



## Superfund LDR Guide #8

# Compliance with Third Third Requirements under the LDRs

Office of Emergency and Remedial Response  
Hazardous Site Control Division 05-220

Quick Reference Fact Sheet

The 1984 Hazardous and Solid Waste Amendments (HSWA) require EPA to promulgate regulations restricting the land disposal of RCRA hazardous wastes. EPA previously promulgated regulations restricting the land disposal of solvent- and dioxin-containing, California list, First Third, and Second Third wastes. This guide (the eighth in a series of LDR guides prepared by the Office of Emergency and Remedial Response (OERR)) summarizes the key provisions of the Third Third LDR rule and discusses potential implications for CERCLA response actions. More detailed guidance on Superfund compliance with the LDRs is being prepared by the Office of Solid Waste and Emergency Response (OSWER).

The Third Third rule, promulgated on May 8, 1990, restricts all remaining RCRA hazardous wastes (listed as of November 8, 1984) for which treatment standards had not previously been set. Wastes for which LDR standards are not established include certain wastes that were newly listed or newly identified after November 8, 1984, mineral processing wastes previously excluded from regulation under the Bevill Amendment, and certain newly identified characteristic wastes. The rule sets treatment standards and effective dates for the characteristic hazardous wastes, First and Second Third wastes that were "soft hammered," multi-source leachate, and mixed hazardous and radioactive wastes. EPA granted a 90-day national capacity variance for all wastes in the Third Third rule, excluding those wastes already receiving a two-year national capacity variance. In addition, EPA provided important policy guidance on the following issues:

- Continued application of the California list restrictions;
- Interpretation of the dilution prohibition; and
- Application of LDR standards to lab packs.

### TREATMENT STANDARDS

As with previous LDR rules, EPA set concentration-based treatment standards for Third Third wastes whenever possible (thus allowing use of any technology that can achieve the specified performance level). However, many Third Third treatment standards are set as methods of treatment (e.g., incineration), because the Agency currently has no means of calculating valid concentration-based standards that can be used for compliance monitoring. To comply with the LDRs when EPA has specified a method(s) of treatment, site managers must either use the specified technology to treat the waste or demonstrate that an alternative technology can achieve a level of performance equivalent to that of the specified technology.

In cases where soil and debris are contaminated with RCRA hazardous wastes for which the treatment standards are methods of treatment, site managers should continue to

comply with the LDRs through a Treatability Variance, as outlined in Superfund LDR Guides #6A and #6B. [See Preamble to the 1990 National Contingency Plan (NCP), 55 FR 8760-61, March 8, 1990.]

### NATIONAL CAPACITY VARIANCES

EPA granted a 90-day national capacity variance, until August 8, 1990, for all wastes included in the Third Third Rule. EPA also granted certain wastes national capacity variances from the LDRs for up to two years (from May 8, 1990 until May 8, 1992), based on inadequate treatment capacity. The surface-disposed wastes receiving a two-year national capacity variance are listed in Highlight 1.

### CHARACTERISTIC WASTES

Among the wastes restricted in the Third Third rule are those wastes exhibiting one or more of the RCRA hazardous characteristics (i.e., ignitability, corrosivity, reactivity, or toxicity). EPA set treatment standards for the characteristic wastes both as concentration-based levels and methods of treatment. For most characteristic wastes with concentration-based treatment levels, EPA generally set the LDR treatment standards at the characteristic level that defines these wastes as hazardous. For example, EPA currently defines a D009 waste as mercury that leaches more than 0.2 mg/l using the EP toxicity test; the treatment standard for mercury is 0.2 mg/l using the TCLP test. Because EPA established concentration levels for these wastes at the characteristic level, treatment to the LDR treatment standards will render the treated wastes non-hazardous. Therefore, the treated wastes may be disposed of in Subtitle D landfills. [Note: the Agency recently promulgated the toxicity characteristic (TC) rule, which requires use of the TCLP test beginning September 25, 1990 as a means of determining whether a waste is characteristic. Therefore, as of September 25, 1990, the TCLP will be used to determine whether a waste is characteristic and, in most cases, for compliance with LDR standards prior to disposal.]

