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976 F.2d 2, 35 ERC 1329, 298 U.S.App.D.C. 54, 61 USLW 2219, 23 Env'tl. L. Rep. 20,024

Judges and Attorneys

United States Court of Appeals,
District of Columbia Circuit.
CHEMICAL WASTE MANAGEMENT, INC., et al., Petitioners,
v.
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, Respondent.
Zinc Corporation of America, et al., Intervenors.

No. 90-1230, et al. Complex
Nos. 90-1245, 90-1275, 90-1303, 90-1314, 90-1330, 90-1404, 90-1410, 90-1413, 90-1414, 90-1416,
90-1417, 90-1423, and 90-1442.
Argued April 30, 1992.
Decided Sept. 25, 1992.
Order Granting in Part Motion
to Stay Mandate Nov. 24, 1992.

Industry trade associations and companies petitioned for review of orders of the Environmental Protection Agency (EPA) promulgating regulations implementing ban on land disposal of hazardous wastes mandated by the Resource Conservation and Recovery Act (RCRA). Petitions for review were also brought by several environmental organizations as well as association representing companies that treat hazardous waste. The Court of Appeals held that: (1) sections of the RCRA give the EPA statutory authority to mandate treatment of wastes to levels beyond those at which the wastes present the characteristics that cause them to be deemed hazardous; (2) EPA provided adequate notice of its intent to bar dilution of certain hazardous wastes in water treatment facilities that meet standards of the Clean Water Act (CWA); (3) dilution of characteristic hazardous wastes may constitute "treatment," but only if no hazardous constituents are present following dilution that would endanger human health or the environment; (4) dilution of wastes in CWA facilities is acceptable as long as toxicity of the waste discharged from facility is minimized or eliminated consistent with the RCRA; and (5) disposal of wastes in underground injection wells may occur as long as hazardous characteristics have been eliminated and any health and environmental dangers posed by hazardous constituents of the waste are minimized.

Petitions for review granted in part and denied in part.

West Headnotes

[1] [KeyCite Citing References for this Headnote](#)

- 149E Environmental Law
- 149EIX Hazardous Waste or Materials
- 149Ek425 Hazardous, Dangerous, or Toxic Waste
- 149Ek430 k. Treatment, Storage, and Disposal; Facilities and Sites. Most Cited Cases
- (Formerly 199k25.5(5.5) Health and Environment)

Sections of the Resource Conservation and Recovery Act (RCRA) provide the Environmental Protection Agency (EPA) with authority to bar land disposal of certain wastes unless they have been treated to levels beyond those at which the wastes present the characteristics that cause them to be deemed hazardous; moreover, assertion of regulatory authority over the wastes from the moment they are generated is based on permissible construction of statute. Solid Waste Disposal Act, § 3004(g)(5), (m), as amended, 42 U.S.C.A. § 6924(g)(5), (m).

[2] [KeyCite Citing References for this Headnote](#)



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- (Formerly 199k25.5(5.5) Health and Environment)

Section of the Resource Conservation and Recovery Act (RCRA) requiring that treatment of hazardous wastes prior to land disposal substantially diminish their toxicity or substantially reduce likelihood of migration so that threats to human health and environment are minimized does not bar dilution as a means of treating hazardous wastes; rather, dilution may constitute "treatment," but only if no hazardous constituents are present following dilution that would endanger human health or the environment. Solid Waste Disposal Act, § 3004(m)(1), as amended, 42 U.S.C.A. § 6924(m)(1).

[3] KeyCite Citing References for this Headnote

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"Deactivation" treatment standard contained in "third-third" rule governing land disposal of hazardous waste under the Resource Conservation and Recovery Act (RCRA) was invalid with regard to ignitable wastes, insofar as standard authorized dilution as method of treatment, considering that ignitable wastes subject to deactivation standard would include hazardous or toxic constituents that would remain after dilution, perhaps at sufficient levels to pose risk to human health and environment. Solid Waste Disposal Act, § 3004(m), as amended, 42 U.S.C.A. § 6924(m).

[4] KeyCite Citing References for this Headnote

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"Deactivation" treatment standard contained in "third-third" rule governing land disposal of hazardous wastes under the Resource Conservation and Recovery Act (RCRA) was valid in authorizing dilution as means of treatment of corrosive wastes, only so long as such wastes do not contain hazardous constituents that, following dilution, would themselves present a continuing danger to human health or the environment. Solid Waste Disposal Act, § 3004(m), as amended, 42 U.S.C.A. § 6924(m).

[5] KeyCite Citing References for this Headnote

↔ 149E Environmental Law

- ↔ 149EIX Hazardous Waste or Materials
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"Deactivation" treatment standard contained in "third-third" rule governing land disposal of hazardous wastes under the Resource Conservation and Recovery Act (RCRA) was invalid insofar as it authorized dilution for treatment of reactive wastes, without limiting dilution to methods that would not create risk of violent reactions. Solid Waste Disposal Act, § 3004(m), as amended, 42 U.S.C.A. § 6924(m).

[6] KeyCite Citing References for this Headnote

↩ [149E Environmental Law](#)

- ↩ [149EIX Hazardous Waste or Materials](#)
- ↩ [149Ek425 Hazardous, Dangerous, or Toxic Waste](#)
- ↩ [149Ek430 k. Treatment, Storage, and Disposal; Facilities and Sites. Most Cited Cases](#)
- (Formerly 199k25.5(5.5) Health and Environment)

Rule of the Environmental Protection Agency (EPA) authorizing aggregation and dilution of characteristic hazardous wastes in surface impoundments within Clean Water Act (CWA) treatment systems, in lieu of treatment, does not violate the Resource Conservation and Recovery Act (RCRA) when waste is "decharacterized" prior to placement in a CWA surface impoundment and subsequently treated in full conformity with standards of the RCRA; since aggregation itself occurs in tanks, it does not constitute "land disposal," and thus the RCRA does not require treatment before aggregation. Solid Waste Disposal Act, § 3004(m)(1), as amended, [42 U.S.C.A. § 6924\(m\)\(1\)](#); Federal Water Pollution Control Act Amendments of 1972, § 101 et seq., as amended, [33 U.S.C.A. § 1251](#) et seq.

[7] [KeyCite Citing References for this Headnote](#)

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Rule promulgated by the Environmental Protection Agency (EPA) permitting operators of deep injection wells regulated pursuant to the Safe Drinking Water Act (SDWA) to dilute hazardous wastes to remove the hazardous characteristic prior to injecting such wastes was valid only where dilution itself fully met standards of the Resource Conservation and Recovery Act (RCRA) or where the waste would subsequently meet such standards. Public Health Service Act, § 1401 et seq., as amended, [42 U.S.C.A. § 300f](#) et seq.; Solid Waste Disposal Act, § 3004(m)(1), as amended, [42 U.S.C.A. § 6924\(m\)\(1\)](#).

[8] [KeyCite Citing References for this Headnote](#)

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Treatment standard for lead waste waters contained in "third-third" rule governing land disposal of hazardous waste, which set treatment standard at characteristic level of 5.0 milligrams of lead per liter violated requirement of the Resource Conservation and Recovery Act (RCRA) that the EPA select levels or methods of treatment minimizing threats to human health and environment, in view of EPA's concession that treatment to .4 milligrams was possible. Solid Waste Disposal Act, § 3004(m)(1), as amended, [42 U.S.C.A. § 6924\(m\)\(1\)](#).

[9] [KeyCite Citing References for this Headnote](#)

↩ [15A Administrative Law and Procedure](#)

- ↩ [15AIV Powers and Proceedings of Administrative Agencies, Officers and Agents](#)
- ↩ [15AIV\(C\) Rules and Regulations](#)
- ↩ [15Ak392 Proceedings for Adoption](#)
- ↩ [15Ak395 k. Notice and Comment, Sufficiency. Most Cited Cases](#)

↩ [149E Environmental Law](#) [KeyCite Citing References for this Headnote](#)

- ↩ [149EIX Hazardous Waste or Materials](#)
- ↩ [149Ek450 Administrative Agencies and Proceedings](#)
- ↩ [149Ek453 k. Notice and Comment. Most Cited Cases](#)
- (Formerly 199k25.5(9) Health and Environment)

Statements of the Environmental Protection Agency (EPA) in "third-third" rule concerning land disposal of hazardous wastes, that impermissible dilution occurs whenever waste streams are combined and combined stream is not treated in manner appropriate for each individual waste did not constitute "rules" that were issued without notice or opportunity to comment; adequate notice was given by EPA in proposed rule which offered several examples of impermissible dilution where combined waste stream was treated for only one type of waste. 5 U.S.C.A. § 553(b, c).

[10] [KeyCite Citing References for this Headnote](#)

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■ ↩ [149Ek430 k. Treatment, Storage, and Disposal; Facilities and Sites. Most Cited Cases](#)

■ (Formerly 199k25.5(5.5) Health and Environment)

Statement in "third-third" rule promulgated by the Environmental Protection Agency (EPA) to govern land disposal of hazardous wastes that "if the wastes are all legitimately amenable to the same type of treatment, and this method of treatment is utilized for the aggregated wastes, the aggregation step does not constitute impermissible dilution" was not impermissibly vague; principle that combination for centralized treatment was acceptable only where centralized treatment covered all of the constituent streams was easily stated, and the "legitimately amenable" language was simply an expression of the principle.

[11] [KeyCite Citing References for this Headnote](#)

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■ ↩ [149Ek430 k. Treatment, Storage, and Disposal; Facilities and Sites. Most Cited Cases](#)

■ (Formerly 199k25.5(5.5) Health and Environment)

Hazardous waste rule permitting characteristic wastes for which no method of treatment has been specified to be aggregated in a Clean Water Act (CWA) facility is not invalid on ground that it arbitrarily excludes listed wastes for which the Environmental Protection Agency (EPA) has promulgated a concentration-based treatment standard, as listed wastes are fundamentally different from characteristic wastes; listed wastes generally contain a certain substance that is per se harmful, and dilution does nothing to remove that element from waste stream and prevent it from entering the environment where it may reaccumulate; by contrast, some characteristic wastes may be altered permanently by dilution, and hence it is reasonable to permit aggregation. Federal Water Pollution Control Act Amendments of 1972, § 101 et seq., as amended, 33 U.S.C.A. § 1251 et seq.

[12] [KeyCite Citing References for this Headnote](#)

↩ [149E Environmental Law](#)

■ ↩ [149EIX Hazardous Waste or Materials](#)

■ ↩ [149Ek425 Hazardous, Dangerous, or Toxic Waste](#)

■ ↩ [149Ek430 k. Treatment, Storage, and Disposal; Facilities and Sites. Most Cited Cases](#)

■ (Formerly 199k25.5(5.5) Health and Environment)

Requirement of "third-third" rule promulgated under the Resource Conservation and Recovery Act (RCRA) that hazardous waste disposal facilities periodically test waste that has already been tested and certified to be in compliance either by waste generator or third-party treatment facility is not invalid on ground that it is arbitrarily imposed only on off-site disposal facilities, is unnecessarily duplicative, and is impermissibly vague. Solid Waste Disposal Act, § 1002 et seq., as amended, 42 U.S.C.A. § 6901 et seq.

[13] [KeyCite Citing References for this Headnote](#)

↩ 149E Environmental Law

- ↩ 149EIX Hazardous Waste or Materials
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- ↩ 149Ek430 k. Treatment, Storage, and Disposal; Facilities and Sites. Most Cited Cases
- (Formerly 199k25.5(5.5) Health and Environment)

Adoption by the Environmental Protection Agency (EPA) of characteristic level of five milligrams per liter as waste treatment standard for chromium in "third-third" rule was based on improper view of the evidence and would be remanded. Solid Waste Disposal Act, § 1002 et seq., as amended, 42 U.S.C.A. § 6901 et seq.

[14] KeyCite Citing References for this Headnote

↩ 15A Administrative Law and Procedure

- ↩ 15AV Judicial Review of Administrative Decisions
- ↩ 15AV(F) Determination
- ↩ 15Ak817 Remand
- ↩ 15Ak817.1 k. In General. Most Cited Cases
- (Formerly 15Ak817)

↩ 149E Environmental Law KeyCite Citing References for this Headnote

- ↩ 149EXIII Judicial Review or Intervention
- ↩ 149Ek694 Determination, Judgment, and Relief
- ↩ 149Ek698 k. Remand to Administrative Agency. Most Cited Cases
- (Formerly 199k25.5(9) Health and Environment)

Provision of "third-third" rule exempting all hazardous waste burned in utility boilers, mining furnaces and cement kilns that qualify as "Bevill" units from treatment requirements of section of the Resource Conservation and Recovery Act (RCRA), would be remanded to the Environmental Protection Agency (EPA) where Agency failed to give any notice at all, in proposed rule or elsewhere, that it intended to address Bevill unit exemption in rule-making proceeding. Solid Waste Disposal Act, § 3004(m)(1), as amended, 42 U.S.C.A. § 6924(m)(1); 5 U.S.C.A. § 553.

[15] KeyCite Citing References for this Headnote

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Requirement of "third-third" rule governing land disposal of hazardous waste that waste treatment standards be enforced by "grab sampling," i.e., a single test sample drawn from a single location, rather than "representative sampling" of various samples drawn from different locations so as to yield a representative level for the waste, is not arbitrary on ground that provision is inconsistent with other regulations requiring that disposers use representative sampling to test waste levels, or on ground that provision is impermissibly vague. Solid Waste Disposal Act, § 1002 et seq., as amended, 42 U.S.C.A. § 6901 et seq.

***5 **57** Petitions for Review of Orders of the Environmental Protection agency.

David R. Case, with whom Eli D. Eilbott (for Hazardous Waste Treatment Council), Karen L. Florini (for Environmental Defense Fund), A. Blakeman Early (for Sierra Club), Jacqueline M. Warren and Douglas Wolf (for Natural Resources Defense Council), were on the joint brief, for petitioners in Nos. 90-1230, 90-1245, and 90-1417 and intervenors in consolidated cases. Jane L. Bloom, and J. Brian Malloy, also entered appearances.

