



# CERCLA Compliance with the RCRA Toxicity Characteristics (TC) Rule: Part II

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

Quick Reference Fact Sheet

CERCLA remedial actions must comply with the requirements of the Resource Conservation and Recovery Act (RCRA) when they are determined to be applicable or relevant and appropriate requirements (ARARs) unless a waiver is justified. For RCRA Subtitle C hazardous waste requirements to be applicable, the CERCLA response action must constitute either treatment, storage, transport, or disposal of a RCRA hazardous waste. Therefore, to make determinations about the applicability or relevance and appropriateness of RCRA requirements, site managers need to understand how to identify whether a CERCLA waste is a RCRA hazardous waste (including when a waste exhibits the newly promulgated toxicity characteristics (TC)). The purpose of this guide, the second dealing with the TC rule (see *ARARs Qs & As, Compliance with the Toxicity Characteristics Rule: Part I*, May 1990, Publication 9234.2-08FS) is to provide a general framework for managing CERCLA wastes in accordance with the new requirements.

In order to ensure that all CERCLA response actions comply with RCRA requirements that are applicable or relevant and appropriate (including removal actions when compliance is determined to be practicable), site managers need to know whether contamination at the Superfund site includes RCRA hazardous wastes (see Highlight 1). In determining the presence of RCRA wastes that are hazardous because they exhibit the characteristic of toxicity, site managers must take into account a new RCRA regulation, the Toxicity Characteristic (TC) rule, which EPA promulgated on March 29, 1990 and which takes effect on September 25, 1990.

## THE TOXICITY CHARACTERISTIC RULE

The TC rule (55 FR 11798, March 29, 1990) requires use of the toxicity characteristic leaching procedure (TCLP) test in place of the extraction procedure (EP) test to determine whether wastes exhibit the characteristic of toxicity. As with the EP, site managers are not required to test their wastes to determine if they exhibit the toxicity characteristic; knowledge of the wastes may be sufficient to make this determination [40 CFR 261.10(a)(2)(ii)]. Specific knowledge of CERCLA wastes will not be available at many Superfund sites, however, so that testing may be necessary.

### Highlight 1

#### TYPES OF RCRA HAZARDOUS WASTES

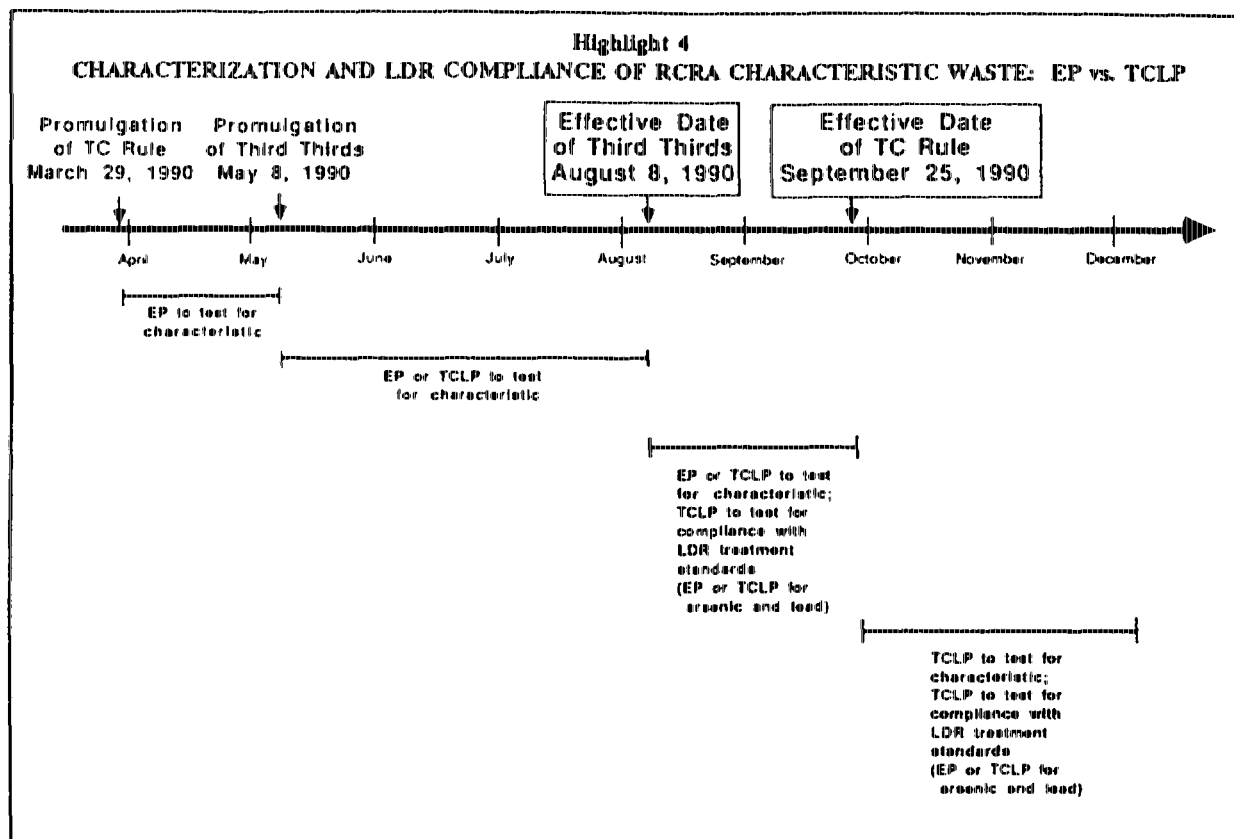
Listed Wastes: Wastes from specific processes or from specific or non-specific sources that EPA has "listed" as RCRA hazardous wastes. These wastes carry the waste codes "F, K, P or U." For example:

K015 Still bottoms from the production of benzyl chloride.