**Highlight 1 - SURFACE-DISPOSED WASTES RECEIVING TWO-YEAR NATIONAL CAPACITY VARIANCES IN THE THIRD THIRD RULE**

Technology	Waste Code <sup>a</sup>	
All	All scheduled mixed hazardous/radioactive wastes and D004-D011 inorganic solid debris	
Vitrification	D004 K031 K084 K101 K102 P010	P011 P012 P036 P038 U136
Combustion of Sludge/Solids	F039 <sup>b</sup>	K048-K052 <sup>c</sup>
Acid Leaching and Chemical Precipitation (low mercury) and mercury retorting (high mercury)	D009 K106 P065	P092 U151
Secondary Smelting	D008 <sup>d</sup>	
Thermal Recovery	P087 (wastewater and nonwastewater)	
Incineration, vitrification, and mercury retorting	Soil and Debris	

- <sup>a</sup> Variances are granted only to the nonwastewater forms, unless otherwise noted.
- <sup>b</sup> Multi-source leachate.
- <sup>c</sup> Capacity extension only until November 8, 1990.
- <sup>d</sup> D008 lead-acid batteries.

For the pesticide wastewaters, EPA set treatment standards as specified technologies. For pesticide nonwastewaters, the treatment standards are set as total waste concentrations (not extract concentrations). Although these total waste concentrations appear to be higher than the levels that define the wastes as hazardous, given the 20 to 1 dilution factor inherent in the TCLP and EP protocols, no correlation between the treatment standard and the characteristic level can be assumed. Therefore, testing likely will be necessary to determine whether these wastes remain hazardous once treated to the LDR treatment standards (see **Highlight 2**).

For characteristic wastes with specified methods of treatment (e.g., certain D001 ignitable wastes), site managers must treat the wastes with the specified technology or demonstrate that an alternative technology can achieve an equivalent level of performance. Following treatment, wastes should be tested to determine whether the wastes have been rendered non-hazardous and evaluated as to whether the residues exhibit characteristics other than those for which the waste was originally treated. In some cases, the use of a BDAT treatment technology to remove one characteristic

**Highlight 2 - THIRD THIRD CHARACTERISTIC PESTICIDE NONWASTEWATER TREATMENT STANDARDS**

Waste	Name	LDR Treatment Standard (mg/l) (total waste)	EP Toxicity/TC Level (mg/l)*
D012	Endrin	0.13	0.02
D013	Lindane	0.066	0.4
D014	Methoxychlor	0.18	10.0
D015	Toxaphene	1.3	0.5
D016	2,4-D	10.0	10.0
D017	2,4,5-TP	7.9	1.0

\* These also will be the regulatory standards under the TCLP when it becomes effective on September 25, 1990.

could result in a residue that exhibits a different characteristic and, therefore, the residue may require further treatment. For example, incineration of an ignitable D001 waste may generate an ash that exhibits the characteristic of toxicity for certain metals. This ash would need to be treated for the additional characteristic to meet the LDR treatment standard before disposal. If the treatment has rendered the waste non-hazardous, the residues may be disposed of in a Subtitle D facility.

When a listed waste also exhibits a characteristic, the waste must be treated to the treatment standard established for both the listed waste and its characteristic, unless the characteristic constituent or property is specifically addressed through the treatment standard for the listed waste. For example, if F006 waste (for which lead is a BDAT constituent) also exhibits the hazardous characteristic of lead, the waste must be treated only to the treatment standard for F006, because it is the most waste-code specific standard and lead is a constituent directly addressed by the F006 treatment standard. If an F001 solvent waste also exhibits the characteristic of lead, however, the waste must be treated to meet the F001 solvent standard and the D008 lead treatment standard, because lead is not a BDAT constituent for F001 waste. Therefore, it is important for site managers to determine all of the listed and characteristic codes that may apply to a waste.

Because EPA divided several of the characteristic wastes into treatability groups for purposes of establishing treatment standards, (see **Highlight 3**), site managers should determine which treatability group(s) are present during a response action and comply with their respective treatment standards.

**MULTI-SOURCE LEACHATE**

EPA has listed multi-source leachate, defined as leachate derived from the treatment, storage, disposal, or recovery of more than one listed hazardous waste, as a new waste code, F039, and established one set of wastewater standards and one

set of nonwastewater standards for this code. These standards set concentration levels for the entire BDAT list of constituents (approximately 200 in total) that may be found in multi-source leachate (see Highlight 4). [Note: treatment standards for the constituents under F039 may differ from standards for the same constituents in other more specific waste codes.]