Michael W. Steinberg (for Chemical Manufacturers Ass'n), Richard A. Flye (for The Fertilizer Institute, et

al.), and Angus Macbeth (for Chemical Waste Management, et al.), with whom Hunter Prillaman, David F. Zall, Ronald Shipley, Robert F. Van Voorhees, and Barton D. Day (for Chemical Manufacturers Ass'n), Gordon D. Quin (for The Fertilizer Institute), G. William Frick and Ralph J. Colleli, Jr. (for American Petroleum Institute), Kurt J. Olson (for RSR Corp.), John N. Hanson, Donald J. Patterson, Jr. (for American Min. Congress), Aaron H. Goldberg (for American Min. Congress, American Iron and Steel Institute, and The Dow Chemical Co.), Karl S. Bourdeau (for American Iron and Steel Institute and The Dow Chemical Co.), Cynthia H. Evans (for American Paper Institute and the Nat. Forest Products Ass'n), William M. Guerny, Jr. (for Specialty Steel Industry of the U.S.), Thomas G. Echikson (for Chemical Waste Management, Inc.), and William R. Weissman and Douglas H. Green (for Edison Elec. Institute) were on the joint brief, for industry petitioners/intervenors in all cases. Lynn L. Bergeson, Susan S. Schmedes, Paul E. Shorb III, Barton C. Green, Carole Stern, Edward M. Green, Roderick T. Dwyer, John L. Wittenborn, Paul M. Bork, Stephen I. Houseal, Thomas A. McCormick, Nancy D. Tammi, Arline M. Sheehan, and Howard B. Myers also entered appearances for industry petitioners/intervenors.

Edwin H. Seeger and Kurt E. Blase, for petitioner Exide Corp., Inc., in No. 90-1303.

Paul E. Gutermann and John N. Moore, for petitioners Horsehead Resource Development Co., Inc., and Zinc Corp. of America in No. 90-1413 and intervenors in Nos. 90-1404, 90-1410, 90-1414, 90-1416, 90-1417, and 90-1423.

Gwendolyn G. Logan, Stephen E. Roady, and M. Barry Meyer, for petitioner the Aluminum Ass'n in No. 90-1442 and intervenor in No. 90-1245.

Mary Elizabeth Ward, Atty., U.S. Dept. of Justice, and Steven E. Silverman, Atty., E.P.A., with whom Barry M. Hartman, Acting Asst. Atty. Gen., Gretchen Slosser Pirasteh, Atty., U.S. Dept. of Justice, and Raymond Ludwizewski, Acting Gen. Counsel, EPA, were on the brief, for respondents in all cases. Richard B. Stewart, Peter W. Colby, Christopher S. Vaden, Thomas R. Bartman, and Mandan Kenkermath also entered appearances, for respondent.

Robert F. VanVoorhees, for intervenors Chemical Manufacturers Ass'n, et al.

Aaron H. Goldberg, for intervenors American Mining Congress, et al.

Gerald L. Richman and Paul M. Donovan entered appearances, for intervenor Chlorine Institute in all cases except No. 90-1230.

Robert N. Steinwurtzel and Jeffrey S. Halik entered appearances, for intervenors Secondary Lead Smelters Ass'n, Inc., and Ass'n of Battery Recyclers in Nos. 90-1245 and 90-1314.

Corinne A. Goldstein and Guy V. Johnson entered appearances, for intervenors National Ass'n of Metal Finishers and E.I. duPont deNemours & Co. in No. 90-1245.

David B. Weinberg and Kurt J. Olson entered appearances, for intervenor Battery Council Intern. in all cases except No. 90-1230.

Leonard A. Miller and Robert S. Taylor entered appearances, for intervenor Allied-Signal, Inc., in No. 90-1245.

***6 **58** C. Howard Hardesty, Jeffrey S. Halik, and P. Burton Gray entered appearances, for intervenor Institute of Makers of Explosives in Nos. 90-1245 and 90-1330.

Edwin H. Seeger, Kurt E. Blase and Michael A. Poling entered appearances, for intervenors Lead Industries Ass'n, Inc., and Cadmium Council, Inc., in Nos. 90-1245 and 90-1417.

Carole Stern entered appearances, for intervenors Thiokol Corp. and Olin Corp. in Nos. 90-1275 and 90-1303.

Before EDWARDS, BUCKLEY, and HENDERSON, Circuit Judges.

Opinion PER CURIAM.

PER CURIAM:

The Hazardous and Solid Waste Amendments of 1984 instituted a ban on the land disposal of classes of hazardous wastes unless certain conditions are met. Those amendments require the Environmental Protection Agency to follow a phased schedule for implementing the ban. In this case we consider various challenges to regulations implementing the final portion of this program, the so-called "third-third" rule, which largely covers the land disposal of wastes deemed hazardous because they possess certain defined characteristics.

Various petitioners raise multi-faceted challenges. A group of industry trade associations and companies ^{FN1} (collectively, "industry petitioners") seek review of regulations mandating levels of treatment before land disposal that go beyond the removal of the attribute that led to the waste's classification as hazardous. These petitioners claim that the EPA lacked authority under the statute to require treatment to such levels. The Fertilizer Institute raises procedural and substantive objections to provisions that bar dilution of certain wastes as a form of treatment prior to discharge into the waters of the United States from treatment facilities licensed under the Clean Water Act. Finally, three companies attack the imposition of new testing requirements at disposal facilities as arbitrary and insufficiently clear.

FN1. American Iron and Steel Institute, American Mining Congress, American Paper Institute, American Petroleum Institute, Chemical Manufacturers Association, National Forest Products Association, RSR Corporation, Specialty Steel Industry of the United States and The Fertilizer Institute. The Dow Chemical Company and the Edison Electric Institute have intervened in support of the petition.

We deny each of these petitions for review. Sections 3004(g)(5) and (m) of the Resource Conservation and Recovery Act ("RCRA") ^{FN2} (which are reprinted in Appendix A hereto) give the EPA the statutory authority to mandate the treatment of wastes to levels beyond those at which the wastes present the characteristics that caused them to be deemed hazardous. The EPA provided adequate notice of its intent to bar dilution of certain hazardous wastes at water treatment facilities that meet the standards of the Clean Water Act facilities. The regulations provide sufficient guidance as to how this part of the rule will work, and the distinction drawn between types of hazardous wastes appears reasonable. The challenge by the individual companies to testing protocols established in this rule is rejected. The procedures are both clear and reasonable.

FN2. A glossary of acronyms and abbreviations is provided in Appendix B at the conclusion of this opinion.

Several environmental organizations, as well as the Hazardous Waste Treatment Council, an association representing companies that treat hazardous waste (collectively, "NRDC petitioners"), present different objections. They assert that (1) the new rule's "deactivation" treatment standard impermissibly allows the dilution, rather than treatment with specified technologies, of many characteristic wastes prior to land disposal; (2) the rule authorizes placement of untreated formerly characteristic wastes in surface impoundments within Clean Water Act treatment systems, or into underground injection wells, in violation of RCRA; (3) it arbitrarily created treatment standards for chromium and lead wastes; and (4) the rule provides an exception to treatment standards for wastes burned in industrial furnaces along with wastes exempted*7 **59 by the Bevill Amendment that violates that provision. In addition, the Council and Chemical Waste Management, Inc., a large waste disposal company, challenge certain testing procedures imposed by the regulations as impermissibly vague.

The petitions brought by NRDC petitioners are granted in part and denied in part. Under the statute, dilution of characteristic hazardous wastes may constitute treatment, but only if no hazardous constituents are present following dilution that would endanger human health or the environment. The EPA concedes that dilution will not attain this result for certain characteristic wastes. For others, it has not made clear that dilution will meet the requirements for treatment. The standard is therefore vacated as to those wastes. The dilution of wastes in Clean Water Act facilities is acceptable so long as the toxicity of the waste discharged from the facility is minimized or eliminated consistent with RCRA. Similarly, disposal of wastes in underground injection wells may occur as long as the hazardous characteristics have been eliminated and any health and environmental dangers posed by hazardous constituents of the wastes are minimized.

We remand the lead and chromium standards because the EPA appears to have relied on data that does not support its conclusions. We also remand the exemption from regulation under Subtitle C of RCRA of wastes burned with wastes exempted under the Bevill Amendment for consideration in an ongoing rulemaking addressing that question. Finally, Chemical Waste Management's petition for review of test compliance procedures is denied. Testing procedures will be embodied in permits. Uncertainties over the standards can be resolved in the permit-writing process.

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I. STATUTORY AND REGULATORY BACKGROUND

Subtitle C of the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6921-6939b (1988), sets out a comprehensive regulatory system governing the treatment, storage, and disposal of hazardous wastes. Wastes are deemed hazardous in one of two ways: ***8 **60** They possess one of the four hazardous characteristics identified by the EPA in 40 C.F.R. Part 261, Subpart C ("characteristic wastes"), *see id.* § 261.3(a)(2)(i) (1991), or have been found to be hazardous as a result of an EPA rulemaking. *See id.* Part 261, Subpart D ("listed wastes").

The four characteristics identified as hazardous are ignitability, corrosivity, reactivity, and extraction

procedure ("EP") toxicity. The hazards presented by ignitable, corrosive, and reactive ("ICR") wastes are primarily, though not exclusively, the results of their physical properties. See 45 Fed.Reg. 33,066, 33,107-10 (1980). EP characteristic wastes contain toxic constituents. *Id.* at 33,107-12. These wastes remain hazardous until they cease to exhibit any of the characteristics identified in Subpart C. See 40 C.F.R. § 261.3(d)(1). Characteristic wastes comprise over fifty percent of all the hazardous wastes generated in the United States each year.

Although the EPA may list a waste if it possesses one of the four characteristics described above, in practice it will only list specific wastes that are either acutely hazardous or possess high levels of toxic constituents. See *id.*; 45 Fed.Reg. at 33,105-07. A listed waste loses its hazardous status only after a petition for its "delisting" is approved by the EPA in a notice-and-comment rulemaking. See 40 C.F.R. §§ 260.20, 260.22; *Shell Oil Co. v. EPA*, 950 F.2d 741, 749 (D.C.Cir.1991).

"Once a waste is listed or identified as hazardous, its subsequent management is regulated" under subtitle C of RCRA. *American Petroleum Inst. v. EPA*, 906 F.2d 729, 733 (D.C.Cir.1990) ("API"). The waste enters RCRA's "cradle-to-grave" regulatory system; and "the waste's treatment, storage, and disposal is usually regulated by permit." *American Mining Congress v. EPA*, 907 F.2d 1179, 1182 (D.C.Cir.1990) ("AMC II"); see also RCRA §§ 3001-3004, 42 U.S.C. §§ 6921-6924. The management of a hazardous waste continues "until such time as it ceases to pose a hazard to the public." *Shell Oil*, 950 F.2d at 754.

Because "certain classes of land disposal facilities are not capable of assuring long-term containment of certain hazardous wastes," RCRA § 1002(b)(7), 42 U.S.C. § 6901(b)(7), Congress amended subtitle C in 1984 to prohibit land disposal of many hazardous wastes. The Hazardous and Solid Waste Amendments of 1984, Pub.L. No. 98-616, 98 Stat. 3221 (1984) ("1984 Amendments"), gave the EPA significant authority to regulate land disposal. The statute expressed a general policy preference that "reliance on land disposal should be minimized or eliminated." RCRA § 1002(b)(7), 42 U.S.C. § 6901(b)(7). A prohibition on disposal would apply unless the waste is treated so as to minimize the short-term and long-term threats to human health and the environment posed by toxic and hazardous constituents, RCRA § 3004(m), 42 U.S.C. § 6924(m), or unless the EPA finds that no migration of hazardous constituents from the facility will occur after disposal. *Id.* § 3004(g)(5), 42 U.S.C. § 6924(g)(5); see also *Hazardous Waste Treatment Council v. EPA*, 886 F.2d 355, 357 (D.C.Cir.1989), *cert. denied*, 498 U.S. 849, 111 S.Ct. 139, 112 L.Ed.2d 106 (1990) ("HWTC III").

The 1984 Amendments specifically required the EPA to follow a phased schedule to implement the land disposal ban. They forbade the land disposal of hazardous wastes containing solvents and dioxins after November 8, 1986. RCRA § 3004(e), 42 U.S.C. § 6924(e). A select list of other wastes were barred from land disposal after July 8, 1987 ("California list" wastes). *Id.* § 3004(d), 42 U.S.C. § 6924(d). Finally, the amendments ordered the Agency to rank all remaining hazardous wastes on the basis of their intrinsic hazard and the volume generated annually and to divide the list into three parts. *Id.* § 3004(g)(4), 42 U.S.C. § 6924(g)(4). The Administrator was then charged with the task of promulgating final regulations for each third of the list. See *id.* § 3004(g)(5), 42 U.S.C. § 6924(g)(5). Unless the Administrator promulgated regulations for wastes in the last third of the list by May 8, 1990, they could not be land disposed. *Id.* § 3004(g)(6)(C), 42 U.S.C. § 6924(g)(6)(C).

***9 **61** Under the 1984 Amendments, the final regulations must

prohibit[] one or more methods of land disposal of the hazardous wastes listed on such schedule except for methods of land disposal which the Administrator determines will be protective of human health and the environment for as long as the waste remains hazardous.... For the purposes of this paragraph, a method of land disposal may not be determined to be protective of human health and the environment (except with respect to a hazardous waste which has complied with the pretreatment regulations promulgated under subsection (m) of this section) unless, upon application by an interested person, it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous.

RCRA § 3004(g)(5), 42 U.S.C. § 6924(g)(5). The Administrator must also promulgate treatment standards, compliance with which will authorize land disposal, at the same time he publishes the land ban. The treatment regulations shall

specify[] those levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.

Id. § 3004(m)(1), 42 U.S.C. § 6924(m)(1).

The regulations under review implement the land-ban program for the last third of the ranked list of wastes, the "third-third." They largely consist of treatment standards for characteristic wastes. See 55 Fed.Reg. 22,520-720 (1990). The final rule also modifies regulations governing characteristic wastes that are managed in treatment systems regulated through National Pollutant Discharge Elimination System permits issued under the Clean Water Act as well as regulations affecting those disposed of in underground injection wells regulated under the Safe Drinking Water Act. The rule establishes a variety of compliance requirements as well.

Fourteen petitions for review were filed and consolidated into this proceeding. Petitioners divided the case into three groups of issues for purposes of briefing and argument. The first focuses on industry petitioners' challenge to standards mandating treatment of characteristic wastes beyond the point at which they cease to display hazardous characteristics and on NRDC petitioners' challenge to dilution as a method of treatment. The second centers on the Clean Water Act and underground injection well questions. The third consists of the remaining issues. This opinion adopts the same approach.

II. TREATMENT STANDARDS FOR CHARACTERISTIC WASTES

A. Proposed Rule

As described above, at the outset of the RCRA program, the EPA identified four characteristics as hazardous: ignitability, corrosivity, reactivity, and EP toxicity. In its proposed rules, and in the final regulations, the Agency divided characteristic wastes into subcategories, suggesting treatment standards or levels for each subcategory. For some of these, the EPA proposed treatment to reduce the presence of the characteristic below the level at which the waste was defined as hazardous. For example, a waste is considered corrosive, and therefore hazardous, if it is aqueous and has a pH of less than two or greater than 12.5. The proposed rule required treatment that would result in a pH between six and nine. See 54 Fed.Reg. 48,372, 48,422 (1989). For other subcategories, however, the EPA suggested treatment to the characteristic level and no further. See *id.* at 48,420-26 (setting treatment levels and standards).

