

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

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MEMORANDUM

SUBJECT: Use of Site-Specific Land Disposal Restriction Treatability Variances Under 40 CFR 268.44(h) During Cleanups

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TO: RCRA/CERCLA Senior Policy Managers Regions I - X

This memorandum encourages appropriate use of site-specific land disposal restriction (LDR) treatability variances under 40 CFR §268.44(h) for contaminated soils and other materials managed during cleanups. In particular, this memorandum clarifies the minimum requirements for alternative treatment standards and outlines treatability variance procedures. It builds on Superfund LDR Guides 6A and 6B, "Obtaining a Soil and Debris Treatability Variance for Remedial Actions and Obtaining a Soil and Debris Treatability Variance for Removal Action," publication numbers 9347.3-O67S and 9347.3-OB67S, September 1990 and the quick reference fact sheet "Regional Guide: Issuing Site-Specific Treatability Variances for Contaminated Soils and Debris from Land Disposal Restrictions," publication number 9380.3-08FS, January 1992.

LDR Applicability

The Hazardous and Solid Waste Amendments (HSWA), enacted November 8, 1984, largely prohibit land disposal of hazardous wastes. After a waste is prohibited from land disposal the statute provides two options: comply with a specified treatment standard designed to minimize threats to human health and the environment prior to land disposal or dispose of the waste in a "no migration" unit.ⁱ Land disposal includes any placement of hazardous waste into a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave. See, RCRA Section 3004(k).

Since 1984, EPA has developed LDR treatment standards for all hazardous wastes listed or identified at the time HSWA was enacted and many hazardous wastes that have been subsequently listed or identified (e.g., the new toxicity characteristic (TC) wastes). The Agency recognizes, however, that in some cases these generally applicable LDR treatment standards will be unachievable or inappropriate. When a generally applicable LDR treatment standard is unachievable or inappropriate, a site-specific LDR treatability variance offers an opportunity to comply with LDRs through development of an alternative standard based on site- and waste-specific characteristics. The Agency's longstanding policy is that site-specific treatability variances are generally appropriate for contaminated soils; they also may be appropriate for other wastes encountered during site cleanups. See, e.g., 55 FR 8666, 8760-8761 (March 8, 1990); 58 FR 48092, 48125 (September 14, 1993); 61 FR 18805-18808, 18810-18812 (April 29, 1996); 61 FR 55717 (October 28, 1996).

It is important to note that the land disposal restrictions apply only to hazardous wastes placed after the effective date of the applicable land disposal prohibition. Not all materials managed during a cleanup action are hazardous wastes and not all activities conducted during a cleanup action constitute placement. For example, EPA has interpreted placement to include putting hazardous waste into a land-disposal unit, moving hazardous wastes from one land-disposal unit to another, and removing hazardous waste from the land, managing it in a separate unit, and re-placing it in the same or a different land-disposal unit. Placement does not occur when hazardous waste is consolidated within a land-disposal unit, when it is treated *in situ*, or when left in place (e.g., capped). See, e.g., 55 FR 8758-8760, (March 8, 1990).

When To Use Site-Specific Variances

Site-specific LDR treatability variances generally do not require rulemaking for approval; they are approved on a case-by-case basis in consideration of site- and waste-specific circumstances and conditions. A site-specific variance may be approved when the properties of the waste at issue are physically or chemically different from the properties of the wastes evaluated in establishing the generally applicable treatment standard and, as a result, the generally applicable standard cannot be achieved. A site-specific variance may also be approved when the generally applicable treatment standard is based on a Best Demonstrated Available Technology (BDAT) that is inappropriate for the waste in question. See, 268.44(h) and 61 FR 55717 (October 28, 1996).

Common cleanup situations which may prompt consideration of a site-specific treatability variance include:

Cleanup of contaminated soils where the generally applicable land disposal treatment standards are based on combustion. For large quantities of contaminated soils with relatively low concentrations of hazardous constituents, EPA generally considers treatment standards based on combustion inappropriate.

Cleanups where bench or pilot scale studies indicate that the generally applicable land disposal treatment standard cannot be achieved.

