RETURN TO SER AR INDEX

United States Environmental Protection Agency
Office of Solid Waste and Emergency Response
Directive 9234.2-04FS
October 1989

EPA

CERCLA Compliance with Other Laws Manual

RCRA ARARs:

Focus on Closure Requirements

The Superfund Amendments and Reauthorization Act of 1986 (SARA) adopts and expands a provision in the 1985 National Contingency Plan (NCP) that remedial actions must at least attain applicable or relevant and appropriate requirements (ARARs). Section 121(d) of CERCLA, as amended by SARA, requires attainment of Federal ARARs and of State ARARs in State environmental or facility siting laws when the State requirements are promulgated, more stringent than Federal laws, and identified by the State in a timely manner.

To implement the ARARs provision, EPA has developed guidance, CERCLA Compliance with Other Laws Manual: Parts I and II (OSWER Directives 9234.1-01 and 9234.1-02, respectively). EPA is preparing a series of short Fact Sheets (OSWER Directive 9234.2 series) that summarize the guidance documents. This particular Fact Sheet addresses compliance with Subtitle C of the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), with a focus on the RCRA Subtitle C closure requirements. This Fact Sheet is based on policies in the proposed December 21, 1988 revisions to the NCP. The final NCP may adopt policies different from those covered here and, when promulgated, should be considered the authoritative source.

I. AN OVERVIEW OF RCRA SUBTITLE C ARARS

The provisions of Subtitle C of RCRA mandate "cradle-to-grave" management of hazardous waste, and regulate three types of hazardous waste handlers: (1) generators; (2) transporters; and (3) owners and operators of treatment, storage, or disposal facilities (TSDFs). Although there are RCRA requirements for generators and transporters of hazardous waste, the most extensive RCRA requirements are those for the design, operation, and closure of hazardous waste TSDFs (40 CFR Part 264). **Highlight 1** shows the types of hazardous waste management units regulated under Subtitle C.

RCRA Subtitle C requirements for TSDFs will frequently be ARARs for CERCLA actions, because RCRA regulates the same or similar wastes as those found at many CERCLA sites, covers many of the same activities, and addresses releases and threatened releases similar to those found at CERCLA sites. When RCRA requirements are ARARs, only the substantive requirements of RCRA must be met if a CERCLA action is to be conducted on site. On-site actions do not require RCRA permits, nor is compliance with administrative requirements necessary for on-site actions. CERCLA actions to be conducted off site, however, must comply with both substantive and administrative RCRA requirements (see **Highlight 2** on the next page).

Highlight 1: KEY SECTIONS OF RCRA

SUBTITLE D Solid Waste Regulations	SUBTITLE C Hazardous Waste Regulations	SUBTITLE I Underground Storage Tank Regulations

Part 264 – Treatment, Storage, and Disposal Facility Requirements

- Subpart F – Ground-water Protection
- Subpart G – Closure and Post-Closure
- Subpart I – Containers
- Subpart J – Tanks
- Subpart K – Surface Impoundments
- Subpart L – Waste Piles
- Subpart M – Land Treatment
- Subpart N – Landfills
- Subpart O – Incinerators
- Subpart X – Miscellaneous Units

Part 268 – Land Disposal Restrictions

Printed on Recycled Paper

SDMS DocID 518540

Highlight 2: SUBSTANTIVE AND ADMINISTRATIVE REQUIREMENTS

Substantive Requirements are those requirements that pertain directly to actions or conditions in the environment. Examples include performance standards for incinerators (40 CFR 264.343), treatment standards for land disposal of restricted waste (40 CFR 268), and concentration limits, such as MCLs.

Administrative Requirements are those mechanisms that facilitate the implementation of the substantive requirements of a statute or regulation. Examples include the requirements for preparing a contingency plan, submitting a petition to delist a listed hazardous waste, recordkeeping, and consultations.

A. WHEN RCRA IS APPLICABLE

RCRA Subtitle C requirements for the treatment, storage, and disposal of hazardous waste are applicable for a Superfund remedial action if the following conditions are met:

- The waste is a RCRA hazardous waste, and either:
- The waste was initially treated, stored, or disposed of after the effective date of the particular RCRA requirement, or
- The activity at the CERCLA site constitutes treatment, storage, or disposal, as defined by RCRA.

1. When a CERCLA Waste is a RCRA Hazardous Waste

In order for RCRA requirements to be applicable, a Superfund waste must be determined to be a listed or characteristic hazardous waste under RCRA (see **Highlights 3a and 3b** for the definition of RCRA hazardous waste). A waste that is hazardous because it once exhibited a characteristic (or media containing a characteristic waste) will not be subject to Subtitle C regulation if it no longer exhibits the characteristic. A listed waste may be delisted if it can be shown that the specific waste is not hazardous based on the standards in 40 CFR 264.22. If such a waste will be shipped off site, it must be delisted through a rulemaking process. However, to delist a RCRA hazardous waste that will remain on site at a Superfund site, only the substantive requirements for delisting must be met (see "ARARs Q's and A's," OSWER Directive 9234.2-01FS, May 1989).

