

# Land Disposal Restrictions



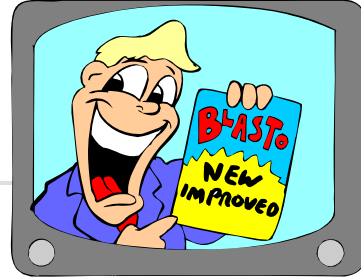
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## Overview

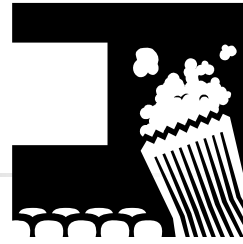


- The Big Picture
- The Basics
- FAQs and Common Mistakes
- Notification Requirements
- Recordkeeping
- Waste Analysis Plan



## The Big Picture

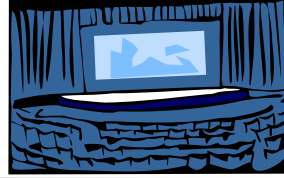
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- RCRA (1976)
  - Protect HHE from dangers associated with the generation, transport, storage, treatment and disposal of hazardous waste
- HSWA 3004(m) (1984)
  - Minimize short and long-term threats to HHE by reducing the toxicity or mobility of hazardous constituents



## The Big Picture



- EPA developed the LDR program in 9 stages!
  - Congress set schedule for wastes listed pre-1984
    - Solvent and Dioxin wastes
    - California List
    - "Thirds"
  - Four "Phases" for newly identified or listed wastes



## The Big Picture



- LDR Program: Extensive technical requirements
  - Prohibits hazardous wastes from land disposal
  - Establishes treatment standards (40CFR Part 268)
    - Reduce the mobility and toxicity of hazardous constituents
  - Adds a second level of protection over that from physical barriers
- What is up at EPA today?
  - Focus on wastes that don't fit the LDR framework
    - Variances
    - Determinations of equivalent treatment
  - Implementation issues
- States can be more restrictive
- There is some room for interpretation



## The Basics

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- What are the Prohibitions that form the framework of the LDR program?
  - Disposal—requires adequate treatment
  - Dilution—ensures proper treatment
  - Storage—prevents indefinite storage
- We will cover prohibitions in more detail

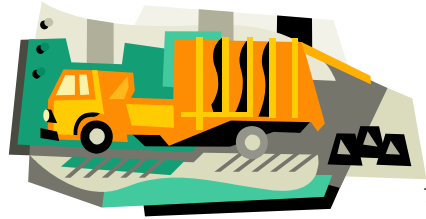




## The Basics

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- What is “land disposal”
  - Placement in or on the land including landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome or bed formation, cave, or in a concrete vault or bunker intended for disposal





## The Basics

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- What are Restricted and Prohibited Wastes?
  - “Restricted” waste -- waste subject to LDR
  - “Prohibited” waste – waste that has an EPA established treatment standard in effect







# The Basics



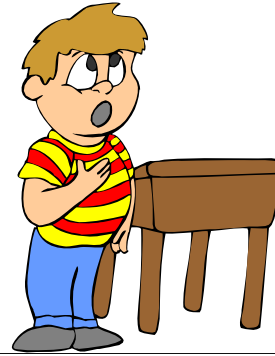
- What are the two types of treatment standards (268.40)?
  - Technology-based
    - Must use a specified technology such as CMBST or DEACT
    - Technology-based (§268.42 Table 1)
    - For information on these technologies, see [www.epa.gov/epaoswer/hazwaste/ldr/backgrd.htm](http://www.epa.gov/epaoswer/hazwaste/ldr/backgrd.htm)
  - Concentration-based
    - Must meet specified concentration limits
    - Any technique allowed except dilution (in most cases)



## The Basics

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- Let's test your knowledge:
  - What Treatment Technologies are approved to meet the concentration-based treatment standards?





## Test Answer

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- Any treatment technology that is not impermissible dilution may be used to meet the concentration-based treatment standards.



