Federal Register

Tuesday,
January 22, 2002

Part III

Environmental Protection Agency

40 CFR Parts 260, 264, and 271
Amendments to the Corrective Action Management Unit Rule; Final Rule

ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 260, 264, and 271

[FRL–7124–3]

RIN 2050–AE77

Amendments to the Corrective Action Management Unit Rule

AGENCY: Environmental Protection Agency.

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (''EPA'' or ''the Agency'') is today promulgating amendments to the regulations governing Corrective Action Management Units. Corrective Action Management Units, or ''CAMUs,'' are special units created under the Resource Conservation and Recovery Act (RCRA) to facilitate treatment, storage, and disposal of hazardous wastes managed for implementing cleanup, and to remove the disincentives to cleanup that the application of RCRA to these wastes can sometimes impose. The original CAMU regulations were promulgated on February 16, 1993.

In today's action, EPA is amending the 1993 CAMU rule in six ways. First, EPA is establishing a specific definition, distinct from the definition of remediation waste, to govern the types of wastes that are eligible for placement in CAMUs. Second, the Agency is establishing more detailed minimum design and operating standards for CAMUs in which waste will remain after closure, with opportunities for Regional Administrators to approve alternate design standards under certain circumstances. Third, the Agency is establishing treatment requirements for wastes that are placed in CAMUs, including minimum treatment standards, with opportunities to adjust treatment requirements under certain circumstances. Fourth, EPA is establishing more specific information requirements for CAMU applications and is explicitly requiring that the public be given notice and a reasonable opportunity for public comment before final CAMU determinations are made. Fifth, the Agency is establishing new requirements for CAMUs that will be used only for treatment and storage. Sixth, today's rulemaking ''grandfathers'' certain types of existing CAMUs and allows them to continue to operate under the 1993 rule.

Today's rulemaking amends the regulations for ''staging piles'' to expressly allow for mixing, blending, and other similar physical operations intended to prepare wastes for subsequent management or treatment. It also adds a new provision allowing off-site placement of hazardous CAMU-eligible waste in hazardous waste landfills, if they are treated to meet CAMU treatment standards (somewhat modified).

Finally, today's rule grants interim authorization for these CAMU amendments to states that are authorized for the 1993 CAMU rule, and it expedites state authorization for the CAMU rule for states that are authorized for the RCRA corrective action program but not the 1993 CAMU rule.

Today's amendments were proposed on August 22, 2000, referred to throughout this rulemaking as ''the proposal.'' EPA also proposed a supplemental proposal on November 20, 2001, referred to as ''the supplemental proposal.''

DATES: This final rule is effective April 22, 2002.

ADDRESSES: The official record for this rulemaking under docket number F–2002–ACAF–FFFFF is located at the RCRA Docket Information Center (RID), located at Crystal Gateway I, First Floor, 1235 Jefferson Davis Highway, Arlington, Virginia. It is available for viewing from 9:00 a.m. to 4:00 p.m. Monday through Friday, excluding federal holidays.

To review docket materials, it is recommended that the public make an appointment by calling (703) 603–9230. The public may copy a maximum of 100 pages from any regulatory docket at no charge. Additional copies cost $0.15/page. The Final Rule, index, and some supporting materials are also available electronically. See the Supplementary Information section below for information on electronic access.

FOR FURTHER INFORMATION CONTACT: For general information, contact the RCRA Hotline at (800) 424–9346 or TDD (hearing impaired) (800) 553–7672. In the Washington, DC metropolitan area, call (703) 412–9810 or TDD (703) 412–3323. For more detailed information on specific aspects of today's action, contact Tricia Buzzell, U.S. Environmental Protection Agency (5303W), Ariel Rios Building, 1200 Pennsylvania Ave., NW., Washington, DC 20460, at (703) 308–8632, or e-mail *buzzell.tricia@epa.gov.*

SUPPLEMENTARY INFORMATION: Copies of today's Final Rule are available for inspection and copying at the EPA Headquarters library, at the RCRA Docket (RIC) office identified in **ADDRESSES** above, at all EPA Regional Office libraries, and in electronic format at the following EPA Web site: *www.epa.gov/epaoswer/hazwaste/ca/resource/guidance/remwaste/camu.* Printed copies of the final rule and related documents can also be obtained by calling the RCRA/Superfund Hotline at (800) 424–9346 or (703) 412–9810.

The index and some of the supporting materials are available on the Internet at *www.epa.gov/epaoswer/hazwaste/ca/resource/guidance/remwaste/camu.*

Outline

The contents of today's preamble are listed in the following outline.

I. Authority
II. Background
III. Section-by-Section Analysis
A. Grandfathering CAMUs (40 CFR 264.551)
B. Eligibility of Wastes for Management in CAMUs (40 CFR 264.552(a))
1. Definitions of Remediation Waste and CAMU-Eligible Waste
2. As-Generated vs. Cleanup Wastes
3. Wastes Managed During Closure
4. Wastes in Intact or Substantially Intact Containers, Tanks or Other Non-Land-Based Units (40 CFR 264.552(a)(1)(ii))
a. Intact and Substantially Intact Containers Excavated During Cleanup are CAMU Eligible
b. Extension of Approach to Buried Containers to Include Buried Tanks
c. Interpretations of ''Intact or Substantially Intact,'' ''Found During Cleanup'' and ''Excavated During Cleanup''
d. Placement of ''Historic Wastes'' in CAMUs
5. Limited Use of Nonhazardous ''As-Generated'' Waste in CAMUs (40 CFR 264.552(a)(1)(iii))
C. Discretionary Kickout (40 CFR 264.552(a)(2))
D. Information Submission (40 CFR 264.552(d))
1. ''Unless Not Reasonably Available'' Standard
2. Application of New CAMU Information Submission Requirements to P- and U-Listed Wastes
3. Interpretation of General CAMU Information Submission Performance Standard Continues to Apply
E. Liquids in CAMUs (40 CFR 264.552(a)(3))
F. Design Standards for CAMUs
1. Liner Standard
a. Standard Liner Design (40 CFR 264.552(e)(3)(i))
b. Alternate Liner Designs (40 CFR 264.552(e)(3)(ii))
2. Cap Standard
a. Standard Cap Design (40 CFR 264.552(e)(6)(iv))
b. Alternate Cap Designs (40 CFR 264.552(e)(6)(iv)(B))
3. Releases to Ground Water (40 CFR 264.552(e)(5)(iii))
G. Treatment Requirements (40 CFR 264.552(e)(4))
1. Identification of Principal Hazardous Constituents (40 CFR 264.552(e)(4)(i) and (ii))
a. Approach to Identifying PHCs
b. Constituents from which PHCs are Drawn (40 CFR 264.552(e)(4)(ii))
c. Carcinogenic and Non-Carcinogenic PHCs

d. PHCs Identified Based on Waste-to-Ground-Water Pathway (40 CFR 264.552(e)(4)(i)(B))
e. Designation of Other PHCs (40 CFR 264.552(e)(4)(i)(C))
f. Relationship of PHCs to ''Principal Threats'' Guidance
2. Treatment Standards (40 CFR 264.552(e)(4)(iii))
a. Minimum National Treatment Standards (40 CFR 264.552(e)(4)(iv))
(1) Standard of 90% Capped by 10XUTS
(2) Use of TCLP and Alternative Leach Tests
(3) Assessment of 90% Reduction
b. Site-Specific Treatment Standards Based on Adjustment Factors (40 CFR 264.552(e)(4)(v))
(1) Adjustment Factor A: Technical Impracticability (40 CFR 264.552(e)(4)(v)(A))
(2) Adjustment Factor B: Consistency with Site Cleanup Levels (40 CFR 264.552(e)(4)(v)(B))
(3) Adjustment Factor C: Community Views (40 CFR 264.552(e)(4)(v)(C))
(4) Adjustment Factor D: Short-Term Risks (40 CFR 264.552(e)(4)(v)(D))
(5) Adjustment Factor E: Engineering Design and Controls (40 CFR 264.552(e)(4)(v)(E))
(6) If / Then Chart Illustrating Application of Adjustment Factor E
c. Relationship between Minimum National Treatment Standards and Adjustment Factors
d. Treatment in CAMUs within a Reasonable Time (40 CFR 264.552(e)(4)(vi))
e. Assessing Compliance with Treatment Standards (40 CFR 264.552(e)(4)(vii))
H. Constituents at or below Site Cleanup Levels or Goals (40 CFR 264.552(g))
I. Storage and/or Treatment Only CAMUs (40 CFR 264.552(f))
J. Staging Piles (40 CFR 264.552(g))
K. Placement of CAMU-Eligible Wastes in Off-Site Hazardous Waste Landfills
1. Conditions of Off-Site Landfill Placement
a. Limitation to CAMU–Eligible Wastes
b. Limitation to Placement in Off-Site Landfills
c. Treatment Requirements
d. Disposal Requirements
2. Approval Procedures
a. Approval of CAMU-Eligible Waste for Placement Off-Site in a Subtitle C Landfill
b. Permitting and Acceptance at the Receiving Landfill
1. Other Requirements
L. Grandfathering CAMUs (40 CFR 264.555 and 40 CFR 264.551)
M. Public Participation (40 CFR 264.552(h))
N. Additional Requirements (40 CFR 264.552(i))
IV. Relationship to Other Regulatory Programs
V. How Will Today's Regulatory Changes be Administered and Enforced in the States?
A. Applicability of Federal Rules in Authorized States
B. Authorization of States for Today's Final Rule
C. Interim Authorization-by-Rule for States currently Authorized for the CAMU Regulations
1. Background and List of States Eligible for Interim Authorization-by-Rule
2. Eligibility Criteria and Process for Interim Authorization-by-Rule
D. Expiration of Interim Authorization
E. Authorization for § 264.555
F. Authorization of States currently Authorized for Corrective Action, but Not the Existing CAMU Rule
1. State Applications for Final Authorization
2. Authorization Approach for States That Adopt the CAMU Regulations by Reference or Verbatim
VI. Effective Date
VII. Conforming Changes (40 CFR Part 260 Subpart S, § 260.10)
VIII. Analytical and Regulatory Requirements
A. Planning and Regulatory Review under Executive Order 12866
1. Economic Analysis Background and Purpose
a. Framework for the Analysis
b. Baseline Case Description
c. Post-Regulatory Case Description
d. Incremental Impacts
2. CAMU Administrative Approval Costs Assessment
3. Assessment of the Incremental Impacts Related to the Treatment and Unit Design Provisions, and to the Storage and/or treatment Only CAMU Provisions
a. Treatment and Unit Design Standards Implemented in the Baseline
b. Treatment and Unit Design Provisions in the Post-Regulatory Case
c. Incremental Impacts Associated with Final Treatment and Unit Design Provisions
d. Incremental Impacts Associated with the Storage and/or treatment Only CAMU Provisions
4. Assessment of the Incremental Change in the Number of CAMUs Approved
a. Grandfathering Window
b. Early After Promulgation
c. Post Promulgation Equilibrium
5. Assessment of the Total Impacts for the Final Amendments to the CAMU Rule
B. Regulatory Flexibility Act (RFA) as Amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA)
1. Methodology to Assess Small Entity Impacts
a. Framework for the Analysis
b. Methodological Approach for SBREFA Analysis
c. Examination of Existing CAMUs for Small Entity Status
d. Significant Impact Screen of Facilities for Which Size Was Undetermined
2. The Impacts Estimated on Small Entities
C. Paperwork Reduction Act
D. Unfunded Mandates Reform Act
E. National Technology Transfer and Advancement Act
F. Consultation and Coordination with Indian Tribal Governments (Executive Order 13175)
G. Protection of Children from Environmental Health Risks and Safety Risks (Executive Order 13045)
H. Federalism (Executive Order 13132)
I. Environmental Justice (Executive Order 12898)
J. Congressional Review Act
K. Energy Effects (Executive Order 13211)

I. Authority

These regulations are promulgated under the authority of sections 1006, 2002(a), 3004, 3005(c), 3007, 3008(h), and 7004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments of 1984.