Cleanup of old sludges initially placed prior to the effective date of land disposal prohibitions. In some cases the physical or chemical composition of sludges become significantly altered upon prolonged exposure to: natural sunlight, acidic rainfall, weather cycles (such as freeze-thaw) and intrusion; commingling, or chemical reaction with rainfall, soil, windblown dirt and/or other co-disposed wastes. These types of exposure can result in changes in composition through: evaporation or migration of volatiles, sunlight induced polymerization of organics, lime stabilization (i.e., self-cementation), photodegradation, natural biodegradation, hydrolysis, and even electrolytic oxidation/reduction reactions. As a result, weathered sludges often no longer have the physical or chemical composition of newly generated sludges and a treatability variance may be warranted.

Cleanups where, due to site-specific circumstances, compliance with the generally applicable land disposal treatment standard would result in a net environmental detriment, for example, by discouraging cleanup. In some situations, legal and protective cleanup alternatives involve the choice between remedies that require compliance with LDR treatment standards developed for as-generated wastes and remedies that do not (i.e., remedies that rely on containment). When application of the generally applicable treatment standard provides an incentive for remedies that, while permitted under applicable law, are less aggressive (and, potentially, less protective over the long term) than alternatives, the generally applicable standard may be considered inappropriate. Note, many of these remedies will include some form of treatment; however, it might not be the treatment prescribed for as-generated wastes. See, e.g., 61 FR 55717 (October 28, 1996) where EPA approved alternative treatment standards, in part, because imposing the otherwise applicable standards would have resulted in a net environmental detriment.

Alternative Treatment Standards

All alternative LDR treatment standards must satisfy the statutory requirement of RCRA 3004(m) by minimizing threats to human health and the environment. In many situations, protective, risk-based, site-specific cleanup standards established in the context of an Agency-overseen cleanup will meet this "minimize threat" standard and may be used as alternative treatment standards. In other situations, alternative treatment standards may be established on a technology basis.ⁱⁱ

Risk-based alternative treatment standards established in the context of an Agency-overseen cleanup should consider EPA guidance on risk-based cleanup standards. EPA has interpreted protective cleanup standards to include risk-based media cleanup standards that are within the 10^{-4} to 10^{-6} risk range for carcinogens and result in a hazard index of one or less for constituents with non-carcinogenic effects. Protective, risk-based, site-specific cleanup standards can be based on generally available constituent concentration standards (e.g., MCLs and many state cleanup standards) or they may be developed for an individual site (e.g., through a site-specific risk assessment). Alternative treatment standards established on a technology basis are most often based on site-specific treatability data or on a

“substantial treatment” standard. For example, 90 per cent reduction in constituent concentrations is generally considered substantial treatment.

For contaminated soils, the Superfund LDR Guides 6A and 6B, "Obtaining a Soil and Debris Treatability Variance for Remedial Actions and Obtaining a Soil and Debris Treatability Variance for Removal Action," publication numbers 9347.3-O67S and 9347.3-OB67S, September 1990 provide suggested constituent concentration ranges and per cent reduction targets that may be used as guidance when establishing alternative LDR treatment standards for contaminated soils.ⁱⁱⁱ When using the constituent concentration ranges or per cent reduction targets from the 6A/6B guidance, the Agency should be prepared to support application of these standards on a site-specific basis. As with application of any Agency guidance, application of the constituent concentration ranges or per cent reduction targets from the 6A/6B guidance could be questioned by facility owners/operators or by the public; the Agency must be prepared to respond to these comments and justify application of any guidance to site- and waste-specific circumstances.

Constituents Subject to Treatment

Unless the generally applicable LDR treatment standard will be met, alternative treatment standards must be set for each constituent subject to treatment. Constituents subject to treatment are, for listed wastes, the constituents for which treatment standards are specified in 40 CFR 268.40 and, for characteristic wastes, the characteristic constituent and any underlying hazardous constituents present at concentrations greater than the Universal Treatment Standards (UTS) specified in 40 CFR 268.48. For example, a waste that fails the toxicity characteristic leaching test for benzene but also contains other organic hazardous constituents such as toluene, ethyl benzene, and xylene must meet treatment standards for both the benzene and the other hazardous constituents.^{iv} Note that, when testing characteristic waste to determine constituents subject to treatment, individuals do not necessarily have to test for every constituent with a universal treatment standard; they may limit testing to constituents that are reasonably expected to be present.