## The Basics—§268.40



- §268.40 contains treatment standards for all of the characteristic, listed wastes, and treatment subcategories
  - Treatment standards for soil, debris and lab packs are listed in separate subparts (discussed below)
- §268.40 has separate standards for “wastewater” and “nonwastewater”
  
- What is wastewater?
  - Wastes that are less than 1% by weight of total organic carbon *and* 1% by weight of total suspended solids



## The Basics



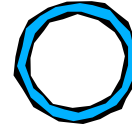
- Exclusions (§268.1): LDRs do not apply to:
  - Household hazardous waste
  - Conditionally-exempt small quantity generator hazardous waste
  - De minimis losses of characteristic wastes to facility wastewaters
  - Certain wastes to Injection Wells and Clean Water Act treatment and pretreatment systems
  - Pesticide/container residue disposed by farmer on own land---the famous "farmer exclusion"
    - Most states include ranchers with farmers



## The Basics



- Alternative Treatment Standards address wastes that don't fit the general LDR framework
  - Soil (§268.49)
  - Debris (§268.45)
  - Lab Packs (§268.42)
- Waste variances (§268.44)
- Determinations of equivalent treatment (DETs) (§268.42(b))
- Remediation waste regulations and policies



## FAQs & Common Mistakes

When do the LDRs attach to waste?

- At the point of waste generation
  - Not at the point of disposal
  - Example
    - D001 solid ignitable paint filter may lose its D001 characteristic in a tub of water, but all D001 LDR rules still apply because it was D001 when it was generated
  - Important concept; once attached, LDRs apply until treatment standards are met



## FAQs & Common Mistakes



How is an "LDR Waste Determination" made?  
(\$268.7)

- Analysis
  - TCLP (metals)
  - Totals analysis (organics)
  - Must be a grab sample, not composite (268.40(b)(no change))
- Knowledge of process
  - Must document the basis of knowledge determination
  - Must be correct! (no change)





## FAQs & Common Mistakes

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How do the LDRs apply to Characteristic and Listed wastes?

- Listed: Must meet the §268.40 treatment standards for regulated hazardous constituents specific to the waste (or use a specified technology)
- Characteristic: Must remove the characteristic (or meet the specified technology for a treatment subcategory in §268.40), *and* address any underlying hazardous constituents (UHCs) (unless § 268.40 specifically does not require it).



## FAQs & Common Mistakes

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- What are Underlying Hazardous Constituents (UHCs)?
  - Must determine if UHCs present in characteristic waste (no change)
    - “Reasonably expected to be present” at the point of generation §268.2(i)
    - D001 High TOC subcategory exception (§268.9(a))
  - 250 + chemicals on the Universal Treatment Standards Table (§268.48)



## FAQs & Common Mistakes

What are the Universal Treatment Standards (UTS)?

- Historically, EPA set treatment standards based on “BDAT” (best demonstrated available technology) for each waste.
- Unintended consequence: numeric treatment standards from BDAT for a single constituent could vary for different hazardous wastes.
- To simplify the LDR program, EPA set a single numeric value for each hazardous constituent. This is the UTS table in §268.48.
- EPA also changed the values for constituents in the §268.40 treatment standards table to be the same as the UTS.



## FAQs & Common Mistakes

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Just to make sure you're "not" confused...

- How is a "regulated hazardous constituent" different from an "underlying hazardous constituent (UHC)?"



## FAQs & Common Mistakes

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- “Regulated hazardous constituents” are the constituents known to be in listed and TC wastes, and are found in the §268.40 table for the listed waste code.
- “UHC’s” are identified in characteristic wastes, and are found in the UTS table at §268.48 for the listed and characteristic waste codes (except for fluoride, selenium, sulfides, vanadium, and zinc—see §268.2).



## FAQs & Common Mistakes

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On the off chance that you are still confused.....

- Do listed wastes have to meet the UHC treatment standards?





## FAQs & Common Mistakes


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- There are few Yes/No answers in RCRA...
  - Almost always, listed wastes do not have to meet the UHC treatment standards—only the regulated constituents must be treated to meet the LDRs.
  - **However**, if listed waste also exhibits a characteristic other than that addressed by the listing and its regulated constituents, the waste must be treated to address that characteristic and any UHCs that are not already covered by the listing.
  - Also, soil contaminated with listed waste is also subject to UHC standards.