Highlight 3a: CHARACTERISTIC RCRA HAZARDOUS WASTES
(Subpart C of 40 CFR Part 261)

- **Ignitability** - i.e., a waste with a flash point lower than 140 F;
- **Corrosivity** - i.e., a waste with a pH less than or equal to 2.0 or greater than or equal to 12.5, or capable of corroding steel at a rate of more than 0.25 inches per year;
- **Reactivity** - i.e., a waste that is explosive, reacts violently with water, or generates toxic gases when exposed to water or liquids that are moderately acidic or alkaline; and
- **Extraction Procedure (EP) Toxicity*** - i.e., a waste for which the EP test extract contains a concentration of a specified contaminant above its regulatory threshold.

*A final rulemaking is underway that will replace the EP test with the Toxicity Characteristic Leaching Procedure (TCLP). Promulgation is expected in 1990.

Highlight 3b: LISTED RCRA HAZARDOUS WASTES
(Subpart D of 40 CFR Part 261)

- **F Waste Codes** (Part 261.31) - wastes from non-specific sources (e.g., F001 - F005 spent solvents);
- **K Waste Codes** (Part 261.32) - wastes from specific sources (e.g., K001 wastewater treatment sludge from wood preserving processes);
- **P Waste Codes** (Part 261.33(e)) - acutely hazardous commercial chemical products;* and
- **U Waste Codes** (Part 261.34(f)) - toxic commercial chemical products.*

In addition, any solid waste derived from the treatment, storage, or disposal of a listed waste, and any mixture of solid waste and listed waste is a RCRA hazardous waste (regardless of the concentration of hazardous constituents or the percentage of listed wastes in such a mixture).

*NOTE: The word "product" refers to a commercially pure or technical grade of the chemical. A material does not qualify as a product simply because it is a process waste.

Any environmental media (i.e., soil or ground water) contaminated with a listed waste is not a hazardous waste, but must be managed as such until it no longer contains the listed waste, generally when constituents from the listed waste are at health-based levels. Delisting is not required.

To determine whether a waste is a listed waste under RCRA, it is often necessary to know the source of that waste. For any Superfund site, if an affirmative determination cannot be made that the contamination is a RCRA hazardous waste, RCRA requirements will not be applicable. A determination of whether a waste is a characteristic waste can be based on testing the waste. Alternatively, best professional judgment (based on knowledge of the waste and its constituents) can be used to determine whether testing is necessary.

2. When the Date of Initial Disposal Triggers RCRA Applicability

A RCRA requirement will be applicable if the hazardous waste was treated, stored, or disposed of after the effective date of the particular requirement. The RCRA Subtitle C regulations that established the hazardous waste management system first became effective on November 19, 1980. RCRA regulations will not be applicable to wastes disposed of before that date, unless the CERCLA action itself constitutes treatment, storage, or disposal (see below). Additional standards have been issued since 1980; therefore, applicable requirements may vary somewhat, depending on the specific date on which the waste was disposed.

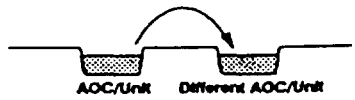
3. When Superfund Activities Trigger RCRA Applicability

RCRA requirements for hazardous wastes will also be applicable if the response activity at the Superfund site constitutes treatment, storage, or disposal, as defined under RCRA. Disposal of hazardous waste, in particular, triggers a number of significant requirements, including closure requirements (see Part II of this Fact Sheet) and land disposal restrictions, which require treatment of wastes prior to land disposal. (See Guides on Superfund Compliance with Land Disposal Restrictions, OSWER Directives 9347.3-01FS through 9237.3-06FS, for a detailed description of these requirements.)

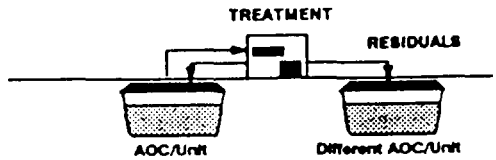
Because remedial actions frequently involve grading, excavating, dredging, or other measures that disturb contaminated material, activities at Superfund sites may constitute disposal, or placement, of hazardous waste (see **Highlight 4**).

