Florida Department of Environmental Protection

Land Disposal Restrictions





Why Land Disposal Restrictions?

1976 RCRA Objective = Prevention of New Superfund Cleanups

Congressional Action

- Hazardous and Solid Waste Amendments of 1984
  - Response to EPA issues
  - Required EPA to set treatment standards
    - Phased implementation
    - Hard vs. Soft Hammers
  - Required EPA to issue permits & rules
    - Priority to Land Disposal & Incinerator permits
    - SQG rules by 3/31/86
  - Required all permitted facilities to assess releases from old unpermitted units

And Mandated Land Disposal Restrictions (LDRs)

- Prohibits land disposal of hazardous wastes
  - Unless waste meets treatment standard set by EPA
  - Treatment must reduce toxicity or reduce the mobility of the toxic constituents
  - Listed wastes are still listed
  - Treatment standard based on technology, not health
- Exceptions
  - Case by case exemptions under 268.5
  - National Capacity variances ex. debris (expired)
  - “No migration” determination ex. some injection wells

Land Disposal Restrictions

- Purpose:
  - Reduce toxicity of waste
  - Reduce mobility of hazardous constituents

- Where are the Rules?:
  - Underground Injection – 40 CFR 148
  - LDRs – 40 CFR 268

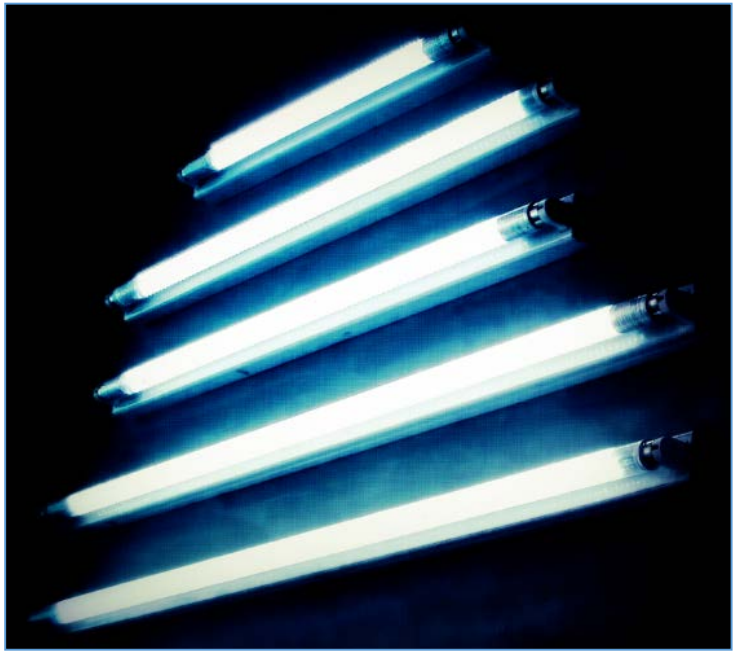
Phased Implementation

- Banned liquids in landfills
- Solvents & Dioxins – 11/8/86
- “California List” – 7/8/87
  - acids, PCBs, liquid HOCs liquids with CN, heavy metals
- Thirds 8/8/88, 6/8/89, 5/8/90
  - EP toxicity wastes
- “Newly listed” wastes
  - Phase II, III and IV
  - TC toxicity wastes

Applicability

- Does not apply to:
  - CESQG waste is exempt – unless CESQG land disposes of waste
  - Waste pesticides from farmers disposed of under 40 CFR 262.70
  - Newly Listed wastes
  - Deminimus loss of some characteristic wastes to CWA systems
- Applies to everyone else
- Note: Does not apply to non-hazardous waste

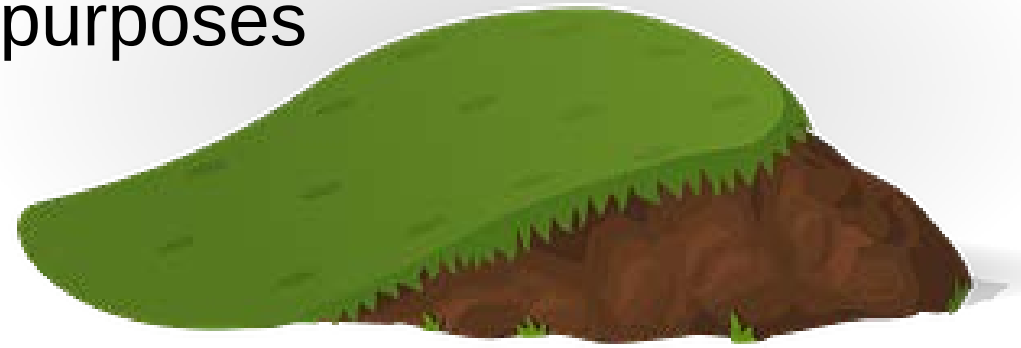
Applicability



- Some Provisions do not apply to UW handlers and transporters [40 CFR 268.1(f)]

Key Definitions

- Land Disposal – placement in or on the land, except in a CAMU or staging pile, and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes



Point of Generation

- Point of Generation – LDRs attach at the point of generation of a waste.