## FAQs & Common Mistakes

What is the Dilution Prohibition? §268.3

- 
- Impermissible to dilute hazardous waste (e.g., adding soil or water) to meet concentration-based standards.
    - Dilution circumvents proper treatment and does not reduce the overall load of toxics.
    - Also inappropriate to “treat metals” by incineration or biodegradation.
  - This is *RCRA*, and there are exceptions:





## FAQs & Common Mistakes

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The Main Exceptions to dilution prohibition?:

- Ignitable, corrosive and reactive hazardous wastes may be diluted to meet the LDR treatment standards, *if*
- They are sent through a CWA or CWA-equivalent system or a Class I SDWA underground injection well, *and*
- Have a treatment standard of DEACT.

## FAQs & Common Mistakes



What is the Storage Prohibition? §268.50?

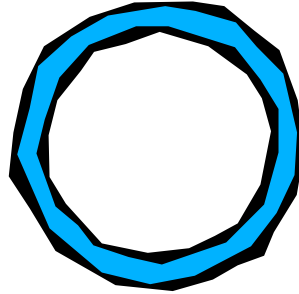
- Storage of prohibited wastes is only allowed to accumulate a sufficient volume of waste to facilitate proper treatment, recovery, or disposal.
- For storage up to one year, burden is on EPA/state to demonstrate non-compliance.
- Beyond one year, burden of proof with waste handler to justify storage; not required to submit notification.
- In all cases, generators/TSDFs subject to standard accumulation time, labeling, unit requirements.



# Land Disposal Restrictions

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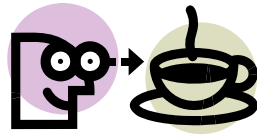
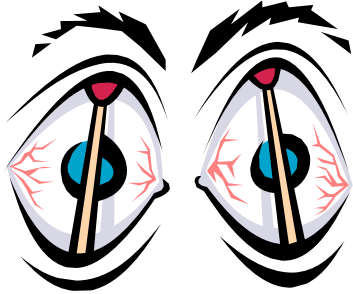
- Questions

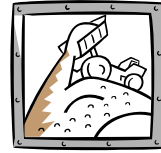




# Land Disposal Restrictions

**BREAK!**





## FAQs & Common Mistakes

What are Alternative LDR Treatment Standards for Contaminated Soil? (§268.49)

- Requires 90% reduction in hazardous constituents subject to treatment, capped at 10 times UTS
- For ignitable, reactive and corrosive wastes, must remove the characteristic
- Applies to each constituent subject to treatment when such constituents are initially expected to be present at greater than 10 times the UTS



## FAQs & Common Mistakes

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What are the Soil Standards? (continued)

- Must meet the soil standard for both characteristic and listed designations
- Do not apply to “in situ” soils
- Only apply in states that have been authorized for them or when EPA administers the program
- Incidental mixing of soil and haz waste is ok under some circumstances; otherwise its impermissible dilution
- Treated Characteristic soil can go to Subtitle D landfill if it meets soils standards
- Listed soil can go to Subtitle D landfill when it meets soil standards **AND** has a “no-longer contained-in” determination

A graphic consisting of overlapping colored squares (yellow, red, blue) and a black crosshair.

## FAQs & Common Mistakes

What is the “Contained-in” Policy?

- Contaminated environmental media\* is not haz waste, unless it “contains” haz waste:
  - Exhibit a characteristic, or are
  - Contaminated with concentrations of hazardous constituents from listed wastes above health-based levels.
- Media “containing” HW are subject to applicable RCRA requirements, until it no longer contains HW.

\*environmental media include soil, groundwater, surface water and sediments



## FAQs & Common Mistakes

### “Contained-in” Policy (continued)

- “Contained-in determination”—no longer contains HW and no longer subject to RCRA when:
  - no longer exhibits a characteristic (note the policy does not require treatment of UHCs to UTS levels)
  - for listed wastes, regulated constituents must be below health-based levels, based on conservative, direct exposure assumptions
- **NOTE:** waste that is determined to “no longer contain” hazardous waste is still subject to the LDRs, if there are constituents above LDR treatment levels







## FAQs & Common Mistakes



### **What are the Debris Standards? §268.45 and §268.2(g) and (h)**

- Debris (see §268.2 for complete definition): solids exceeding 60 mm (tennis ball) intended for disposal and are: manufactured objects, plant or animal matter, natural geologic material. There are exemptions, including: wastes with specific treatment standards (e.g., lead acid batteries); process residuals (e.g., sludges); intact containers.
- Hazardous debris: exhibits characteristic or contains listed waste