CERCLA compliance with the F039 treatment standards will involve the analysis of the BDAT constituents present in waste streams extracted through leachate collection systems, and the treatment of such wastes to meet the appropriate levels for these constituents. Because of the RCRA derived-from rule, residuals from the treatment of multi-source leachate are restricted under the LDRs. [Note: Leachate derived from the exclusive management of more than one of the listed dioxin-containing hazardous wastes (e.g., F020-F023 and F026-F028) is classified as a single-source dioxin waste and is not considered multi-source leachate.]

### MIXED RADIOACTIVE WASTES

EPA promulgated treatment standards expressed as specified methods for the following four categories of mixed hazardous and radioactive wastes: (1) hydraulic oils contaminated with mercury, (2) wastes containing elemental mercury, (3) wastes containing elemental lead, and (4) D002, D004-D011 radioactive high-level wastes generated during reprocessing of fuel rods. For other mixed wastes, the

### Highlight 3 - SUBCATEGORIES FOR CHARACTERISTIC WASTES

The following are RCRA characteristic wastes for which EPA established treatability groups in addition to wastewaters and nonwastewaters:

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|---|--|
| <ul style="list-style-type: none"> <li>■ D001 Ignitables               <ul style="list-style-type: none"> <li>- Ignitable liquids                   <ul style="list-style-type: none"> <li>-- organic liquids</li> <li>-- aqueous liquids</li> <li>-- wastewaters</li> </ul> </li> <li>- Ignitable reactives</li> <li>- Oxidizers</li> <li>- Ignitable compressed gases</li> </ul> </li> <li>■ D002 Corrosives               <ul style="list-style-type: none"> <li>- Acids</li> <li>- Alkalines</li> <li>- Other corrosives</li> </ul> </li> <li>■ D003 Reactives               <ul style="list-style-type: none"> <li>- Reactive cyanides</li> <li>- Explosives</li> <li>- Water reactives</li> <li>- Reactive sulfides</li> <li>- Other reactives</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>■ D006 Cadmium               <ul style="list-style-type: none"> <li>- Wastewaters</li> <li>- Nonwastewaters</li> <li>- Cadmium Batteries</li> </ul> </li> <li>■ D007 Chromium               <ul style="list-style-type: none"> <li>- Wastewaters</li> <li>- Nonwastewaters</li> <li>- Chromium Bricks</li> <li>- Chromium Batteries</li> </ul> </li> <li>■ D008 Lead               <ul style="list-style-type: none"> <li>- Wastewaters</li> <li>- Nonwastewaters</li> <li>- Lead-Acid Batteries</li> </ul> </li> </ul> |
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Note: Those characteristic wastes not listed here have wastewater and nonwastewater categories treatability groups only.

### Highlight 4 - EXAMPLE OF F039 MULTI-SOURCE LEACHATE TREATMENT STANDARD\*

(Standards are set in a similar manner for each of the approximately 200 BDAT constituents.)

<u>Wastewater</u>	<u>Total Concentration<sup>+</sup></u> <u>(mg/l)</u>
Acetone	0.28
Acenaphthalene	0.059
Acenaphthene	0.059
Acetonitrile	0.17
Acetophenone	0.010
•	
•	
•	
<u>Nonwastewater</u>	<u>Total Concentration<sup>++</sup></u> <u>(mg/kg)</u>
Acetone	160.0
Acenaphthalene	3.4
Acenaphthene	9.1
Acetophenone	9.6
•	
•	
•	

Notes:

\* F039 nonwastewaters received two year national capacity variances.

+ Total concentration for wastewaters based on the maximum for any single grab sample

++ Total composition for nonwastewaters based on maximum for any 24-hour composite.

treatment standard for the RCRA hazardous waste code is the standard in effect for the hazardous portion of mixed wastes. EPA determined that inadequate nationwide treatment capacity exists for all Third Third surface-disposed mixed radioactive wastes, and granted these wastes a two-year national capacity variance. Mixed wastes containing only spent solvents and dioxins, or California list wastes, are still subject to the applicable treatment standards; no capacity variances are in effect for these wastes.

