

US EPA ARCHIVE DOCUMENT

Session 5 Land Disposal



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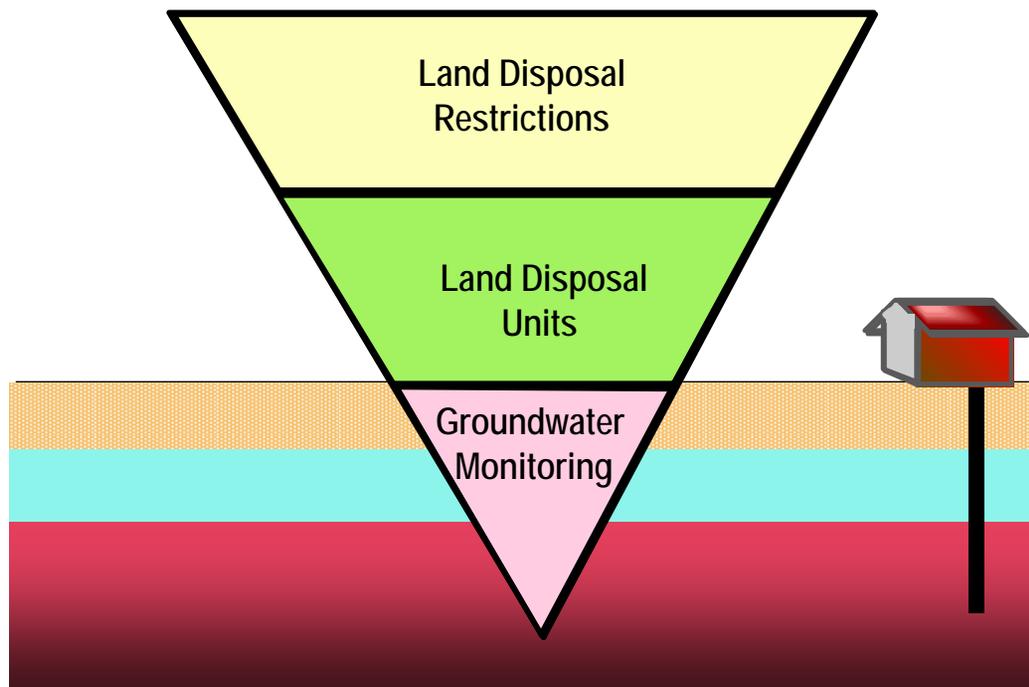
Session 5 Agenda: Land Disposal

- ▶ Regulatory Framework
- ▶ Land Disposal Restrictions
- ▶ Definition of Land Disposal
- ▶ Unit-Specific Requirements
(40 CFR Parts 264 and 265, Subparts K-N)
- ▶ Corrective Action Management Units (CAMUs)



Regulatory Framework

Three-tiered Groundwater Protection Strategy (Prevention and Early Detection)



Land Disposal Restrictions

LDR = First Line of Defense

- ▶ LDR applies to the entire cradle-to-grave chain (all handlers from generator to TSDF)
- ▶ LDR prohibits:
 - Disposal of untreated waste
 - Storage of hazardous waste for long periods of time to avoid proper treatment (§268.50)
 - Dilution of hazardous waste to meet treatment standards (§268.3)



Land Disposal Restrictions

Must treat waste to achieve LDR treatment standards prior to land disposal

- ▶ A treatment standard is based on an evaluation of best demonstrated available technologies (BDAT)
 - Demonstrated to most effectively treat the hazardous constituents present in the waste stream
 - Available for the public's use

- ▶ Waste must be treated in one of two ways:
 - By meeting **constituent concentrations** (e.g., 5 mg/L TCLP)
 - By using **specified technologies** (e.g., combustion)

- ▶ Must also treat some wastes for underlying hazardous constituents (Universal Treatment Standards)



