

# Regulation of Solid and Hazardous Waste

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# What is the Problem?

- Solid waste
  - 250 million tons (2010)
    - 4.43 lbs/person/day (3.66 lbs/person/day 1980)
    - 85 million tons recycled (34%)
  - Slight decrease since 2005, but larger per capita decrease
  - Disposal in municipal solid waste (MSW) landfills (54%)
  - Burned for energy (12%)

# What is the Problem?

- Hazardous waste
  - 35.3 million tons (2009)
    - > 33% generated in Texas
    - > 35% managed in Texas
  - Management methods
    - Deep well injection 51%
    - Treatment 23%
    - Disposal in landfills & impoundments 5%
    - Other disposal 6%
    - Burned for energy (<4%)

# Resource Conservation and Recovery Act (RCRA)

- Regulates solid and hazardous waste and underground storage tanks
- Federalism
  - Constitutional
  - Responsibility shared by federal and state governments

# Federalism under RCRA

- National minimum standards
- States may chose to implement
  - State standards may be more stringent
  - US EPA oversight of state implementation
- Solid waste program
  - Limited federal rules and oversight
  - States largely independent

# Federalism under RCRA

- Hazardous waste program
  - Extensive federal rules
  - US EPA approval of proposed state regulatory program if equivalent
  - Alaska & Iowa only states to not seek & receive approval

# Hazardous Waste Program

- “Cradle-to-grave” or death-bed to grave
  - Regulate materials from moment they determined to be “waste”
  - Not regulate toxic or hazardous substances as raw materials, intermediary, or product
  - “Grave” is appropriate given how much is injected in deep wells and buried (62%)
  - Treatment resulting in non-hazardous material is only permanent solution

# What is a Hazardous Waste?

- Is the substance in question a solid waste?
  - Solid – “solid, liquid, semisolid, or contained gaseous material”
  - Discarded – abandoned, recycled, or inherently waste-like
- Regulatory definition of "solid waste" is extraordinarily complex, subject to court challenge and undergoing revision
- Numerous exemptions



# When is a Solid Waste a Hazardous Waste?

- If solid waste, is the substance a hazardous waste?
- Statute – causes increases in deaths or serious illness or poses a substantial threat to human health or the environment

# US EPA Regulatory Definition

- Listed - It is on one of four lists published by EPA
  - 100 specific and 39 general sources
  - Hundreds of discarded commercial chemicals etc
- Characteristic wastes
  - Ignitability
  - Corrosivity
  - Reactivity
  - Toxicity (Toxicity Characteristic Leaching Procedure)

# Regulation of Hazardous Waste

- Generator of a waste is responsible for determining if it is hazardous waste, managing waste onsite, choosing appropriate treatment, storage, or disposal facility (TSDF), and arranging transport
- Manifest system tracks HW from generator to TSDF
- < 100 kg/month conditionally exempt

# Pollution Prevention

- “Waste minimization” national policy
- Generators who ship HW off-site must certify that they have a program to reduce the volume and toxicity of HW
  - Small quantity generators (< 1000 kg/mo) – good faith effort to minimize generation of HW
- Generators submit biennial report on efforts to reduce & changes in toxicity and volume over past year

# TSDF Regulations

- Manifest
- Record keeping
- Operating methods, techniques, and practices
- Location, design, and construction of facilities
  - Tanks
  - Surface impoundments
  - Landfills
  - Incinerators

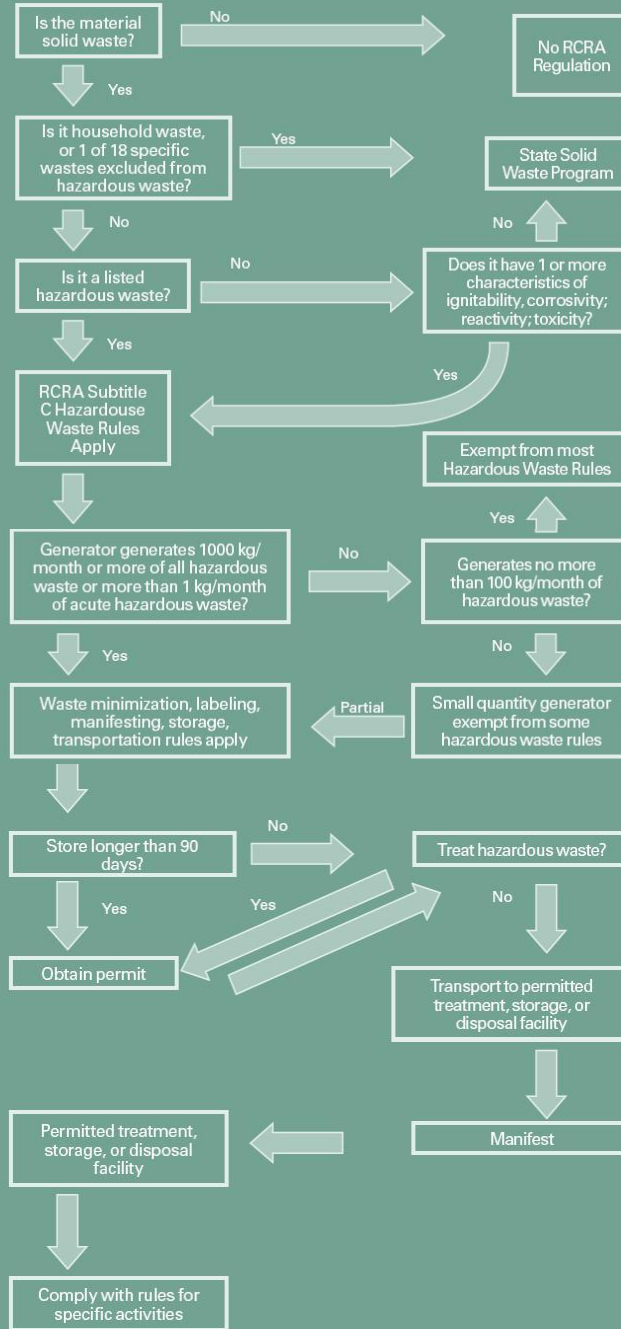
# TSDF Regulations

- Contingency planning
- Permitting and compliance with conditions
- Maintenance
- Training of personnel
- Financial responsibility
- Closure

# TSDF Regulations

- Land ban
  - Congress banned land disposal of uncontained liquid waste
  - Minimize containerized liquid HW
- Land disposal restriction (LDR)
  - Ban land disposal unless treated to reduce risk or no-migration facility
  - Best demonstrated available technologies (BDAT)
    - Reduce toxicity or likelihood of migration
    - Waste-specific standards

# RCRA Regulation of Hazardous Waste





# **Imminent and Substantial Endangerment**

- **RCRA authorizes EPA and citizens to sue to remedy conditions where solid or hazardous waste handling, storage, treatment, or disposal have the potential to endanger health or the environment**
- **Reasonable attorneys fees to prevailing party (citizens) to encourage private enforcement**

# Chicago v. Environmental Defense Fund - 511 U.S. 328 (1994)

- Municipal combustion waste (MCW) ash
  - Solid waste incinerator
    - Household waste
    - Industrial waste
  - Ash contains constituents that would be HW
- Must city treat ash as HW?
- Supreme Court – yes
  - Statute is clear – ash is waste & it is hazardous

# Underground Storage Tanks

- Designed to prevent leaks
- Design standards
- Monitoring
- Leaking underground storage tanks
  - Cleanup program

# Thank you

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