### CALIFORNIA LIST WASTES

On July 8, 1987, EPA promulgated a final rule establishing treatment standards for California list wastes containing PCBs and certain HOCs, and codified the statutory prohibition on liquid corrosive wastes. The statutory prohibition is in effect for the California list wastes containing free cyanides, metals, and the California list dilute HOC wastewaters. As discussed in Superfund LDR Guide #2, *Complying With the California List Restrictions Under the Land Disposal Restrictions (LDRs)*, when the California list waste restrictions overlap with waste-code specific treatment standards, the waste-code specific treatment standards apply. Therefore, most California list prohibitions are now superseded by more waste-code specific prohibitions and treatment standards as a result of the Third

Third rule. However, the California list prohibitions will continue to apply in the cases outlined below:

- Liquid hazardous wastes that contain over 50 ppm PCBs, where the PCBs are not regulated by the treatment standard;
- HOC-containing wastes that are identified as hazardous by a characteristic property not involving HOCs, such as an ignitable waste that also contains greater than 1,000 ppm HOCs;
- Liquid hazardous wastes that contain a total concentration equal to or greater than 134 mg/l of nickel and/or 130 mg/l of thallium (because these two constituents are not regulated under the characteristic of toxicity); and
- Wastes with a national capacity variance that are also California list wastes, until the waste-code specific treatment standards become effective.

#### LAB PACKS

In the Second Third rule, EPA reaffirmed that all restricted wastes in lab packs being land disposed must comply with the LDR treatment standards for each waste in the lab pack. In the Third Third rule, EPA established two alternate treatment standards for lab packs: (1) incineration followed by treatment (e.g., stabilization) to meet the appropriate individual treatment standard for each EP toxic metal present in lab packs containing only organo-metallic wastes (listed in 40 CFR 268 Appendix IV); and (2) incineration as a method for lab packs that contain only certain organic wastes (listed in 40 CFR 268 Appendix V).

Where possible, site managers should segregate lab packs containing wastes found in 40 CFR 268 Appendix IV and V to facilitate appropriate treatment determination. Lab packs that contain PCBs or dioxins must continue to meet the treatment standards for those wastes. For example, a lab pack containing only dioxin-containing wastes (F020-F023 and F026-F028), a mixture of dioxin-containing wastes and organic hazardous wastes, or California list PCBs and dioxin-containing

wastes must be incinerated according to the applicable standards for those wastes.

#### DILUTION PROHIBITION

In the Third Third rule, EPA reaffirmed the existing dilution prohibition contained in 40 CFR 268.3 for RCRA listed wastes, which restricts dilution through mixing of hazardous wastes unless such dilution meets the standard in § 3004(m) of substantially reducing the prohibited waste's toxicity or mobility. EPA has clarified, however, that the aggregation of wastes does not constitute impermissible dilution if the wastes are all legitimately amenable to the type of treatment being used. Dilution also is allowed in the following cases for characteristic wastes:

- When characteristic wastes are managed in wastewater treatment systems discharging under the pretreatment program or an NPDES permit regulated under the Clean Water Act (CWA) (unless a method is specified), or disposing in Class 1 underground injection wells regulated under the Safe Drinking Water Act (SDWA), if nonhazardous at the point of injection.
- When dilution removes the characteristic property from non-toxic characteristic wastes. [EPA considers high total organic carbon (TOC) ignitable nonwastewaters, reactive cyanide wastes, reactive sulfide wastes, and EP toxic metals and pesticides to be toxic characteristic wastes, and dilution is not allowed for these wastes. All other D001-D003 wastes are considered non-toxic.]

Site managers should ensure that any dilution occurring as a result of waste streams being combined is for acceptable purposes (e.g., pretreatment or treatment). The dilution prohibition may be violated when wastes that are not amenable to the same type of treatment are aggregated. For example, if a listed hazardous waste containing metals is aggregated with organic wastewaters resulting in metal levels no longer exhibiting the characteristic, and the aggregated mixture is sent to biological treatment, the dilution prohibition would be violated because biological treatment is not an appropriate treatment for metal-bearing toxic wastes, (i.e., the metal removal was not as a result of treatment, but was from dilution).

NOTICE: The policies set out in this memorandum are intended solely as guidance. They are not intended, nor can they be relied upon, to create any rights enforceable by any party in litigation with the United States. EPA officials may decide to follow the guidance provided in this memorandum, or to act at variance with the guidance, based on an analysis of specific site circumstances. The Agency also reserves the right to change this guidance at any time without public notice.