Land Disposal Restrictions

Example of LDR treatment standards listed in §268.40

Treatment Standards for Hazardous Waste					
Waste Code	Waste Description and Treatment/Regulatory Subcategory	Regulated Hazardous Constituent		Waste-waters	Non-wastewaters
		Common Name	CAS Number		
D017	Wastes that exhibit toxicity characteristic for 2,4,5-TP (Silvex) based on the TCLP	2,4,5-TP (Silvex)	93-72-1	CHOXD or CMBST	7.9 mg/L and meet §268.48 standards
D018	Wastes that exhibit toxicity characteristic for benzene based on the TCLP	Benzene	71-43-2	0.14 mg/L and meet §268.48 standards	10 mg/L and meet §268.48 standards



Land Disposal Restrictions

Alternative LDR Requirements for Certain Materials

- ▶ Debris
- ▶ Soil
- ▶ Lab packs



40 CFR §§268.45, 268.49, and 268.42



Land Disposal Restrictions

LDR Prohibits Storage of Waste as a Substitute for Treatment

- ▶ **TSDFs cannot store waste longer than one year** unless the storage is to facilitate proper recovery, treatment, or disposal
- ▶ **Generators and transporters are exempt** from the storage prohibition if they follow their respective accumulation and storage standards



Land Disposal Restrictions

LDR Prohibits Dilution in Lieu of Adequate Treatment

- ▶ In general, dilution does not satisfy the statutory requirement of reducing the toxicity and mobility of hazardous constituents (§3004(m))

- ▶ In some situations, dilution is permissible
 - Aggregating similar wastes to facilitate treatment
 - Managing characteristic wastes in Clean Water Act treatment systems



Land Disposal Restrictions

In addition to the prohibitions, there are certain tracking and recordkeeping requirements

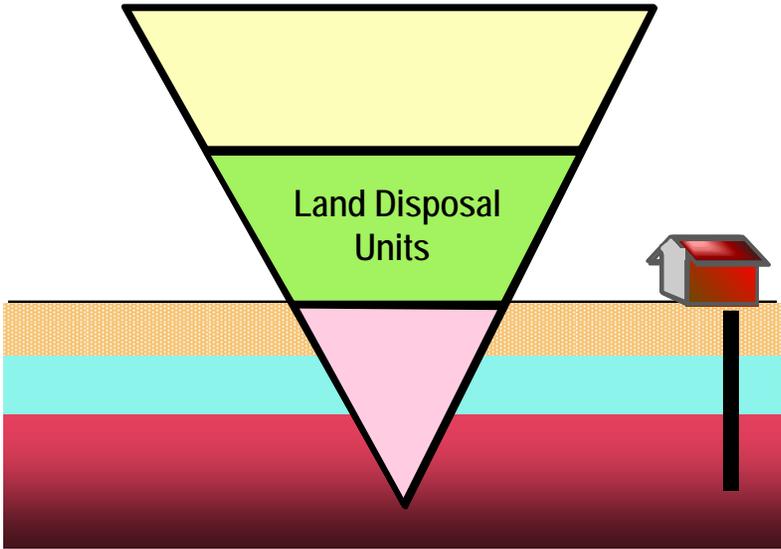
- ▶ LDR contains provisions for notification, certification, waste analysis, and recordkeeping

- ▶ Notification accompanies the first shipment of each waste subject to LDR and contains the following
 - Waste code(s)
 - Hazardous constituents present in the waste
 - Waste analysis data
 - Certification that the waste can be land disposed without further treatment, if applicable



Regulatory Framework

Properly Regulated Land Disposal Units = Second Line of Defense for Groundwater

- ▶ Surface Impoundments – Subpart K
 - ▶ Waste Piles – Subpart L
 - ▶ Land Treatment Units – Subpart M
 - ▶ Landfills – Subpart N
- 
- ▶ Appropriate for Permitted or Interim Status Facilities Only

Definition of Land Disposal

What is Land Disposal?