## FAQs & Common Mistakes

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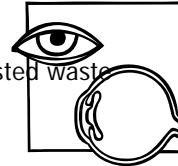
### **Debris Standards** (continued)

- 50% "rule": mixtures of debris and other material that are greater than 50% debris by visual inspection are regulated as debris
- Mixing of wastes with debris to change treatment classification is illegal
- 3 technology types: extraction, destruction, immobilization
  - Characteristic debris treated by extraction or destruction and that are not characteristic can be disposed in Subtitle D landfill
- Debris treatment residuals must meet §268.40 treatment standards

## FAQs & Common Mistakes

LDRs and Remediation Waste—a complex area:

- Area of Contamination (AOC) policy
- Corrective Action Management Units (CAMUs)
- Temporary Units
- Policy on determining when contamination caused by listed waste
- Site-specific LDR treatment variances
- Spill response exemptions (40 CFR 254.1(g)(8)(i))
- Contained-in policy
- §3020 exemption for groundwater reinjection
- Alternate LDR standards for soil and debris



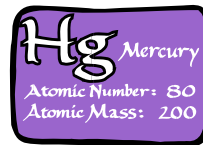
See Management of Remediation Waste Under RCRA  
[http://www.epa.gov/correctiveaction/resource/guidance/remwaste/spd\\_mem.pdf](http://www.epa.gov/correctiveaction/resource/guidance/remwaste/spd_mem.pdf)



## FAQs & Common Mistakes

What is a “Lab Pack?”

- Lab Pack – Drum or container filled with many smaller containers of chemicals
- Lab Packs have an alternative LDR requirement—incineration (§ 268.42(c))
- However, certain wastes are excluded (see 268 Appendix IV)





## FAQs & Common Mistakes



Do Universal Waste handlers need to comply with LDRs?

- Universal wastes must ultimately be sent to a universal waste (or Subtitle C) destination facility
- Handlers are exempt from testing, tracking, recordkeeping in §268.7 and the storage prohibition (§268.50)
- All of the LDR requirements of §268 apply (see §273.60) at the destination facility

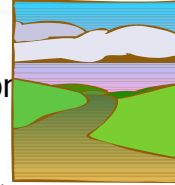


## FAQs & Common Mistakes

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What are appropriate management options for non-hazardous soil/debris wastes?:

- Untreated Listed Waste
  - meets TS as generated (RCRA-C LF disposal)
  - needs treatment (RCRA-C treatment facility)
- Treated Listed Waste (RCRA-C disposal facility)
- Untreated Characteristic Waste (RCRA-C treatment facility)
- Decharacterized, no UHCs or treated UHCs (RCRA-D LF; CWA/CWA-EQ; Class I SDWA well for disposal)
- Decharacterized, UHCs (non-RCRA-C unit for treatment)





## Notification Requirements

- I'll discuss the notification requirements here and include the paperwork requirements tables at 268.7
- One-time notices
  - Excluded/exempted after point of generation
    - Disposition
    - On-site files
- 71 FR 16913, Apr 4, 2006 Burden Reduction Initiative changes are included



## Notification Requirements

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- One-time notices (cont.)
  - Initial shipment of waste not meeting treatment standard
    - To TSDf and generator file
    - Re-notify when waste or facility changes
  - Meets treatment standard at point of generation
    - To TSDf and generator file
    - Re-notify when waste or facility changes
    - Available waste analysis data





# Notification Requirements



- One-time notices (cont.)
  - Characteristic waste treated to non-hazardous
    - Notification & Certification
    - Generators or **treater's files** and
    - Send to State/EPA (Requirements removed)
    - Update when waste changes (process/operation) and/or
    - Subtitle D receiving facility changes
    - **Annual re-notification if change occurs by Dec 31 (Requirement removed)**



## Notification Requirements

- Characteristic waste treated to non-hazardous (cont.)
  - Notification requires
    - Name & Address of RCRA-D facility
    - Description of waste as initially generated
    - Include waste codes, treatability group, UHCs unless all UHCs are treated & monitored
      - Can't go to RCRA-D unless UHC's treated
  - Certification
    - Signed by authorized representative
    - Separate certification language if treatment removes characteristic, but not UHCs