Characteristic Wastes: Wastes that exhibit any one of four hazardous characteristics (these wastes carry a "D" waste code):

- Ignitability
- Corrosivity
- Reactivity
- Toxicity

Note: A RCRA hazardous waste must first be a solid waste, which is defined by RCRA as any material that is disposed of (i.e., abandoned, recycled in certain ways, or considered inherently waste-like). Exclusions from the definition (e.g., domestic sewage sludge, household wastes) are listed in 40 CFR 261.4(a) and (b).



### Pre-ROD

During an on-going RI/FS, or in cases where the investigation is complete but the ROD has not yet been signed, site managers should assess (either through use of the TCLP or knowledge of the waste, which could include EP test results) whether the wastes being managed are hazardous by toxicity characteristic and determine which, if any, RCRA Subtitle C requirements may be ARARs for each of the alternatives being considered.

### Post-ROD

For RODs signed before March 29, 1990 that involve on-site disposal of waste, site managers do not have to run the TCLP to determine applicability of Subtitle C hazardous waste requirements because ARARs generally are considered to be "frozen" when a ROD is signed (although an assessment of the protectiveness of the remedy, in light of a new requirement, should be made). Because the TC rule simply addresses whether a waste is a characteristic RCRA

hazardous waste, its consideration generally should not affect determinations made during the RI/FS and remedy selection process of the protectiveness of a remedy.

If an ongoing or planned response action (regardless of when the ROD was signed) involves or will involve off-site disposal of wastes after September 25, 1990, the wastes must be evaluated for the toxicity characteristic to ensure that applicable RCRA Subtitle C requirements are met at the time of disposal. For example, if wastes that exhibit the TC (but were not considered hazardous under the EP when tested earlier) are being disposed of in an off-site municipal Subtitle D landfill, these wastes can no longer be disposed of in this manner after September 25, 1990. These wastes will need to be disposed of in a RCRA Subtitle C facility or treated such that they are no longer characteristic prior to disposal in a Subtitle D facility. Depending on which of these options is chosen, a ROD amendment or explanation of significant differences (ESD) would need to be issued.

**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.

Constituents Regulated - The TC rule establishes regulatory levels for an additional 25 organic chemicals that were not previously regulated (D018-D043) and retains the regulatory levels for the 14 chemicals originally regulated under the old EP (i.e., D004-D017). Each of the constituents regulated and their regulatory levels (based on the TCLP) are shown in Highlight 2. Because the new chemicals regulated are organic constituents commonly found at Superfund sites, it is likely that more wastes at Superfund sites will exhibit the RCRA toxicity characteristic and will require management in accordance with RCRA Subtitle C hazardous waste requirements.

The results of the TCLP and EP tests generally are expected to be the same for the original 14 constituents (i.e., if a waste tested as non-characteristic under the EP test, it would not be expected to exhibit the characteristic under the TCLP test as well). However, in some cases, wastes that were not hazardous under the EP may be hazardous under the TCLP. Appropriate management and compliance options in such situations are discussed in the following section.

## RELATIONSHIP OF TC TO OTHER RCRA REQUIREMENTS

- LDRs. As described in Superfund LDR Guide #8, *Compliance with Third Third Requirements under the LDRs*, the Third Third LDR rule promulgated on May 8, 1990, set LDR treatment standards for the 14 RCRA wastes that are identified as hazardous by characteristic using the EP toxicity test. (Note: compliance with the LDR standards for most characteristic wastes is based on the TCLP.) For the eight EP toxic metals (D004-D011), EPA generally set the LDR treatment standards as concentrations at the characteristic level, with the exception of selenium nonwastewaters, for which the treatment standard was set above the characteristic level, and certain high mercury nonwastewaters, for which a treatment technology of mercury retorting was set. For the pesticide wastewaters, a technology (e.g., incineration, biodegradation) was specified as the treatment standard. For pesticide nonwastewaters, the treatment standards were set as total waste concentrations (not extract

