that occurred in the past.

# Major Components

- **Subtitle C – Hazardous Waste**

- Cradle-to-grave tracking system for hazardous waste
- Standards for generators and transporters of hazardous waste, and for operators and facilities that treat/store/dispose of hazardous waste
- 40 C.F.R. Parts 260-279

- **Subtitle D – Nonhazardous Waste**

- State-run permitting program for owners/operators of municipal landfills
- 40 C.F.R. Parts 239-259

- **Subtitle I – Underground Storage Tanks**

- Protect underground drinking water from contamination from underground storage tanks
- 40 C.F.R. Parts 280-282



# Hazardous Waste

- **Subtitle C**
- Purpose: Regulate hazardous waste from cradle to grave
- **Places responsibility on:**
  - Generators of hazardous waste - 40 C.F.R. Part 262
  - Transporters of hazardous waste - 40 C.F.R. Part 263
  - Facilities that treat, store, and dispose of hazardous waste (TSD facilities) - 40 C.F.R. Parts 264-265
- **Hazardous Waste Manifest System**
  - System of forms, reports, and procedures designed to track hazardous waste from the time it leaves the generator facility until it reaches the waste management facility that will store, treat, or dispose of the hazardous waste
  - Each entity signs manifest
  - Ensure that waste is properly delivered to treatment facility, and that no waste is lost

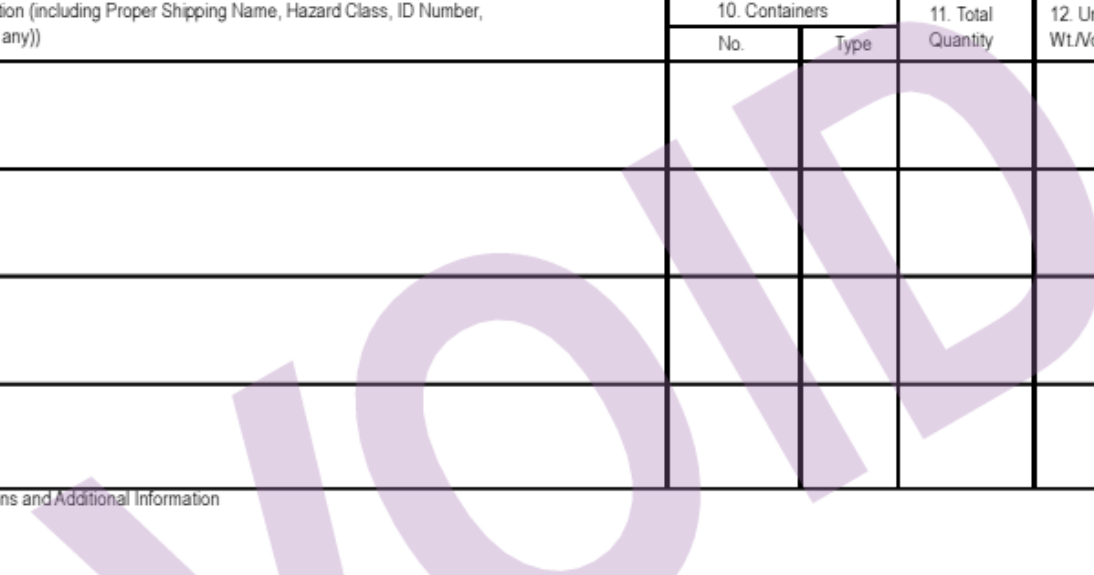
# Hazardous Waste Manifest (top)

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved, OMB No. 2050-0039

<b>UNIFORM HAZARDOUS WASTE MANIFEST</b>		1. Generator ID Number		2. Page 1 of		3. Emergency Response Phone		4. Manifest Tracking Number		
		5. Generator's Name and Mailing Address						Generator's Site Address (if different than mailing address)		
Generator's Phone:										
6. Transporter 1 Company Name						U.S. EPA ID Number				
7. Transporter 2 Company Name						U.S. EPA ID Number				
8. Designated Facility Name and Site Address						U.S. EPA ID Number				
Facility's Phone:										
9a. HM	9b. U.S. DOT Description (including Proper Shipping Name, Hazard Class, ID Number, and Packing Group (if any))	10. Containers		11. Total Quantity	12. Unit Wt./Vol.	13. Waste Codes				
		No.	Type							
1.										
2.										
3.										
4.										
14. Special Handling Instructions and Additional Information										