The Agency stated that it possessed the authority to compel treatment below characteristic levels. See 54 Fed.Reg. at 48,419. It took note of the argument that the characteristic levels represent the limit of subtitle C authority—that the Agency had no power to regulate a waste where the ***10 **62** characteristic had been brought below the level deemed hazardous. *Id.* at 48,490. The Agency believed, however, that section 3004(m) extended its authority beyond that point. "[O]nce wastes become subject to section 3004(m), they remain subject to the requirements of that section until the section 3004(m) standard is satisfied." *Id.* The EPA concluded that it was directed by the statute to require a waste that is hazardous at the point of generation and is destined for land disposal to "be treated by methods which substantially reduce toxicity and minimize threats to human health and the environment." *Id.*

As to methods of treatment, the proposed rule largely followed the judgment made by the EPA in previous land-ban program rulemakings. In those earlier rules, the EPA determined that treatment would be accomplished through the use of "best demonstrated available technologies." See, e.g., 51 Fed.Reg. 40,572, 40,578 (1986) (solvents and dioxins); 53 Fed.Reg. 31,138, 31,142 (1988) (first-third wastes). The proposed rule specified the particular technology to be used in the treatment of most ICR wastes. See 54 Fed.Reg. at 48,420-26. For a handful of others, the Agency offered a measure of flexibility by creating a "deactivation" category of treatment. According to the proposal, the EPA had "determined that within [several ICR subcategories] there appear to be a further variety of different waste groups, each with a certain degree of uniqueness with respect to hazard and handling requirements." *Id.* at 48,419. Therefore, while the Agency recommended a number of methods, it proposed to allow generators or treaters of those wastes to select the appropriate method of treatment. *Id.* at 48,419-20.

In implementing the land-ban program for solvents and wastes containing dioxins, the EPA barred dilution as an alternative for "adequate treatment." See 51 Fed.Reg. at 40,639. As codified, the rule stated that

no generator, transporter, handler, or owner or operator of a treatment, storage, or disposal facility shall in any way dilute a restricted waste ... as a substitute for adequate treatment to achieve compliance with subpart D of this part [setting forth treatment standards], ... or to circumvent a land disposal prohibition imposed by RCRA section 3004.

40 C.F.R. § 268.3(a) (1989).

At several points in the proposed third-third rule, the EPA reaffirmed its decision that a generator or treater might not dilute wastes to escape the dictates of the land disposal program. In its discussion of ignitable wastes, the Agency stated that "a prohibited form of dilution that is used to remove a characteristic from a prohibited hazardous waste would be a violation of the dilution prohibition in [40 C.F.R.] section 268.3." 54 Fed.Reg. at 48,422. Among the EPA's concerns was the possibility that dilution of ignitable wastes would lead to dangerous emissions of volatile organic compounds, a problem that could be avoided by using other treatment methods. *Id.* "Accordingly, the Agency believes that dilution should not be a legitimate method for treating ignitable wastes." *Id.*

The EPA proposed a similar bar with regard to reactive wastes: "[D]ilution of reactive wastes should not automatically be considered to be a legitimate form of treatment." *Id.* at 48,426. It proposed that reactive cyanides and sulfides be treated like any toxic waste; "[w]ith respect to other reactive wastes, most cannot be diluted without violent reaction so that dilution is not a viable management alternative[.]" *Id.*

Finally, the EPA suggested that corrosives be treated by neutralization, not dilution, to alter their pH. *Id.* at 48,422-23. According to the Agency, dilution would require the use of large amounts of water and would create a greater volume of waste; moreover, dilution "does not treat or remove hazardous constituents in the wastes." *Id.* at 48,423.

More broadly, the EPA expressed its

concern, echoing Congress' concern in indicating that dilution to avoid proper treatment was impermissible, [] that individual prohibited wastes [hazardous wastes destined for land disposal] not be *11 **63 mixed with larger volumes of other wastes (whether prohibited or not) to meet treatment standards without undergoing treatment that substantially reduces the prohibited wastes' toxicity or mobility....

Consequently, it appears to the Agency that any dilution that fails to meet the standard in § 3004(m) of substantially reducing the prohibited waste's toxicity or mobility is impermissible.... Further, with respect to organic constituents, 'reduction of toxicity' means actual removal of or chemical change to the constituent.

Id. at 48,494 (citation omitted). But the Agency did seek comments on "whether dilution can be used as a means of supplanting a section 3004(m) treatment standard by being used to render a prohibited waste non-hazardous in lieu of actually treating the prohibited hazardous waste prior to land disposal." *Id.* at 48,495.

B. Final Rule

In the final rule, the EPA revised many of its proposed treatment standards for ICR and toxic characteristic wastes. The EPA, however, did not back away from its basic position that it could require treatment below characteristic levels. Because "Congress has given apparently conflicting guidance on how the Agency should address land disposal prohibitions for characteristic wastes," the EPA "believes it has authority to reconcile these potential conflicts and to harmonize statutory provisions to forge a coherent regulatory system." 55 Fed.Reg. at 22,651. The EPA agreed with many participants in the comment period that "one permissible construction of the language in section 3004(g)" (which requires the promulgation of regulations "prohibiting ... methods of land disposal of the [listed] hazardous wastes") is that subtitle C rules applied only to hazardous wastes, and therefore the applicability of the land disposal regulations must be judged at the moment of disposal. 55 Fed.Reg. at 22,652. Ultimately, the EPA concluded that Congress did not state when the status of the waste should be evaluated for purposes of the ban on land disposal; therefore, the EPA could choose to regulate the waste "at the point of generation or at the point of disposal (and possibly at some other point or combination of the two)." *Id.*

While viewing its authority broadly, the EPA decided to exercise it sparingly:

Today's rule reflects a decision to take limited, but nonetheless significant, steps within the point of generation framework. As a general matter, the Agency believes that the goals of [the program] may require application of standards which go beyond the characteristic level ... in some future cases.

Id. at 22,654. The final regulations call for treatment below characteristic levels for only a handful of wastes. Among ICR wastes, ignitable liquids with high total organic carbons (a subset of the subcategory of ignitable liquids for which the proposed rule required treatment to below characteristic levels by technology), *see id.* at 22,543-44, and reactive cyanides, *see id.* at 22,550-51, would be subject to enhanced treatment. The Agency backed away from its original plan to mandate enhanced treatment for corrosive characteristic wastes.

The EPA determined that for most ICR wastes, treatment to characteristic levels would be sufficient. The Agency found upon review that

[t]he environmental concerns from the [properties of ignitability, corrosivity, and reactivity] are different from the environmental concern from EP toxic wastes. Toxic constituents can pose a cumulative impact on land disposal even where waste is below the characteristic level. Where wastes pose an ascertainable toxicity concern ... the Agency has developed treatment standards that address the toxicity concern and (in effect) require treatment below the characteristic level.... Otherwise, treatment that removes the properties of ignitability, corrosivity, and reactivity, fully addresses the environmental concern from the properties themselves.

Id. at 22,655.

The EPA also retreated from its emphasis on technology-based treatment in the ***12 **64** final regulations, altering its position on the use of dilution as a method of treatment:

In all cases, the Agency has determined that for non-toxic hazardous characteristic wastes, it should not matter how the characteristic property is removed so long as it is removed. Thus, dilution is an acceptable treatment method for such wastes.

Id. at 22,532. The Agency included dilution within the ambit of the "deactivation" treatment standard. The final rule defined the standard as "[d]eactivation to remove the hazardous characteristics of a waste due to its ignitability, corrosivity, and/or reactivity." *Id.* at 22,693. As long as these characteristics are removed, any method can be employed under the final regulations. The EPA allowed full discretion among specified technological methods of treatment (such as neutralization or incineration) as well as dilution with water or other wastes. For toxic wastes, the prohibition on dilution remained. *See id.* at 22,656.

The Agency admitted that it

believes the mixing of waste streams to eliminate certain characteristic[s] is appropriate treatment for *most* wastes which are purely corrosive, *or in some cases*, reactive or ignitable. As a general matter, these are properties which can effectively be removed by mixing.

Id. (emphasis added). It further conceded that

this approach does not fully address the potential problem of toxic constituents that may be present in such wastes, nor encourages minimization or recovery of non-toxic characteristic hazardous wastes. EPA has determined that these potential problems should be addressed, if at all, in other rulemakings ... and are too difficult to resolve in this proceeding, given the extraordinary pressures and limited review time imposed by the May 8 [1990] statutory deadline.

Id. at 22,665-66. Only in three subcategories of ICR wastes did the EPA mandate the use of technological treatment: reactive sulfides, 57 Fed.Reg. 8,086, 8,089 (1992) (technical correction to third-third rule); reactive cyanides, 55 Fed.Reg. at 22,551; and ignitable liquid nonwastewater wastes containing more than ten percent total organic compounds, *id.* at 22,544. For all corrosive wastes, other

ignitable liquid wastes (nonwastewaters with low total organic compounds and ignitable wastewaters), ignitable compressed gases, ignitable reactive wastes, explosive wastes, water reactives, and other reactives dilution would be acceptable. *Id.* at 22,543-53.

C. Standard of Review

Industry and NRDC petitioners challenge the third-third rule's treatment standards as incompatible with RCRA. We typically analyze such claims under the familiar standard of *Chevron U.S.A. Inc. v. NRDC*, 467 U.S. 837, 104 S.Ct. 2778, 81 L.Ed.2d 694 (1984). Under *Chevron*, unless Congress has spoken directly to these questions, the EPA's determinations are entitled to deference, if reasonable. *Id.* at 842-43, 104 S.Ct. at 2781-82.

D. Industry Petitioners' Challenge to the Treatment Standards

[1] Industry petitioners contend that RCRA does not provide authority for the EPA to mandate treatment of characteristic wastes after their ignitability, corrosiveness, reactivity, or EP toxicity has been addressed. They make a straightforward argument: Subtitle C regulations attach to a waste only when it is hazardous. The moment a waste ceases to meet the regulatory definition of a hazardous waste, the EPA loses its authority to regulate further. Thus, in industry petitioners' view, RCRA's cradle-to-grave system covers waste only if it remains hazardous throughout its life and at the moment of its burial.

Industry petitioners point to a welter of provisions in RCRA where the words "hazardous waste" are used as proof that the statute applies only to waste defined as hazardous. Subtitle C, they explain, is entitled "Hazardous Waste Management," and the entire subtitle addresses that problem—the management of *hazardous* waste. They add that some statements by the EPA have suggested the same reading *13 **65 of the statute. See, e.g., 54 Fed.Reg. 1,056, 1,093 (1989) (a waste that no longer exhibits a hazardous characteristic "is no longer subject to the requirements of Subtitle C of RCRA").

In their view, the 1984 Amendments did not change this boundary. They point out that land disposal is defined in part as "any placement of such hazardous waste in a landfill, [or] surface impoundment," RCRA § 3004(k), 42 U.S.C. § 6924(k); that section 3004(g) similarly "prohibit[s] one or more methods of land disposal of [] hazardous wastes," *id.* § 6924(g)(5); and, finally, that section 3004(m) authorizes land disposal of hazardous waste that has been treated, suggesting to industry petitioners that the provision specifically authorizes only the disposal of wastes that remain hazardous after treatment. Thus, they conclude, the disposal restrictions can apply only to wastes that are hazardous at the moment of disposal.

In its brief, the EPA reiterates the rationales stated in its final rule: The key provisions of the land-ban program, sections 3004(g)(5) and (m), can be read as allowing the Agency to apply land disposal restrictions at any time it wishes; those provisions at a minimum contemplate activity that occurs before land disposal; section 3004(m)(1) requires treatment to avoid the prohibition on land disposal; and treatment must take place, by definition, before disposal occurs. This reading, the EPA adds, dovetails with the concern expressed in the report accompanying the Senate version of the 1984 Amendments, that hazardous waste not be diluted and then disposed of in landfills. See S.Rep. No. 284, 98th Cong., 1st Sess. 17 (1983) ("Senate Report"). The Agency reasons that the subtitle C program can attach at the point of generation, and the broad language of section 3004(m)(1) allows additional treatment to remove risks posed by wastes beyond those inherent in the characteristic.

To succeed in their *Chevron* step one argument, industry petitioners must show that Congress "has directly spoken to the precise question at issue" and has "unambiguously expressed [its] intent." 467 U.S. at 842-43, 104 S.Ct. at 2781-82.^{FN3} We find little support in the statute or our prior decisions for the notion that Congress mandated the line industry petitioners draw. These petitioners believe that the definition of a hazardous waste acts as a revolving regulatory door, allowing continual entrance and egress from RCRA's requirements. The key provisions of the statute support a contrary view—that hazardous waste becomes subject to the land disposal program as soon as it is generated.

FN3. Industry petitioners suggest that the EPA's decision to mandate treatment of some wastes below characteristic levels is due no deference because the EPA made "prior inconsistent statements" during the rulemaking that cut against its current position. See Brief for Industry Petitioners at 24-25. As our analysis makes clear, we find that the statute

compels the EPA, in some instances, to require treatment beyond removal of the characteristic of hazard. Therefore, we do not address industry's contention.

RCRA directs the Administrator to "promulgate regulations identifying the characteristics of hazardous waste ... which shall be subject to the provisions of this subchapter." RCRA § 3001(b)(1), 42 U.S.C. § 6921(b)(1). This appears to bring a waste within the statutory scheme once it is identified as hazardous. Under the dictates of the 1984 Amendments, the Administrator "shall promulgate regulations ... [banning land disposal for] any hazardous waste identified or listed under section 6921 of this title." RCRA § 3004(g)(4), 42 U.S.C. § 6924(g)(4). Again, the focus is on the identification of a waste as hazardous.

This reading of the statute is consistent with our prior interpretations. In *API*, we explained that "[o]nce a waste is listed or identified as hazardous, its subsequent management is regulated." *API*, 906 F.2d at 733. After the 1984 Amendments, we added, regulation of the waste included the prohibitions of section 3004. *Id.* In *Shell Oil*, we noted that the power to manage waste is created "[a]t [the] point" a waste is defined as hazardous and discarded. *Shell Oil*, 950 F.2d at 754. Once in the system, we found that the power to manage hazardous waste provided by RCRA gave the EPA the authority to regulate ***14** ****66** waste until "it ceases to pose a hazard to the public." *Id.*; see also RCRA § 1004(7), 42 U.S.C. § 6903(7) (defining "hazardous waste management"). We therefore deferred to the EPA's determination that resource recovery from hazardous waste came within the Agency's subtitle C authority.