- ▶ Land disposal is defined as placement of waste on the land in any of the following:
 - Landfill
 - Surface Impoundment
 - Waste Pile
 - Land treatment facility
 - Injection well
 - Salt dome formation
 - Salt bed formation
 - Underground mine
 - Underground cave

- ▶ Minimum Technology Requirements (MTRs)
- ▶ Unit-Specific Technical Standards

RCRA Statute Section 3004(k)



Unit-Specific Requirements

Minimum Technology Requirements

PURPOSE: Prevent soil and groundwater contamination associated with placement of waste on land

- ▶ **Liners** prevent migration of waste downward into groundwater
- ▶ **Leachate collection and removal systems (LCRS)** collect hazardous constituents before they leak into groundwater
- ▶ **Leak detection systems** detect leaks in time to prevent extensive contamination

Statute Sections 3004(o)(1)A and 3004(o)(4)



Unit-Specific Requirements

Surface Impoundments – Definition

- Natural or man-made depression
- Constructed primarily of earthen materials
- Designed to hold liquid wastes or those with free liquids
- Also referred to as pits, ponds, basins, lagoons
- Used for waste storage and treatment



40 CFR Parts 264 and 265, Subpart K



Unit-Specific Requirements

Surface Impoundments – Requirements

- ▶ Double Liner
- ▶ Leachate Collection and Removal System (LCRS)
- ▶ Leak Detection System
- ▶ Dikes and Freeboard
- ▶ Action Leakage Rate
- ▶ Construction Quality Assurance Program



Unit-Specific Requirements

Surface Impoundment – Construction

- ✓ Double Liner System
- ✓ Single Leachate Collection and Removal System
- ✓ Groundwater Monitoring Well
- ✓ Dike or Berm



Unit-Specific Requirements

Surface Impoundments – New and Existing

- ▶ **New Impoundments**
 - Must be in compliance from construction to closure
 - Includes replacement units or unit expansions

- ▶ **Certain Existing Impoundments Must be Retrofitted**
 - How would an existing SI become subject to RCRA? (new hazardous waste listings or characteristics)
 - Two options for retrofitting: Remove waste and install appropriate controls, or begin closure
 - Must be in compliance within four years



Unit-Specific Requirements

Waste Piles – Definition

- ▶ Waste is not containerized
- ▶ Holds “solid,” non-flowing hazardous wastes
- ▶ Not located in a containment building
- ▶ Used only for storage or treatment