II. Background

Since the 1984 Hazardous and Solid Waste Amendments (HSWA) to the Resource Conservation and Recovery Act of 1976 (RCRA), EPA has recognized that the comprehensive regulatory framework that generally governs identification, generation, transportation, treatment, storage, and disposal of hazardous wastes can present serious disincentives to management of hazardous wastes during cleanups. As discussed in the proposal[1] and in numerous other Agency documents and rulemakings,[2] these disincentives arise for three primary reasons.

First, the broad objectives of the hazardous waste program—to prevent releases through a comprehensive set of management requirements, to minimize generation of hazardous waste, and to promote legitimate reuse and recycling—are not, in general, the same as the Agency's objectives during cleanup. During cleanup, the Agency is faced primarily with remediating a release that has already occurred. In this context the Agency may, in fact, desire to maximize the amount of waste generated (i.e., maximize the amount of waste managed for implementing cleanup).

Generators of hazardous waste, for the most part, do not have a choice about whether they trigger application of the RCRA hazardous waste regulations (once the waste is generated). If a hazardous waste is generated, RCRA applies. The application of the RCRA hazardous waste regulations, however, discourages its generation in the first

[1] All references to ''the proposal'' are to the proposal of today's amendments, 65 FR 51080, August 22, 2000.

[2] For a fuller discussion of this issue, see the preamble discussions accompanying the Land Disposal Restrictions (LDR) Phase IV rule, 63 FR 28556, 28603–28604 (May 26, 1998); Clarification of the LDR Treatment Variance Standard (the ''environmentally inappropriate'' variance), § 268.44(h), 62 FR 64504, 64505–64506 (December 5, 1997); and the HWIR-Media rule, 63 FR 65874, 65876–65878 (November 30, 1998), and sources cited therein.

place and encourages generators to reuse materials, to reduce waste, and to use fewer hazardous constituents in production processes. These outcomes are desirable and consistent with the broad objectives of RCRA. Conversely, in a cleanup situation, the waste already exists, but site owners/operators often have legal options that allow them to minimize or avoid application of the RCRA regulations, which thus discourage cleanup or the amount of wastes cleaned up. In large part, these legal options involve capping waste in place, or in some cases not engaging in cleanup at all. In general, these types of approaches are less desirable than remedies that involve excavation of some, or all, cleanup waste for more aggressive treatment and/or off-site disposal.

Second, the RCRA regulations have been conservatively designed and uniformly applied to ensure proper management of hazardous wastes over a range of waste types, environmental conditions, management scenarios, and operational contingencies. The land disposal restriction (LDR) treatment standards for most hazardous wastes, for example, are established at levels achieved by the best demonstrated available technology for treating the waste in question. Likewise, the minimum national design and operation standards for hazardous waste land disposal units were developed to be protective in a range of disposal scenarios. Cleanups, on the other hand, are fundamentally site-specific and essentially risk-based. During cleanup, the Agency generally has the site- and waste-specific information it needs to develop protective management requirements for the particular site and waste in question; therefore, there is less need for generic management approaches to ensure protectiveness in a range of scenarios.

Finally, in addition to the differences in the context for regulating hazardous wastes from ongoing industrial operations versus cleanup described above, there are often (but not always) significant physical and chemical differences between wastes generated by industrial processes (or ''as-generated'' wastes) and cleanup wastes. These physical and chemical differences further support the need for different approaches for wastes managed for implementing cleanup.

In practice, application of the RCRA regulations developed for as-generated wastes to wastes managed for implementing cleanup often presents remediation project managers with only two choices: (1) pursue the legal option of capping or treating cleanup wastes in place, thereby avoiding application of many RCRA requirements, or (2) excavate cleanup wastes and, in accordance with RCRA requirements, treat them to the fullest extent possible given available technology and place them in a permitted hazardous waste landfill. Often neither of these options represents the best remedial approach. And the desire to avoid costs associated with the second option creates an incentive to select the first.

While recognition of this problem came relatively early, EPA and stakeholder groups have grappled for more than ten years with the policy challenges associated with solving the problem. Developing approaches to regulating cleanup wastes differently from as-generated wastes presents a number of challenges. For example, how does the Agency develop approaches tailored to cleanup wastes while at the same time leaving in place the basic features of the RCRA program as they apply to as-generated wastes? How does the Agency create a management structure for cleanup wastes that minimizes disincentives for cleanup without creating incentives to mismanage as-generated wastes? How do EPA and the states ensure that cleanup wastes are managed safely while providing for the site-specific flexibility that effective cleanups demand?

In an effort to deal with these questions, the Agency has developed over the years numerous policies, regulations, and guidance documents addressing the application of the RCRA Subtitle C regulations for as-generated wastes to wastes managed for implementing cleanup.[3] As part of its efforts to address these issues, the Agency promulgated the original CAMU rule in 1993. (February 16, 1993, 58 FR 8658) The 1993 CAMU rule created a special type of hazardous waste management unit—a Corrective Action Management Unit, or CAMU—to be used only for on-site treatment, storage, and disposal of hazardous wastes managed for implementing cleanup. Consolidation or placement of cleanup wastes into a CAMU is not considered land disposal and, therefore, does not trigger RCRA LDR requirements. 40 CFR 264.552(a)(1). Similarly, consolidation or placement of cleanup waste into a CAMU does not create a unit subject to RCRA's minimum technology requirements. 40 CFR 264.552(a)(2). Instead of applying RCRA LDRs, minimum technology requirements, and other hazardous waste requirements, overseeing agencies had considerable flexibility under the 1993 CAMU rule to tailor design, operating, closure and post-closure, and waste treatment requirements to site- and waste-specific conditions. This approach allowed a significantly broader range of cleanup options at individual sites and has led, at individual sites, to prompter and more aggressive cleanup.

Many stakeholders supported the 1993 CAMU rule. In implementation, the Agency believes the 1993 CAMU rule has resulted in appropriate, protective, site-specific remedies. (See the CAMU Site Background Document in the docket for today's rule.) Not all stakeholders, however, supported the 1993 CAMU rule. As discussed in the proposal, the 1993 CAMU rule was legally challenged after promulgation. (*Environmental Defense Fund* v. *EPA,* No. 93–1316 (D.C. Cir. filed May 14, 1993.) Among other things, the Petitioners were concerned with provisions in the 1993 CAMU rule providing that land disposal restrictions, minimum technology requirements, and other Part 264 and 265 unit requirements did not apply to CAMUs. After an extended stay of the challenge, during which EPA and stakeholders pursued a number of other approaches to addressing RCRA regulation of hazardous remediation wastes, the Agency entered into settlement discussions and reached a settlement agreement on February 11, 2000. Today's amendments to the 1993 CAMU rule are the result of this settlement process.

In developing today's amendments and in negotiating the CAMU settlement, the Agency's primary purpose was to allow continued use of CAMUs so as to remove the disincentives to cleanup that result from applying RCRA regulations for as-generated hazardous wastes to cleanup wastes. As the Agency stated in the proposal:

> The Agency recognizes the benefits of including minimum standards in a rule of this nature, i.e., such standards can make the process more consistent nationally, and the results more predictable, as well as more explicit for the public. Such standards can also make implementation of the rule less vulnerable to mistakes or abuse. However, the Agency did not want to include more detailed standards if they would result in potentially limiting the usefulness of the

[3] These include, the ''area of contamination'' policy; the ''contained-in'' policy; the ''Phase IV LDR'' treatment standards for contaminated soil; and, the provisions for ''Remedial Action Plans'' or RAPs. Descriptions of many of these and other relevant policies and regulations, including references, are included in the October, 1998 memorandum, ''Management of Remediation Waste Under RCRA,'' EPA 530–F–98–026. These regulations, policies, and guidance documents are not changed by today's rulemaking.

rule, thereby delaying or inhibiting cleanups. (65 FR 51084.)

It was the Agency's conclusion at the time of proposal that the proposed amendments achieved an appropriate balance, realizing the benefits of increased regulatory detail without reinstating the disincentive to cleanup the CAMU rule was originally designed to address. As discussed in the proposal, the Agency's analyses showed that the vast majority of CAMUs approved under the 1993 rule could be approved with few or no changes under the proposed amendments. The Agency requested comment on these conclusions.

The Agency received mixed comments on the proposed CAMU amendments. Many commenters, including the Petitioners from the 1993 CAMU litigation, strongly supported the proposal as remedying ''major legal and policy deficiencies with [the 1993 CAMU rule], principally by providing for baseline standards rather than unconstrained discretion.'' Some commenters opposed the CAMU amendments, believing they were not needed to protect human health or the environment and disagreeing with the Agency's conclusion that they would not reinstate disincentives to cleanup. On balance, however, even most commenters who thought that amendments to the 1993 CAMU rule were not necessary, expressed the view that, if the Agency was convinced that amendments to the 1993 CAMU rule were needed, the proposed approach was reasonable.