GENERATOR



# Hazardous Waste Manifest (bottom)

↓	<b>15. GENERATOR'S/OFFEROR'S CERTIFICATION:</b> I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations. If export shipment and I am the Primary Exporter, I certify that the contents of this consignment conform to the terms of the attached EPA Acknowledgment of Consent. I certify that the waste minimization statement identified in 40 CFR 262.27(a) (if I am a large quantity generator) or (b) (if I am a small quantity generator) is true.				
	Generator's/Offeror's Printed/Typed Name	Signature	Month	Day	Year
↓	<b>16. International Shipments</b> <input type="checkbox"/> Import to U.S. <input type="checkbox"/> Export from U.S.                      Port of entry/exit: _____ Transporter signature (for exports only):                      Date leaving U.S.: _____				
	<b>17. Transporter Acknowledgment of Receipt of Materials</b>				
↓	Transporter 1 Printed/Typed Name		Signature		Month Day Year
	Transporter 2 Printed/Typed Name		Signature		Month Day Year
↓	<b>18. Discrepancy</b>				
	<b>18a. Discrepancy Indication Space</b> <input type="checkbox"/> Quantity <input type="checkbox"/> Type <input type="checkbox"/> Residue <input type="checkbox"/> Partial Rejection <input type="checkbox"/> Full Rejection <div style="text-align: right;">Manifest Reference Number: _____</div>				
↓	18b. Alternate Facility (or Generator)		U.S. EPA ID Number		
	Facility's Phone: _____				
↓	18c. Signature of Alternate Facility (or Generator)				Month Day Year
	<b>19. Hazardous Waste Report Management Method Codes (i.e., codes for hazardous waste treatment, disposal, and recycling systems)</b>				
↓	1.	2.	3.	4.	
	<b>20. Designated Facility Owner or Operator: Certification of receipt of hazardous materials covered by the manifest except as noted in Item 18a</b>				
Printed/Typed Name		Signature		Month	Day Year

# Hazardous Waste

- **Generator must:**

- Obtain govt-issued ID
  - Determine if wastes are hazardous
  - Store and handle hazardous waste properly
  - Notify transporters that waste is hazardous
  - **Prepare manifest about its hazardous waste, and track shipment of waste**
  - Keep records of test results, waste analyses, other waste determinations
  - For ex: dry cleaners, auto repair shops, hospitals, photo processors, chemical manufacturers, petroleum refineries
- 
- 40 C.F.R. Part 262

# Hazardous Waste

- Generators may store haz waste for a certain period of time
- Time limit depends on the amount of haz waste generated per month
- **Conditionally Exempt Small Quantity Generators** (< 200 lbs/month)
  - No time limit on storing haz waste
  - Exempt from most requirements for generators, subject to limited generator waste management standards
- **Small Quantity Generators** (200-2,200 lbs/month)
  - May store haz waste for 180 days
- **Large Quantity Generators** (> 2,200 lbs/month)
  - May store haz waste for 90 days

# Hazardous Waste

- **Transporter must:**
  - Obtain govt-issued ID
  - Label shipments as hazardous waste
  - Handle hazardous waste properly
  - Transport waste to licensed TSD facility
  - **Deliver manifest to TSD facility**
  - In case of discharge of hazardous waste, transporter must take immediate action to protect human health and environment
- 40 C.F.R. Part 263