Industry petitioners nevertheless contend that we adopted the exact position they now advocate in *American Mining Congress v. EPA*, 824 F.2d 1177 (D.C.Cir.1987) ("*AMC I*"). To be sure, in *AMC I*, we stated that the EPA's authority, in the first instance, extends only to waste that is identified as hazardous, *id.* at 1179, and that Congress took care in drafting the definition of solid waste to reflect its concern over the reach of the EPA's authority, *id.* at 1188-89 and n. 17. But, as we emphasized in *Shell Oil*, the definitions of solid and hazardous wastes provide the keys to entrance into the RCRA system; "[o]nly materials that meet *both* definitions will come within the [RCRA] 'cradle-to-grave' regulatory scheme," *Shell Oil*, 950 F.2d at 754 (emphasis added); and we also stated that once within the system, the waste will remain there so long as it poses a threat to the public health and safety. *Id.* *AMC I* turned on the question of whether secondary materials immediately reused within an industrial process had been "discarded" under the terms of RCRA. We concluded that they had not. *AMC I*, 824 F.2d at 1185-87. Our decision in that case stands for no more. See *Shell Oil*, 950 F.2d at 755-56.

The 1984 Amendments also provide the EPA with the authority to mandate treatment past the point at which a characteristic is removed. Section 3004(g)(5) requires the Administrator to promulgate regulations prohibiting land disposal of hazardous wastes "except with respect to a hazardous waste which has complied with the pretreatment regulations promulgated under subsection (m) of this section." 42 U.S.C. § 6924(g)(5). Subsection (m)(1), in turn, calls on the Administrator to

specify[] those levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.

RCRA § 3004(m)(1), 42 U.S.C. § 6924(m)(1). The requirement that treatment "substantially diminish the toxicity" or substantially reduce the likelihood of migration of hazardous constituents suggests concerns that go beyond the characteristics identified in 40 C.F.R. Part 261, subpart C. Similarly, in concluding that the EPA had the authority to require technologies that go beyond the elimination of hazardous characteristics, we have noted that "minimize" offers a broad mandate: "To 'minimize' something is, to quote the Oxford English Dictionary, to 'reduce [it] to the smallest possible amount, extent, or degree.'" *HWTC III*, 886 F.2d at 361.

In *HWTC III*, the Chemical Manufacturer's Association ("CMA") attacked treatment standards for solvents under the land disposal program because the EPA required treatment of all solvents, not simply those deemed unsafe. See *id.* at 361. The CMA argued that this regime could result in treatment "below established levels of hazard," and therefore was an unreasonable interpretation of the Act. *Id.* at 362. We disagreed, noting that section 3004(m) demands that treatment minimize risks to health and the environment. Treatment might be unreasonable, we added, if the EPA required treatment of wastes that "posed no threat to human health or the environment." *Id.* at 363. That was not the case in *HWTC III*,

nor is it true here.

We conclude that, in combination, sections 3004(g)(5) and (m) provide the EPA with authority to bar land disposal of certain wastes unless they have been treated to reduce risks beyond those presented by the characteristics themselves. We also find the Agency's assertion of regulatory authority over the wastes from the moment they are generated to be "based on a permissible construction of the statute." *Chevron*, 467 U.S. at 843, 104 S.Ct. at 2782.

***15 **67** E. NRDC Petitioners' Challenge to Deactivation Treatment standard

[2] NRDC petitioners ask this court to vacate the deactivation treatment standard as applied to ICR wastes because it authorizes the dilution of these wastes to eliminate their ignitability, corrosiveness, or reactivity rather than mandating use of technological treatment. NRDC petitioners rely on the language of section 3004(m)(1), statements in the legislative history of the 1984 Amendments, and the overall structure of the RCRA program as support for their position that treatment does not include dilution. They claim that some form of technology must be used to treat wastes in all instances.

They also contend that dilution fails to satisfy the statutory requirement that treatment minimize short-term and long-term threats to human health and the environment, or to substantially diminish the toxicity of the waste. In their view, the removal of these characteristics through dilution only affects the short-term risk that the waste will manifest that property; it does not address the threats posed by the hazardous organic and inorganic constituents of those wastes. NRDC petitioners also assert that the Agency's interpretation of RCRA fails *Chevron*'s second step because the statute does not permit a plea of time pressures as a reason for failing to require treatment at the levels mandated by section 3004(m). See 55 Fed.Reg. at 22,665-66.

We believe that dilution can, in principle, constitute an acceptable form of treatment for ICR wastes. We do not read the 1984 Amendments as mandating the use of the best demonstrated available technologies ("BDAT") in all situations. To reiterate, section 3004(m)(1) directs the Administrator to

specify[] those levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.

42 U.S.C. § 6924(m)(1). NRDC petitioners insist that under the plain terms of this provision, the deactivation standard fails because dilution is not a "method of treatment." Although they acknowledge that the statutory definition of "treatment" is broad enough to encompass dilution, see RCRA § 1004(34), 42 U.S.C. § 6903(34), they maintain that Congress had a more exacting criterion in mind when it enacted section 3004(m).

We agree that the section imposes an exacting standard: It requires that treatment prior to land disposal "substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized." RCRA 3004(m)(1), 42 U.S.C. § 6924(m)(1). But this provision does not bar dilution as a means of treating ICR wastes; instead, it defines the purposes that a method of treatment must achieve. Any treatment that meets those objectives is permissible. When read against RCRA's broad definition of treatment, we cannot say Congress clearly barred dilution as an acceptable methodology. See *Chevron*, 467 U.S. at 842-43, 104 S.Ct. at 2781-82.

NRDC petitioners advert to a number of statements in the legislative history that they believe make clear Congress's unexpressed intent to prohibit dilution as a form of treatment in all cases. They cite, for example, the committee report accompanying the Senate version of the 1984 Amendments, which notes that hazardous waste should be "transformed to a less hazardous chemical form through treatment." Senate Report at 17. More directly, the report states:

The dilution of wastes by the addition of other hazardous wastes or any other materials during waste handling, transportation, treatment, or storage is not an acceptable method of treatment to reduce the concentration of hazardous constituents. Only dilution which occurs as a normal part of the process that results in the waste can be taken into account in establishing concentration levels.

***16 **68** *Id.* These petitioners also quote from Senator Moynihan's statement explaining the floor

amendment that became section 3004(m): "The requisite levels o[r] methods of treatment established by the Agency should be the best that has been demonstrated to be achievable." 130 Cong.Rec. 20,803 (1984) (statement of Sen. Moynihan). They infer from this that only treatment with technology will meet the standard of section 3004(m).

We are unpersuaded. The Senate committee version of the 1984 Amendments, which the committee report addresses, mandated the treatment of EP toxic wastes among the many others specified in the legislation. It did not require the treatment of ICR wastes. See Senate Report at 17-18. The strong statements cautioning against dilution as a means of treatment must be read in that context. Similarly, Senator Moynihan's statement referred to the particular problem of highly mobile, highly toxic wastes. See 130 Cong.Rec. S9,178. These citations to legislative history do not show that Congress spoke directly to the dilution of ICR wastes. See Chevron, 467 U.S. at 842-43, 104 S.Ct. at 2781-82.

We are more troubled by the question whether the dilution of certain ICR wastes will satisfy section 3004(m). Treatment must meet the standards established by that section, and its requirements are clear: It must remove the characteristic and reduce the presence of hazardous constituents when those constituents are present in sufficient concentrations to pose a threat to human health or the environment. The EPA's regulations "must be fully consistent with" those requirements. NLRB v. United Food & Commercial Workers Union, Local 23, AFL-CIO, 484 U.S. 112, 123, 108 S.Ct. 413, 416, 98 L.Ed.2d 429 (1987). We find it unclear whether dilution is fully consistent with section 3004(m)'s treatment standards for all of the subcategories of ICR wastes for which the EPA has proscribed deactivation.

As we have explained, the proposed rule pointed to significant problems that could arise if dilution was accepted as a means of treating ICR wastes. In the final regulations, the Agency found that deactivation "addresses the environmental concern from the properties themselves." 55 Fed.Reg. at 22,655. The EPA admitted, however, that "the characteristic level is only one indicator of hazard and, thus, removal of the specific characteristic is not the same as assuring that the waste is safe." Id. at 22,651. It then acknowledged "that this approach does not fully address the potential problem of toxic constituents that may be present in [ICR] wastes, nor encourage [] minimization ... of non-toxic characteristic hazardous wastes." Id. at 22,665. The Agency's brief contains a similar admission. Brief for Respondent at 96-97.

Unfortunately, these confessions are not a substitute for a rule conforming to the statute's command. We conclude that the deactivation standard, in its present form, is permissible only in the case of corrosive wastes; and then only so long as they do not contain hazardous constituents that, following dilution, would themselves present a continuing danger to human health or the environment.

1. Ignitable Wastes

[3] At oral argument, counsel for the EPA conceded that some ignitable wastes subject to the deactivation standard include hazardous or toxic constituents that will remain after dilution, perhaps at sufficient levels to pose a risk to human health and the environment. See *also* Reply Brief for NRDC petitioners at 12-14 (ignitable wastes have significant hazardous constituents); EPA, Final BDAT Background Document (May 1990), at 2-2 and 2-3, *reprinted in* Joint Appendix ("J.A.") at 456-57 (same). Further, in the proposed rule, the EPA barred dilution of all ignitable wastes because of the risk of emissions of volatile organic compounds during dilution and the possibility that the waste would regain its ignitability after dilution. See *also* BDAT Background Document at 2-10, *reprinted in* J.A. at 464 ("If the ignitable wastes are diluted, [volatile organic compounds] will ordinarily be emitted in concentrations far exceeding those emitted by treatment processes*17 **69 in which these volatiles are destroyed.").

The final regulations suggested a number of technology-based treatment methods that might be used for ignitable wastes, but in the end authorized dilution if it would remove the characteristic alone, except for ignitable wastes including more than ten percent total organic compounds. In its brief, the Agency stated that the problem of emissions and the possibility that the waste would regain its ignitability were not significant, that some dilution prior to treatment would be beneficial, and that the problem of VOC emissions, if any occur, would be "best addressed by establishing air emission limitations in the future." Brief for Respondent at 93.

In view of the EPA's position that treatment pursuant to section 3004(m) requires the removal of a

waste's hazardous characteristic and the reduction of other hazardous constituents, and the Agency's concessions that constituents are present in some ignitable wastes subject to the deactivation standard, we vacate this part of the rule. To conform with its own reading of section 3004(m), the Agency must identify the ignitable wastes that include, after dilution, sufficiently high levels of hazardous constituents to pose a risk to human health or the environment, and propose a method of treatment that will deal with these threats. In addition, the Agency must address the problem of VOC emissions from ignitable wastes during dilution. The EPA's statement that it believes that VOC emissions can be controlled by changes in operating parameters is inadequate. It must state, with evidentiary support, that the risk of VOC emissions during dilution is minimal for ignitable wastes now subject to the deactivation standard, or it must require actions to minimize that risk.

2. Corrosive Wastes

[4] The EPA asserts in its brief that the *sole* problem posed by corrosive wastes is their corrosiveness: "[T]here are no hazardous constituents in the waste." Brief for Respondent at 94. Counsel for the EPA made essentially the same representation at oral argument. But NRDC petitioners come to a different conclusion. They point to the proposed rule, see 54 Fed.Reg. at 48,423 ("The Agency prefers neutralization of corrosive wastes over simple dilution because dilution simply creates a larger volume of wastes but does not treat or remove hazardous constituents in the wastes."), and a statement from the EPA's BDAT Background Document stating that some corrosive wastes do in fact possess hazardous constituents beyond their potential for corrosion. See BDAT Background Document at 3-2, *reprinted in* J.A. at 485 ("Typically, corrosive wastes that are disposed of by deep well injection are likely to contain toxic organics, whereas landfilled wastes are likely (38 percent) to contain heavy metals."); see also *id.* at 3-7, *reprinted in* J.A. at 490 (residue from neutralized corrosive wastes can exhibit the characteristic of EP toxicity). NRDC petitioners acknowledge that corrosive wastes can be treated effectively by mixing acid and alkaline wastes; but they object to dilution with water because it will not treat the toxic constituents they claim are present in corrosive wastes. Reply Brief for NRDC petitioners at 15.

The final regulations themselves are somewhat ambiguous on the question of the presence of hazardous constituents. In discussing the deactivation standard applied to acids and alkalines, the EPA states that "many [corrosive] wastes also are hazardous for other reasons, and may require that additional treatment processes be employed besides neutralization, incineration or recovery." 55 Fed.Reg. at 22,549. The Agency also explains that

[c]orrosivity is not defined in the same way EP Toxic wastes are defined. Corrosivity is not based on a toxic constituent, where the environmental concern is mass-loading in the environment. With respect to the issue of toxics present in these corrosive wastes, EPA notes that if a corrosive waste also exhibits the toxicity characteristic, it must be treated to meet the treatment standard for the toxic constituent as well....

Id. This explanation begs the question of what is required if the toxic constituent is ***18 **70** present in insufficient quantities to cause the waste to be classified as EP toxic as well as corrosive, but in sufficient quantities to engage section 3004(m)'s concerns over residual effects.

We agree with the EPA that dilution can be an acceptable form of treatment of corrosive wastes. But in the face of this record, we cannot rely on the assertions made in the EPA's brief and oral argument that corrosive wastes pose no hazards other than those presented by this characteristic. If, however, the facts will support these assurances, the EPA may cure this defect and meet the requirements of section 3004(m) with a statement, backed by evidence, that the corrosive wastes subject to the deactivation standard do not contain hazardous constituents that pose a threat to human health and the environment. If such a statement may be made, the Agency should be able to revise its rulemaking prior to the issuance of the mandate in this case.

3. Reactive Wastes

[5] With regard to reactive wastes, we have a problem of a different kind. Although, in the final regulations and in its brief, the EPA spoke of ICR wastes generally when it confessed that hazardous constituents might remain in some wastes following deactivation, see 55 Fed.Reg. at 22,655-56; Brief for Respondent at 96-97, we find nothing in the proposed or final regulations to suggest that reactive wastes contain such constituents, other than reactive cyanides and sulfides for which the EPA ordered technological treatment. Nor have NRDC petitioners identified any. Therefore, we have no basis for

vacating the use of the deactivation standard for the remaining subcategories of reactive wastes because of the threat of migration of hazardous constituents.