Highlight 2  
CONSTITUENTS AND REGULATORY LEVELS ESTABLISHED UNDER THE TOXICITY CHARACTERISTIC RULE

Old EP Toxicity Constituents (now regulated under TC)			New TC Constituents (cont.)		
Waste Code	Regulated Constituent	Reg. Level (mg/l)	Waste Code	Regulated Constituent	Reg. Level (mg/l)
D004	Arsenic	5.0	D022	Chloroform	6.0
D005	Barium	100.0	D023	o-Cresol	200.0*
D006	Cadmium	1.0	D024	m-Cresol	200.0*
D007	Chromium	5.0	D025	p-Cresol	200.0*
D008	Lead	5.0	D026	Total cresols	200.0*
D009	Mercury	0.2	D027	1,4-Dichlorobenzene	7.5
D010	Selenium	1.0	D028	1,2-Dichloroethane	0.5
D011	Silver	5.0	D029	1,1-Dichloroethylene	0.7
D012	Endrin	0.02	D030	2,4-Dinitrotoluene	0.13
D013	Lindane	0.4	D031	Heptachlor (and its epoxide)	0.008
D014	Methoxychlor	10.0	D032	Hexachlorobenzene	0.13
D015	Toxaphene	0.5	D033	Hexachloro-1,3-butadiene	0.5
D016	2,4-D	10.0	D034	Hexachloroethane	3.0
D017	2,4,5-TP (silver)	1.0	D035	Methyl ethyl ketone	200.0
New TC Constituents			D036	Nitrobenzene	2.0
Waste Code	Regulated Constituent	Reg. Level (mg/l)	D037	Pentachlorophenol	100.0
D018	Benzene	0.5	D038	Pyridine	5.0
D019	Carbon tetrachloride	0.5	D039	Tetrachloroethylene	0.7
D020	Chlordane	0.03	D040	Trichloroethylene	0.5
D021	Chlorobenzene	100.0	D041	2,4,5-Trichlorophenol	400.0
			D042	2,4,6-Trichlorophenol	2.0
			D043	Vinyl chloride	0.2

\* If o-, m-, and p-Cresol cannot be differentiated, total cresol concentration of 200.0 mg/l is used as the regulatory level.

concentrations). Although some of the total waste concentrations for these pesticide nonwastewaters appear to be higher than the levels that define the wastes as hazardous, when the 20 to 1 dilution factor inherent in the TCLP and EP protocols is considered, no certain relationship between the two standards can be stated, and, therefore, testing likely will be necessary to determine whether wastes treated to the LDR treatment standards remain hazardous.

The 25 new organic constituents are considered "newly identified" wastes, and will not be subject to the LDRs until the Agency promulgates treatment standards for those wastes. Furthermore, no other LDR restrictions (e.g., soft hammer requirements, California list restrictions) apply to these newly identified wastes; however, they must be disposed of in accordance with other RCRA Subtitle C requirements (i.e., in a regulated Subtitle C disposal unit).

Where wastes not hazardous under the EP test fail the TCLP test, these wastes also are considered RCRA "newly identified" wastes, and are not subject to LDR treatment standards. Highlight 3 provides examples of how LDR requirements may apply to TC wastes.

- **Delisting.** Wastes that have been delisted may still be considered hazardous under RCRA if they exhibit the TC (or other) characteristic. Although this is not expected to occur, site managers who will be disposing of wastes or treatment residuals that have been delisted, or are in the process of being delisted, must nevertheless determine (either through testing or knowledge of the wastes) if their wastes exhibit the toxicity characteristic.

### COMPLIANCE EVALUATIONS

As a result of the TC rule, site managers may need to evaluate whether wastes at a site exhibit the toxicity characteristic during the site investigation and implementation phases of a CERCLA response. Highlight 4 contains a timeline outlining the legally acceptable options (established in the TC and Third Third rules) for using the EP and the TCLP to test for the characteristic of toxicity and compliance with LDR treatment standards.

### Highlight 3 EXAMPLES OF LDR REQUIREMENTS FOR TC WASTES\*

- A TC waste containing lead (D008) at 8.0 mg/l (based on leachate analysis) must be treated (e.g., by using immobilization) to comply with the LDR treatment standard of 5.0 mg/l before land disposal. Because the LDR treatment standard is also the characteristic level, the treated wastes would no longer be considered a RCRA hazardous waste and, therefore, disposal in a Subtitle D facility would be permissible.
- The LDRs are not in effect for a waste containing benzene (D018) at 6.0 mg/l (using a TCLP analysis) that will be land disposed because D018 is a newly identified waste for which no LDR standards exist. The waste must be disposed of as a Subtitle C RCRA hazardous waste (unless the waste is treated to below the TC level for benzene of 0.5 mg/l).
- Wastes containing a mixture of lead and benzene at concentrations above the TC levels must be treated to meet the LDR treatment standard for lead before disposal. If, after treatment, the waste still exhibits the characteristic for benzene, it must be managed as a RCRA hazardous waste. If treatment removes the characteristic for benzene, through immobilization or other treatment methods, the treated waste may be disposed of in a Subtitle D landfill.

NOTE: If any of the 14 original EP constituents for which standards are in effect are contained in soil and debris, site managers may want to obtain a Treatability Variance to comply with the LDRs. However, depending on the waste's original (or threshold) concentration, attaining the characteristic level may be a less stringent requirement than obtaining the alternate treatability variance level established in Superfund LDR Guides #6A and #6B.

- TC effective date is September 25, 1990.