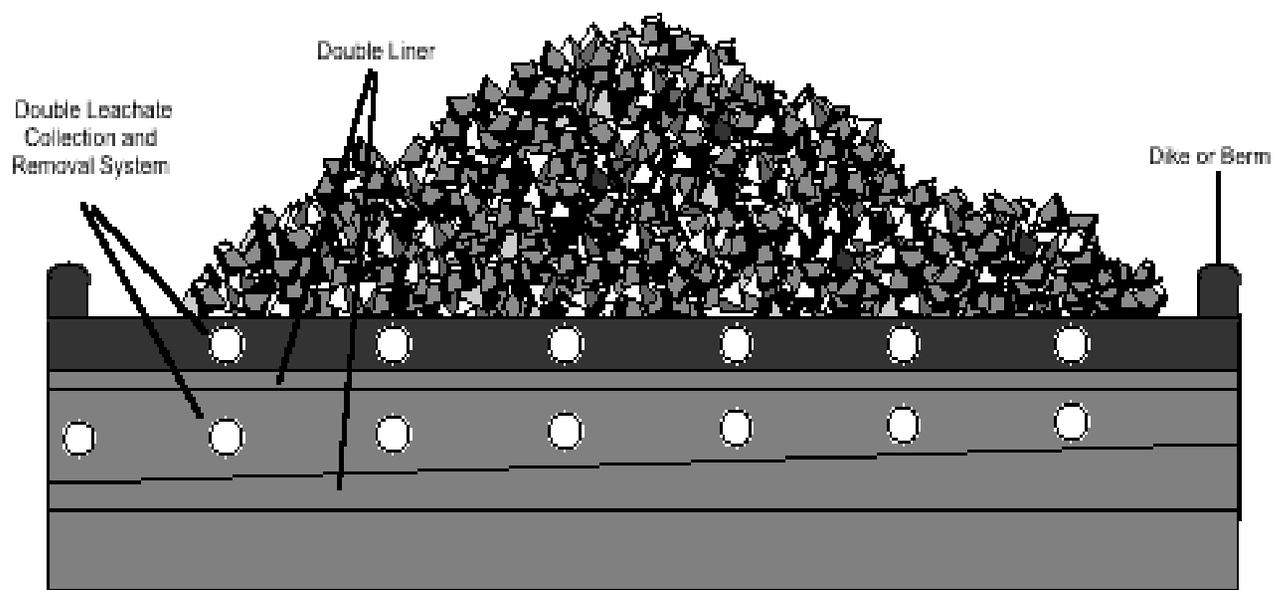
40 CFR Parts 264 and 265, Subpart L



Unit-Specific Requirements

Waste Piles – Design and Operation

- ▶ MTRs (Double Liner and LCRS)
- ▶ Stormwater and Wind Controls



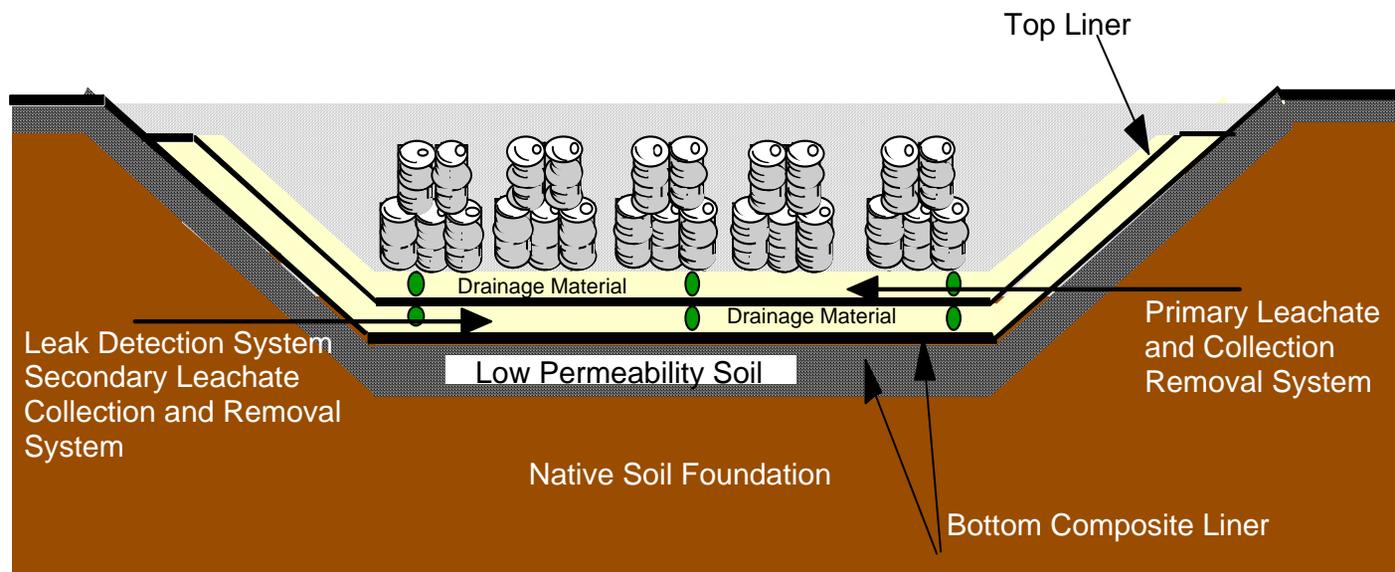
40 CFR Section 264.251



Unit-Specific Requirements

Landfills – Definition

- ▶ Waste disposed in or on the land and intended to remain in place permanently



40 CFR Parts 264 and 265, Subpart N



Unit-Specific Requirements

Landfills – Special Requirements

- ▶ Liquids in Landfills
 - §264.314
 - No bulk or non-containerized liquids
 - Can be sorbed with NON-biodegradable sorbents

