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Understanding Risk-Based Clean Closure Under RCRA

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The Army's remediation is conducted in accordance with the Defense Environmental Restoration Program (DERP) guidance.² This DERP guidance is intended to work in coordination with the requirements of the law governing "Superfund" cleanup – the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA).³ But in some instances, cleanup is conducted in accordance with the law that governs hazardous waste – the Resource, Conservation and Recovery Act (RCRA).⁴ RCRA generally provides for two types of cleanup – *RCRA Closure* and *RCRA Corrective Action*. Our discussion will examine the concepts of RCRA closure, RCRA corrective actions, and RCRA risk-based "clean" closure.

What the Terms Mean

RCRA Closure principles generally apply to the closing of a hazardous waste facility that is, was (or should have been) an "interim status" or permitted treatment, storage and disposal (TSD) unit.⁵ The regulations governing RCRA closure⁶ tend to be less flexible than RCRA corrective action requirements.

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² See, Office of the Deputy Under Secretary of Defense (Environmental Security), *Management Guidance for the Defense Environmental Restoration Program*, p. 1, March 1998.

³ CERCLA, 42 U.S.C. § 9601 *et. seq.*

⁴ RCRA, 42 U.S.C. § 6900 *et. seq.*

⁵ See, 42 U.S.C. § 6925 for information on interim status and RCRA permitting.

⁶ General closure requirements can be found at 40 C.F.R. Subpart G of Part 264 (permitted) or 265 (interim status). Additional closure requirements are found in the unit-specific requirements of Part 264 and 265.

RCRA Corrective Action generally applies to the remediation of hazardous waste⁷ or hazardous constituent⁸ releases from “solid waste management units” (SWMUs).⁹ RCRA corrective action guidance tends to be a bit more flexible, than the approach taken with RCRA closure. This article provides a quick overview of these matters.

RCRA Closure

The clean-up standard for RCRA closure requires the Owner/Operator of a RCRA interim status or permitted TSD unit to close in a manner that:

- Minimizes the need for further maintenance;
- Controls, minimizes or eliminates post-closure escape of hazardous waste and other hazardous constituents into soil or water;
- To the extent necessary to protect human health and the environment.¹⁰

Generally, only two types of closure are allowed:

1. Closure by removal or decontamination (clean closure).
2. Closure-in-place (also called “dirty” closure).

Removal or Decontamination: These terms form the basis of “clean” closure. “[R]emoval or decontamination” often means that: (a) hazardous wastes should be *removed* from a TSD unit, and (b) any releases (including contaminated equipment, structures or soils) should be *decontaminated* so that further regulatory control is unnecessary.¹¹ RCRA clean closure is called “clean” because – in an ideal world – no contamination would remain.

Closure-in-Place: We don’t live in an ideal world. So, we also have the option of closing a unit with waste in place. Should hazardous waste remain, it will be dealt with under RCRA’s “post-closure care” requirements which call for future

⁷ The statutory definition of hazardous waste at § 1004(5) applies in this context, which is broader than the regulatory definition at 40 C.F.R. Part 261.

⁸ Hazardous constituents are listed at Appendix VII to 40 C.F.R. Part 261. EPA has also proposed that hazardous constituents include those substances listed in Appendix IV to 40 C.F.R. Part 264. See, *Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities*, 55 Fed. Reg. 30798, July 27, 1990.

⁹ See, 42 U.S.C. § 6924(u) and 40 C.F.R. § 264.101. Note that corrective action requirements for interim status units under 42 U.S.C. § 6928(h) are slightly different.

¹⁰ The clean-up standard for RCRA closure is found at 40 C.F.R. § 264.111.

¹¹ See, 40 C.F.R. §§ 264.112; 264.114.

monitoring, maintenance and security measures, generally over a thirty-year period.¹² EPA has recently attempted to increase flexibility in this process.¹³

Recognizing the practical difficulties incumbent upon RCRA closures, the EPA developed a new policy that would essentially allow use of RCRA corrective action cleanup standards during a RCRA closure.¹⁴ (Authorized state RCRA regulators may decide to adopt the EPA guidance as well.) To better understand the EPA guidance, we should first look at the requirements for RCRA corrective actions.