# Hazardous Waste

- **Treatment, storage, and disposal (TSD) facility must:**
  - Obtain govt-issued permit
  - Store, treat, and dispose of waste in units that meet design criteria – containers, containment buildings, landfills, surface impoundments, tanks
  - **Return manifest to generator, to confirm that the waste has been received by the designated facility**
  - Demonstrate financial capacity to take correction action in case of spill/leak
  - Take corrective action for all releases of hazardous waste from the facility
  - Conduct groundwater monitoring to ensure waste does not leak
  - Clean up prior contamination at facility
- 40 C.F.R. Parts 264-265

# Hazardous Waste

- Designs for hazardous waste containment
  - Tank
  - Surface impoundment

Figure III-13: Secondary Containment for Tanks

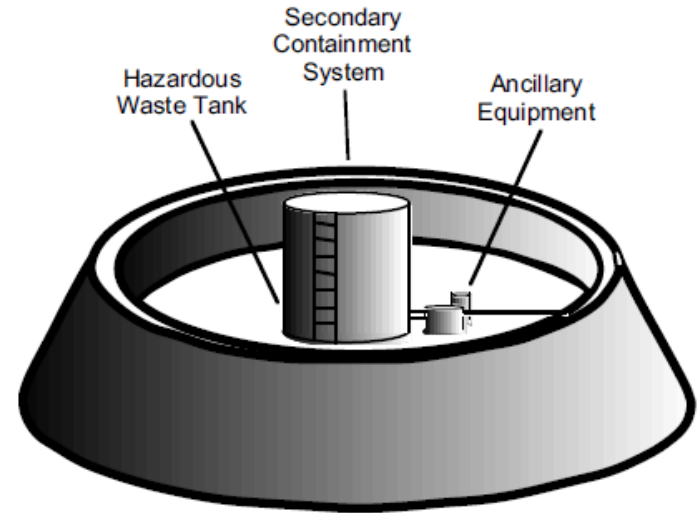
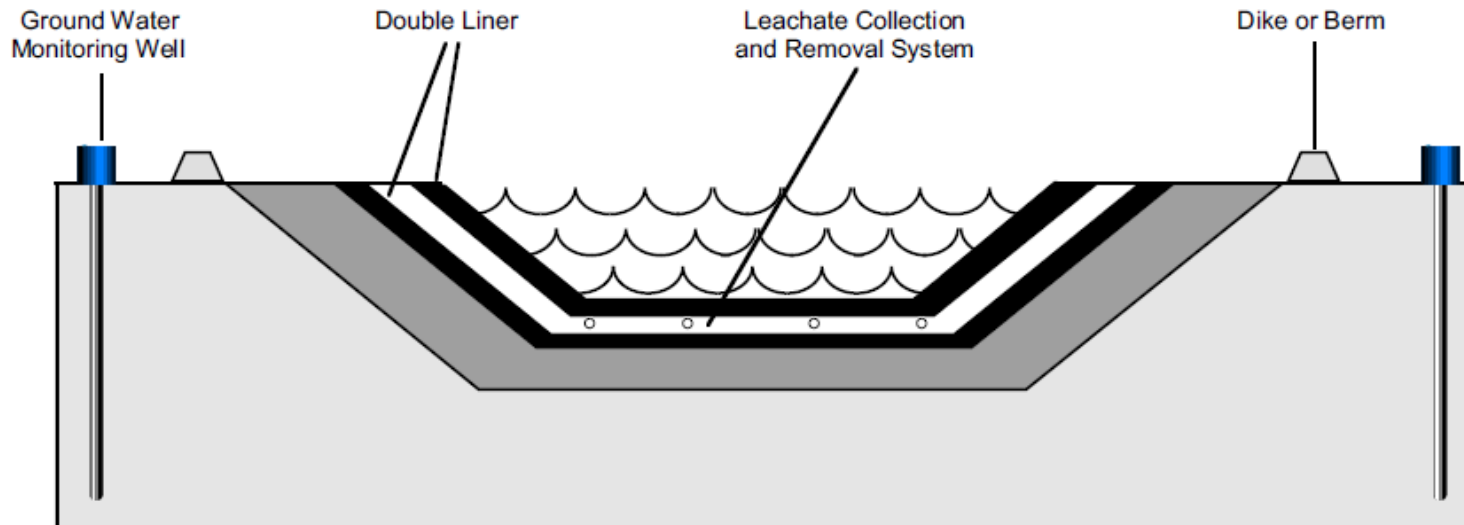


