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EPA

# Superfund LDR Guide #1

# Overview of RCRA Land Disposal Restrictions (LDRs)

The Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act (RCRA) - - P.L. 98-616, signed on November 8, 1984 - - include specific provisions restricting the land disposal of RCRA hazardous wastes. The purpose of these HSWA provisions is to minimize the potential of future risk to human health and the environment by requiring the treatment of hazardous wastes prior to their land disposal. **This guide summarizes the major components of the land disposal restrictions (LDRs), outlines the types of restrictions imposed, and presents the compliance options specified in the regulation**. Other Superfund LDR Guides are listed at the end of this guide. More detailed guidance on Superfund compliance with the LDRs is being prepared by the Office of Solid Waste and Emergency Response (OSWER).

## DEFINITION OF LAND DISPOSAL

The LDRs place restrictions on the land disposal of RCRA hazardous wastes. The definition of land disposal (or "placement," which is synonymous with "land disposal") under RCRA includes, but is not limited to:

> *any "placement" of hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, undergound mine or cave, and concrete bunker or vault.* (RCRA §3004(k))

The LDRs apply only to RCRA hazardous wastes that are land disposed or placed. They do not apply to wastes that are discharged to surface waters (where National Pollutant Discharge Elimination System (NPDES) requirements apply) or to Publicly Owned Treatment Works (where pretreatment requirements apply). The LDRs also do not apply to contaminated ground water treated and supplied directly to households (where Maximum Contaminant Levels (MCLs) generally apply).

It is important to note that the LDRs apply prospectively to wastes that are land disposed after the effective date of the restrictions (i.e., the LDRs do not require that wastes land disposed prior to the date of the restrictions be removed and treated).

## STATUTORY DEADLINES

HSWA directed EPA to establish treatment standards for each of seven groups of RCRA hazardous wastes by specific dates. These dates, referred to as statutory deadlines, will eventually restrict land disposal of all RCRA hazardous wastes, as shown in **Highlight 1**.

**Highight 1: LDR STATUTORY DEADLINES**

| Waste | Statutory Deadline |
|---|---|
| Spent Solvent and Dioxin-Containing Wastes | November 8, 1986 |
| California List Wastes | July 8, 1987 |
| First Third Wastes | August 8, 1988 |
| Spent Solvent, Dioxin-Containing, and California List Soil and Debris From CERCLA/RCRA Corrective Actions | November 8, 1988 |
| Second Third Wastes | June 8, 1989 |
| Third Third Wastes | May 8, 1990 |
| Newly Identified Wastes | Within 6 months of identification as a hazardous waste |

The statutory deadlines are important because they are the dates on which RCRA wastes become "restricted," although EPA has the authority to restrict a waste before its statutory deadline. For example, the Agency has restricted certain Second Third wastes in the First Third rule and certain Third Third wastes in the June 1989 Second Third rule.

**STATUTORY WASTE CATEGORIES**

The first category of wastes (refer to **Highlight 1**) includes: the F001-F005 spent solvent-containing RCRA wastes and the F020-F023 and F026-F028 dioxin-containing RCRA wastes. The second category, the California list wastes, is a distinct category of RCRA hazardous wastes described further in Superfund LDR Guide #2. The three categories of scheduled wastes (i.e., First Third, Second Third, Third Third wastes) include all listed and characteristic hazardous wastes identified as of November 8, 1984 (excluding the solvent and dioxin wastes mentioned above). EPA ranked the scheduled wastes based on their toxicity and volume and placed the highest toxicity/volume wastes in the "First Third." Soil and debris (see **Highlight 2**) contaminated with spent solvent- or dioxin-containing and California list wastes generated during CERCLA response and RCRA corrective actions were given a separate statutory deadline. Finally, wastes newly identified or listed after 1984 must have standards set within six months of their identification or listing as a hazardous waste.

**Highlight 2: DEFINITIONS OF SOIL AND DEBRIS**

Soil is defined as materials that are primarily of geologic origin such as sand, silt, loam, or clay that are indigenous to the natural geological environment at or near the CERCLA site. (In many cases, soil is mixed with liquids, sludges, and/or debris.)