RCRA Corrective Actions

If the installation has or had an interim status or permitted TSD, corrective action may apply. Corrective action procedures generally apply to the cleanup of releases of hazardous waste or hazardous constituents from solid waste management units (SWMUs).¹⁵ As with CERCLA areas of concern, SWMUS can include landfills, surface impoundments, land-treatment units, wastewater-treatment units, and other areas at which systematic releases occurred.¹⁶ Note that only one regulatory authority, either federal or state, would possess RCRA corrective action authority. It is important that an installation determine whether the state has received authorization for a RCRA corrective action program.

Media Cleanup Standards: The goal of corrective action is to control or eliminate risks to human health and the environment.¹⁷ Risk-based decisionmaking is used to ensure protection of human health and the environment. RCRA corrective actions tend to be governed by media cleanup standards, which can be similar to CERCLA "applicable or relevant and appropriate requirements" (ARARs).¹⁸ Media cleanup standards are the concentrations of a hazardous constituent that a remedy must achieve in regards to a

¹² 40 C.F.R. § 264.117.

¹³ Under a new EPA regulation, alternatives to post-closure permits and the typical closure process may be allowed. See, *Standards Applicable to Owners and Operators of Closed and Closing Hazardous Waste Management Facilities; Post-Closure Permit Requirement; Closure Process*, 63 Fed. Reg. 56710, October 22, 1998, (to be codified at 40 C.F.R. §§ 264; 265; 270; 271).

¹⁴ EPA Memorandum, *Risk-Based Clean Closure*, p. 2-3, March 16, 1998.

¹⁵ The SWMU concept was introduced in 1985 by the EPA at *Hazardous Waste Management System; Final Codification Rule*, 50 Fed. Reg. 28702, July 15, 1985. Isolated spills or passive leaks are generally excluded from this SWMU concept. Note that the SWMU and hazardous constituent terminology do not appear in the interim status corrective action requirements of 42 U.S.C. § 6928(h).

¹⁶ For more information, see, 40 C.F.R. § 264.101.

¹⁷ See, *Corrective Action for Releases from Solid Waste Management Facilities*, 61 Fed. Reg. 19432, 19441, May 1, 1996.

¹⁸ CERCLA, 42 U.S.C. § 9621(d)(C)(4).

specific media – soil, water, etc.¹⁹ A cleanup standard may be based on promulgated federal or state standards (e.g., maximum contaminant levels and state cleanup standards) or developed through a site-specific risk assessment.²⁰

RCRA Risk-Based Clean Closure

In the past, corrective action closure have been distinct RCRA programs. Risk-based closure, however, is a blend of the two RCRA cleanup programs.

What is it? Under recent *federal guidance*,²¹ a RCRA TSD unit could be considered clean closed²² if it meets the risk-based standards appropriate under CERCLA cleanup or a RCRA corrective action.²³ To understand risk-based closure, it helps to revisit the basic requirement for closure – “removal” and “decontamination.”²⁴ The idea of “removal” remains much the same – EPA requires that hazardous waste and liners be removed during cleanup of a TSD facility.²⁵ But, the agency does not require that all contamination be removed. Limited amounts of hazardous constituents may remain in media, provided those constituents are below a concentration that would pose a risk to human health and the environment.²⁶ Here is where “decontamination,” the second element of RCRA “clean”

¹⁹ See, *Corrective Action for Releases from Solid Waste Management Facilities*, 61 Fed. Reg. 19432, 19449, May 1, 1996 and proposed 40 C.F.R. § 264.525(d); see also, *Corrective Action for Solid Waste Management Units (SWMUs) at Hazardous Waste Management Facilities*, 55 Fed. Reg. 30798, July 27, 1990.

²⁰ *Corrective Action for Releases from Solid Waste Management Facilities*, 61 Fed. Reg. 19432, 19449 (May 1, 1996).