Figure III-12: Cross-Section of a Surface Impoundment





# What is hazardous waste?

- A hazardous waste must be a **solid waste**
  - Garbage, refuse, sludge, or other discarded material
  - Can be solid, semi-solid, liquid, and contained gaseous material

# Types of hazardous waste

- Listed wastes
  - Specific wastes that EPA has determined are hazardous
  - For ex: wastes from common manufacturing and industrial processes, such as wood preserving
- Characteristic wastes
  - Wastes that are not “listed” but are ignitable, corrosive, reactive or toxic
- Contaminated media
  - For ex: hazardous waste leaks into soil, so soil is considered hazardous waste
- Special management provisions for used oil and universal wastes
  - Batteries, pesticides, mercury-containing equipment, lamps
- 40 C.F.R. Part 261

# Nonhazardous Waste

- **Subtitle D**
- **Nonhazardous solid waste**
- What is nonhazardous solid waste?
  - Municipal solid waste – trash/garbage, non-recycled household appliances, refuse such as metal scrap, wall board and empty containers
  - Nonhazardous industrial waste
  - Sludge from industrial and municipal waste water and water treatment plants and from pollution control facilities
  - Hazardous wastes from households
  - Hazardous wastes from conditionally exempt small quantity generators
- 40 C.F.R. Parts 239-259