After considering these comments, the Agency has decided to finalize the CAMU amendments largely as proposed. The Agency agrees with commenters who pointed out (as EPA did at proposal) that the 1993 CAMU rule has had a positive effect on cleanups and has promoted more aggressive remediation at individual sites. But the Agency continues to believe that the benefits that derive from the more specific regulatory standards of this rule will not be gained at the cost of reinstating the regulatory disincentive to cleanup that the CAMU was intended to address. This result, in EPA's view, argues in favor of promulgating today's amendments. Although many commenters expressed concern that today's rule would recreate disincentives, they provided general arguments rather than specific evidence. Furthermore, no commenter disputed the Agency's conclusion that the areas in which the Agency provides flexibility from the minimum standards cover the full variety of situations where the minimum standards might operate to discourage aggressive remediation. Similarly, comments submitted on the effects of increased CAMU processing costs (monetary and temporal) for CAMU approval expected to result from today's amendments did not convince the Agency either that such costs alone would likely outweigh the benefits to facilities of obtaining a CAMU, thereby reversing the benefits realized from the 1993 rule. The Agency is therefore promulgating the proposed amendments with only minor changes from the proposal (see discussion of specific changes below).[4]

III. Section-by-Section Analysis

A. Grandfathering CAMUs (40 CFR 264.551)

EPA proposed that CAMUs approved prior to the effective date of the final CAMU amendments (i.e., the effective date of this rulemaking) and CAMUs for which substantially complete applications (or equivalents) were submitted to the Agency on or before ninety (90) days after publication of the proposal (i.e., November 20, 2000), would generally continue to operate under the 1993 CAMU regulations and would not be subject to the CAMU amendments finalized today. This approach is referred to as ''grandfathering.'' Commenters generally supported the grandfathering provisions and, in today's rulemaking, EPA is finalizing these provisions as proposed. Issues associated with grandfathering are discussed in section L, at the end of the section-by-section analysis.

B. Eligibility of Wastes for Management in CAMUs (40 CFR 264.552(a))

EPA's approach to defining the types of wastes that may be placed in CAMUs is an important element in its effort to strike a balance between encouraging aggressive remediation and maintaining RCRA's incentives to avoid releases and minimize wastes in the first instance. EPA's intention in the 1993 CAMU rule and in today's action is to clearly limit the wastes that may be placed in CAMUs to wastes that are managed as a result of cleanup, except under specifically described and limited circumstances.

Under the 1993 CAMU rule, the term ''remediation waste'' defined the types of wastes that may be placed in a CAMU. ''Remediation waste'' is defined at 40 CFR 264.10 as ''all solid and hazardous wastes, and all media (including ground water, surface water, soils, and sediments) and debris that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic and are managed for implementing cleanup.''[5] The definition of remediation waste is also used in regulations pertaining to Remedial Action Plans (see part 270, subpart H), staging piles (see 40 CFR 264.554), and site-specific LDR treatment variances under the ''environmentally inappropriate'' variance provisions (see 40 CFR 268.44(h)(2)(ii)).

Working from the definition of ''remediation waste,'' EPA proposed a number of changes to define more specifically the types of remediation waste that may be placed in CAMUs. First, the Agency proposed to establish a separate subcategory of waste, within the broader category of remediation waste, to govern the types of wastes that may be placed in a CAMU. EPA proposed to call this subcategory of waste ''CAMU-eligible waste.'' Second, EPA proposed to include in the definition of CAMU-eligible waste clarifying language to better distinguish between as-generated and cleanup wastes. Third, EPA proposed, with some exceptions, to explicitly prohibit waste in containers and other non-land-based units from being placed in CAMUs. Fourth, the Agency proposed to allow nonhazardous, as-generated wastes to be placed in a CAMU if such placement would facilitate treatment or the performance of the CAMU. The Agency also proposed to ban placement of liquids in CAMUs except under certain circumstances and to allow the Regional Administrator, under certain circumstances, to ''kick out'' or disallow placement in a CAMU of wastes that would otherwise be CAMU-eligible.

Commenters generally supported EPA's overall proposed approach to more specifically defining the types of remediation waste that may be placed in

[4] In finalizing today's amendments, the Agency has published the entire text of the CAMU rule as it will appear in the CFR. EPA took this approach for the sake of clarity. However, it is important to note that the CAMU regulatory provisions on which the Agency did not seek comment in the proposal (i.e., those which, at proposal, were simply repeated from the 1993 rule) are not modified by today's amendments. In addition, to further aid the reader, the Agency has placed a ''redline/strikeout'' version of the CAMU regulations in the docket for today's rulemaking. This document indicates exactly where changes to the 1993 rule are being finalized.

[5] As discussed in the proposal, the remediation waste definition promulgated with the 1993 CAMU regulations was modified by the Agency in the Hazardous Waste Identification Rule for Contaminated Media (HWIR-Media). See, 63 FR 65874, November 30, 1998. The remediation waste definition quoted above is the definition as modified by the HWIR-Media rule. The Agency is today promulgating an editorial change to the remediation waste definition, as discussed later in this section of the preamble.

CAMUs, and today the Agency is finalizing its approach largely as proposed. In response to comments, however, the Agency is making two changes to the CAMU-eligible waste definition in today's final rulemaking. First, the Agency is making an editorial change to the definition of CAMU-eligible waste (and a conforming change to the related definition of ''remediation waste'') to make clear that these definitions include both hazardous and nonhazardous wastes (including hazardous and nonhazardous environmental media and debris), when such materials are managed for implementing cleanup. Second, the Agency is expanding the definition of CAMU-eligible wastes to include intact and substantially intact tanks. With this change, both containers and tanks excavated during cleanup (and materials they may hold) are generally CAMU eligible. The details of the Agency's approach to defining wastes eligible for management in CAMUs, including the two changes made in response to comments, are discussed below.

1. Definitions of ''Remediation Waste'' and ''CAMU-Eligible Waste''

EPA proposed: (1) To establish a separate subcategory of waste to more specifically define the types of remediation wastes that can be placed in CAMUs, (2) to call the subcategory of waste ''CAMU-eligible waste,'' and (3) to promulgate the definition of CAMU-eligible waste in the CAMU regulations at 40 CFR 264.552(a)(1) rather than in the general definitions section at 40 CFR 260.10. To complement the new definition of CAMU-eligible waste, EPA proposed to revise the definition of Corrective Action Management Unit to refer to ''CAMU-eligible waste'' rather than ''remediation waste.'' Also, to make clear that the changes to the definition would not apply beyond the CAMU rule, the Agency proposed to move the definition of CAMU from the general definitions section at 40 CFR 260.10 to the CAMU regulations at 40 CFR 264.552(a) and, for grandfathered CAMUs, at 40 CFR 264.551(a).

EPA proposed to define CAMU-eligible waste as ''[a]ll solid and hazardous wastes, and all media (including ground water, surface water, soils, and sediments) and debris that contain listed hazardous waste or that themselves exhibit a hazardous characteristic and are managed for implementing cleanup. As-generated wastes (either hazardous or nonhazardous) from ongoing industrial operations at a site are not CAMU-eligible wastes.'' The first sentence of the proposed definition reiterated the definition of remediation waste. The second sentence added language from the preamble to the 1993 CAMU rule to more explicitly prohibit management of as-generated wastes in CAMUs.

EPA did not receive adverse comments on the proposal to promulgate the definition of CAMU-eligible waste in the CAMU regulations, on the proposed conforming change to the definition of CAMU, or on the proposal to move the definition of CAMU from the general definitions section to the CAMU regulations. The Agency is promulgating those provisions as proposed.

Commenters also generally supported establishing a separate definition for CAMU-eligible waste; however, in evaluating the new definition, a number of commenters expressed concern that the definition could be read to preclude placement of nonhazardous cleanup wastes (or environmental media and debris that contain solid but not hazardous wastes) in a CAMU. The Agency believes this misreading—which it understands but never intended—could unnecessarily delay approvals of CAMUs and delay cleanups, so it is taking today's opportunity to make editorial changes necessary to clarify the definition of CAMU-eligible waste and the related definition of remediation waste, as discussed below.

The current definition of remediation waste is ''All solid and hazardous waste, and all media (including groundwater, surface water, soils, and sediments) and debris *that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic* and are managed for implementing cleanup'' (emphasis added). EPA included the phrase ''that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic'' to make clear that media brought under regulation through the ''contained-in'' policy were eligible for management in a CAMU. Under the Agency's longstanding contained-in policy, EPA requires that contaminated environmental media, although not hazardous wastes themselves, be managed as if they were hazardous waste as long as they contain hazardous waste or exhibit a characteristic of hazardous waste.[6] Commenters expressed concern that, because it is not clear which portions of the definition of remediation waste are modified by the phrase ''that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic,'' the definition could be read to limit media and debris placed in a CAMU to those containing listed waste or exhibiting a characteristic, and not to include contaminated environmental media or debris that contain solid (but not hazardous) waste.

Commenters additionally raised concerns that the definition of ''CAMU-eligible waste''—which is based on the definition of remediation waste—could similarly be read to exclude nonhazardous wastes managed for implementing cleanup. This reading would preclude management of nonhazardous remediation wastes in CAMUs.[7] Clearly, this reading does not reflect the Agency's intent as expressed in the preamble to the proposal or in earlier Agency discussions of remediation waste, and therefore the Agency is making editorial changes to the definition of CAMU-eligible waste.

As discussed in detail in the 1993 CAMU rule, ''the definition of remediation waste includes nonhazardous solid waste . . . [although] management of such wastes would not require the designation of a CAMU . . . since [RCRA] Subtitle C requirements would not apply to management of [nonhazardous solid waste]'' (58 FR 8664, February 16, 1993). The Agency also addressed this issue in the 1998 HWIR-Media rulemaking, where it indicated that ''remediation waste'' includes ''both hazardous and nonhazardous solid wastes managed as a result of cleanup'' (63 FR 65881, November 30, 1988). Nonetheless, to prevent any potential confusion over this issue, the Agency is revising the wording of the definition of CAMU-eligible waste to remove the

[6] The contained-in policy is described in the October 1998 memorandum, ''Management of Remediation Waste Under RCRA,'' EPA A530-F–98–026, which is included in the docket for today's rulemaking.

[7] The confusion is caused by the restrictive clauses in the definitions of CAMU-eligible and remediation waste. In the case of remediation waste, the definition is: ''Remediation waste means all solid and hazardous wastes, and all media (including ground water, surface water, soils and sediments) and debris that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic and are managed for implementing cleanup.'' Some commenters feared that the restrictive clauses ''that contain listed hazardous wastes or that themselves exhibit a hazardous characteristic . . .'' would be read to limit media and debris placed in a CAMU to those containing listed wastes or exhibiting a characteristic. This interpretation would mean that nonhazardous media and debris could not be managed in a CAMU. In an alternative reading, commenters feared that the restrictive clauses could be read to modify ''all solid and hazardous wastes, and all media . . .,'' that is, to require that solid or hazardous waste ''contain listed hazardous wastes'' or ''exhibit a hazardous characteristic'' in order to be covered by the definitions. While EPA believes that most readers understood what it intended in the definition, the Agency agrees that the wording is confusing and has, therefore, made the editorial changes discussed in today's rulemaking.

phrase ''that contain listed hazardous wastes or that themselves exhibit a characteristic.'' The definition of CAMU-eligible waste promulgated today, in pertinent part, reads: ''CAMU-Eligible Waste means: (i) all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris that are managed for implementing cleanup.''