- This is complicated – When waste becomes a waste, when it leaves a unit, when it is no longer usable, > 90 days after a unit ceases to operate…

- 261.3(b):
  - 1. When waste meets listing
  - 2. Mixture of a SW and a listed hw
  - 3. When waste exhibits a characteristic

Dilution

- Dilution Prohibition [40 CFR 268.3]
  - Cannot in any way dilute a hazardous waste as a substitute for adequate treatment.
  - Serves two purposes:
    1. Ensure actual treatment of hazardous waste
    2. Ensure wastes are treated appropriately

Impermissible Dilution

- Dilution Prohibition [40 CFR 268.3]

  Examples:

  1. Adding solid waste to a liquid hazardous waste.
  2. Adding water to an aqueous hazardous waste.
  3. Combustion of certain metal bearing wastes.

Generator Requirements

- Generator must identify all EPA waste codes that apply to the waste
  - Improper HW identification is the most common violation that may lead to a LDR violation

Generator Decisions

- Generator can:
  - Decide not to make a determination of whether the waste must be treated
  - Make the determination that the waste is not subject to the LDRs
  - Make the determination that the waste is subject to the LDRs

Generator Decisions

- Generator can decide not to make a determination of whether the waste must be treated [40 CFR 268.7(a)(2)]
  - One time notice to TSD and a copy in the file:
    - Waste Codes
    - Manifest number
    - “This hazardous waste may or may not be subject to the LDR treatment standards.” The treatment facility must then make the determination

Generator Decisions

- Generator can determine whether the waste must be treated prior to disposal
  - Testing or process knowledge [40 CFR 268.7]

Generator Decision

- If the Generator makes the determination that the waste meets the treatment standards at the original point of generation [40 CFR 268.7(a)(3)] :
  - One time notification to TSD and place a copy in the file
    - Waste Codes
    - Manifest number
    - “Waste is subject to LDRs…”
    - Wastewater/Non-wastewater category
    - Constituents of concern and UHCs if applicable
    - Certification “ I certify…”

Generator Requirements

- If the Generator makes the determination that the waste does not meet the treatment standards at the original point of generation [40 CFR 268.7(a)(2)] :
  - One time notification to TSD and place a copy in the file
    - Waste Codes
    - Manifest number
    - “Waste is subject to LDRs…”
    - Wastewater/Non-wastewater category
    - Constituents of concern and UHCs if applicable

Generator Requirements

- Records need to be kept for three years
- Three years is automatically extended during the course of unresolved enforcement action
- Common issue is generator can not locate first time notification

Treatment Standards for Hazardous Waste 40 CFR 268.40

- All Hazardous wastes are listed on this table
- Columns for:
  - Waste code
  - Waste description and treatment/regulatory subcategory
  - Regulated hazardous constituent
  - Wastewaters – concentration in mg/L or technology code
  - Nonwastewaters – concentrations in mg/kg unless noted as “mg/L TCLP” or technology code

Treatment Standards for Hazardous Waste 40 CFR 268.40

Waste Code	Waste description and treatment/regulatory subcategory	Regulated hazardous constituent		Waste waters Conc. In mg/L or Tech. Code	Non wastewaters Conc. In mg/kg unless noted as mg/L TCLP or tech. code
		Common Name	CAS2 No.		
D001	Ignitable Characteristic Wastes, except for the 261.21(a)(1) High TOC Subcategory	NA	NA	DEACT and meet 268.48 standards. Or RORGS, or CMBST	DEACT and meet 268.48 standards. Or RORGS, or CMBST
	High TOC Ignitable Characteristic Liquids Subcategory based on 40 CFR 261.21(a)(1) - Greater than or equal to 10% total organic carbon.	NA	NA	NA	RORGS; CMBST; or POLYM
F001, F002, F003	F001, F002, F003 are solvent wastes that contain any combination of one or more spent solvents.	F001 - Carbon tetrachloride, F002 - Chlorobenzene, F003 - Acetone	F001: 56-23-5 F002: 108-90-7 F003:67-64-1	F001 - 0.057 F002 - 0.057 F003 - 0.28	F001 - 6.0 F002 - 6.0 F003 - 160