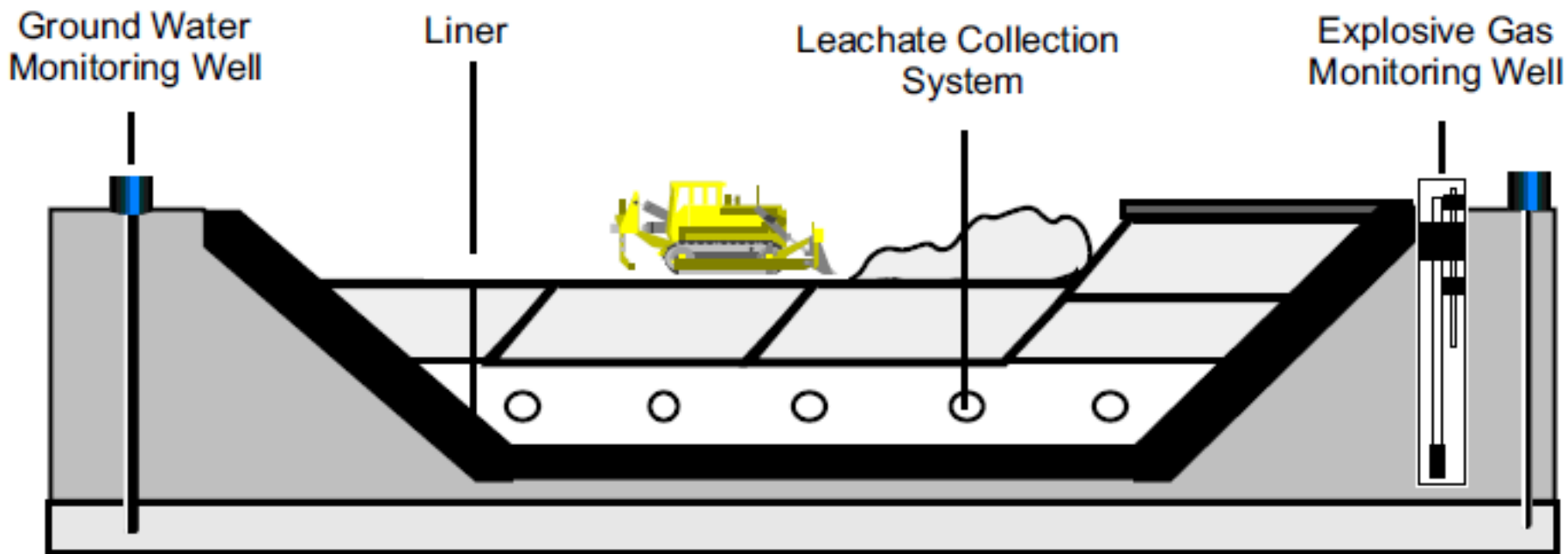
# Nonhazardous Waste

- **Purpose of Subtitle D:** Encourage states to better manage nonhazardous wastes
- Encourage reduction of disposed waste through recycling, composting, combustion
- Facilities must implement public health and safety precautions to prevent spread of disease and control migration of waste
- Owners and operators of municipal solid waste landfills must meet minimum federal requirements, but states have primary responsibility
  - Design
  - Groundwater monitoring
  - Corrective action and closure
  - Demonstrate financial resources for closure

# Nonhazardous Waste

- Design of municipal solid waste landfill

*Figure II-5: Cross-Section of a Municipal Solid Waste Landfill*



# Other Responsibilities

- TSD facilities (haz waste) and municipal solid waste landfills (nonhaz waste) are required to perform corrective action if their waste causes contamination
- Owner/operator must also arrange and pay for closure when facility is no longer useful
  - If all waste removed, “clean closure”
  - If not clean closure, and waste remains, owner/operator must perform post-closure monitoring or activities to ensure integrity of waste containment system, and groundwater monitoring

# Hot Topic: Coal Ash or CCR

- Coal ash released from power plants burning coal, often mixed with water to contain ash
  - Coal combustion residuals (CCR)
- CCR are considered special wastes exempt from regulation as haz wastes under Subtitle C until EPA conducts further risk assessment and submits report to Congress (RCRA Section 3001)
  - Bevill Amendment of RCRA in 1980
- As required, EPA issued several reports concluding that CCR do not warrant regulation as hazardous wastes under Subtitle C
- In 2008, more than 136 million tons of CCR generated per year
  - 34 % disposed of in landfills, 22% disposed of in surface impoundments, nearly 37% beneficially used
  - 75 % of impoundments are more than 25 years old, and 10% are more than 50 years old
  - Approximately 300 CCR landfills and 584 surface impoundments in use at approximately 495 coal-fired power plants

# Kingston Plan Coal Ash Spill

- TVA Kingston Fossil Plant in Tennessee stored ash/water slurry in an 40-acre unlined pond that was above ground
- In December 2008, containment wall of pond ruptured
- 1.1 billion gallons of sludge released
  - 1,660 Olympic-size swimming pools
  - Volume released was about 101 times larger than the Exxon Valdez oil spill
- Spill covered 300 acres, destroyed homes, gas/rail/power lines, killed fish
- Cleanup estimated to cost ~\$1 billion



# Before Spill

Aerial Image of Kingston Ash Slide Pre-Event 2008



0 500 1,000 1,500 2,000  
Feet

Tennessee Valley Authority  
CE&R - ER&S  
Geographic Information & Engineering

# After Spill

Aerial Image Of Kingston Ash Slide 12/23/08



0 500 1,000 1,500 2,000  
Feet

Tennessee Valley Authority  
CE&R - ER&S  
Geographic Information & Engineering



(AP Photo/Wade Payne)



(Photo: TVA)



(Photo: TVA)

# Regulation of Coal Ash

- On June 21, 2010, EPA proposed rule to regulate CCR under RCRA (75 Fed. Reg. 35,128)
- Contaminants of most environmental concern in CCR: antimony, arsenic, barium, beryllium, cadmium, chromium, lead, mercury, nickel, selenium, silver and thallium
  - These metals rarely exceed the RCRA haz waste toxicity characteristic (TC), but because of the mobility of metals and the large size of typical disposal units, metals (especially arsenic) have leached at levels of concern from unlined landfills and surface impoundments.
- EPA proposed options for regulating CCR
- Option 1:
  - CCR regulated as **special** waste under Subtitle C
- Option 2:
  - CCR regulated as **nonhazardous** waste under Subtitle D