Highlight 4: ACTIONS CONSTITUTING DISPOSAL

DISPOSAL OCCURS WHEN:

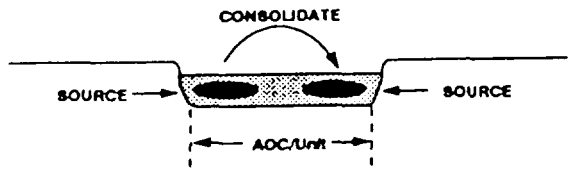


Wastes from different AOCs are consolidated into one unit.



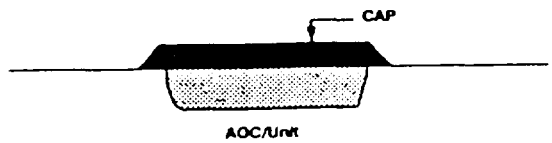
Wastes are removed from the AOC, treated in a separate unit (even if physically within the same AOC), and redeposited into the same or another AOC.

DISPOSAL DOES NOT OCCUR WHEN:



Wastes are consolidated within the same AOC or unit.

Wastes are treated in situ.



Wastes are capped or left in place.

EPA has determined that disposal occurs when wastes are placed in a land-based unit. However, movement within a unit does not constitute disposal or placement, and, at CERCLA sites, an area of contamination (AOC) can be considered to be comparable to a unit. Therefore, movement within an AOC does not constitute placement.

B. WHEN RCRA IS RELEVANT AND APPROPRIATE

RCRA requirements that are not applicable may, nonetheless, be relevant and appropriate, based on site-specific circumstances. For example, if the source or prior use of a CERCLA waste is not identifiable, but the waste is similar in composition to a known, listed RCRA waste, the RCRA requirements may be potentially relevant and appropriate, depending on other circumstances at the site.

However, the similarity of the waste at the CERCLA site to RCRA waste is not the only, nor necessarily the most important, consideration in the determination. An in-depth, constituent-by-constituent analysis is generally neither necessary nor useful, since most RCRA requirements are the same for a given activity or unit, regardless of the specific composition of the hazardous waste.

The determination of relevance and appropriateness of RCRA requirements is based on the circumstances of the release, including the hazardous properties of the waste, its composition and matrix, the characteristics of the site, the nature of the release or threatened release from the site, and the nature and purpose of the requirement itself. Some requirements may be relevant and appropriate for certain areas of the site, but not for other areas. In addition, some RCRA requirements may be relevant and appropriate at a site, while others are not, even for the same waste. For example, minimun technology requirements may be considered relevant and appropriate for one area receiving waste because of the high potential for migration of contaminants in hazardous levels to ground water, but not for another area that contains relatively immobile waste. Land disposal restrictions may be determined not to be relevant and appropriate for either area because the treatment technology required by the requirement is not appropriate, given the matrix of the waste. Only those requirements that are determined to be both relevant and appropriate must be attained.

C. STATE AUTHORIZATION UNDER RCRA

A State may be authorized to administer the RCRA hazardous waste program in lieu of the Federal program provided that the State has equivalent authority. Authorization is granted separately for the basic RCRA Subtitle C program, which includes permitting and closure of TSDFs; for regulations promulgated pursuant to HSWA, such as land disposal restrictions; and for other programs, such as delisting of hazardous wastes. If a site is located in a State with an authorized RCRA program, the State's promulgated RCRA requirements wil' replace the equivalent Federal requirements as potential ARARs.

An authorized State program may also be more stringent than the Federal program. For example, a State may have more stringent test methods for characteristic wastes, or may list more wastes as hazardous than the Federal program does. Therefore, it is important to determine whether laws in an authorized State go beyond the Federal regulations.

II. FOCUS ON RCRA CLOSURE REQUIREMENTS

For each type of unit regulated under RCRA, Subtitle C regulations contain closure standards that must be met when a unit is closed. For treatment and storage units, the standards require that all hazardous waste and hazardous waste residues be removed when the unit is closed. In addition to the option of closure by removal, called "clean closure," units such as landfills, surface impoundments, and waste piles may be closed as disposal or landfill units with waste in place, referred to as "landfill closure." Frequently, the closure requirements for such land-based units will be either applicable or relevant and appropriate at Superfund sites.

A. WHEN CLOSURE REQUIREMENTS ARE APPLICABLE

The basic prerequisites for applicability of closure requirements are: (1) the waste must be a hazardous waste; and (2) the unit (or AOC) must have received waste after the RCRA requirements became effective, either because of the original date of disposal or because the CERCLA action constitutes disposal (described in Part I of this Fact Sheet). When RCRA closure requirements are applicable, the regulations allow only two types of closure: (1) clean closure; and (2) disposal or landfill closure.