Waste Codes

- Very important to properly characterize all hazardous waste streams and add all appropriate waste codes in order to be in compliance with LDRs

Categories and Subdivisions

- Categories:
  - Wastewater – Wastes that contain less than 1% by weight TOC and less than 1% by weight TSS.
  - Nonwastewater – Are not wastewaters
- Subdivisions:
  - Listed in 40 CFR 268.40
    - Examples:
      - D001 High TOC Subcategory
      - D008 Lead Acid Battery Subcategory

Regulated Hazardous Constituents

- What is the constituent that the hazardous waste is listed for?
  - Examples:
    - Cadmium
    - Lead
    - MEK
    - Toluene

Wastewaters

- Concentration in mg/L or technology code
  - Examples of Concentrations
    - F005 MEK - .28mg/L
    - D008 Lead - .69mg/L and meet 268.48 standards
  - Examples of Treatment Technologies
    - D002 - DEACT and meet 268.48 standards

Non-Wastewaters

- Concentration in mg/kg unless noted as “mg/L TCLP” or technology code
  - Examples of Concentrations
    - F005 MEK - .36mg/kg
    - D008 Lead - .75 mg/L TCLP and meet 268.48 standards
  - Examples of Treatment Technologies
    - D001 High TOC – RORGS, CMBST, or POLYM (see 40 CFR 268.42)

Underlying Hazardous Constituents (UHCs)

- UHCs are any constituent listed in 40 CFR 268.48, Table UTS – Universal Treatment Standards
  - Except: (unless listed under specific wastes)
    - Fluoride
    - Selenium
    - Sulfides
    - Vanadium
    - Zinc
- **Reasonably expected** to be in the waste at the Point of Generation at a concentration above the constituent-specific UTS

Underlying Hazardous Constituents (UHCs)

- Regulated Constituent Common Name
- CAS number
- Wastewater Standard – Concentration in mg/L
- Nonwastewater Standard – Concentration in mg/kg unless noted “mg/L TCLP”

Underlying Hazardous Constituents (UHCs)

[Note: NA means not applicable]

Regulated constituentcommon name	CAS 1 number	Wastewaterstandard	Nonwastewaterstandard
		Concentration 2 in mg/l	Concentration 3 in mg/kg unless noted as "mg/l TCLP"
Organic Constituents			
Acenaphthylene	208-96-8	0.059	3.4
Acenaphthene	83-32-9	0.059	3.4
Acetone	67-64-1	0.28	160
Acetonitrile	75-05-8	5.6	38
Acetophenone	96-86-2	0.010	9.7
2-Acetylaminofluorene	53-96-3	0.059	140
Acrolein	107-02-8	0.29	NA
Acrylamide	79-06-1	19	23
Acrylonitrile	107-13-1	0.24	84
Aldrin	309-00-2	0.021	0.066
4-Aminobiphenyl	92-67-1	0.13	NA
Aniline	62-53-3	0.81	14
o-Anisidine (2-methoxyaniline)	90-04-0	0.010	0.66
Anthracene	120-12-7	0.059	3.4
Aramite	140-57-8	0.36	NA
alpha-BHC	319-84-6	0.00014	0.066
beta-BHC	319-85-7	0.00014	0.066
delta-BHC	319-86-8	0.023	0.066
gamma-BHC	58-89-9	0.0017	0.066
Benzene	71-43-2	0.14	10

Underlying Hazardous Constituents (UHCs)

- Examples:
  - D002 waste
  - D002/D008 waste
  - D001/F003/F005 waste
  - D001 waste

Alternative Treatment Standards

- Alternate treatment standards:
  - Soil [40 CFR 268.49]
  - Debris [40 CFR 268.45]
  - Lab packs [40 CFR 268.42(c)]
    - Need to be incinerated
    - These wastes can not be placed into the lab pack if you use the alt. treatment standards – D009, F019, K003, K004, K005, K006, K062, K071, K100, K106, P010, P011, P012, P076, P078, U134, and U151 [268 Appendix IV]