The EPA, however, has only partially addressed the problem, raised in the proposed rule, of the effect of dilution on reactive wastes—that those wastes could display their reactive characteristic in the process of dilution. See 54 Fed.Reg. at 48,426. See also BDAT Background Document at 4-3, *reprinted in* J.A. at 503 (water reactives “(1) react violently with water; (2) form potentially explosive mixtures with water; or (3) when mixed with water, generate toxic gases, vapors, or fumes in a quantity sufficient to present a danger to human health or the environment.”). In the final regulations, based on comments received, the EPA suggested that dilution with “certain organic liquids” prior to dilution with water would remove the risk of a violent reaction in the three subcategories of reactive wastes for which the deactivation treatment standard is permitted, allowing subsequent incineration or chemical treatment. 55 Fed.Reg. at 22,553. The Agency noted that it was “not restricting the use of this practice” for any reactive waste. *Id.*

The final regulations thus offer no assurance that dilution of explosive, water reactive, or other reactive wastes will not create a risk of violent reaction. The final regulations state that the Agency will not prohibit the practice of diluting wastes with other materials to reduce the risk of reaction, and suggest that this might be a useful step to take prior to technological treatment. This ignores the reality of the EPA's deactivation standard: Dilution of these wastes by any method is permissible if it removes the characteristic.

We grant, on narrow grounds, the petition for review as to reactive wastes. The Agency must limit dilution to methods that will curb the risk of violent reactions, mandate preliminary steps to prevent such reactions, require a technological treatment, or find, with the backing of evidence, that there is no significant risk of reaction present for any of the three subcategories of reactive wastes for which deactivation is a permissible form of treatment.

* * *

Finally, contrary to what the EPA suggests, it will not suffice that the Agency promises to fully address certain unresolved problems of hazardous constituents in future rulemakings. In enacting the 1984 Amendments, Congress imposed very strict deadlines. Moreover, it has chosen to enforce them by decreeing that any hazardous ***19 **71** waste that is not covered by a valid regulation within the date specified will be denied land disposal. We understand the enormous difficulties that the Agency has undoubtedly faced, given competing obligations and the complexity of the task. Nevertheless, we cannot treat the final rule as other than that—the EPA's final response to the task entrusted to it by Congress. *Cf. State of Colorado v. Dep't of Interior*, 880 F.2d 481, 485 (D.C.Cir.1989) (regulations promulgated by the deadline “constitute the [Agency's] complete response in compliance with the statutory requirements.”).

III. THE EPA'S DILUTION RULES

[6] The issues that we next face focus on challenges to the EPA's new dilution permissions, formulated to integrate RCRA requirements with Clean Water Act (“CWA”) treatment systems and deep injection wells regulated pursuant to the Safe Drinking Water Act (“SDWA”). Contemporaneously with the promulgation of the third-third rule, the EPA amended a rule that had prohibited dilution of wastes in lieu of treatment. Pursuant to the amended rule, centralized CWA treatment systems may aggregate certain characteristic waste streams; the aggregation results in dilution that purportedly removes the hazardous characteristic without treatment. Under this new rule, dilution is allowed where the EPA has not specified a particular treatment method and where the CWA system includes a treatment protocol addressed to the types of characteristic wastes being aggregated. As a consequence of this rule, CWA treatment facilities may continue to use unlined surface impoundments as part of their treatment trains. The EPA also promulgated a new rule that permits the operators of deep injection wells to dilute all characteristic wastes, in lieu of treatment, prior to underground injection.

NRDC petitioners contend that aggregation and dilution of characteristic wastes in CWA facilities, in lieu of treatment, is inconsistent with the requirements for hazardous waste management under RCRA. According to the NRDC, under RCRA subtitle C, solid waste is subject to RCRA's treatment requirements at the moment it exhibits a hazardous characteristic; and the waste may leave the RCRA system only when treated pursuant to RCRA section 3004(m)(1) or when disposed in a facility meeting the no migration requirement of RCRA section 3004(g). Because surface impoundments are technically “land disposal” facilities, NRDC petitioners argue that placement of “decharacterized” wastes in these CWA

impoundments before treatment pursuant to section 3004(m) violates RCRA's land ban. Similarly, NRDC petitioners assert that the rule permitting dilution in lieu of treatment prior to deep well injection violates RCRA because it allows land disposal of untreated hazardous wastes. The Fertilizer Institute argues that the EPA's new interpretive guidance for the dilution prohibitions should be struck down because they were promulgated without adequate notice and comment and that the new dilution prohibition is overly restrictive.

For reasons that will follow, we grant in part and deny in part the challenges of NRDC petitioners; and we deny *in toto* the claims raised by the Fertilizer Institute. We hold that the new CWA dilution permission is valid where the waste is decharacterized prior to placement in a CWA surface impoundment and subsequently treated in full conformity with section 3004(m)(1) standards. Aggregation prior to treatment is not per se unacceptable. Aggregation itself occurs in tanks and is, therefore, not "land disposal"; and RCRA does not *require* treatment before aggregation.

To the extent that aggregation in tanks and dilution results in the removal of the waste's characteristic and the minimization of the toxicity of the constituents as required under section 3004(m), all that RCRA commands has been achieved. However, where aggregation and dilution does not eliminate the characteristic or (more likely) does not minimize the toxicity of the constituents, then RCRA requires further treatment.

***20 **72** In those instances where aggregation and dilution result in the elimination of the characteristic, but the toxicity of the constituents has not been minimized, the required further treatment of the constituents may occur after the waste leaves the CWA tank and enters the surface impoundment.

^{EN4} Although a surface impoundment is technically a form of "land disposal," and treatment therein normally would be at odds with the commands of RCRA, this approach is nonetheless acceptable because RCRA requires some accommodation with CWA. However, in all other respects, treatment of solid wastes in a CWA surface impoundment must meet RCRA requirements prior to ultimate discharge into waters of the United States or publicly owned treatment works ("POTWs"). If the treatment in the CWA surface impoundment succeeds in removing the toxicity to the extent 3004(m)(1) would have required, then RCRA does not require a separate treatment regimen. In other words, what leaves a CWA treatment facility can be no more toxic than if the waste streams were individually treated pursuant to the RCRA treatment standards.

FN4. Where aggregation and dilution does not eliminate the characteristic, the waste is still technically "hazardous" and cannot be placed (even temporarily) in an unlined CWA surface impoundment.

Applying the same principles to the deep injection well rule, we hold that dilution is permissible prior to injection only where dilution itself fully meets the section 3004(m)(1) standards.

A. Clean Water Act Treatment Systems

1. Background

The Federal Water Pollution Control Act, popularly known as the Clean Water Act, establishes a comprehensive treatment regime to eliminate "the discharge of pollutants into the navigable waters" of the United States. CWA § 101(a)(1), 33 U.S.C. § 1251 (1988). In general, the CWA prohibits the discharge of any pollutant into the waters of the United States. CWA § 301(a), 33 U.S.C. § 1311(a) (1988). "This basic rule admits of a critical exception—the discharge of pollutants is permitted if the source obtains and complies with a permit that limits the amounts and kinds of pollutants which can lawfully be discharged." *NRDC v. EPA*, 822 F.2d 104, 108 (D.C.Cir.1987). Regulations for permits are established through the Clean Water Act effluent guidelines and pretreatment standards and are applied through the National Pollutant Discharge Elimination System ("NPDES"); permits are issued thereunder to qualifying owners and operators of facilities that discharge into waters of the United States or POTWs. See CWA §§ 401, 402, 33 U.S.C. §§ 1341, 1342 (1988).

Treatment facilities operating pursuant to the CWA often receive waste streams from many sources, and generally these streams are combined for centralized treatment. Following aggregation, the facilities sometimes place the combined stream in unlined surface impoundments as part of the CWA treatment

train. These impoundments do not meet RCRA subtitle C standards and they are regulated solely under RCRA subtitle D (solid wastes). However, as the EPA noted in the final rule, the use of surface impoundments for solid wastes clearly implicates the land ban under RCRA. See 55 Fed.Reg. at 22,657. The CWA treatment facilities at issue here do not handle listed hazardous wastes; thus, prior to the third-third proceeding, which classified and identified the characteristic hazardous wastes, the use of an unlined surface impoundment did not implicate RCRA at all.

In addition, under RCRA rules prior to the third-third proceeding, the EPA prohibited dilution of any hazardous waste. Thus, once a waste was determined to be hazardous, it had to be "treated" under RCRA; dilution was not a form of treatment, nor could it be used to avoid RCRA's treatment rules:

No generator, transporter, handler, or owner or operator of a treatment, storage, or disposal facility shall in any way dilute a restricted waste or the residual from treatment of a restricted waste as a ***21 **73** substitute for adequate treatment to achieve compliance with Subpart D of this part, to circumvent the effective date of a prohibition in subpart C of this part, to otherwise avoid a prohibition in subpart C of this part, or to circumvent a land disposal prohibition imposed by RCRA section 3004.

40 C.F.R. § 268.3 (1989); see also, e.g., Land Disposal Restrictions for Certain "California List" Hazardous Wastes, 52 Fed.Reg. 25,760, 25,778 (1987) ("EPA [is] amend[ing] the § 268.3 dilution prohibition ... to include dilution to avoid a prohibition in Subpart C of Part 268 (e.g., a dilution to below the restrictions levels for the California list wastes) and dilution to circumvent the effective date of a Subpart C prohibition on land disposal."). The EPA specifically noted, however, that it did not intend to prohibit "legitimate aggregation of waste streams (e.g., wastewaters) to facilitate centralized treatment." *Id.*

Although CWA treatment facilities handled characteristic wastes before the adoption of the third-third rule, there were no land-ban requirements under RCRA directed at these wastes. Thus, as to these wastes, CWA facilities faced no restrictions under RCRA prior to the third-third rule. After promulgation of the third-third rule, however, CWA facilities handling characteristic wastes became subject to potential regulation under RCRA's subtitle C impoundment and land-ban requirements.

For listed wastes, there are generally no overlapping CWA and RCRA treatment requirements for wastewater ultimately discharged to a water of the United States or POTW.... Some of these facilities, however, generate waste which exhibits a hazardous characteristic but after mixing with other waste streams ceases to exhibit that characteristic prior to placement in a subtitle D surface impoundment which is part of the wastewater treatment train. These surface impoundments are land disposal units for purpose of LDR prohibitions. The practice of mixing could thus trigger LDR dilution rules.

55 Fed.Reg. at 22,657. The EPA noted that, if these CWA facilities were required to meet RCRA standards fully, this "would create significant regulatory disruption," *id.*, because each facility would be forced "either to (1) treat the waste prior to placement in the surface impoundment, (2) obtain a 'no migration['] variance, (3) comply with section 3005(j)(11) [setting standards for surface impoundments which treat hazardous wastes,] or (4) install tank treatment instead of using surface impoundments," *id.* n. 14.

To meet its concern over forcing CWA facilities to meet RCRA's subtitle C requirements, the EPA amended section 268.3. The amendment provides that CWA treatment facilities do not violate section 268.3 when they aggregate characteristic wastes for which no specific treatment method has been detailed with other waste streams and thereby dilute the wastes to below the characteristic level.

Dilution of wastes that are hazardous only because they exhibit a characteristic in a treatment system which treats wastes subsequently discharged to a water of the United States pursuant to a permit issued under section 402 of the Clean Water Act (CWA) or which treats wastes for purposes of pretreatment requirements under section 307 of the CWA is not impermissible dilution for purposes of this section unless a method has been specified as the treatment standard in § 268.42.

40 C.F.R. § 268.3(b) (1991).^{FN5} The phrase "unless a method has been specified as the treatment standard in § 268.42" makes clear that dilution is permitted only for those waste streams that the EPA has otherwise permitted to be "treated" by dilution, that is, ICR wastes, *and* those EP toxic metal wastes for which the EPA has required treatment to a specific level (as opposed to by a specific method).^{FN6}

Because *22 **74 this dilution removes the characteristic prior to placement in the unlined surface impoundment, the EPA claims that RCRA is satisfied-no land disposal of "hazardous waste" occurs.

FN5. The former § 268.3 was renumbered § 268.3(a).

FN6. See 40 C.F.R. § 268.41 (1991) (listing EP toxic metal characteristic wastes for which a treatment level has been specified). By contrast, a CWA facility could not aggregate a stream that was hazardous because it was characterized as a high total organic compound ignitable nonwastewater. See 55 Fed.Reg. at 22,657; *id.* at 22,544 (requiring incineration of high total organic compound ignitable nonwastewaters).

NRDC petitioners challenge the amendment permitting dilution before wastes are placed in CWA surface impoundments. Because RCRA requires treatment before any land disposal (unless the land disposal facility wins a no-migration finding) and because CWA surface impoundments are "land disposal facilities," merely diluting the characteristic wastes to remove the characteristic does not satisfy the statute.

2. Analysis

We already have held that RCRA section 3004(m)(1) requires treatment both to remove the characteristic *and* to substantially reduce the toxicity of *all* hazardous constituents present in the characteristic waste.^{FN7} The treatment standards are the core of RCRA's hazardous waste management scheme, and nothing in RCRA or the CWA permits the EPA to establish different treatment standards when wastewaters are treated in CWA systems instead of facilities operated solely to RCRA standards. Nevertheless, Congress, when enacting RCRA, was cognizant of the substantial development of CWA systems, and, thus, permitted regulatory "accommodation" of RCRA and CWA systems. Thus, we agree with the EPA that, under RCRA, diluted formerly characteristic wastes may be placed in subtitle D surface impoundments which are part of an integrated CWA treatment train. However, in order for true "accommodation" to be accomplished, we find that RCRA treatment requirements cannot be ignored merely because CWA is implicated; that is, the CWA does not *override* RCRA. Thus, we hold that, whenever wastes are put in CWA surface impoundments before they have been treated pursuant to RCRA to reduce the toxicity of all hazardous constituents, these wastes must be so treated before exiting the CWA treatment facilities. In other words, CWA facilities handling characteristic wastes must remove the characteristic and decrease the toxicity of the waste's hazardous constituents *to the same degree* that treatment outside a CWA system would.

FN7. "No amount of agency expertise" can change the meaning of the statute Congress enacted here. *Board of Governors, Federal Reserve System v. Dimension Fin. Corp.*, 474 U.S. 361, 368, 106 S.Ct. 681, 685-86, 88 L.Ed.2d 691 (1986).

NRDC petitioners and the EPA disagree primarily because they each view differently the waste stream after it has been aggregated but before it has been placed in the CWA surface impoundment. The EPA suggests that, because the formerly characteristic wastes no longer exhibit the characteristic which classifies the waste as "hazardous," no impermissible land disposal of hazardous wastes occurs. By contrast, NRDC petitioners see that hazardous wastes are handled in a way that does *not* meet the requirements of section 3004(m)(1) and are then land disposed. When a waste which is hazardous because of some constituent, for example a metals-bearing wastewater, is diluted, the *concentration* of the metals is decreased, but dilution does not prevent any of the metals from entering the environment.