# Regulation of Coal Ash

- Option 1 – CCR is **Special Waste** under Subtitle C
  - EPA declares CCR a special waste, to be regulated under Subtitle C
  - Even though Subtitle C regulates “hazardous waste,” CCR would be labeled a “special waste” to reduce possible stigma on beneficial use that might accompany a label of “hazardous waste”
  - CCR would be regulated cradle-to-grave: generation to disposal
  - Requires installation of a composite liner and leachate collection and removal system at CCR landfills and surface impoundments
  - Surface impoundments and landfills must be managed to control fugitive dust
  - Phase out wet handling of CCR and disposal of CCR in surface impoundments within five years

# Regulation of Coal Ash

- Option 2 – CCR is **Nonhazardous** Waste under Subtitle D
  - EPA retains its 2000 determination and declares coal ash a nonhazardous waste, to be regulated under Subtitle D
  - Only disposal would be regulated, not generation, transportation, storage, or treatment of coal ash prior to disposal
  - EPA would develop national minimum standards for landfills and surface impoundments where CCR is disposed – similar to standards for municipal solid waste landfills, including restrictions on location, design, operation, groundwater monitoring, closure, and post-closure care
  - **New** landfills and surface impoundments would be required to install a composite liner and leachate collection and removal system
  - **Existing** landfills and surface impoundments must close unless they could meet new safety requirements
  - Wet handling of CCR continues as long as existing surface impoundments are retrofitted to meet proposed design standards

# Regulation of Coal Ash

	SUBTITLE C	SUBTITLE D
<b>Effective Date</b>	Timing will vary from state to state, as each state must adopt the rule individually-can take 1-2 years or more	Six months after final rule is promulgated for most provisions.
<b>Enforcement</b>	State and Federal enforcement	Enforcement through citizen suits; States can act as citizens.
<b>Corrective Action</b>	Monitored by authorized States and EPA	Self-implementing
<b>Financial Assurance</b>	Yes	Considering subsequent rule using CERCLA 108 (b) Authority
<b>Permit Issuance</b>	Federal requirement for permit issuance by States (or EPA)	No
<b>Requirements for Storage</b>	Yes	No
<b>Surface Impoundments Built Before Rule is Finalized</b>	Remove solids and meet land disposal restrictions; retrofit with a liner within five years of effective date. Would effectively phase out use of existing surface impoundments	Must remove solids and retrofit with a composite liner or cease receiving CCRs within 5 years of effective date and close the unit
<b>Surface Impoundments Built After Rule is Finalized</b>	Must meet Land Disposal Restrictions and liner requirements. Would effectively phase out use of new surface impoundments.	Must install composite liners. No Land Disposal Restrictions
<b>Landfills Built Before Rule is Finalized</b>	No liner requirements, but require groundwater monitoring	No liner requirements, but require groundwater monitoring
<b>Landfills Built After Rule is Finalized</b>	Liner requirements and groundwater monitoring	Liner requirements and groundwater monitoring
<b>Closure and Post-Closure</b>	Yes; monitored by States and EPA	Yes; self-implementing



# Regulation of Coal Ash

- Surprise!
- Option 3 – CCR is **Nonhazardous** Waste under Subtitle “D Prime”
  - Same as Subtitle D, but...
  - Grandfathering of existing surface impoundments – would be allowed to operate for the rest of their useful lives without installing liners or closing
- For more information , visit <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/ccr-rule/index.htm>

# Regulation of Coal Ash

- EPA received > 450,000 comments on the proposed rule
- EPA Administrator Lisa Jackson estimated that the Agency could not issue a rule until 2012 – that estimate is now 2013
- In April 2011, EPA stated that it would hold another public comment period on new data on EPA's risk analysis and cost-benefit analysis for the rule
  
- Legislative proposals
- In April 2011, H.R. 1391 introduced to exempt fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels from regulation as hazardous waste under RCRA
  - Recycling Coal Combustion Residuals Accessibility (RCCRA) Act of 2011
- In June 2011, H.R.2273 introduced to authorize state regulation of CCR
  - Coal Residuals Reuse and Management Act

# Underground Storage Tanks

- **Subtitle I**
- **Purpose:** Protect underground drinking water from underground storage tanks (USTs) holding petroleum or hazardous substances (risk of leaks, spills, corrosion)
- 40 C.F.R. Parts 280-282.