Wastes Treated On-Site

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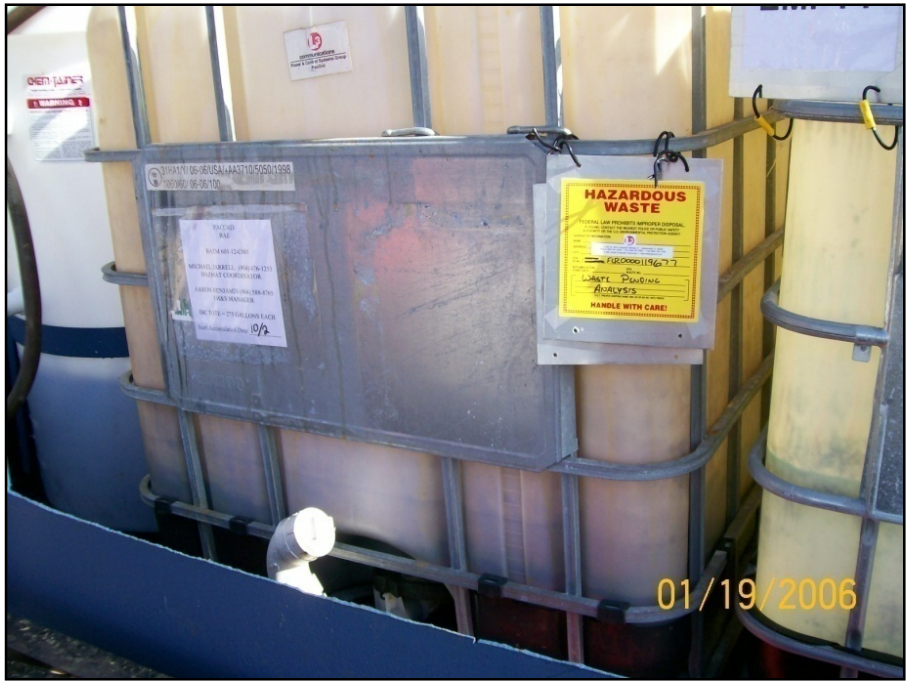

Wastes Treated On-Site

- Waste Analysis Plan (WAP) [40 CFR 268.7(a)(5)] required if the generator is claiming to treat wastes to meet treatment standards
  - Must be based on a detailed chemical and physical analysis of a representative sample of the waste
  - Must keep on file
  - Must comply with notification requirements of 40 CFR 268.7(a)(3)
- Records of treatment must be kept
  - Listed wastes are still HW
  - Characteristic wastes may have to be treated further
- Follow paperwork table for 268.7(a)(3)
- EPA Guidance booklet for WAPs

Wastes Treated On-Site

- Deactivated Characteristic wastes managed in CWA systems:
  - One time notice to facility's files
    - Describing generation
    - Describe exclusion
    - Disposition of waste
- 268.7(a)(7)

Characteristic Waste

- 268.9(b) – Special rules regarding wastes that exhibit a characteristic:
  - Listed codes and characteristic codes must both be applied, except:
    - When the treatment standard for the listed codes operates in lieu of the treatment standard of the characteristic code

Characteristic Waste

- 268.9(b) – Special rules regarding wastes that exhibit a characteristic:
  - Examples:
    - MEK – F005, not D035/F005
    - Perc – F002, not D039/F002
    - D001/F005
    - D001/F003/F005

Characteristic Waste

- 268.9(b) – Paperwork required:
- If waste no longer hazardous:
  - One time notice to file, not to Subtitle D facility [268.9(d)]. Use language in 268.7(b)(4).
- If waste no longer hazardous, but does not meet treatment standards for UHCs:
  - Comply with 268.7(b)(4)(iv) – certification must be sent with waste so that UHCs are further treated
- If waste no longer hazardous and it meets treatment standards for UHCs:
  - Comply with 268.7(b)(4)(v) – certification must be sent with waste saying UHCs have been treated

Storage Requirements

- 268.50 - Storage prohibited unless:
  - Generator complies with applicable parts of 262.34, 264 or 265
  - TSDs comply with:
    - Only for accumulation of sufficient quantity
    - Each container marked with description of contents and date of each period of accumulation
    - Each tank marked with description of contents, quantity received, and date of each period of accumulation (or in operating record)

Storage Requirements

- 268.50 - Storage prohibited unless:
  - TSD stores for < 1year unless storage is for purpose of accumulation for a sufficient quantity…
  - Transporter < 10 days at transfer facility

Other Resources

- Main EPA LDR page:
  - http://www.epa.gov/osw/hazard/tsd/ldr/index.htm
- EPA 2001 LDR Booklet:
  - http://www.epa.gov/osw/hazard/tsd/ldr/ldr-sum.pdf
- EPA 2005 LDR Training Module:
  - http://www.epa.gov/osw/inforesources/pubs/training/ldr05.pdf
- EPA Waste Analysis Plan Guidance:
  - http://www.epa.gov/osw/hazard/tsd/ldr/wap330.pdf

Questions ?

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