We begin with the definition of section 3004(m)(1), which the EPA has conceded means elimination of the hazardous characteristic *and* reduction of all the hazardous constituents. The EPA cannot colorably claim that RCRA permits lesser treatment in this part of the case than in the first part of this case. It is also conceded that the individual waste streams sent to the CWA treatment facility are, before aggregation, hazardous wastes. Therefore, the wastes must be treated pursuant to the 3004(m)(1)

standards. The EPA's rejoinder, that because the wastes being placed in the surface impoundment are no longer "hazardous" they need not be treated, is exactly the argument industry petitioners previously made and the EPA rejected. RCRA *23 **75 attaches to "hazardous wastes" that are destined for land disposal facilities and the statute requires complete treatment. The EPA cannot take a position here radically at odds with its prior position. RCRA requires treatment that removes the characteristic and substantially reduces the toxicity of all hazardous constituents.

Nevertheless, the EPA is correct that Congress, when enacting RCRA, recognized that prior environmental statutes, such as the Clean Water Act, would need to be accommodated.

The Administrator shall integrate all provisions of this chapter for purposes of administration and enforcement and shall avoid duplication, to the maximum extent practicable, with the appropriate provisions of the ... Federal Water Pollution Control Act [and] the Safe Drinking Water Act ..., and such other Acts of Congress as grant regulatory authority to the Administrator. Such integration shall be effected only to the extent that it can be done in a manner consistent with the goals and policies expressed in this chapter and in the other acts referred to in this subsection.

RCRA § 1006(b)(1), 42 U.S.C. § 6905(b)(1) (1988); see 55 Fed.Reg. at 22,654, 22,657. The EPA's decision to permit "decharacterized" hazardous wastes to be deposited in surface impoundments as part of continuing treatment is a reasonable accommodation.

We wish to make explicit the impact of our holding because we find merit in significant parts of both parties' positions. First, where dilution to remove the characteristic *meets* the definition of treatment under section 3004(m)(1), nothing more is required. Second, where dilution removes the characteristic but does not "treat" the waste by reducing the toxicity of hazardous constituents, then the decharacterized waste may be placed in a surface impoundment *if and only if* the resulting CWA treatment fully complies with RCRA § 3004(m)(1). In other words, the material that comes out of CWA treatment facilities that employ surface impoundments must remove the hazardous constituents to the same extent that any other treatment facility that complies with RCRA does.^{FN8}

^{FN8}. To illustrate RCRA's focus on treatment of the hazardous constituents in a waste, consider a waste stream hazardous by characteristic for cadmium. Both the characteristic and treatment levels for the hazardous waste are 1.0 mg/l. Assume that a stream of 3.0 mg/l daily deposits 1000 liters into a treatment facility. A RCRA treatment facility would remove at least 2000 mg of cadmium from the waste stream. A CWA treatment facility must do the same-although to do so it will have to process at least three times as much water (because dilution of 1000 liters of 3.0 mg/l to just below the characteristic level will yield just over 3000 liters). Allowing dilution alone would decharacterize the waste, but it would not reduce the total amount of cadmium entering the environment. One thousand liters of 3.0 mg/l cadmium yields the same amount of hazardous constituent as 3000 liters of 1.0 mg/l cadmium.

This result satisfies RCRA's requirement that any accommodation "be done in a manner consistent with the goals and policies" of *both* RCRA and CWA, RCRA § 1006(b)(1); the EPA's approach does not.^{FN9} First, under this approach, treatment is accomplished in conformance with section 3004(m)(1). While section 1006(b)(1) requires some accommodation with existing treatment regimes, that section by its terms does not permit the substantive standards of RCRA to be compromised. The treatment standards are the heart of RCRA's hazardous waste management program. Section 3004(g), 42 U.S.C. § 6924(g), permits land disposal only after treatment or in a facility which meets the strong no-migration standard. The Conference Report stressed that "through the vigorous implementation of the objectives of this Act, ... advanced treatment, recycling, incineration and other hazardous waste control technologies should replace *24 **76 land disposal." H.R.Conf.Rep. No. 1133, 98th Cong., 2d Sess. 80 (1984); see *also* 130 Cong.Rec. 29,529 (1984) ("The regulatory program mandated by this bill, if conscientiously implemented, will force a massive change in this country's disposal practices: That is, away from land disposal and toward appropriate recycling, waste reduction and treatment."). Second, nothing in RCRA demands, as NRDC petitioners would suggest, that treatment occur prior to aggregation or dilution or that dilution not be a step in the treatment process. Third, the diluted streams deposited in the surface

impoundment are not "hazardous" when placed there, and they are not held there permanently.

FN9. "The traditional deference courts pay to agency interpretation is not to be applied to alter the clearly expressed intent of Congress." Board of Governors, 474 U.S. at 368, 106 S.Ct. at 685-86; see also K Mart Corp. v. Cartier, Inc., 486 U.S. 281, 293-94, 108 S.Ct. 1811, 1818-19, 100 L.Ed.2d 313 (1988). Section 1006(b)(1) requires that any "accommodation" remain true to the goals of all of the relevant environmental statutes; RCRA's treatment standards, not the lowest common denominator, must survive any attempt to integrate the statutes.

In this last regard, this case differs from API, 906 F.2d 729. In that case, which considered aspects of the first-third rule, several industry representatives challenged the EPA's decision not to consider land treatment as a form of treatment for hazardous wastes under section 3004(m)(1). The court affirmed the EPA's action, ruling that land treatment was a form of land disposal and that "RCRA clearly specifies ... that hazardous wastes must be treated *before* being land disposed." Id. at 735. The API court also noted that "[p]ursuant to 42 U.S.C. § 6925(j)(11), Congress allowed surface impoundments (a type of land disposal unit under § 6924(k)) to receive, on an interim basis, hazardous wastes that have not been treated to meet § 6924(m) standards" *only* so long as the impoundments met certain minimum technological standards. Id. at 736; see RCRA § 3004(o)(1), 42 U.S.C. § 6924(o)(1) (1988) (requiring double-lining, leachate collection and groundwater monitoring). Here, however, the liquids, at the time they are placed in the surface impoundments, are not technically "hazardous wastes," although they are fully subject to RCRA's strictures because they were hazardous and have not yet met the treatment requirements. Additionally, the liquids here are only placed in the surface impoundments temporarily; in API, the "land treatment" represented the final resting place of the hazardous wastes.

In sum, section 3004(m)(1)'s treatment standards lie at the core of RCRA subtitle C and require that any hazardous waste be treated in such a way that hazardous constituents are removed from the waste before it enters the environment. Nonetheless, RCRA section 1006(b)(1) contemplates some accommodation with existing CWA systems; to strictly apply each RCRA prohibition would nullify section 1006(b)(1) and, we think, would be untrue to Congress's intent. Thus, allowing temporary deposit of decharacterized wastes is a reasonable accommodation so long as complete circumvention of the treatment standards does not occur. Finally, we emphasize that the result here is unique to CWA systems. Nothing herein permits the placement (temporarily or otherwise) of hazardous wastes or formerly hazardous wastes which have not yet met section 3004(m)(1) treatment standards into non-subtitle C surface impoundments *except* in existing CWA treatment systems which ultimately treat the streams to full section 3004(m)(1) standards.^{FN10}

FN10. Furthermore, as the EPA concedes in its brief, if the stream entering the surface impoundment is not decharacterized, then RCRA requires the impoundment to meet the subtitle C requirements. Similarly, any hazardous precipitate or other hazardous material generated during CWA treatment must be managed in accord with subtitle C.

B. Deep Injection Wells Regulated Under the Safe Drinking Water Act

1. Generally

[7] In the final third-third rule, the EPA promulgated a dilution rule for deep injection well facilities similar to the CWA treatment facilities rule just considered. Under new 40 C.F.R. § 148.1(d) (1991), operators of deep injection wells ^{FN11} are permitted to dilute characteristic wastes to remove the characteristic prior to injecting *25 **77 those wastes. Unlike the CWA dilution permission, operators of deep injection wells may dilute all characteristic hazardous wastes, *including* those for which a specific treatment method is required (for example, high total organic compound ignitable wastes, which otherwise must be incinerated or utilized as fuel substitute). *Cf.* 40 C.F.R. § 268.3(b) (waste may not be diluted in a CWA system if "a method has been specified as the treatment standard in § 268.42"). NRDC petitioners again charge that the rule violates RCRA because hazardous wastes are land disposed before being treated to section 3004(m)(1) standards; the EPA argues that the rule meets RCRA because no

"hazardous" wastes are injected and that the rule is a necessary accommodation with the SDWA, which governs deep well injection generally. Consistent with our resolution of the Clean Water Act systems issue, we hold that dilution followed by injection into a deep well is permissible only where dilution itself fully meets section 3004(m)(1) standards or where the waste will subsequently meet section 3004(m)(1) standards. Because deep well injection is permanent land disposal, our holding in effect permits diluted decharacterized wastes to be deep well injected only when dilution meets the section 3004(m)(1) standard or where the deep well secures a no-migration variance.

FN11. The deep injection wells at issue here, Class I deep wells, inject wastewaters into geologic formations *below* the lowest formation containing a source of drinking water. See 40 C.F.R. 144.6(a) (1991).

Before the third-third rule, many deep injection wells handled characteristic wastes without being subject to subtitle C requirements. Therefore, the EPA promulgated section 148.1(d) for reasons similar to those it offered to support section 268.3(b). In general, the EPA claimed that the rule was required to protect existing SDWA systems. "The large facilities that have these wells often mix waste streams and through this mixing remove the characteristic prior to disposal. A dilution prohibition would require restructuring of these facilities." 55 Fed.Reg. at 22,658.

The EPA also argued that treatment to RCRA standards would provide no environmental benefit over dilution and injection. The "EPA believes that the application of dilution rules to these wastes would not further minimize threats to human health and the environment. Specifically, EPA believes that disposal of these metals by underground injection at the characteristic level is as sound as the treatment option." *Id.*; see also *id.* (quoting floor statement of Senator Bentsen commenting on safety of underground injection). The EPA additionally concluded that all injection wells would meet the no-migration requirement, and the Agency therefore held that it would not require individual no-migration showings. *Id.*

We reject each of the EPA's proffered justifications. Unlike the CWA system context, where the hazardous wastes can be eventually treated to RCRA standards, injected wastes are not treated further. Section 1006(b)(1) cannot be used to wholly circumvent RCRA. To permit deep well injection operators to dilute all characteristic wastes to below the characteristic level and then to inject them would completely avoid the balance Congress struck in RCRA. Specifically, Congress required that any land disposal of hazardous waste be preceded by treatment to section 3004(m)(1) standards *or* by a site-specific no-migration finding. Although we have found the temporary placement of decharacterized wastes in CWA surface impoundments, which admittedly are land disposal facilities, to be a reasonable accommodation with the CWA, that holding turns on the prospect for future treatment so that the core of RCRA is not voided. Here, no treatment follows decharacterization.

Additionally, this court previously has rejected the argument that SDWA standards meet RCRA requirements. In NRDC v. EPA, 907 F.2d 1146 (D.C.Cir.1990) (*per curiam*), the industry petitioners claimed that the EPA's deep injection well standards there at issue were too stringent and argued that the SDWA provided sufficient protection. The court found against the industry petitioners by referring to the differing purposes of the two statutes.

The texts of RCRA and SDWA provide no support for the [Chemical Manufacturing Association]'s identity argument. SDWA protects sources of drinking water; ***26 **78** RCRA protects human health and the environment. SDWA states that underground injection must not endanger drinking water sources; RCRA states that there must be no migration of hazardous constituents from the injection zone for as long as the wastes remain hazardous; it makes no reference to anything outside the injection zone that might be threatened by such a migration. The statutory texts provide no evidence whatsoever that Congress intended that the RCRA and SDWA standards be identical.

Id. at 1157; see also *id.* (specifically rejecting reliance on Senator Bentsen's floor statements). Nothing the EPA has pointed to in the record suggests that deep injection wells *will* contain the diluted wastes (such as diluted metal-bearing streams). The EPA refers to its Background Document, but its statement there refers to no studies or other hard evidence the Agency has accumulated.

EPA believes that deep well disposal of these metals at concentrations below the characteristic level may be as sound as the treatment option. Native formation fluid injection zones already contain substantial concentrations of these metals. The addition of more metal-bearing fluid below characteristic levels would not change this general feature of the subsurface environment. Moreover, the propensity of such metals to adhere to and thereby generally stay contained in the injection zones make the practice of deep well disposal of such constituents an environmentally sound one.

Background Document, supra, at 269, reprinted in J.A. at 405.

The EPA's second argument, that modification of deep injection well systems to require either pretreatment of characteristic wastes or issuance of case-by-case no-migration permits would be too burdensome, is simply irrelevant. Deep well injection is a form of land disposal. The statute provides an exemption for systems which must be retrofitted, other than a national capacity variance. See RCRA § 3004(h), 42 U.S.C. § 6924(h) (1988) (the EPA may suspend regulations for up to two years where inadequate treatment capacity exists).

Finally, Congress decided that no-migration showings were the only alternative to treatment under section 3004(m)(1). See RCRA § 3004(g), 42 U.S.C. § 6924(g). The EPA's claim that its experience showed, in general, that deep injection wells would win no-migration variances is not relevant under Congress's requirement that each site be certified, see RCRA § 3004(g), 42 U.S.C. § 6924(g), and is belied by the EPA's record evidence, see United States Environmental Protection Agency, State-of-the-Art Report, Injection of Hazardous Wastes into Deep Wells (1986) ("This survey also indicates that additional research is needed in all areas of abiotic and biotic waste interactions before definitive explanations can be given on their long-term fate."), reprinted in J.A. at 248.

2. The Treatment Standard for Lead Wastewaters

[8] In another example of its decision to "accommodate" treatment regimes based on the SDWA, the EPA set the treatment standard for lead wastewaters at the characteristic level of 5.0 milligrams per liter (mg/l) lead. In accord with our decisions that accommodation cannot moot the 3004(m)(1) treatment standard, we hold that the 5.0 mg/l standard violates RCRA, and we remand that part of the rule to the Agency for further consideration.

In the proposed rule, the EPA suggested a treatment standard of 0.04 mg/l for D008 lead wastewaters. See 55 Fed.Reg. at 22,567. Many commenters submitted data challenging that level as too low, but all of the data did suggest that optimal treatment could achieve a level at least an order of magnitude lower than the 5.0 mg/l characteristic level. See *id.* (reviewing data submissions). In the final rule, the EPA conceded that, while its proposed treatment level could not be achieved, a treatment level below the characteristic level was possible. "Based on the evaluation of all of the wastewaters data received from comments, as well as the various Clean Water Act, effluent limitation guidelines and pretreatment*27 **79 standards regulating lead ..., the Agency concludes that well designed and well operated treatment systems can achieve total concentrations of lead lower than the characteristic level." *Id.* The EPA's only reason for rejecting a treatment standard below the characteristic level was a reference to its decision, considered previously, that the Agency could integrate RCRA with other regulatory programs.