Debris is defined as materials that are primarily non-geologic in origin such as grass, trees, stumps, and man-made materials such as concrete, clothing, partially buried whole or empty drums, capacitors, and other synthetic manufacturing items, such as liners. (It does not include synthetic organic chemicals, but may include materials contaminated with these chemicals.)

**TYPES OF LDR RESTRICTIONS**

As discussed above, a RCRA hazardous waste becomes "restricted" under the LDRs on its statutory deadline (or earlier if EPA promulgates the restriction ahead of schedule). On that date, one of four types of restrictions will apply:

1. Treatment standards: EPA may set one of three types of treatment standards for restricted wastes:

   - A concentration level to be achieved prior to disposal (the most common type of treatment standard);
   - A specified technology to be used prior to disposal; or
   - A "no land disposal" designation when the waste is no longer generated, is totally recycled, is not currently being land disposed, or no residuals are produced from treatment.

   All three types of treatment standards are established based on the best demonstrated available technology (BDAT) identified for that waste.

2. Minimum technology requirements during a national capacity extension: When EPA sets a treatment standard, it may grant a national capacity extension (for up to two years) if sufficient treatment capacity is not available for that waste. During a national capacity extension, the treatment standards set for a waste do not have to be met. However, if wastes that do not meet the standards are disposed of in a landfill or surface impoundment, the receiving unit must meet the RCRA minimum technology requirements (i.e., double liner, leachate collection system, and ground-water monitoring).

   When EPA sets treatment standards for Third Third wastes in May 1990, it may grant a national capacity extension, but only for up to two years. Therefore, by May 1992, all national capacity extensions will have expired. The only exception may be if EPA grants an extension when it sets treatment standards for newly identified wastes. Superfund LDR Guide #3 provides additional information on the minimum technology requirements.

3. Soft hammer restrictions: If EPA fails to set a treatment standard for a First or Second Third

waste by its statutory deadline, soft hammer restrictions apply. The soft hammer requirements place the following restrictions on the disposal of wastes in landfills and surface impoundments:

- # The receiving unit must meet minimum technology requirements; and

- # Site managers (OSCs, RPMs as generators) must determine if treatment is practically available. If treatment is practically available, the site manager must use the best practically available treatment to treat wastes before disposal; if treatment is not practically available, the wastes may be disposed of without treatment.

Land disposal in other types of units, such as land treatment units and waste piles, is not restricted under soft hammers, although an LDR notification will be required for actions involving off-site disposal in such units.

Soft hammer restrictions remain in effect until EPA sets a treatment standard, or until May 1990, when the hard hammer restrictions become effective.

4. Hard hammer restrictions: If EPA fails to set a treatment standard by the statutory deadlines for solvent- and dioxin-containing and California list wastes, or by May 8, 1990, for any of the scheduled wastes, the hard hammer restrictions prohibit all land disposal of the affected waste until a treatment standard is promulgated. To date, the hard hammer has only fallen for certain California list wastes.

   Superfund LDR Guide #4 provides more information on soft and hard hammer restrictions.

**LDR COMPLIANCE OPTIONS**

EPA recognizes that not all wastes can be treated to the LDR treatment standards and that alternative treatment standards and methods of land disposal may provide significant reduction in the toxicity, mobility, or volume of wastes and be protective of human health and the environment. The LDRs, therefore, provide the following compliance options to meeting the restrictions discussed above.

- # Treatabili1ity Variance: This option is available when EPA has set a treatment standard as a concentration level, but because a generator's waste differs significantly from the waste used to set the standard, the promulgated treatment standard cannot be met or the BDAT technology is inappropriate for that waste. (For the purposes of the LDRs, CERCLA site managers are considered generators of hazardous waste.) Under a Treatability Variance, EPA approves an alternate treatment standard that must be met before that waste can be land disposed. Superfund LDR Guides #6A and #6B provide more information for obtaining Treatability Variances for remedial and removal actions.

- # Equivalent Treatment Method Petition: This option is available when EPA has set a treatment standard that is a specified technology (e.g., incineration). Generators may use a different technology (e.g., chemical treatment) if they can demonstrate that this technology will achieve a measure of performance equivalent to that of the specified technology.