Multiple Contaminants

It is not automatically necessary to treat all constituents subject to treatment in order to satisfy RCRA Section 3004(m). Just as some industrial wastes are generated with concentrations of constituents subject to treatment that are below the applicable land disposal treatment standards, some wastes generated during cleanup may contain concentrations of hazardous constituents that are below land disposal treatment standards established in a site-specific treatability variance. It is common for cleanup wastes to contain mixtures of many different kinds of hazardous constituents at widely varying concentrations. Often, these combinations of constituents or constituent concentrations are different from the constituents combinations and concentrations typically found in as-generated wastes that carry the same waste code or exhibit the same hazardous characteristic and treatment of all constituents subject to treatment may not be required to satisfy RCRA Section 3004(m).

In some of these cases, a treatability variance might establish alternative treatment standards for some constituents subject to treatment, but not others (i.e., compliance with the

otherwise applicable treatment standard might be required for some constituents). In other cases, a treatability variance might require treatment to meet alternative LDR treatment standards for some constituents subject to treatment while for others it might be determined that no treatment is necessary to comply with LDRs. For example, a waste might be characteristic for benzene and contain low levels of toluene, ethyl benzene, or xylene. Depending on the concentrations of the individual constituents, treatment might be required for the benzene, and protective, risk-based alternative treatment standards for the minor contaminants might be established such that treatment to comply with LDR standards was not required (i.e., where the initial constituent concentrations are at or below the risk-based standard). Similarly, a cleanup waste might fail the toxicity characteristic leaching test for a metal contaminant and also contain low levels of organic contaminants. Treatment to the generally applicable LDR treatment standards might be required for the TC metal, but protective, risk-based alternative LDR treatment standards for the organics might be established at or above the initial constituent concentrations, making treatment of the organics unnecessary.^v

Variance Procedures

In states authorized to issue site-specific LDR treatability variances, applications should be submitted to the state hazardous waste program director, or other official designated by the state. In states that are not authorized to issue these variances, applications should be submitted to the EPA Regional Administrator or to the appropriate delegated official within the Region. All applications should include information required by 40 CFR 260.20(b)(1) - (4) and information documenting compliance with the waste analysis requirements of 40 CFR 268.7.

Applications for site-specific LDR treatability variances will likely require less detail and rigorous analysis than applications for generically applicable variance (e.g., rulemaking variances under 268.44(a)); however, if necessary EPA can use 40 CFR 268.44(j) to request additional information to support a given application. All approvals should emphasize that the variances are site- and waste-specific in nature and do not apply to any other site or waste.

Whenever possible, the decision to approve a site-specific LDR treatability variance should be integrated into other cleanup decision documents (e.g., RCRA Statement of Basis, CERCLA Record of Decision, state corrective action order). As a matter of Agency policy, site-specific LDR treatability variances should undergo public notice and opportunity for comment before approval. See, 53 FR at 31200 (August 17, 1988). Similar to the decision to approve a variance, whenever possible, public notice and opportunity for comment for site-specific LDR treatability variances should be combined with other public notice and opportunity for comment activities that occur during Agency-overseen cleanups (e.g., the public notice and opportunity for comment associated with a CERCLA proposed plan or approval of a corrective action remedy). In the limited circumstances where it is not possible to combine public notice for site-specific LDR treatability variances with other public notice opportunities, public notice and opportunity for comment should be provided consistent with the program goals of full, fair and equitable public participation. While a variance

application is pending the applicant must comply with all applicable land disposal restrictions and requirements (40 CFR 268.44(1)).