As explained in Section III.D, however, EPA has determined not to require hazardous wastewaters to be treated to levels less than the characteristic level in order to avoid significant and potentially environmentally counterproductive disruptions to the NPDES/pretreatment and UIC [deep injection well] programs.

Id. (referring to 55 Fed.Reg. at 22,651).

The keys to this argument largely have been examined previously. The treatment standards embodied in section 3004(m)(1) are the heart of RCRA; section 1006(b)(1) does not permit concern for existing treatment regimes to override RCRA's substantive requirements.

The EPA's approach on the record is also somewhat flawed. Its reference to the discussion of point of disposal versus point of generation seems to suggest that the EPA will not consider the waste hazardous if it has been diluted to below the characteristic level in a CWA treatment facility. But, the EPA did not

follow this approach in the final rule; instead, it stated that "the Agency is promulgating the treatment standard at the characteristic level, thereby treaters and generators of D008 wastewaters may select any precipitant in order to meet the characteristic level." *Id.* Therefore, the EPA has set a treatment level and, by contrast, *has not* exempted lead wastewaters from subtitle C regulation until such time as they might be land disposed (i.e., a point of disposal approach). Because the EPA has conceded that treatment to 0.4 mg/l is possible, its 5.0 mg/l standard violates section 3004(m)(1)'s requirement that the EPA select levels or methods of treatment "so that short-term and long-term threats to human health and the environment are *minimized*." RCRA § 3004(m)(1), 42 U.S.C. § 6924(m)(1) (emphasis added).

C. The Fertilizer Institute's Challenges to the Dilution Rules

The Fertilizer Institute challenges two aspects of the third-third rule that clarify the scope of the dilution prohibition of Rule 268.3(a).^{FN12} The EPA stated in the final rule that impermissible dilution occurred *whenever* waste streams are combined *and* the combined stream is not treated in a manner appropriate for each individual waste.^{FN13} Petitioner claims that the EPA's statements constitute "rules"^{FN14} that were issued without notice and opportunity to comment and are impermissibly vague. Additionally, petitioner asserts that Rule 268.3(b) arbitrarily excludes from its scope listed wastes with concentration-based treatment standards.

FN12. Petitioner does not challenge Rule 268.3(b), discussed earlier, which permits certain dilution.

FN13. This, of course, does not apply in the deep injection well context just discussed.

FN14. In its brief, the Fertilizer Institute repeatedly calls these statements the "two new impermissible dilution rules." They were not, however, codified by the EPA in any way.

The Fertilizer Institute is concerned primarily with the operation of central treatment facilities designed pursuant to the CWA. These facilities, as discussed above, often accumulate waste streams for centralized treatment. The EPA's statements clarify that the CWA treatment facility must utilize treatment appropriate for *all* of the incoming waste streams. The prohibitory part of Rule 268.3 states that dilution "as a substitute for adequate treatment ..., to circumvent the effective date of a prohibition ..., to otherwise avoid a prohibition, ... or to circumvent a land disposal prohibition" is impermissible. 40 C.F.R. § 268.3(a). In the final rule, the EPA stated that the section meant that, "[a]s a general rule, if the wastes are all *legitimately amenable* to the same type of treatment, and this method of treatment is ***28 *80** utilized for the aggregated wastes, the aggregation step does not constitute impermissible dilution." 55 Fed.Reg. at 22,532 (emphasis added). The EPA also offered several examples of the operation of this rule. Petitioner focuses on the third example, in which the EPA stated that impermissible dilution occurs where a metals-bearing waste stream is mixed with an organic stream such that the combined stream is no longer characteristic for metals and the combined stream is treated for organics only. *Id.* at 22,666-67.

1. Notice and Opportunity to Comment

[9] The Administrative Procedure Act requires agencies to give the public notice of proposed regulations and an opportunity to participate through submission of comments. 5 U.S.C. § 553(b), (c) (1988). In general, to meet section 553, an agency must "provide sufficient factual detail and rationale for the rule to permit interested parties to comment meaningfully." Florida Power & Light Co. v. United States, 846 F.2d 765, 771 (D.C.Cir.1988), *cert. denied*, 490 U.S. 1045, 109 S.Ct. 1952, 104 L.Ed.2d 422 (1989). Nonetheless, the final regulations need not exactly match those proposed. As this court recently explained in *Shell Oil*, "To avoid the absurdity that the agency can learn from the comments on its proposals only at the peril of starting a new procedural round of commentary, we have held that final rules need only be a 'logical outgrowth' of the proposed regulations." 950 F.2d at 750-51 (internal quotations and citations omitted).

Here, the EPA gave adequate notice. In fact, the Agency explicitly stated in the proposed rule that it considered dilution which met the treatment level without undergoing the required treatment impermissible. 54 Fed.Reg. at 48,494 ("The Agency's concern, echoing Congress's concern in indicating that dilution to avoid proper treatment was impermissible, is that individual prohibited wastes not be mixed with large volumes of other wastes (whether prohibited or not) to meet treatment standards without undergoing treatment that substantially reduces the prohibited wastes' toxicity or mobility.") (citation omitted). As we have stated, dilution cannot eliminate the need to treat each formerly hazardous waste to full compliance with § 3004(m)(1).

In the proposed rule, the EPA also offered several examples of impermissible dilution where a combined waste stream was treated for only one type of waste. In fact, the EPA offered the exact flip of the metals example that the Institute claims was unheralded.

Of course, even where one BDAT constituent is treated to reduce its toxicity or mobility, impermissible dilution might occur. For example, a waste with treatable concentrations of metals as well as extremely high concentrations of hazardous organics could be mixed with large volumes of other metal-bearing wastes for metals treatment. To the extent that the high concentrations of organics are diluted by this treatment to below treatable levels, this would constitute impermissible dilution if there is an appropriate organics treatment technology that could be applied prior to metals treatment.

54 Fed.Reg. at 48,495. Thus, petitioner's argument that the "metals example" constituted a new rule is meritless. The no-dilution principles the Agency proposed were clear-the metals example is a direct application.

Petitioner nonetheless persists and argues that the proposed rule gave no hint that the impermissible dilution rule would turn in part on whether the mixed stream was a characteristic waste or a listed waste. Admittedly, the EPA did not until its final rule contend that deactivation/dilution would be an acceptable form of treatment for many characteristic wastes. Nonetheless, the EPA did note in the proposed rule that the dilution prohibition was limited to cases where dilution was part of the treatment. *See id.* ("EPA believes that the standards of section 3004(m) apply to all wastes destined for a prohibited form of land disposal. It is not permissible to dilute a waste to render it nonhazardous in lieu of proper treatment under section *29 **81 3004(m) (unless dilution is a part of proper treatment under section 3004(m).)"). Thus, the EPA directly foreshadowed its final interpretation.

2. Is the Rule Impermissibly Vague?

[10] The Fertilizer Institute also argues that the EPA's statement that, "[a]s a general rule, if the wastes are all *legitimately amenable* to the same type of treatment, and this method of treatment is utilized for the aggregated wastes, the aggregation step does not constitute impermissible dilution," 55 Fed.Reg. at 22,532 (emphasis added), is impermissibly vague. An agency "has the responsibility to state with ascertainable certainty what is meant by the standards [it] promulgate[s]." *Diamond Roofing Co. v. OSHA*, 528 F.2d 645, 649 (5th Cir.1976). The EPA has satisfied this requirement; therefore, we reject the Institute's challenge. The principle behind the regulation can be easily stated-that combination for centralized treatment is acceptable only where the centralized treatment covers all of the constituent streams-and the "legitimately amenable" language is simply an expression of this principle.

Additionally, the Agency has provided several clarifying examples. Therefore, the meaning of the language has been made applicable to certain concrete cases. Petitioner has not suggested any significant factual circumstance that falls near the edge of coverage which causes the regulated community substantial hardship because of the uncertainty. The Agency and the courts can decide whether the language gives sufficient notice as those circumstances arise. Finally, RCRA contemplates a permitting process through which each individual facility can work with the EPA to determine exactly what dilution would be prohibited. RCRA § 3005, 42 U.S.C. § 6925 (permitting of subtitle C facilities). *Cf. Keffe v. Library of Congress*, 777 F.2d 1573, 1581 (D.C.Cir.1985) (regulation not vague in part because employee could submit proposed activity to Library prior to engaging in it and receive a definitive ruling).

3. Should Rule 268.3(b) Include Listed Wastes for which the EPA has Developed Concentration-Based Treatment Standards?

[11] Rule 268.3(b) permits characteristic wastes for which no method of treatment has been

specified to be aggregated in a CWA facility. The Fertilizer Institute contends that the rule arbitrarily excludes listed wastes for which the EPA has promulgated a concentration-based treatment standard. We reject this argument; the distinction is based on the primary difference between listed wastes and characteristic wastes.

In its brief to this court, the EPA suggests that its decision was not arbitrary because listed wastes are already treated in facilities which meet RCRA requirements. Therefore, because the exemption in section 268.3(b) was motivated primarily by a desire to avoid retrofitting CWA facilities, exclusion of listed wastes was logical because those facilities already had been retrofitted. The EPA also argues that the "derived from" rule ^{FN15} demonstrates that landfill leachates have always been subject to subtitle C regulation. Therefore, any mixing presently occurring would be illegal. Nevertheless, the EPA fails to confront petitioner's contention that CWA facilities which presently are not required to meet RCRA requirements will be forced to do so in two cases: (1) if characteristic wastes are not excluded by Rule 268.3(b), and (2) as new wastes are identified as listed wastes. The latter scenario is not met by the EPA's suggestion that the distinction is based on the cost of retrofitting.

FN15. The derived from rule provided that any substance which was a product of a hazardous waste was itself a hazardous waste. The derived from rule was vacated for inadequate notice and opportunity to comment in *Shell Oil* but has now been repromulgated.

Petitioner's argument nonetheless fails because listed wastes are, in any event, fundamentally different from characteristic wastes. As discussed in Part I of this opinion, listed wastes generally contain a certain substance that is per se harmful (such as arsenic). Dilution does nothing to ***30 **82** remove that element from the waste stream and prevent it from entering the environment where it may reaccumulate. By contrast, some characteristic wastes may be altered permanently by dilution and, hence, it is reasonable to permit aggregation. In these cases, dilution and treatment are one and the same.

The fact that a rule may be justified on alternate grounds, however, will not normally save it from remand. See *SEC v. Chenery Corp.*, 318 U.S. 80, 95, 63 S.Ct. 454, 462-63, 87 L.Ed. 626 (1943). Although the EPA does not offer this argument in its brief, it is well made in the final rule. The EPA explicitly linked its approach to the dilution prohibition to its view that dilution constituted acceptable treatment for some characteristic wastes.

Dilution rules are intended to prohibit dilution in lieu of treatment and to ensure that wastes are treated in appropriate ways. As discussed in the preamble sections on treatment of characteristic wastes, EPA believes the mixing of waste streams to eliminate certain characteristic[s] is appropriate for most wastes which are purely corrosive, or in some cases, reactive or ignitable. As a general matter, these are properties which can effectively be removed by mixing. On the other hand, simple dilution is not effective treatment for toxic constituents. Dilution does not itself remove or treat any toxic constituent from the waste.

55 Fed.Reg. at 22,656. Thus, the EPA has adequately justified excluding listed wastes from the scope of Rule 268.3(b). Cf. *Syracuse Peace Council v. FCC*, 867 F.2d 654, 657 (D.C.Cir.1989) ("if an agency relies on two grounds for a decision, a court may sustain it if one is valid and if the agency would clearly have acted on that ground even if the other were unavailable"), cert. denied, 493 U.S. 1019, 110 S.Ct. 717, 107 L.Ed.2d 737 (1990).

IV. MISCELLANEA

Finally, various petitioners challenge four additional aspects of the third-third rule: (1) its requirement of periodic corroborative waste testing by disposers (industry petitioners); (2) its adoption of the characteristic level as the waste treatment standard for chromium (NRDC petitioners); (3) its exemption of "Bevill" unit residue from RCRA § 3004(m) standards (NRDC petitioners); and (4) its requirement that waste treatment standards be enforced by grab sampling rather than representative sampling (petitioner Chemical Waste Management, Inc.). For the reasons set out below, we uphold as reasonable the EPA's corroborative testing and grab sampling requirements but remand for reconsideration the chromium treatment standard and the Bevill unit exemption.

A. Corroborative Testing

[12] First, industry petitioners challenge the final rule's requirement that disposal facilities periodically test waste that has already been tested and certified to be in compliance either by the waste generator or a third-party treatment facility.^{FN16} The final rule provides:

FN16. This challenge is made by petitioners Chemical Waste Management, Inc., and RSR Corp. and intervenor The Dow Chemical Company.

Under the final approach, treatment and disposal facilities may generally rely on information provided to them by generators or treaters of the waste. However, treatment and disposal facilities must conduct periodic detailed physical and chemical analysis on their waste streams to assure that the appropriate [40 C.F.R.] part 268 treatment standards are being met. Specifically, today's final rule amends the comment in [40 C.F.R.] §§ 264.13 and 265.13 to make it clear that the restricted waste testing requirement (or other frequency approved by the Agency) is not superseded by the ability of the facility to rely on information supplied by the generator or treater. Also, with today's change, § 264.13 more clearly specifies that EPA may, through the permit, require the owner or generator***31** ****83** of a treatment or disposal facility to conduct periodic chemical and physical analysis prior to treatment or other management of wastes.

55 Fed.Reg. at 22,669. Petitioners object to the requirement that disposers conduct periodic waste analysis on the grounds that it is (1) arbitrarily imposed only on off-site disposal facilities, (2) unnecessarily duplicative, and (3) impermissibly vague. We find none of these grounds meritorious.

Initially, we note that the corroborative testing requirement is not, as petitioners contend, discriminatorily imposed only on off-site disposers. As the EPA points out, the quoted language applies equally to disposal on- and off-site. We, therefore, reject petitioners' first ground.

We also reject petitioners' second argument that the requirement is arbitrary and capricious because "duplicative." In its proposed rule, the EPA explained that corroborative testing is desirable "because a crosscheck that treatment has been conducted successfully is needed to ensure that ultimate disposal does not violate the statute and regulations. Corroborative testing will maximize the likelihood of ultimate disposal being legal. The testing will also provide useful records for ascertaining compliance." 54 Fed.Reg. at 48,497. The EPA echoed this rationale in the final rule, explaining that the requirement was "premised on a need to ensure that the LDR requirements are met *prior* to disposal" and noting that "such corroborative testing provides records that may be useful in ascertaining compliance with LDR requirements." 55 Fed.Reg. at 22,669 (emphasis in original).^{FN17} We find the EPA's rationale clearly reasonable and therefore sustain the requirement under *Chevron*. Whether or not corroborative testing is "necessary," it unquestionably promotes compliance with the mandated standards because it subjects the hazardous waste to a second, corroborating analysis at the point the EPA has consistently characterized as the crucial one, immediately before disposal. See *HWTC III*, 886 F.2d at 370 ("[T]he EPA has explicitly stated that the crucial stage in the process, upon which the agency has placed its heaviest reliance, is the point at which the waste reaches the land disposal facility: at this juncture, just prior to land disposal, waste must be rigorously tested to confirm that it is what others have represented it to be and that it may permissibly be land disposed."). As we observed in *HWTC III*: "[I]t is ... not irrational for the EPA to introduce a backup, arguably 'redundant' testing stage" at such a critical point to ensure compliance with mandated treatment standards. *Id.* (citing 51 Fed.Reg. at 40,597).