# Underground Storage Tanks

- **Technical requirements** to prevent, detect, and clean up releases from USTs
  - Design and installation of USTs
  - Report new USTs that are installed
  - Upgrade older USTs
- **Financial requirements**
  - Owners and operators of USTs must demonstrate sufficient financial resources, so that if a release occurs the owner/operator can pay for clean-up and can compensate third parties

# Underground Storage Tanks

- USTs regulated under RCRA Subtitle I
  - Any tank that is at least 10% underground – may include above ground tanks with extensive underground piping
  - USTs holding **petroleum or hazardous chemicals**
- USTs **NOT** regulated under RCRA Subtitle I
  - USTs holding **hazardous wastes** – already regulated under Subtitle C
  - Small residential USTs

# RCRA Enforcement

- Strict liability – and criminal penalties for *knowing* violations
- EPA can issue an order requiring entity to come into compliance with RCRA
  - Penalty of up to \$37,500/day
- EPA can issue order requiring monitoring, analysis, testing
- In cases of imminent and substantial endangerment potential to human health or environment, EPA can order entity to take corrective action
- Criminal acts: Fine of up to \$50,000/day and up to 5 years in prison
  - Transporting waste without a manifest or to a nonpermitted facility
  - Treating, storing, or disposing waste without permit
  - Generating waste without complying with recordkeeping and reporting requirements

# Import/Export of Hazardous Waste

- International shipment of hazardous waste
- Toxic colonialism
- EPA amends RCRA regulations to align with decisions made by Organization for Economic Cooperation and Development (OECD)
  - Before spent lead-acid batteries can be exported, generator must notify and receive permission from receiving country
  - Ensure that batteries are being sent to countries and facilities where they will be managed in an environmentally sound manner
  - When treatment/storage/disposal facilities in the US receive hazardous waste that is imported from another country, submit manifest to EPA

# Import/Export of Hazardous Waste

- Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal
  - International treaty designed to reduce the movements of hazardous waste between nations
  - Prevent transfer of hazardous waste from developed to less developed countries
  - Notification and consent requirements
- US is signatory, but has not ratified Basel Convention, so need bilateral agreement to trade covered wastes with countries that are parties to the Convention



# Results of RCRA

- 1960: Almost **94%** of solid waste was discarded into landfill or other disposal area
- 2007: Only **54%** of solid waste was disposed in landfills
  - The rest was recycled, composted, or recovered
- In 2005:
  - 15,000 large quantity generators
  - 18,000 transporters
  - 500 TSDs

# RCRA Resources

- Statute: 42 U.S.C. §6901 et seq.
- Regulations: 40 C.F.R. Parts 239-282
- History of RCRA
  - <http://www.epa.gov/osw/laws-regs/rcrahistory.htm>
- EPA Resources on Waste
  - <http://www.epa.gov/epawaste/index.htm>
- Guide on Industrial Waste Management
  - <http://www.epa.gov/epawaste/nonhaz/industrial/guide/index.htm>
- Coal Ash Rule
  - <http://www.epa.gov/osw/nonhaz/industrial/special/fossil/ccr-rule/index.htm>
- Definition of Solid Waste Rule
  - <http://www.epa.gov/osw/hazard/dsw/rulemaking.htm>

# Thank You!

*Hazardous Sites and Substances:*  
RCRA

Anna Kuperstein  
Keller and Heckman LLP

June 29, 2011