EPA emphasizes that this editorial change does not reflect a change in the Agency's approach toward implementing the definition of CAMU-eligible waste. Rather, it reflects the Agency's conclusion, based on comments, that the proposed definition created a potential for confusion which could hinder implementation of the CAMU amendments. EPA further emphasizes that the exclusion of nonhazardous ''as-generated'' waste from the definition of CAMU-eligible waste is not affected by this change. As discussed later in today's rulemaking, nonhazardous as-generated waste is generally not within the definition of CAMU-eligible waste and can be placed in CAMUs only under certain limited circumstances.

EPA is also taking this opportunity to make the same change to the definition of remediation waste. The revised definition of remediation waste reads: ''Remediation waste means all solid and hazardous wastes, and all media (including groundwater, surface water, soils, and sediments) and debris that are managed for implementing cleanup.'' EPA is making this change to avoid confusion that might result from using different wording in the definitions of remediation and CAMU-eligible waste. The Agency notes that it is making these changes solely for clarity and consistency and that they will have no substantive effect on either definition.

The Agency also received a number of comments on the inclusion of the sentence ''[a]s-generated wastes (either hazardous or nonhazardous) from ongoing industrial operations at a site are not CAMU-eligible wastes' in the definition of CAMU-eligible waste. These comments are discussed in the section ''As-Generated versus Cleanup Wastes,'' below.

2. As-Generated versus Cleanup Wastes

The 1993 CAMU rule limited wastes placed in CAMUs to ''remediation waste,'' i.e., to wastes, environmental media, and debris that ''are managed for implementing cleanup.'' The preamble to the 1993 rule explained what was generally meant by this definition: ''(t)oday's definition of remediation waste excludes ''new'' or as-generated wastes (either hazardous or nonhazardous) that are generated from ongoing industrial operations at a facility'' (58 FR 8658 and 8664, February 16, 1993). While the Agency believes the 1993 CAMU rule language is clear, it also understands the concerns of critics of the rule, who argued that the regulations could benefit from additional language creating a ''firewall'' between industrial process waste and cleanup waste by specifically prohibiting placement of as-generated wastes in CAMUs. In response to these concerns, the Agency proposed to add the sentence ''[a]s-generated wastes (either hazardous or nonhazardous) from ongoing industrial operations at a site are not CAMU-eligible wastes'' to the new definition of CAMU-eligible waste. Commenters supported adding this express exclusion, and the Agency is finalizing this part of the definition of CAMU-eligible waste as proposed.

As discussed in the proposal, including the sentence ''[a]s-generated wastes (either hazardous or nonhazardous) from ongoing industrial operations at a site are not CAMU-eligible wastes'' in the definition of CAMU-eligible waste does not change the way the Agency currently distinguishes between as-generated and cleanup wastes (65 FR 51085 and 51086, August 22, 2000). It is simply a way to reflect more explicitly the original intent of the 1993 definition.

''As-generated'' continues to have the same meaning that it did in 1993. For example, hazardous wastes generated by an industrial process (e.g., an electroplating operation at a metals-finishing facility), managed in an operating hazardous waste surface impoundment or landfill, are considered as-generated wastes. As such, these wastes must be managed, treated, and disposed of in compliance with applicable RCRA hazardous waste requirements.

EPA has also not changed the meaning of ''from ongoing industrial operations.'' EPA is including this phrase in the definition of CAMU-eligible wastes solely to aid program implementers in distinguishing between wastes that are managed as a result of routine hazardous waste management activities at a facility, and wastes that are managed for implementing cleanup. Wastes from ongoing industrial operations include wastes produced during commercial operations as well as any wastes that are produced during management of such wastes. For example, hazardous sludges that, in accordance with 40 CFR 268.4, must be removed at least annually from operating hazardous waste surface impoundments are considered wastes from ongoing industrial operations. They are not considered wastes ''managed for implementing cleanup'' and thus are not CAMU-eligible (65 FR 51085, August 22, 2000). However, as discussed in the proposal, soil that becomes contaminated by releases (including leachate) from operating hazardous waste units would be CAMU-eligible when managed for implementing cleanup (65 FR 51085, August 22, 2000).

Similarly, soil or other materials contaminated by product spills or releases from ongoing industrial processes are not considered as-generated wastes and, as such, are CAMU-eligible when managed for implementing cleanup. Note, however, that EPA fully expects—and requires—facility owners/operators to avoid spills and unintended releases of any sort. Also, facility owners and operators should note that today's rulemaking provides that soils and other materials contaminated by spills or releases—although generally within the meaning of CAMU-eligible—might be disallowed from management in a CAMU under the discretionary kickout provision. The discretionary kickout provision is discussed later in today's rulemaking.

EPA specifically requested comment on whether including the sentence ''[a]s-generated wastes (either hazardous or nonhazardous) from ongoing industrial operations at a site are not CAMU-eligible wastes' in the definition of CAMU-eligible waste might have unintended consequences, for example, by eliminating actual or potential practices where as-generated waste is appropriately placed in a CAMU as a legitimate part of cleanup. In response to this request, one commenter expressed the concern that the phrase ''generated from ongoing industrial operations'' suggests a temporal condition that could be interpreted to mean that only historical wastes are CAMU-eligible. For example, this reading might preclude placement of materials contaminated by spills from ongoing industrial processes in a CAMU. As explained above, the Agency appreciates this concern and takes this opportunity to state explicitly that CAMU-eligible waste is not limited to historical waste or contamination. The Agency does not consider cleanup of contaminated soils or similar materials to be an ongoing industrial process—even if the contamination itself derives from ongoing industrial processes. Thus, material contaminated by spills from industrial processes would not be ''as-generated'' wastes from these processes. When managed for

implementing cleanup, these materials are CAMU eligible.

Another commenter expressed a similar concern that the phrase ''from ongoing industrial operations'' could be read to preclude management of historical wastes in a CAMU simply because the industrial process that caused the wastes to be generated in the first instance continues to operate. Many industrial facilities have industrial operations that have been ongoing for a number of years. As this commenter pointed out, management strategies for wastes generated by these ongoing industrial operations typically have changed over time, in part to respond to new regulatory requirements. For example, wastes currently generated by an ongoing industrial operation might be sent off site for RCRA Subtitle C disposal; these are clearly as-generated waste. At the same time, wastes previously generated by this same industrial operation might remain on site in solid waste management units that are now subject to RCRA corrective action requirements. If these solid waste management units require cleanup, wastes removed from them during cleanup (and materials contaminated by releases from them) would be CAMU eligible. This is because removal of the wastes would be a remedial activity, rather than part of an ongoing industrial process.

3. Wastes Managed During Closure

In the proposal, the Agency clarified the circumstances under which wastes associated with closure of land-based hazardous waste treatment, storage or disposal units are ''managed for implementing cleanup'' and, therefore, when they are eligible for placement in a CAMU. This distinction is based primarily on a distinction between ''permanent'' and ''non-permanent'' land-based units.

Closure with waste in place is an option for permanent land-based units, e.g., landfills, surface impoundments, and land treatment units. Given the availability of the closure with waste-in-place option, EPA considers closure by removal to be ''cleanup'' for such permanent land disposal units. Therefore, wastes removed from closed or closing permanent land-based units are considered wastes ''managed for implementing cleanup'' and are CAMU eligible (65 FR 51086, August 22, 2000). As discussed in the proposal, ''closed or closing'' means units that have received their final volume of wastes (65 FR 51086, August 22, 2000).[8]

Conversely, non-permanent units, e.g., container and tank storage units and waste piles, are not intended as the final resting place for wastes. Rather, removal of waste from these units in general is part of the normal course of operations. Therefore, EPA believes that, typically, it is inappropriate to consider waste removed from non-permanent units to be CAMU-eligible, because removal is part of the operating life cycle of the unit (65 FR 51086, August 22, 2000).[9]

Many commenters were concerned with EPA's position that wastes associated with closure of waste piles and other non-permanent units are generally not ''managed for implementing cleanup'' and would not be CAMU-eligible. In particular, commenters disagreed with EPA's view that waste piles and other units are ''non-permanent'' units. Commenters pointed out that regulations at 40 CFR 264.197 and 40 CFR 265.197 (for tank systems) and 40 CFR 264.258 and 40 CFR 265.258 (for waste piles) require that when these units do not comply with secondary containment and liner requirements, respectively, facility owners/operators must prepare contingent plans to close these units as if they were hazardous waste landfills. Also, for both tank systems and wastes piles, landfill closure is required if, after a reasonable effort is made to meet the clean-closure performance standard, an owner/operator demonstrates that not all contaminated soils can be practicably removed or decontaminated.[10]

EPA agrees that a clarification is warranted. The Agency recognizes that waste piles and tank systems (or, more likely, environmental media contaminated by releases from these units) may be closed as landfills if it is not practicable to remove or decontaminate all contaminated material during an attempt to achieve clean closure. The Agency does not believe, however, that these circumstances justify a change to the interpretation that, as a general matter, wastes removed from these typically non-permanent units are not ''managed for implementing cleanup'' and therefore are not CAMU-eligible.

As explained earlier as well as in the proposal, the Agency does not typically consider waste removed from closing non-permanent land-based units (such as waste piles) to be ''managed for implementing cleanup,'' because removal of wastes from waste piles and other non-permanent land-based units is a normal part of unit operation. (65 FR 51086, August 22, 2000.) These units are not intended as the final resting place for wastes, and the existence of a regulatory option allowing contamination to remain in the unexpected circumstance where clean closure is not practicable does not alter this general conclusion. However, the Agency does agree that when these units are closed as landfills in situations where clean closure is not practicable, they are the final resting place for the remaining wastes, and any waste thereafter removed from them would be ''managed for implementing cleanup'' and would therefore be CAMU eligible.[11] Also, as discussed earlier in

[8] As discussed in the proposal, the Agency believes the ability to place such wastes in CAMUs will promote its objective of encouraging the removal and/or treatment of wastes during closure of RCRA units (65 FR 51086).