# Notification & Recordkeeping Requirements



- Hazardous debris considerations
  - Include contaminants subject to treatment
  - "Indication" that the constituents being treated per the alternative treatment standards
- Contaminated soil considerations
  - One-time notice to receiving facility
  - One copy in facility's file
  - Include 268.7 Paperwork Table #8 statement



## Notification & Recordkeeping

- Keep all determination records 3 years
- Waste Analysis Plan – Required if managing prohibited waste to meet treatment standards
  - Keep on site in generator files
- SQG with “tolling agreement”
  - LDR notice/certification required
  - Keep records 3 years after agreement termination



## Notification & Recordkeeping



- Waste meets treatment standards as generated
  - One time notification/certification with initial shipment
- Waste does not meet treatment standards as generated **or generator chooses not to determine**
  - One time notification
    - To Facility and generator's file with 268.7(a)(2) info **or if choice is not to determine**
    - Both files above with EPA haz waste # and first shipment manifest # with statement: "This hazardous waste may or may not be subject the LDR treatment standards. The treatment facility must make the determination."


## Notification & Recordkeeping

- Lab Packs
  - One time notice/certification
  - Certify pack contains only waste not excluded under Appendix IV to 40 CFR 268
    - e.g., mercury, P010 (arsenic acid), etc.
  - UHCs for characteristic wastes need not be identified





## Notification & Recordkeeping

- Characteristic wastes that are no longer hazardous 
  - One time notification/certification to generator or treater's on-site files **and EPA/State (removed)**
    - Include RCRA-D facility (if applicable)
    - Waste description: codes, treatability group, UHCs
    - If all UHCs will be treated and monitored, no need to list UHCs on notice
  - Update if changes occur &
  - **Re-notify EPA/State annually NLT December 31 (removed)**



## Waste Analysis Plan



- Generator LDR requirements if you treat your own waste to meet standards – not permitting
  - TSDF WAP not discussed here
- Managed to meet the LDR treatment standard
- Does not apply to alternative debris standards
- Keep on site
- Detailed chemical & physical analysis





## Waste Analysis Plan



- All info needed to treat the waste
- Testing frequency
- Written
- Notification



## Land Disposal Restrictions

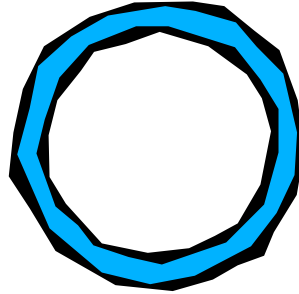
- Everything You Ever Wanted to Know About LDR in Two Hours!
  - OK – not everything, but
  - Do you have something we missed?





# Land Disposal Restrictions

- Questions





## Who Do You Call?

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- Felix Flechas (303) 312-6014
  - [Flechas.Felix@epamail.epa.gov](mailto:Flechas.Felix@epamail.epa.gov)
- Jim Harford (402) 471-8308
  - [jim.harford@ndeq.state.ne.us](mailto:jim.harford@ndeq.state.ne.us)





## Web Resources



### ■ General

<http://www.epa.gov/epaoswer/hazwaste/ldr/index.htm>

<http://www.epa.gov/epaoswer/hotline/training/ldr.pdf>

<http://www.epa.gov/epaoswer/osw/topics.htm>



### ■ Regulations

<http://www.epa.gov/epaoswer/hazwaste/ldr/rules04.htm>

### ■ Soils

<http://www.epa.gov/epaoswer/hazwaste/ldr/ldr-soil.pdf>

### ■ WAPs

<http://www.epa.gov/epaoswer/hazwaste/ldr/wap330.pdf>

### ■ Remediation

[http://www.epa.gov/epaoswer/hazwaste/ca/resource/guidance/remwaste/pspd\\_mem.pdf](http://www.epa.gov/epaoswer/hazwaste/ca/resource/guidance/remwaste/pspd_mem.pdf)



## FAQs & Common Mistakes

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- “Extra Credit” Examples
  - F003 listed waste
  - F005 listed waste
  - D008 spent sandblast residue from a lead-based painted tower
  - Soil contaminated with gasoline



## Thank You

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After viewing the links to additional resources, please complete our online feedback form.

**Thank You**

[Links to Additional Resources](#)