FN17. The EPA similarly asserts in its brief: "The requirement that disposal facilities do some type of corroborative testing is manifestly reasonable. Such testing of wastes just before they are land disposed assures that the treatment standards have indeed been met." Brief for Respondent at 129 (footnote omitted).

Finally, we do not find the corroborative testing requirement to be impermissibly vague. As the EPA points out, details not set out in the final rule, as, for example, testing frequency, can be resolved on a site-specific, case-by-case basis by the permit writer and the individual waste disposer. See 55 Fed.Reg.

at 22,669; Brief for Respondent at 131-32. If a particular disposer objects to the requirement as actually imposed, it can challenge the requirement at that time. See *HWTC III*, 886 F.2d at 371 (rejecting as "premature" parties' objection to adequacy of waste testing requirement where specific testing procedures were to be addressed in individual waste analysis plans: "We prefer to anticipate that the agency will faithfully execute its responsibilities under the statute, and will impose testing requirements that will guarantee that Congress' purposes in enacting the statute are implemented. If the agency does not live up to this expectation, there will be time and opportunity for petitioners' challenge.").

B. Treatment Standards for Chromium Wastes

[13] Next, NRDC petitioners challenge the treatment standard the EPA set for D007 chromium wastes. In the proposed rule, the EPA, applying a "technology transfer approach," expressed its intent to set the treatment standard for D007 chromium*32 **84 nonwastewaters at .094 mg/l and D007 chromium wastewaters at .32 mg/l. *54 Fed.Reg. at 48,437*. The final rule, however, sets the treatment standard for both waste forms at the characteristic level of 5 mg/l. *55 Fed.Reg. at 22,563-65*. NRDC petitioners assert the EPA reached this decision based on an improper view of the evidence. We agree and, accordingly, direct that on remand the EPA reexamine the appropriate treatment standards for D007 chromium wastes.

In setting the final D007 chromium standard, the EPA considered data submitted by Cyanokem and the Hazardous Waste Treatment Council and concluded they supported a treatment standard at or near the characteristic level. Petitioners assert, and the EPA does not dispute, that the EPA improperly based its calculations on data reflecting both effective and ineffective treatment and inflated the levels supported by the data. Petitioners assert that as a result of this "mathematical wizardry," the EPA incorrectly concluded those data supported a 4.3 mg/l when in fact they indicated a much lower standard, somewhere below 2.1 mg/l. The EPA does not dispute that its calculations were in error. See Brief for Respondent at 105. Nevertheless, the Agency asserts any error was harmless because it did not rely on the cited data or erroneous computations in setting the standard at the characteristic level. We disagree.

The Administrative Procedure Act requires that our review of agency action take "due account ... of the rule of prejudicial error." *5 U.S.C. § 706*. That rule notwithstanding, however, remand is required "when there is substantial doubt that the administrative agency would have reached the same result it did absent [the alleged error]." *Consolidated Gas Supply v. FERC*, 606 F.2d 323, 329 (D.C.Cir.1979). Such doubt exists here. Although the EPA's background document expressly disclaims reliance on the cited data, ^{FN18} the language of the final rule suggests otherwise. In the rule, the EPA states:

^{FN18}. See BDAT Background Document for Chromium Wastes at 4-2 to -3 (J.A. 615-16) ("Cyanokem submitted treatment data for treatment of D007 nonwastewaters.... Because of the deficiencies in these data, they were not used to develop a treatment standard. * * * The Hazardous Waste Treatment Council submitted stabilization treatment data for treatment of D007 nonwastewaters.... [T]hese data were not used to develop the D007 nonwastewater treatment standards.").

The Agency then decided to examine what the treatment standard would be based on all of the data from Cyanokem and the HWTC....

The resultant standard using these combined data was 4.3 mg/l.... The Agency contemplated promulgating the 4.3 mg/l standard as an alternative to the 5.2 mg/l from F006; however, this level is so close to the 5.0 mg/l characteristic level that the Agency does not believe the significant regulatory disruptions and uncertainties inherent in applying direct part 268 regulation to D facilities is warranted.

... As it is, a measurement of 4.3 mg/l ... is approximately 86% of the 5.0 mg/l characteristic level and within the analytical error that may be expected for such an analysis.

As a result of these comments and data, EPA is withdrawing both of the proposed treatment standards for D007 wastes (i.e., the transfer from F006 and from K062). While the Agency contemplated promulgating the 5.2 mg/l F006 standard, it is even closer to the characteristic level

than the 4.3 mg/l calculated using the commenters' data.

55 Fed.Reg. at 22,564. This discussion indicates that the EPA set the D007 standard at the characteristic level at least in part because of that level's proximity to the one it erroneously calculated from the cited data. Thus, we cannot characterize the EPA's computational errors as "harmless" and must remand the issue to the EPA.

C. Exemption of Waste Burned in "Bevill" Units

[14] Next, NRDC petitioners challenge the final rule insofar as it exempts from the section 3004(m)(1) requirements all hazardous waste burned in utility boilers, mining furnaces and cement kilns that qualify as "Bevill" units. In 1980, Congress passed the "Bevill Amendment," which suspended ***33** ****85** "until at least six months after the date of submission of the applicable study required to be conducted ... and after promulgation of regulations" any RCRA regulation of

(i) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste generated primarily from the combustion of coal or other fossil fuels.

(ii) Solid waste from the extraction, beneficiation, and processing of ores and minerals, including phosphate rock and overburden from the mining of uranium ore.

(iii) Cement kiln dust waste.

RCRA § 3001(b)(3)(A), 42 U.S.C. § 6921(b)(3)(A). The EPA has implemented the Bevill Amendment exemptions at 40 C.F.R. § 261.4(b)(4), (7) and (8), ^{FN19} which the final rule expressly incorporates and applies to its disposal restrictions:

FN19. These regulations provide:

(b) *Solid wastes which are not hazardous wastes*. The following solid wastes are not hazardous wastes:

....
(4) Fly ash waste, bottom ash waste, slag waste, and flue gas emission control waste, generated primarily from the combustion of coal or other fossil fuels, except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

....
(7) Solid waste from the extraction, beneficiation, and processing of ores and minerals (including coal, phosphate rock and overburden from the mining of uranium ore), except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste....

(8) Cement kiln dust waste, except as provided by § 266.112 of this chapter for facilities that burn or process hazardous waste.

40 C.F.R. § 261.4(b)(4). Section 266.112 provides that "[a] residue derived from the burning or processing of hazardous waste in a boiler or industrial furnace" is not to be classified as nonhazardous under § 261.4(b)(4), (7), or (8) unless certain express conditions are met including that "[t]he owner or operator demonstrates that the hazardous waste does not significantly affect the residue." 40 C.F.R. § 266.112.

The issues in this rulemaking concerning when hazardous wastes become prohibited from land disposal do not change the status of other regulatory or statutory inclusions or exclusions to the definition of solid or hazardous waste found at 40 CFR 261.2.6. These provisions can override the LDR

point of generation evaluation to keep wastes from being prohibited and subject to a dilution prohibition or treatment standard.

... EPA has not fully analyzed these exclusions and, in the absence of specific justification, will continue to provide exclusions from the land disposal restrictions for waste excluded from the definition of hazardous or solid waste under 40 CFR 261.2-6.

55 Fed.Reg. at 22,660. Petitioners challenge this provision insofar as it exempts from treatment hazardous wastes co-processed in Bevill units, alleging the EPA has thereby "created a gaping loophole in the land ban program, contrary to Congress' stated intent." Brief for NRDC petitioners at 83. Without reaching the merits of petitioners' challenge, we conclude the provision must be vacated and remanded insofar as it addresses the Bevill Amendment exemption because that subject was not properly before the Agency in this proceeding.

As we observed above, the Administrative Procedure Act requires an agency to provide sufficiently detailed notice of a matter to be regulated to permit meaningful comment. *See supra* Part III(C)(1). The EPA, however, failed to give any notice at all, in the proposed rule or elsewhere, that it intended to address the Bevill unit exemption in this proceeding. Accordingly, we vacate those portions of the rule affecting the exemption and remand the matter for reconsideration *after adequate public notice and opportunity for comment*, whether in this proceeding or elsewhere.^{FN20} *See Shell Oil Co.*, 950 F.2d at 741 (vacating and remanding rules for failure to provide adequate notice).

FN20. The EPA and the industry intervenors agree that this issue is currently the subject of another rulemaking procedure. *See* Brief for Respondent at 123 n. 90; Brief for Industry Intervenors at 45-46; *see also* 56 Fed.Reg. 55,160, 55,166 (1991).

D. "Grab" Sampling

[15] Finally, petitioner Chemical Waste Management ("CWM") asserts the final rule impermissibly requires compliance and enforcement based on "grab" samples rather than "representative" samples. Preliminarily, we note that a grab sample is a single test sample drawn from a single ***34 **86** location, while a "representative" or "composite" sample consists of various samples drawn from different locations so as to yield a representative level for the waste. *See RCRA Sampling Procedures Handbook 75 (1989), reprinted in J.A. at 1057*. The final rule provides: "Where performance data exist based on both the analysis of composite samples and the analysis of grab samples, the Agency establishes the treatment standards based on the analysis of grab samples." 55 Fed.Reg. at 22,539. Implementing this preference, the rule amends 40 C.F.R. § 268.41(a) as follows: "Compliance with [the allowable waste concentrations established herein] is required *based upon grab samples*." 55 Fed.Reg. at 22,689 (emphasis added). The rule also provides that "enforcement of the disposal restrictions [be] based on grab samples." *Id.* at 22,539.^{FN21} CWM challenges the new grab sample provisions on the grounds that they (1) are inconsistent with other regulations requiring that disposers use "representative" sampling to test waste levels and (2) are impermissibly vague. We find neither objection meritorious.

FN21. The rule creates an exception when the standard has been developed based on representative sampling. In that event, "[e]nforcement of that standard thus would also be based on composite samples." 55 Fed.Reg. at 22,539.

First, CWM argues that requiring grab samples, both for compliance and enforcement testing, is arbitrary because inconsistent with other regulations requiring disposal facilities to use *representative* sampling in developing waste analysis plans. *See* 40 C.F.R. §§ 264.13(a)(1) and 265.13(a)(1) (each stating: "Before an owner or operator treats, stores, or disposes of any hazardous wastes, or non-hazardous wastes if applicable under § 264.113(d), he must obtain a detailed chemical and physical analysis of a representative sample of the wastes."). We disagree.

As the EPA points out, it is facially reasonable to test compliance with a given standard under the same sampling method used to develop that standard, as the rule requires. Further, variation between

results under the different methods will in large part be resolved through the EPA's adjustment of sampling results to account for the inevitable variability of content. See 55 Fed.Reg. at 22,539. To the extent that substantial variation may nevertheless result, an individual disposer can raise as a defense to enforcement the EPA's prior approval of its disposal plan, including the sampling method specified therein.

Finally, we summarily reject CWM's vagueness challenge to the grab sampling requirement. The EPA's published definition aside, see *RCRA Sampling Procedures Handbook 75*, reprinted in J.A. at 1057, the expression "grab sample" seems graphically self-defining. In fact, CWM's own discussion of the requirement's alleged arbitrariness demonstrates that it has experienced no difficulty in determining the phrase's meaning. Nevertheless, any vagueness that may inhere in the term can be resolved through explicit drafting of individual disposal permits.

V. CONCLUSION

For the reasons described above, the petitions for review are granted in part and denied in part.

So ordered.

APPENDIX A

42 U.S.C. § 6924(g)(5):

not later than the date specified in the schedule published under this subsection, the Administrator shall promulgate final regulations prohibiting one or more methods of land disposal of the hazardous wastes listed on such schedule except for methods of land disposal which the Administrator determines will be protective of human health and the environment for as long as the waste remains hazardous, taking into account the factors referred to in subparagraph (A) through (C) of subsection (d)(1) of this section. For the purposes of this paragraph, a method of land disposal may not be determined to be protective of human health and the environment (except with respect to a hazardous waste which has ***35 **87** complied with the pretreatment regulations promulgated under subsection (m) of this section) unless, upon application by an interested person, it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous.

42 U.S.C. § 6924(m):

Treatment standards for waste subject to land disposal prohibition

(1) Simultaneously with the promulgation of regulations under subsection (d), (e), (f), or (g) of this section prohibiting one or more methods of land disposal of a particular hazardous waste, and as appropriate thereafter, the Administrator shall, after notice and an opportunity for hearings and after consultation with appropriate Federal and State agencies, promulgate regulations specifying those levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized.

(2) If such hazardous waste has been treated to the level or by a method specified in regulations promulgated under this subsection, such waste or residue thereof shall not be subject to any prohibition promulgated under subsection (d), (e), (f), or (g) of this section and may be disposed of in a land disposal facility which meets the requirements of this subchapter. Any regulation promulgated under this subsection for a particular hazardous waste shall become effective on the same date as any applicable prohibition promulgated under subsection (d), (e), (f), or (g) of this section.

APPENDIX B

BDAT	Best Demonstrated Available Technologies
CWA	Clean Water Act
CWM	Chemical Waste Management
EDF	Environmental Defense Fund
EP	Extraction Procedure
EPA	Environmental Protection Agency
HWTC	Hazardous Waste Treatment Council

ICR	Ignitable, Corrosive, Reactive
mg/l	Milligrams per liter
NPDES	National Pollutant Discharge Elimination System
NRDC	Natural Resources Defense Council
pH	Potential of Hydrogen
POTWs	Publicly Owned Treatment Works
RCRA	Resource Conservation and Recovery Act
SDWA	Safe Drinking Water Act
VOCs	Volatile Organic Compounds

ORDER
Nov. 24, 1992.

Upon consideration of the unopposed joint motion of Industry Petitioners and Industry Intervenors for stay of mandate, it is

ORDERED, by the Court, that the motion is granted in part and the Clerk is ***36 **88** directed to withhold issuance of the Court's mandate through January 5, 1993.

976 F.2d 2, 35 ERC 1329, 298 U.S.App.D.C. 54, 61 USLW 2219, 23 Env'tl. L. Rep. 20,024

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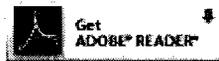
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