[9] As discussed in the proposal, ''typically'' is intended to indicate the Agency's ability, for example, at abandoned facilities, to place waste found in old piles or similar units in a CAMU, because once they are abandoned, management of wastes they contain is for implementing cleanups. Note also that there is a distinction between removal of waste from a closed or closing unit for placement in a CAMU and incorporation of a unit into a CAMU. EPA's position that wastes removed from non-permanent land-based units are generally not CAMU-eligible does not preclude incorporation of such units into a CAMU under appropriate circumstances. 40 CFR 552(b). As with any other regulated unit that is incorporated into a CAMU, the Subpart F, G and H requirements and the unit-specific requirements of 40 CFR Part 264 or 265 that applied to the regulated unit will continue to apply to that portion of the CAMU (i.e., the portion encompassing the former regulated unit) after incorporation into the CAMU. See, 40 CFR 264.552(b). Under § 264.110 or § 265.110, however, the Regional Administrator may defer any of these standards to the site's corrective action requirements, if certain conditions are met (most importantly, the regulated unit is situated among solid waste management units (or areas of concern), a release has occurred, and the regulated unit and the solid waste management units or areas of concern are likely to have contributed to the release).

[10] The regulations for tank systems at 40 CFR 264.197 and 40 CFR 265.197 require owners/operators to remove or decontaminate all waste residues, contaminated containment system components (liners, etc.), contaminated soils, and structures and equipment contaminated with waste. If an owner/operator demonstrates that not all contaminated soils can be practicably removed or decontaminated as required, the owner/operator must close the tank system as a landfill. The regulations for waste piles at 40 CFR 264.258 and 40 CFR 265.258 require owners/operators to remove or decontaminate all waste residues, contaminated containment system components, contaminated subsoils, and structures and equipment contaminated with waste and leachate. If, after removing or decontaminating all residues and making all reasonable efforts to effect removal or decontamination of contaminated components, subsoils, structures, and equipment as required, the owner/operator finds that not all contaminated subsoils can be practicably removed or decontaminated, the owner/operator must close the waste pile as a landfill.

[11] Guidance on the clean closure standard is available in the 1998 guidance memorandum Risk-Based Clean Closure. See Elizabeth Cotsworth to

today's rulemaking, environmental media, such as soil, ground-water, and debris contaminated by hazardous waste placed in waste piles or other non-permanent land-based units generally are CAMU eligible. Therefore, if contamination resulting from the release of waste from a waste pile or tank system is cleaned up, either during closure or otherwise, the contaminated material would generally be CAMU-eligible.[12]

One commenter also requested the Agency's view on whether miscellaneous units approved under the 40 CFR part 264, subpart X provisions are considered permanent or non-permanent land-based units, and therefore whether wastes from these units might be ''managed for implementing cleanup.'' Given the diversity of units that may be approved under the subpart X provisions, the Agency cannot offer a generic answer. In general, the Agency expects the determination of whether wastes from a subpart X miscellaneous unit are ''managed for implementing cleanup'' will be made on a unit-specific basis, considering the purpose of the unit (e.g., is it intended for permanent disposal or will wastes be removed at closure?), the design and operating standards applied to the unit at the time the unit was permitted, and its similarity to conventional units. The Agency notes that many subpart X units (e.g., drum crushers or vitrification plants) are not land-based units and are more analogous to hazardous waste tanks or incinerators. Wastes managed in such units generally would not be CAMU eligible. If a subpart X unit were intended to be a final disposal site for wastes (for example, as indicated in the unit closure plan), it would likely be considered a permanent land-based unit.

Finally, the Agency reiterates the guidance offered in the proposal on abandoned units. The Agency interprets today's rule to provide that waste removed from abandoned land-based units, whether the units were intended to be permanent or non-permanent, is waste ''managed for implementing cleanup'' and is CAMU eligible (see, 65 FR 51086, August 22, 2000).

RCRA Senior Policy Advisors, Risk-Based Clean Closure, March 16, 1998.

[12] Also, as discussed earlier in today's rulemaking, environmental media, such as soil, ground water, and debris contaminated by hazardous waste managed in waste piles or other non-permanent land-based units will generally be CAMU-eligible. Therefore, if waste that has been released from a waste pile or tank system is cleaned up, either during closure or otherwise, such waste will generally be CAMU-eligible.

4. Wastes in Intact or Substantially Intact Containers, Tanks, or Other Non-Land-Based Units (40 CFR 264.552(a)(1)(ii))

The Agency proposed to prohibit management in a CAMU of wastes found during cleanup in intact or substantially intact containers, tanks, or other non-land-based units, even if those wastes would otherwise be within the meaning of CAMU-eligible (i.e., wastes managed for implementing cleanup). ''Other non-land-based units'' include intact or substantially intact non-land-based units that are not ''containers'' or ''tanks,'' but were designed to contain wastes (e.g., containment buildings under part 264, subpart DD, and part 265, subpart DD). The Agency also proposed two exceptions to this general prohibition. First, the Agency proposed to allow management in a CAMU of wastes that are first placed in tanks, containers, or other non-land-based units as part of cleanup. Second, the Agency proposed to allow management in a CAMU of containers (even if they are substantially intact) that are excavated during the course of cleanup.

The Agency did not receive any adverse comment on its general exclusion of wastes in intact or substantially intact containers, tanks, or other non-land-based units, or on the proposed exemption for wastes first placed in tanks, containers or other non-land-based units as a part of cleanup. The Agency is finalizing these provisions as proposed.

Most commenters also supported the proposed exemption to allow placement in a CAMU of intact or substantially intact containers excavated during cleanup. One commenter opposed this approach. After evaluating these comments, the Agency has decided to promulgate the exemption for intact or substantially intact containers as proposed, as discussed below.

a. Intact and Substantially Intact Containers Excavated during Cleanup Are CAMU–Eligible

In developing the proposed exemption allowing placement in a CAMU of intact and substantially intact containers excavated during cleanup, EPA reflected the concerns of many stakeholders that excluding buried containers might create a disincentive to their excavation and would raise practical implementation issues. While off-site management may be chosen for these containers in many cases, in other cases (for example, where the waste in intact containers differs little from other remediation waste at the site, or where off-site management is difficult to arrange for), it may be sensible for the Regional Administrator to consider on-site treatment and disposal options chosen as part of the CAMU process. As explained in the preamble to the proposal, buried containers will typically be much more difficult to assess and manage than those found above ground and could complicate, and potentially slow cleanup, as well as possibly create an incentive not to excavate the container in the first place (65 FR 51087, August 22, 2000). For these reasons, the Agency proposed to allow intact and substantially intact containers (and the wastes they may contain) excavated during cleanup to be placed in CAMUs. (Interpretations of ''intact,'' ''substantially intact,'' and ''excavated during cleanup'' are discussed below.)

Most commenters supported this approach. One commenter opposed the approach, arguing generally that, if a container (or tank—see discussion below) is excavated and it is intact, there is no reason that the waste it contains should not be subject to normal RCRA Subtitle C requirements and the waste should not be disposed of in a CAMU. Focusing on tanks only, however, the commenter argued that requiring RCRA Subtitle C management would not create an incentive to leave buried tanks unexcavated on site (potentially to leak); presumably, therefore, the commenter would also disagree with EPA that excluding buried containers from CAMU eligibility might also act as a disincentive to excavation. The commenter was also not persuaded by EPA's concerns for practical issues of implementation, arguing that if a container is still intact after excavation, it should be managed under normal RCRA Subtitle C requirements.

As discussed in the proposal, the Agency agrees that, as a matter of practice, site-specific remedy decisions will often include off-site management under the RCRA Subtitle C requirements for intact containers (and the wastes they may hold) excavated during cleanup (65 FR 51087, August 22, 2000). EPA's analysis of CAMUs approved under the 1993 CAMU rule shows no evidence that waste in intact containers has been placed in CAMUs (65 FR 51086–51087, August 22, 2000 and CAMU Site Background Document). The Agency, however, does not agree that it should categorically exclude placement of intact containers in CAMUs.

First, EPA continues to believe that a blanket requirement excluding ''substantially intact'' excavated containers from placement in a CAMU could act as a disincentive for

excavation of the containers in the first place. Buried containers are similar to other buried wastes in that facility owners/operators will often be under no obligation to excavate them; if removal automatically triggers RCRA Subtitle C land disposal restrictions, minimum technology requirements, and similar obligations—because placement in a CAMU is not allowed—the RCRA Subtitle C disincentives for excavation might be considerable. EPA is concerned therefore, that prohibiting placement of these wastes in a CAMU—regardless of the site-specific circumstances—could discourage aggressive cleanups.

EPA also believes the commenter underestimates the practical difficulties that could arise. As explained in the preamble to the proposal, buried containers ''will typically be much more difficult to assess and manage than those found above ground'' (65 FR 51087, August 22, 2000). For example, buried containers are more likely to be damaged or deteriorating than containers stored above-ground (for example, because of the burial process and conditions), and therefore questions as to whether a container is or is not ''substantially intact'' are much more likely to arise. EPA believes that attempts to resolve such questions at a specific site might lead to fruitless argument, would unnecessarily distract from the focus on the most effective remedial strategies at the site, and therefore might delay cleanup. Furthermore, as the commenter acknowledges, removal of ''intact'' containers may be dangerous, or it may be technically challenging. In such cases, as another commenter observed, the most prudent approach might be to remove the container's contents and place them in a CAMU before excavation of the container is attempted. Prohibiting placement of wastes in ''intact'' containers in CAMUs could discourage this practice.

More generally, it will typically be easy for remediators to identify and plan for intact containers that are on the surface before a cleanup begins, while buried containers will often not be discovered until an excavation is on-going. At that point, it will be potentially much more disruptive to cleanups if operations have to stop for a judgment on intactness and to arrange for off-site disposal. Yet this process may be unnecessary (for example, where only a few containers are involved and they contain the same waste that is being placed in the CAMU).

For these reasons, EPA is finalizing the inclusion of intact and substantially intact buried containers among CAMU-eligible wastes, as proposed. By allowing intact and substantially intact containers (and the wastes they may hold) that are excavated during cleanup to be placed in CAMUs, the Agency believes it will reduce the likelihood that the CAMU amendments would create disincentives to excavation of buried containers and their contents. As discussed in the proposal, the Agency is less concerned that these disincentives will be created for intact or substantially intact above-ground containers, tanks or other non-land-based units, because these units are much easier to assess and manage in accordance with RCRA Subtitle C requirements for as-generated wastes (65 FR 51087, August 22, 2000). For these reasons, the Agency is finalizing the provisions allowing intact or substantially intact containers excavated during cleanup to be placed in CAMUs as proposed.

b. Extension of Approach to Buried Containers to Include Buried Tanks

EPA specifically requested comment on whether the proposed exemption for buried containers that are excavated during the course of cleanup should also apply to buried tanks (65 FR 51087, August 22, 2000). The Agency received similar comments on the issue of allowing placement in a CAMU of tanks excavated during cleanup as it did on the exemption for containers excavated during cleanup: most commenters supported CAMU eligibility for intact and substantially intact tanks excavated during cleanup; one commenter opposed CAMU eligibility, arguing that—if substantially intact—tanks (and the wastes they may hold) are more appropriately managed under the RCRA Subtitle C requirements for as-generated wastes.