²¹ The term “federal guidance” is highlighted to remind the reader that authorized states are free to develop their own, similar approaches to risk-based clean closure.

²² This “clean” closure would still be in accordance with 40 C.F.R. §§ 264.111; 264.112(b)(4). Note that the concept is viewed as clean closure (rather than closure-in place) because “wastes” are removed, although contaminated media may remain.

²³ EPA Memorandum, *Risk-Based Clean Closure*, March 16, 1998; EPA Memorandum, *Coordination Between RCRA Corrective Action and Closure and CERCLA Site Activities*, September 24, 1996.

²⁴ See, 40 C.F.R. §§ 264.112(b)(4); 264.114. The term “remove or decontaminate” is confusing because it implies that a facility may opt for one type of remediation (decontamination), rather than to “remove” wastes. The EPA sees these processes as working in tandem – a facility is generally required to engage in a certain level of contamination removal before moving onto decontamination.

²⁵ EPA Memorandum, *Risk-Based Clean Closure*, p. 2, March 16, 1998.

²⁶ Specifically, the EPA states that the regulations governing clean closure “...do not require one to completely remove all contamination, i.e., to background, at or from a closing unit. Rather, some limited quantity of hazardous constituents might remain in environmental media after clean closure provided they are at concentrations below levels that may pose a risk to human health and the environment.” *Id.* at 2.

closure, comes into play. As a practical matter, you use risk-based standards to determine your cleanup levels – which, in turn, will tell you the level of “decontamination” required.²⁷

What are the Closure Standards? Risk-based standards for a RCRA “clean” closure may be derived from RCRA corrective action procedures, CERCLA requirements or from site-specific risk data.²⁸ These standards are chosen during negotiations with the appropriate federal or state regulators. Once the applicable set of standards is established, the installation would consider – in coordination with the applicable RCRA regulator – the risks involved with closing a site with remaining constituents. When assessing risk, you may consider practical issues, such as the remoteness of a location, engineering controls and land use.²⁹ For example, an industrial site need not be cleaned to a residential standard. If the risks for closure with remaining constituents fall below designated standards, the installation may assert that it has undertaken (as EPA puts it) the “appropriate level of decontamination” required for RCRA “clean” closure.³⁰

Emphasis on Risk Analysis: RCRA “clean” closures, RCRA corrective actions and CERCLA cleanups should be founded on risk. So, the risk-based considerations used in RCRA corrective actions and in CERCLA clean-ups may be applied in RCRA closure to determine the level of “decontamination” required. This means your risk analysis will help an installation determine the amount of hazardous constituents that may remain on-site after a RCRA “clean” closure. The EPA stresses the principle of reciprocity between RCRA and CERCLA standards, stating:

Generally, cleanups under RCRA corrective action or CERCLA will substantively satisfy the requirements of both programs ...a remedy that is acceptable under one program should be presumed to meet the standards of the other.³¹ (emphasis added)

The EPA also emphasizes that RCRA “clean” closure can be conducted in accordance with these standards. The agency states:

...site specific, risk-based media cleanup levels developed under RCRA corrective action and CERCLA cleanup programs are appropriate levels at which to define clean closure.³² (emphasis added)

²⁷ The installation’s risk analysis could take future land use – including industrial uses – into account when developing risk-based standards. *Id.* at 4-6.

²⁸ EPA Memorandum, *Coordination Between RCRA Corrective Action and Closure and CERCLA Site Activities*, p. 7, September 24, 1996.

²⁹ EPA Memorandum, *Risk-Based Clean Closure*, p. 4-6, March 16, 1998.

³⁰ EPA Memorandum, *Risk-Based Clean Closure*, p. 4, March 16, 1998. See also, EPA Memorandum, *Coordination Between RCRA Corrective Action and Closure and CERCLA Site Activities*, p. 2, September 24, 1996.

³¹ EPA Memorandum, *Coordination Between RCRA Corrective Action and Closure and CERCLA Site Activities*, p. 6-8, September 24, 1996.