Highlight 5 provides a description of each type of closure. Clean closure standards assume there will be unrestricted use of the site and require no maintenance after the closure has been completed, and are often referred to as the "eatable solid, drinkable leachate" standards. In contrast, disposal or landfill closure standards require post-closure care and maintenance of the unit for at least 30 years after closure. EPA has prepared several guidance on closure and final covers (e.g., the draft RCRA Guidance Manual for Subpart G, Closure and Post-Closure Standards, EPA-530-SW-78-010, and the technical guidance document, Final Covers on Hazardous Waste Landfills and Surface Impoundments, EPA 530-SW-89-047, July 1989). These guidance documents are not ARARs, but are to be considered (TBC) for CERCLA actions and may assist in complying with these regulations. Of course, the performance standards in the regulation may be attained in ways other than that described in guidance, depending on the specific circumstances of the site.

Highlight 5: REQUIREMENTS FOR CLEAN AND LANDFILL CLOSURE

Clean Closure: All waste residues and contaminated containment system components (e.g., liners), contaminated subsoils, and structures and equipment contaminated with waste and leachate must be removed and managed as hazardous waste or decontaminated before the site management is completed, "edible soil, drinkable leachate" [see 40 CFR 264.111, 264.228(a)].

Landfill Closure: The unit must be capped with a final cover designed and constructed to:

- provide long-term minimization of migration of liquids;
- function with minimum maintenance;
- promote drainage and minimize erosion;
- accommodate settling and subsidence; and
- have a permeability less than or equal to any bottom liner system or natural subsoils present.

Post-closure care includes maintenance of the final cover; operation of a leachate and removal system; and maintenance of a ground-water monitoring system [see 40 CFR 264.117, 264.228(b)].

B. WHEN CLOSURE REQUIREMENTS ARE RELEVANT AND APPROPRIATE

If they are not applicable, RCRA closure requirements may be relevant and appropriate. However, there is more flexibility in designing closures because a hybrid closure is possible. Hybrid closure occurs when only certain requirements in the closure standards are relevant and appropriate. Depending on the site circumstances and the remedy selected, either clean closure, landfill closure, or a combination of both may be used.

The proposed revisions to the NCP discuss the concept of hybrid closure (53 FR 51446). The NCP illustrated the following possible hybrid closure approaches: (1) hybrid-clean closure; and (2) hybrid-landfill closure, which combines elements of clean closure and closure with waste in place, as described in **Highlight 6**.

Highlight 6: HYBRID-CLEAN AND HYBRID-LANDFILL CLOSURES

Hybrid-Clean Closure: Used when leachate will not impact the ground water (even though residual contamination and leachate are above health-based levels) and contamination does not pose a direct contact threat.

- No covers or long-term management are required;
- Fate and transport modeling and model verification are used to ensure that ground water is usable; and
- A property deed notice is used to indicate the presence of hazardous substances.

Hybrid-Landfill Closure: Used when residual contamination poses a direct contact threat, but does not pose a ground-water threat.

- Covers, which may be permeable, are used to address the direct contact threat;
- Limited long-term management includes site and cover maintenance and minimal ground-water monitoring;
- Institutional controls (e.g., land-use restrictions or deed notices) are used as necessary.

The two hybrid closure alternatives are constructs of applicable laws but are not themselves promulgated at this time. These alternatives are possible when RCRA requirements are relevant and appropriate, but are not available when closure requirements are applicable.

AFTERWORD: MINIMUM TECHNOLOGY REQUIREMENTS

While every unit to which RCRA applies must be closed in accordance with RCRA closure requirements (as discussed in Part II of this Fact Sheet), the minimum technology requirements (MTR) apply only to a subset of these regulated units. The MTR require installation of double liners and a leachate collection system, in addition to compliance with other design standards.

The MTR apply only to new units, replacement units,[a] and lateral expansions of existing landfills (40 CFR 254.301(c)) and surface impoundments (40 CFR 254.221(c)).[b,c] Therefore, an existing landfill or AOC would not be subject to MTR, even if disposal of hazardous waste occurred as part of the CERCLA action. The unit or AOC would, however, be subject to RCRA closure standards for landfills. Although not applicable, MTR may be relevant and appropriate depending on the circumstances of the release and the site.

---

[a] A replacement unit is further defined as an existing unit that meets the following criteria: (1) the unit is taken out of service; (2) all or substantially all of the waste is removed; and (3) the unit is reused, which does not include removal and replacement of waste into the same unit.

[b] In addition, as of November 19, 1988, existing surface impoundments that actively receive wastes must be retrofitted to comply with MTR (with some limited exceptions).

[c] LDR requires that certain restricted wastes, such as soft hammer wastes, be disposed of in a unit that meets MTR, and therefore can trigger MTR indirectly (see Superfund LDR Guide #3, OSWER Directive 9347.3-03FS).