After evaluating these comments, the Agency is persuaded by the view of commenters that intact and substantially intact tanks excavated during cleanup should be addressed in the same way as intact and substantially intact containers excavated during cleanup.[13] The Agency has reached this conclusion based primarily on three considerations. First, as with buried containers, facility owners/operators will often have the option of leaving buried tanks in place during a cleanup action. Therefore, as commenters pointed out, the disincentives to excavation (or aggressive remediation) that application of RCRA Subtitle C requirements for as-generated wastes can impose on cleanup will apply to both buried tanks and buried containers. As discussed throughout the proposal and today's rulemaking, the primary purpose of CAMUs is to remove these disincentives. Second, the same practical difficulties that apply to excluding buried containers from CAMU-eligibility (discussed above) apply equally to buried tanks. Third, as discussed in the proposal, it could be difficult in burial situations to always distinguish between tanks and containers—a point seconded by one set of commenters. In the regulation of as-generated wastes, regulators and facility owners/operators sometimes engage in lengthy discussions over whether a particular storage unit is a ''tank'' or a ''container'; these discussions could be considerably more complicated in the case of excavated ''units'' containing wastes, particularly if the original function or use of the unit is not clear (e.g., at the time it was being used, was the unit ''portable''—making it a ''container'' under § 260.10—or ''stationary''—making it a ''tank''). Thus, extending the container approach to tanks furthers EPA's objective of eliminating from the cleanup context distinctions that serve a useful purpose for management of as-generated hazardous waste, but that, in a cleanup context, distract from the overall objective of achieving cleanups without adding significant value.

Furthermore, as discussed in the proposal, any material found in tanks (or containers) after excavation must meet the new CAMU treatment requirements, ensuring that any principal hazardous constituents are adequately treated so as to ensure protection of human health and the environment (65 FR 51087, August 22, 2000). The CAMU treatment requirements are discussed later in today's rulemaking.

c. Interpretations of ''Intact or Substantially Intact,'' ''Found During Cleanup'' and ''Excavated During Cleanup''

Today's exemption from the prohibition on placement of containers in CAMUs applies to ''intact or substantially intact'' tanks and containers that are ''excavated during cleanup.'' ''Intact'' and ''substantially intact'' continue to have the meanings

[13] Note that products and waste in operating underground storage tank systems would not be CAMU-eligible under today's approach. This is because operating underground storage tank systems are considered part of on-going industrial operations at a facility. They are addressed by today's proposal in the same way as operating waste piles and other non-permanent land-based units. That is, waste removed from such systems is generally not considered waste managed for implementing cleanup and is not CAMU-eligible. Environmental media and debris contaminated by releases from such systems is, if excavated, considered managed for implementing cleanup and is CAMU-eligible.

discussed in the proposal. That is, intact or substantially intact containers, tanks, and other non-land-based units can be removed without likelihood of a significant release. Minor imperfections should not prevent a unit from being considered ''intact'' (65 FR 51087, August 22, 2000). Commenters who addressed this issue supported this approach.

One commenter asked for clarification of the distinction between the phrases ''found during cleanup'' and ''excavated during cleanup.'' As discussed in the proposal, ''found during cleanup'' refers to wastes being addressed in the context of cleanup, as opposed to as-generated wastes that may also be stored at a site undergoing cleanup. It is the phrase ''excavated during cleanup,'' not the phrase ''found during cleanup,'' that defines whether waste in a tank, container, or similar unit is CAMU eligible. Waste ''found during cleanup'' might include waste in intact and substantially intact containers, tanks, or similar units that are above ground (e.g., in an old warehouse) as well as wastes that are buried. Wastes in the above ground units would not be CAMU eligible. Only the wastes in intact and substantially intact containers, tanks, or similar units that were buried and are ''excavated during cleanup'' are CAMU eligible. ''Excavated'' is intended to have its normal meaning of ''unearthed'' or ''dug up.''

d. Placement of ''Historic Wastes'' in CAMUs

In the proposal (65 FR 51087), the Agency also discussed the CAMU-eligibility of historic wastes left onsite in units that arguably could meet the definition of either a land-based unit or a ''tank.'' Under today's rulemaking, as under the proposal, historic wastes would be CAMU-eligible if they are found in a land-based unit and managed for implementing cleanup. In the proposal, EPA identified wastes at manufactured coal gas production facilities as an example of ''historic'' wastes (although the Agency also noted that these wastes would not be hazardous under the TCLP). These facilities often have old ''gas holders'' that contain historic coal gas manufacturing wastes. In most cases, such units would be considered land-based units under RCRA (e.g., old building foundations, which are analogous to concrete vaults), and the wastes would be CAMU-eligible. EPA is also aware that some facilities have old units that have not been used in decades that would arguably meet the definition of a tank, and therefore would potentially not be CAMU-eligible. If such a unit were a tank and it was buried, then it and the waste it contained would be CAMU-eligible. If the ''historic'' tank were not buried, the rule requires that the Regional Administrator determine whether it is intact or substantially intact to decide whether the waste is CAMU-eligible. In some cases, given the age, construction, and size of such units, the Agency believes that it would be reasonable to assume that the units are not substantially intact. As a result, waste removed from the units would be CAMU-eligible (65 FR 51087, August 22, 2000). In other cases, historic units would be considered land-based units under RCRA (e.g., old building foundations), and the waste would not be excluded from CAMU eligibility. Commenters supported this approach.

5. Limited Use of Nonhazardous ''As-Generated'' Waste in CAMUs (40 CFR 264.552(a)(1)(iii))

EPA believes that, as a general matter, it is not appropriate to manage as-generated waste in CAMUs. This longstanding position was discussed in the preamble to the 1993 CAMU regulations (58 FR 8658 and 8664, February 16, 1993), in the proposal to this rulemaking (65 FR 51085 and 51086, August 22, 2000) and in the section on ''as-generated vs. cleanup wastes'' above. At the same time, the Agency acknowledges that there are accepted practices where nonhazardous as-generated wastes are used in cleanup remedies. The new language on as-generated waste added to the CAMU-eligible waste definition, however, would expressly prohibit these practices in CAMUs. EPA proposed, therefore, that Regional Administrators might allow placement of nonhazardous as-generated cleanup waste in a CAMU when such waste is being used to facilitate treatment or the performance of the CAMU. Commenters supported this approach, and the Agency is finalizing this provision as proposed.

As discussed in the proposal, the Agency is aware of two common practices that use nonhazardous as-generated wastes to facilitate treatment of cleanup wastes or the performance of waste disposal units. The first practice is to use fly ash or cement kiln dust (CKD) or similar materials as stabilization agents to reduce leaching of metals from metal-bearing wastes. The second practice is to use similar agents, such as coal combustion wastes, to provide increased structural stability for wastes, such as sludges, that do not have sufficient strength to bear their own weight or the additional weight of a cap without risk of failure. Such practices facilitate treatment or the performance of the CAMU and are within the meaning of today's exemption for placement of nonhazardous as-generated wastes.

EPA requested comment on whether Regional Administrators should also have the discretion to allow placement of hazardous as-generated waste in a CAMU if such placement would facilitate treatment or the performance of the CAMU (65 FR 51086, August 22, 2000). Most commenters did not address this issue. One commenter did suggest, however, that Regional Administrators should have the discretion to allow such placement. The commenter offered, as a hypothetical example, the situation where the corrosive properties of an otherwise hazardous waste might be useful in stabilizing other materials. EPA carefully evaluated this comment. At this time, the Agency is not persuaded to allow placement of hazardous as-generated waste in CAMUs. The Agency is concerned that such an approach might weaken the distinction between wastes generated from ongoing industrial operations and wastes managed for implementing cleanup and does not believe the appropriateness of such a provision has been demonstrated by one hypothetical example. At the same time, EPA acknowledges that there may be individual cases where placement of as-generated hazardous waste in a CAMU could safely facilitate a remedy. If experience shows that the absolute prohibition on placement of as-generated hazardous waste in CAMUs is counterproductive, the Agency may revisit the issue in the future.

Although EPA is not allowing placement of hazardous as-generated waste in CAMUs, the Agency—as commenters pointed out—has sought to encourage the use of materials such as cement kiln dust and coal combustion wastes to facilitate treatment or performance of disposal units, and it would consider these to be legitimate uses of such secondary materials. Their use in a CAMU would be allowed.

C. Discretionary Kickout (40 CFR 264.552(a)(2))

The RCRA Subtitle C regulations ensure that hazardous wastes are handled according to stringent national standards. As discussed in the 1993 CAMU rule and in the proposal to today's rulemaking, these requirements, when applied to existing contamination problems, can provide a strong incentive for leaving wastes in place or for selecting remedial approaches that minimize regulation under RCRA Subtitle C. In the 1993 CAMU rule and

in these amendments, EPA's primary purpose is to provide appropriate opportunities to tailor the RCRA Subtitle C standards to provide better incentives to manage hazardous wastes during cleanup. At the same time, EPA does not want the CAMU regulations to reward facility owners for non-compliance with applicable RCRA Subtitle C requirements for as-generated wastes.

All facility owners/operators are legally obligated to make themselves aware of and comply with applicable RCRA Subtitle C requirements. To ensure that the CAMU rules do not create any incentive to mismanage as-generated wastes (e.g., to create a remediation waste eligible for management in a CAMU), or do not reward past non-compliance, EPA proposed that a Regional Administrator might disallow the management of CAMU-eligible waste in a CAMU where he or she has or receives information that such wastes have not been managed in compliance with applicable land disposal treatment standards of 40 CFR part 268, or applicable 40 CFR part 264 or part 265 unit design requirements, or that noncompliance with other applicable RCRA requirements likely contributed to the release of the waste. This is referred to as the ''discretionary kickout'' provision.

EPA received numerous comments on the discretionary kickout provision. Some commenters strongly supported the provision and thought it should be expanded. Other commenters questioned the need for the provision at all and expressed concern over how the provision might be implemented. As discussed below, EPA was not persuaded that the scope of the discretionary kickout provision should be expanded or reduced. The Agency continues to believe that the discretionary kickout provision strikes a reasonable balance between facilitating cleanups through CAMUs and ensuring that facility owners are not rewarded for improper waste management. EPA, therefore, is finalizing the discretionary kickout provision as proposed, and as discussed below.