- ▶ Lab Packs
 - §264.316

- ▶ Container provisions
 - §264.315



Unit-Specific Requirements

Land Treatment Units – Definition

- ▶ Significantly different in purpose and waste volumes managed
- ▶ Waste applied onto or incorporated into the soil surface
- ▶ Intended to degrade, transform, or immobilize hazardous constituents



Unit-Specific Requirements

Land Treatment Units – Requirements

- ▶ Treatment effectiveness demonstration prior to land application
- ▶ Identification of operational parameters
- ▶ Stormwater controls
- ▶ Wind dispersion controls
- ▶ Environmental monitoring
- ▶ Food-chain crop concerns



Corrective Action Waste Management

EPA Implements Special Provisions for Management of Remediation Wastes During Corrective Action

- ▶ Active Management Policy and Point of Generation
- ▶ Contained-in Policy and Retroactivity of Listings
- ▶ Area of Contamination Policy
- ▶ Remediation Waste Management Units



40 CFR Section 260.10



Remediation Wastes are “Generated” when Actively Managed

- ▶ Active management is defined as:
 - “Physically disturbing accumulated wastes within a management unit”
 - “Disposing of additional hazardous wastes in existing units containing previously disposed wastes”
 - See Management of Remediation Wastes Guidance dated October 14, 1998

- ▶ Point of generation for soil is when it is removed



Contained-In Policy

- ▶ Media are said to contain hazardous waste when they:
 - exhibit a hazardous waste characteristic
 - are contaminated by listed hazardous wastes

- ▶ Hazardous waste listings apply **retroactively**

- ▶ Generator must make a “**good faith effort**” to determine when contamination is caused by listed hazardous waste



Area of Contamination (AOC) Policy

- ▶ An AOC is equated to a RCRA land-based unit
- ▶ Allows for movement or consolidation and *in situ* treatment within an AOC
- ▶ Does not trigger land disposal restrictions (LDR) or minimum technological requirements (MTR) because it does not constitute placement

Corrective Action Waste Management

Remediation Waste Management Units

- ▶ Temporary units (TUs)
 - Tanks or container storage areas
 - Used for treatment or storage of remediation wastes

- ▶ Staging piles
 - Used for temporary accumulation of remediation waste



Remediation Waste Management Units (cont.)

- ▶ Corrective Action Management Units (CAMUs)
 - Defined as areas within a facility designated for treatment, storage, or disposal of CAMU-eligible waste
 - Treatment required for principal hazardous constituents if wastes are being placed in the CAMU for permanent disposal
 - Minimum liner and cap standards
 - Designated by the Implementing Agency in facility's permit or corrective action order



What Wastes can be Managed in CAMUs?

- ▶ CAMU-Eligible:
 - Wastes removed from closed or closing LDUs (e.g., landfills)
 - Intact and substantially intact containers and tanks, only if excavated during cleanup
 - Non-hazardous as-generated waste if this will facilitate treatment or performance of CAMU

- ▶ Not CAMU-Eligible:
 - Wastes from non-permanent units (e.g., containers, tanks), unless excavated
 - Wastes that have been “kicked out” of the CAMU by Implementing Agency via §264.552(a)(2)



Corrective Action Waste Management

Restrictions on Remediation Waste Management Units

Unit	Time Limit	Allowed Activity
Area of Contamination	None	<ul style="list-style-type: none"> ▶ Storage ▶ In-situ Treatment ▶ Disposal
CAMU §264.552	None	<ul style="list-style-type: none"> ▶ Treatment ▶ Storage ▶ Disposal
Temporary Unit §264.553	1 year plus 1 year extension	<ul style="list-style-type: none"> ▶ Treatment ▶ Storage
Staging Pile §264.554	2 years plus 180 day extension	<ul style="list-style-type: none"> ▶ Storage ▶ Non-Significant Treatment