³² EPA Memorandum, *Risk-Based Clean Closure*, p. 2-3, March 16, 1998.

The EPA specifically encourages facilities to use risk-based cleanup standards, stating:

To avoid... inconsistency and to better coordinate between different regulatory programs, we encourage you to use risk-based levels when developing clean-closure standards.³³ (emphasis added)

Although differences may arise between the three approaches of CERCLA, RCRA closure and RCRA corrective action, such variations should not be an impediment. The EPA recommends that a facility examine the end result of remedial activities. If the approaches taken under RCRA or CERCLA are substantively similar, one regulatory process can be selected as the cleanup standard.³⁴ It is important to remember that this action is not unilateral – the installation must negotiate the site-specific application of risk-based principles with the appropriate federal or state RCRA regulator.

When can I use these standards? Installations should discuss the application of risk-based closure principles with the appropriate federal or state regulator at sites where some contamination will remain or when it is inappropriate to use strict “clean” closure standards. Risk-based standards may be used to avoid:

- Creating an island of purity within a “dirty” area.³⁵
- Imposing different standards of cleanup – particularly when a facility is required to meet RCRA closure, RCRA corrective action and CERCLA requirements.
- Applying higher cleanup standards in the absence of risk.³⁶

While risk-based clean closure is mostly discussed in federal guidance, EPA recently promulgated a federal *regulation* that substitutes corrective action (or, when appropriate, the CERCLA cleanup process) in place of closure at certain facilities. This approach is very similar to that of risk-based clean closure.³⁷ This approach can be used when a TSD is: (1) situated among SWMUs or areas of concern (AOC), and (2) the TSD and the SWMUs/AOCs are likely to have contributed to the release.

Summary: Given new EPA rules and guidance, procedures do exist for increased flexibility under RCRA closure. The application of these principles is highly site-specific and will likely involve close negotiating with either the EPA or the appropriate state RCRA regulator.

³³ EPA Memorandum, *Coordination Between RCRA Corrective Action and Closure and CERCLA Site Activities*, p. 7, September 24, 1996.

³⁴ *Id.* at 3.

³⁵ See, *EPA Memorandum, Risk-Based Clean Closure*, p. 5-6, March 16, 1998.

³⁶ See, *Id.* at 2-3; *EPA Memorandum, Coordination Between RCRA Corrective Action and Closure and CERCLA Site Activities*, p. 2-3; 6-8, September 24, 1996.

³⁷ *Standards Applicable to Owners and Operators of Closed and Closing Hazardous Waste Management Facilities; Post-Closure Permit Requirement; Closure Process*, 63 Fed. Reg. 56710, October 22, 1998.

Accordingly, the installation's environmental staff should work with its Environmental Law Specialist (ELS) when crafting the documents required to justify these forms of cleanup acceleration. The ELS will then be at the forefront of subsequent negotiations with RCRA regulators.

If you have further questions, please contact the authors, Karen Heckelman, at the Army Environmental Center, (410) 436-1553 or Kate Barfield at the Environmental Law Division, (703) 696-1572. (Karen Heckelman/AEC; Kate Barfield/RNR).

De Las Milicias Celestiales
(c.f. Paradise Lost)

By Jose Emilio Pacheco, 1999

*En la guerra perpetua
entre los Hijos de la Luz y los Hijos
de las Tinieblas,
me afilié con el bando de las Tinieblas.
Pero cómo elogí su claridad,
su transparencia, su brillo.
De qué manera impuse la veneración
hacia lo oscuro, que llamé luminoso.
Y los obligué a sangre y fuego
a decir que veían el sol
cuando era noche profunda.*

The Celestial Bands
In the perpetual war
between the Sons of Light and
the Sons of Darkness
I affiliated myself with the side of darkness.
My, how I praised its clarity,
its transparency, its brightness.
The way I inspired the veneration
of the dark, which I called luminous.
By blood and fire, I persuaded them
to say that they saw the sun
when it was darkest night.
Translated by LTC Howlett/LIT