As mentioned above, several commenters strongly supported the discretionary kickout provision and thought it should be expanded. One group of commenters suggested that the discretionary kickout should generally be applied to wastes previously managed in violation of major RCRA requirements and ideally should be made mandatory at least with respect to the non-complying owner/operator and affiliated parties. Similarly, other commenters argued that the discretionary kickout provision should be expanded to give Regional Administrators the discretion to exclude CAMU-eligible wastes from management in a CAMU under circumstances other than those outlined in the proposal in order to support more stringent state requirements and state risk-based cleanup evaluations.

The Agency carefully evaluated these comments. As discussed in the proposal, EPA wants to be sure that the CAMU regulations do not create incentives for noncompliance, whether the noncompliance is intentional to take advantage of the CAMU rule requirements or is the result of careless management practices (65 FR 51088, August 22, 2000). The Agency also believes that it will generally be most appropriate to apply the discretionary kickout to owners/operators (or affiliated parties) who are responsible for acts of noncompliance rather than subsequent owners/operators or government agencies conducting the cleanup.[14]

The Agency is not, however, persuaded that the discretionary kickout provision should be made mandatory with respect to such owner/operators. The circumstances where noncompliance may have led to a release will be varied, and EPA believes it would be a mistake to automatically eliminate the possibility of a CAMU in such cases, even where the entity conducting the cleanup is responsible for the original noncompliance. In many cases, CAMUs may allow remedial alternatives that all parties agree are most appropriate for a site—for example, they might facilitate a treatment alternative where, without a CAMU, the most likely alternative might be capping in place without treatment. In other cases, a compromise remedial alternative established through a CAMU might allow a protective remedy to move forward promptly, avoiding years of contention and litigation. Finally, EPA believes that making the discretionary kickout mandatory would inevitably move discussions about CAMUs away from the question of what type of remedy is most appropriate for a site and toward questions surrounding the exact set of circumstances of past waste disposal and management, whether specific management practices did or did not involve a violation, and whether a release occurred as a result of past management before or after the present owner held the property. In other words, it might undercut the objectives of developing protective remedies and avoiding wasteful disputes over ancillary issues. In such cases, action on a CAMU (and more broadly on a cleanup) might be put on hold until all these issues were resolved.

EPA remains convinced that the discretionary kickout provision will be an important tool, especially where violations are clear, or there are indications of intentional noncompliance. However, for the reasons discussed above, the Agency has determined that making the discretionary kickout mandatory—and thereby removing any discretion from overseeing agencies—would be counterproductive by increasing the transaction costs associated with CAMUs, resulting in the potential delay of cleanups, and, in some cases, precluding the most effective remedy for a site. Instead, the Agency continues to believe that the Regional Administrator should have the flexibility to consider both the significance of the violation at issue and other site-specific factors (see discussion of site-specific factors, below) when making a determination as to whether to exercise the discretionary kickout provision.

The Agency is also not persuaded that the language of the discretionary kickout provision needs to be changed in order to accommodate more stringent state approaches. Under RCRA section 3009, states are not restricted from establishing state regulations that are more stringent than the federal RCRA Subtitle C regulations. This would include state provisions to restrict additional wastes from being placed in CAMUs and provisions to establish additional circumstances under which wastes that would otherwise be CAMU-eligible may not be placed in a CAMU.

Other commenters questioned the need for the discretionary kickout provision and expressed concern over its implementation. One group of commenters expressed the view that the discretionary kickout provision could have untoward effects on cleanups, and that other mechanisms and incentives exist that would adequately promote compliance with RCRA Subtitle C standards (e.g., enforcement action against the violations). This group also suggested that if the discretionary kickout provision is retained: (1) It should be limited in all cases to situations where noncompliance ''likely contributed to the release of the waste'' and, in the case of LDR requirements, it should be limited to instances of

[14] Indeed, as discussed in the proposal, EPA generally would not exercise its discretion to disallow placement of CAMU-eligible wastes in a CAMU when the entity applying for the CAMU is not the same as or affiliated with the entity that mishandled the waste (65 FR 51089, August 22, 2000).

noncompliance with the prohibition against actual land disposal without required treatment (i.e., not to the other related requirements of 40 CFR part 268); (2) the Agency should designate additional illustrative factors that Regional Administrators should consider when deciding whether to exercise the kickout, including ''(i) whether the violation was a substantial factor that likely contributed to the release of the waste, (ii) the impact or likely impact of the release in comparison to other releases that may have contributed to the need for cleanup, and (iii) whether the violation was intentional;'' and (3) the Agency should establish a fair and responsible process to ensure that discretionary kickout decisions are properly made by overseeing agencies.

The Agency understands that most facility owners/operators are conscientious and are making their best efforts to understand and comply with applicable environmental requirements; however, the Agency is not persuaded that the discretionary kickout provision should be eliminated on that basis. EPA agrees that other mechanisms—e.g., enforcement mechanisms—also promote compliance, but the Agency continues to believe that the discretionary kickout provision is important to ensure that facilities do not benefit inappropriately from non-compliance. As discussed above, the Agency continues to believe that the discretionary kickout provision represents a reasonable balance between facilitating cleanups with CAMUs and maintaining incentives for waste minimization and proper waste management in the first instance. The discretionary kickout provision will play an important role in maintaining that balance because it provides a significant incentive to owners/operators to manage as-generated hazardous waste properly. A facility owner/operator who understands that the Regional Administrator may deny, at his or her discretion, placement of otherwise CAMU-eligible waste in a CAMU based on relevant noncompliance may focus more closely on safe management of the waste in the first place.

The Agency is also not persuaded that the discretionary kickout provision should be changed to limit its application, in the case of LDRs and design standards, to situations where the noncompliance ''specifically contributed to the release of the wastes.'' As discussed in the proposal, the Agency singled out LDRs and unit design requirements in the discretionary kickout provision because they are fundamental RCRA Subtitle C requirements aimed at preventing or minimizing releases of hazardous waste (65 FR 51088, August 22, 2000). They are also provisions from which CAMUs may provide relief. EPA appreciates that commenters would prefer for the Agency to place less importance on violations of these key requirements, but commenters failed to address EPA's underlying assumption—that substantive violations of LDRs and unit design standards are the kinds of RCRA violations that are likely to lead to environmental contamination—and therefore the Agency is unpersuaded by their argument that the rule should not single out these requirements as a basis for the Regional Administrator to exercise the discretionary kickout.

EPA believes that it has already at least partially addressed the commenter's concern that the discretionary kickout provision would be exercised for non-germane violations of the land disposal restrictions or minimum technology requirements. The discretionary kickout provision, as written, focuses on the substantive requirements of the LDRs and unit design standards. The Agency notes that it specifically highlighted in the proposal that ''unit design requirements'' refers to substantive design standards, such as the tank design standards under 40 CFR 264.192 or the design requirements for waste piles under 40 CFR 264.251 and that maintenance requirements, such as the requirements that owners/operators inspect tanks under 40 CFR 264.195, are not ''unit design requirements'' and thus would be addressed under the phrase ''or that non-compliance with the other applicable RCRA requirements likely contributed to the release of the waste.'' (65 FR 51088, August 22, 2000) Similarly, the element of the discretionary kickout provision related to the LDR requirements is limited, as proposed, to noncompliance with applicable ''land disposal *treatment* standards'' (emphasis added). The Agency believes that this clearly refers to land disposal without required treatment. Therefore, EPA has already focused the discretionary kickout provision on the aspects of LDR requirements and unit design standards that are most likely to be related to environmental releases.

The Agency does believe that it is reasonable to expect the Regional Administrator to consider a number of factors when making decisions about whether and how to apply the discretionary kickout provision. As discussed in the proposal, the Agency emphasizes that it does not intend to exercise its discretionary kickout authority in every instance of noncompliance with LDR treatment requirements or substantive unit design requirements. The Agency expects the Regional Administrator to consider, as appropriate, the significance of the violation at issue, whether it was intentional,[15] facility owner/operator has a history of violations, the extent to which it likely contributed to the release of the waste, and the likely management approach for waste excluded from placement in a CAMU, among other factors, when applying the discretionary kickout provision.

The Agency also agrees that a fair and responsible process should be used to make decisions about applying the discretionary kickout provision; however, the Agency does not agree that it is necessary to include a specific process in today's rulemaking. Decisions to apply the discretionary kickout provision will be made in the context of CAMU approvals, using the CAMU approval process, which relies on existing administrative procedures (e.g., permitting procedures) augmented by CAMU-specific requirements (i.e., public notice and opportunity for comment, as discussed later in today's rulemaking) to review and make decisions about CAMU applications. Therefore, decisions about application of the discretionary kickout provision are subject to review in accordance with available administrative and judicial review procedures.

D. Information Submission (40 CFR 264.552(d))

To implement the more specific requirements for identifying wastes eligible for management in a CAMU (discussed above), EPA also proposed to define more specifically the types of information that owners/operators must submit to enable the Regional Administrator to designate a CAMU. For wastes proposed for placement in a CAMU, the Agency proposed that owners/operators must submit information, unless not reasonably available, on (1) the origin of the waste and how it was subsequently managed

[15] This is not to say, of course, that an intent to violate RCRA has to be present where the kickout is exercised. As EPA stated in the preamble to the proposed rule, ''EPA does not want the CAMU to create any incentives for non-compliance, whether intentional to take advantage of alternate requirements in the CAMU rule, or as result of careless management practices (which could, by example, thereby encourage others to ignore applicable requirements.'' 65 FR 51088. EPA does believe, however, that intent may be an issue appropriate for the RA to take into account when deciding whether to exercise the kickout (for example, in a situation where the facility intentionally mismanaged waste to take advantage of the flexibility in the CAMU rule).

(including a description of the timing and circumstances surrounding the disposal and/or release), (2) whether the waste was listed or identified as hazardous at the time of disposal and/or release, and (3) whether the waste was subject to the land disposal requirements of 40 CFR part 268 at the time of disposal and/or release.

In addition to general comments on the information requirements, the Agency specifically requested comment on an alternative approach to information on LDRs. Specifically, the Agency asked whether it should require facility owners/operators to submit information on whether ''the disposal and/or release of the waste occurred before or after the LDR requirements of part 268 of this chapter were in effect for the associated listing'' rather than whether wastes were ''subject to the land disposal restriction requirements.''

The Agency is promulgating the information requirement on waste origin and management, the information requirement on whether wastes were listed or identified as hazardous at the time of disposal and/or release, and the standard that information be provided ''unless not reasonably available'' as proposed. EPA received considerable comment on the ''reasonably available'' standard. These comments are discussed later in this section. EPA did not receive comments specifically on the other two terms. After evaluating comments received on the issue, the Agency has chosen to finalize its alternative approach to the information requirement on LDR requirements, as discussed below.