- # No Migration Petition: This option may be used to meet any of the four types of LDR restrictions. Under this option, generators may land dispose wastes that do not meet the LDR restrictions if they can demonstrate that there will be "no migration" of hazardous constituents above health-based levels from the disposal unit or injection zone for as long as the wastes remain hazardous.

- # Delisting: This option may be used to demonstrate that a waste is nonhazardous and, therefore, not subject to any of the RCRA Subtitle C hazardous waste regulations, including the LDRs. Delisting only applies when the CERCLA waste is a listed RCRA hazardous waste. (Characteristic wastes need not be delisted, but they can be treated to no longer exhibit the characteristic.) Generators must demonstrate that: (1) the waste does not meet any of the criteria for which the waste was listed as a hazardous waste, and (2) other factors (including additional constituents) do not cause the waste to be hazardous.

The LDRs also permit a case-by-case extension of up to two years, which allows a site-specific extension of the effective date if a generator has a binding contractual commitment for treatment capacity and can show that no capacity currently exists anywhere in the United States. This option, however, is generally not appropriate for Superfund response actions.

**SOIL AND DEBRIS WASTES**

As discussed earlier, the LDRs apply to soil and debris when they are contaminated with a restricted RCRA hazardous waste. Because of the complex

nature of many soil and debris matrices (as compared with the industrial process wastes upon which the LDR treatment standards were based), it may be difficult to meet these standards for wastes mixed with soil and debris. Consequently, the Agency is undertaking a rulemaking that will set LDR treatment standards specifically for soil and debris. Until that rulemaking is completed, however, site managers may need to obtain a Treatability Variance for actions addressing contaminated soil and debris.

**OTHER LDR REQUIREMENTS**

In addition to the four types of restrictions described above, the LDRs also include the following requirements:

# Storage Prohibition: The LDRs prohibit the storage of restricted wastes (including soft hammer wastes) unless storage is solely for the purpose of accumulating sufficient quantities of wastes to facilitate proper treatment, recovery, or disposal. For periods of up to one year, the burden is generally on EPA to prove that storage is not needed to facilitate proper treatment, recovery, or disposal; after one year, the burden of proof shifts to the storage facility. Temporary storage used during CERCLA actions to facilitate proper disposal (e.g., storage while awaiting sampling results, or while selecting and designing a remedy) is allowable under the storage prohibition.

# Exemption for Treatment in Surface Impoundments: Placing untreated wastes in surface impoundments (that meet the minimum technology requirements) for treatment is permissible, provided the treatment residues that do not meet the LDR treatment standards or prohibition levels are removed for subsequent management (through any treatment other than treatment in another surface impoundment) within one year of placement into the surface impoundment.

# Dilution Prohibition: Dilution of a waste as a means to comply with the LDRs is prohibited. However, "dilution" that is part of treatment (e.g., mixing for immobilization) is permissible.

The LDRs also establish requirements for testing, notification, and certification of compliance.

- Testing: Once it is determined that a waste is restricted under the LDRs, generators, treatment facilities, or disposal facilities must test the waste at a frequency specified in the facility's waste analysis plan to demonstrate compliance with LDR treatment standards or California list prohibition levels prior to land disposal.

- Notification: All restricted wastes that are shipped to an off-site treatment, storage, or disposal facility must be accompanied by a notification that includes the EPA hazardous waste number and the applicable LDR restriction that is in effect for those wastes.

- Certification: A treatment facility must certify that the LDR treatment standards are attained before a restricted waste is land disposed off-site. (There are also certification requirements specifically for soft hammer wastes; see Superfund LDR Guide #4.)

**OTHER AVAILABLE SUPERFUND/LDR GUIDES**

#2 Complying with the California List Restrictions Under LDRs

#3 Treatment Standards and Minimum Technology Requirements Under LDRs

#4 Complying With the Hammer Restrictions Under LDRs

#5 Determining When LDRs are Applicable to CERCLA Response Actions

#6A Obtaining a Soil and Debris Treatability Variance for Remedial Actions

#6B Obtaining a Soil and Debris Treatability Variance for Removal Actions*

#7 Determining When LDRs Are Relevant and Appropriate to CERCLA Response Actions*

*Currently being prepared in OSWER