As discussed in the National Contingency Plan (55 FR 8760-8762) and the Superfund LDR 6A and 6B guides, EPA presumes that site-specific LDR treatability variances may be granted for contaminated soils; therefore, applications for a site-specific LDR treatability variance for soil do not have to document that the generally applicable LDR treatment standards are unachievable or inappropriate.^{vi} However, applicants should include information documenting the basis for their application supporting application of the soil presumption to their site- and waste-specific circumstances. Applications for site-specific LDR treatability variances that address cleanup wastes other than soil should include information documenting that either (1) the waste at issue is significantly different from the waste evaluated for the generally applicable treatment standard and, as a result, the regulated constituents cannot be treated to the specified levels or (2) the generally applicable standard is based is not appropriate. Applications should include a statement, signed by the applicant, certifying that the information in the application is true and correct.

Delegation

The authority to approve site-specific LDR treatability variances for contaminated soils was delegated to Regional Administrators in Delegation 8-45-B. For CERCLA removal actions and actions under the solid waste disposal act (which includes RCRA), the authority can be further delegated to regional Division Directors. The authority to approve site-specific LDR treatability variances for one-time only cleanup wastes (non-soil or debris wastes, i.e., sludges managed as part of a cleanup) is under consideration for delegation to Regional Administrators. (See proposed delegation 8-45-C.)

While the authority to approve site-specific LDR treatability variances will rest with the Regions and states, we encourage you to work together and with EPA Headquarters to maintain a national dialogue on variance issues. In particular, we request that Regions (and authorized states) share information on critical or precedent setting variances so we can all benefit from your experiences and so we can assure that issues of national scope or consistency are equitably resolved. This information could be shared at national and regional meetings or through other networking opportunities.

State Authorization

EPA has recently clarified its policy on state authorization for site-specific LDR treatability variances and is actively encouraging states to seek authorization for and integrate appropriate use of these variances in their cleanup programs. See, 61 FR 8828 (April 29, 1996). Additional information on state-authorization will be provided in an upcoming update to the State Program Advisory.

Disclaimer

This document provides guidance to EPA and State personnel on how to best implement RCRA and EPA's regulations on site-specific treatability variances to facilitate appropriate use of these variances, especially as part of Agency-overseen cleanups. It also provides guidance to the public and the regulated community on how EPA intends to exercise its discretion in implementing these regulations. This document does not, however, substitute for EPA's regulations, nor is it a regulation itself. Thus, it cannot impose legally binding requirements on EPA, States, or the regulated community, and may not apply to a particular situation based on specific circumstances. EPA may change this guidance in the future, as appropriate.

Summary/Additional Information

Site-specific LDR treatability variances are an important tool to ensure compliance with appropriate LDR treatment standards. They can be especially useful where application of the generally applicable standard can serve as a disincentive towards aggressive cleanup. We encourage you to continue to integrate site-specific LDR treatability variances into your cleanup activities and to support the use of these variances into state programs. For additional information, please contact Elizabeth McManus or Shaun McGarvey at (703) 308-8657 and (703) 308-8603, respectively.

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ⁱ A no migration unit is a unit from which there will be no migration of hazardous constituents for as long as the waste placed in the unit remains hazardous. See, RCRA Sections 3004(d), (e), (g)(5).

ⁱⁱ The ability to, as appropriate, use site-specific, risk-based cleanup levels as alternative LDR treatment standards does not *affect* the Agency's other remedial expectations, for example, that treatment will be used to address the principal threats posed by a site wherever practicable.

ⁱⁱⁱ Note that protective, risk-based cleanup standards that are developed based on site-specific conditions may be either higher or lower than the constituent concentration ranges or per-cent reduction targets from the 6A16B guidance. In addition, while debris are still eligible for site-specific treatability variance, such variances are no longer presumed to be appropriate. LDR treatment standards specific to debris were promulgated August 18, 1992 (57 FR 37194).

^{iv} Note, extending the obligation to treat for underlying hazardous constituents to TC metal waste was discussed in 60 FR 43654, August 22, 1995. The proposal has not been finalized.

^v See Footnote 4.

^{vi} Of course, if a commenter on any given site-specific treatability variance challenges the presumption, the Agency must address these comments on a site-specific basis, for example, by articulating the site-specific conditions that support the presumption, in response.