The Agency believes that requiring facility owner/operators to submit factual information on the dates of waste disposal and/or release relative to the effective dates of LDR requirements will be more efficient than expecting owners/operators to make determinations of whether wastes were ''subject to'' LDR requirements. Determinations of whether wastes are ''subject to'' LDR requirements can be complex (for example, as one commenter pointed out, the question might arise as to whether a waste was ''prohibited'' or ''restricted'' under the land disposal restrictions, and it was not clear how a facility owner should answer the ''subject to'' question based on the answer). In contrast, facility owners/operators can easily compare the timing of waste disposal/release to the effective dates for LDR requirements (these effective dates are published by the Agency in 40 CFR part 268, Appendix VII—Effective Dates of Surface Disposal Wastes Regulated in the LDRs) and, using this information, the Agency can make any necessary judgments about whether wastes were subject to LDR requirements at the time of disposal or release. Commenters who addressed this issue supported the alternate approach to providing information on LDRs.

In finalizing the alternate approach to information on LDRs, EPA is making a minor clarifying change to the language discussed in the proposal. The alternative language for 40 CFR 264.552(d)(2) discussed in the proposal would have required facility owners/operators to provide information on whether ''the disposal and/or release of the waste occurred before or after the land disposal restriction requirements of part 268 of this chapter were in effect for the *associated listing*'' (emphasis added). By referring explicitly to ''the associated listing,'' this language does not address information requirements for characteristic wastes (although, obviously, for characteristic waste, EPA would expect information on the timing of the disposal and/or release compared to the effective date of the LDRs for the associated characteristic). To address this imprecision, EPA has revised the language of the final regulation so that it clearly covers both listed and characteristic wastes. Under the new language, facility owners/operators must submit information (unless not reasonably available) on whether ''the disposal and/or release * * * occurred before or after the land disposal restrictions * * * were in effect for the *waste listing or characteristic*'' (emphasis added).

The specific information now required under 40 CFR 264.552(d)(1) though (3) covers the circumstances surrounding the origin and subsequent management of wastes proposed for placement in CAMUs. The information required (unless not reasonably available) under 40 CFR 264.552(d)(1) covers waste origins and past management because that is the information the Agency needs to distinguish between as-generated and cleanup wastes and, thus, to make decisions about CAMU eligibility. The Regional Administrator would use this information for the purposes of deciding whether the waste is CAMU-eligible, including whether such waste is one for which kickout should be considered. The information required (unless not reasonably available) under 40 CFR 264.552(d)(2) and (3) speaks to whether wastes proposed for placement in a CAMU were subject to RCRA Subtitle C requirements and whether one key requirement—the land disposal restrictions—was in effect at the time of release or disposal. The Agency will use this information to make decisions about whether, because of previous mismanagement, the discretionary kickout provision should be considered.

The Agency emphasizes that the purpose of the new information submission requirements is to give Regional Administrators and the public information necessary for these specific decisions. Given the importance of restricting CAMUs to management of legitimately CAMU-eligible waste and the need for overseeing agencies to properly exercise the discretionary kickout provision, this information is important. At the same time, the Agency expects that information collection will be focused on what is needed to allow informed decisions to be made and will avoid the collection of unnecessary information. This is consistent with the Agency's general guidance on collection of information in cleanup situations. (See, e.g., 61 FR 19944, May 1, 1996, where EPA observed that ''poorly focused investigations can become a drain on time and resources and, in some cases, unnecessarily delay remedial actions'' and encouraged program implementers and facility owners/operators to use a variety of mechanisms to focus site investigation activities.)

EPA emphasizes that, in general, facility owners/operators will already have the information required by 40 CFR 264.552(d)(1) through (3) prior to requesting approval of a CAMU. Where a CAMU is proposed for a RCRA treatment, storage or disposal facility, information on the origin and historical management of wastes, and on the sources and causes of contamination, will routinely be available in permit applications, RCRA Facility Assessments, and RCRA Facility Investigations. This information can also be found in similar documents prepared under other cleanup programs (e.g., preliminary assessments and site investigations under the federal Superfund program or remedial assessments under state programs). Other cleanup documents, such as remedial work plans, engineering reports, and analyses of remedial alternatives, also typically include information about the waste origin and historical management. Therefore, EPA does not believe that providing this information will be burdensome or will require a special exercise in information development. Commenters agreed.

As discussed in the proposal, if information meeting the requirements of 40 CFR 264.552(d)(1) through (3) has been submitted to the Agency in the past and it remains timely and accurate, owners/operators can simply identify

the information in this past submittal. EPA generally would not expect owners/operators to resubmit information that has been provided previously (65 FR 51089, August 22, 2000). Where information required under 40 CFR 264.552(e)(1) through (3) is not reasonably available, facility owners/operators can fulfill these requirements by informing EPA of the extent of their knowledge about waste origin and history. (See discussion of the ''reasonably available'' standard, below.) As discussed in the proposal, EPA recognizes that there will be situations where information on the origins of contamination or the past management of waste will simply not be reasonably available. For example, there will be situations where contamination cannot be linked with specific waste management activities historically associated with a facility (e.g., characteristically hazardous soil not associated with any hazardous waste management unit). In such cases, facility owners/operators must provide what they know. If the information required by 40 CFR 264.552(d)(1) through (3) is not reasonably available, they are not required to submit it (see discussion at 65 FR 51090, August 22, 2000).

Also as discussed in the proposal, when information submitted in response to the requirements of 40 CFR 264.552(d)(1) through (3) is already in the Agency's possession, or information brought to the Regional Administrator's attention by citizens raises significant concerns about waste eligibility or past waste management practices, the Agency expects the Regional Administrator should, where appropriate, seek additional, reasonably available, information regarding waste history beyond that initially submitted pursuant to § 264.552(d), in order to make properly informed decisions about CAMU eligibility and the use of the discretionary kickout provision (65 FR 51090, August 22, 2000). Facility owners/operators and overseeing agencies often engage in a series of back-and-forth discussions, information exchanges, and requests for additional information throughout the CAMU-application process. While sometimes necessary, these exchanges, of course, should be focused on the information needed for the decision at hand (e.g., for decisions about whether waste is CAMU eligible) and should avoid the collection of information not necessary to inform or support the decision in question.

1. ''Unless Not Reasonably Available'' Standard

As explained above, the information specified in 40 CFR 264.552(1) through (3) is required ''unless not reasonably available.'' Under this standard facility owners/operators must make a good faith effort to gather and provide information meeting the requirements. Also as explained above, the Agency believes that most owners/operators will already have the information required by 40 CFR 264.552(d)(1) through (3) as part of their general facility records or in site investigation reports, cleanup work plans, and other documents. In instances where this is not the case, the Agency expects that facility owners/operators will be able to gather the information from existing site- and waste-specific records. As discussed in the 1998 Phase IV LDR rule establishing treatment standards for contaminated soil, such site- and waste-specific records generally include manifests; vouchers; bills of lading; sales and inventory records; sampling and analysis reports; accident, spill investigation, and inspection reports; enforcement orders; and permits (63 FR 28619, May 26, 1998). Relevant information might also be obtained by talking with current and, in some cases, former employees, particularly where written documentation is absent.

The Agency received a number of comments on the ''reasonably available'' standard. In particular, some commenters were concerned with EPA's reference, in the proposal, to discussions with former employees (65 FR 51090, August 22, 2000). These commenters were concerned that the Agency might expect all facility owners/operators to interview former employees as part of a good faith effort to meet the ''reasonably available'' standard and that this expectation was not, in fact, reasonable. The Agency does not expect facility owners/operators to have to interview former employees in order to meet the ''reasonably available'' standard, except in unusual circumstances. The Agency also agrees with commenters that, in general, it is not reasonable to expect facility owners/operators routinely to contact former employees who might have knowledge relevant to meeting the new information submission requirements, solely to meet these requirements. Rather, the Agency expects that contacting former employees will likely not be necessary, because, as discussed above, facility owners/operators will already have information sufficient to meet the 40 CFR 264.552(d)(1) through (3) requirements. Where that is not the case, contact with former employees themselves would be subject to the same ''reasonably available'' standard. As discussed above, if the information required by 40 CFR 264.552(1) through (3) is not reasonably available, facility owners/operators do not have to provide it. At the same time, the Agency rejects the notion that it is categorically ''not reasonable'' to contact former employees. For example, it might be reasonable in a particular case for a facility owner/operator to contact a former plant environmental manager with a known address (or one that can be readily located) if that person had information about waste origin or past management that was not readily available through other means.

In response to one commenter, EPA also clarifies that, when the Agency asks for additional information under § 264.552(1)–(3), beyond what was submitted in a facility's initial CAMU application, the request would be limited to information that is ''reasonably available.'' In other words, EPA's authority would be limited to the same standard that pertains to information in the original submission.

2. Application of New CAMU Information Submission Requirements to P- and U-Listed Wastes

In the proposal, the Agency clarified application of the new, more specific information requirements in 40 CFR 264.552(d) to commercial chemical products. Because there is often the potential for confusion around commercial chemical products and because, as discussed above, EPA is promulgating the alternate approach to information on LDRs, the Agency discusses the issue again here. For commercial chemical products, 40 CFR 264.552(d)(2) requires that facility owners state whether the listing associated with the commercial chemical product was in effect at the time the commercial chemical product was disposed of or released. EPA has changed the language from the proposal (as discussed above), so the discussion of previous language dealing with commercial chemical products in the proposal preamble (65 FR 51090) is no longer relevant. Under the approach to 40 CFR 264.552(d)(3) promulgated today, for commercial chemical products facility owners/operators must indicate whether the disposal or release took place before or after the effective date of the prohibition for the relevant P or U listing.[16]

[16] As explained in the proposal, commercial chemical products are not ''wastes'' until they are

Continued

3. Interpretation of General CAMU Information Submission Performance Standard

The more specific information requirements promulgated today do not eliminate the general information submission performance standard established in the 1993 CAMU rule. Under the general performance standard, owners/operators must provide information sufficient to enable Regional Administrators to designate CAMUs ''in accordance with the criteria in 40 CFR 264.552.'' As discussed in the proposal, despite the Agency's use of the term ''criteria'' to refer to the requirements in 40 CFR 264.552(c) in the preamble to the 1993 CAMU rule (58 FR 8671, February 16, 1993), EPA interprets the general information performance standard to require information relating to all aspects of implementation of the CAMU regulations (65 FR 51090, August 22, 2000). This includes, for example, implementation factors that are not specifically referenced in 40 CFR 264.552(c), such as information relating to the inclusion of a regulated unit in a CAMU under 40 CFR 264.552(b).

E. Liquids in CAMUs (40 CFR 264.552(a)(3))

EPA proposed a general prohibition against the placement of liquids in CAMUs, with an exception allowing placement of liquids when they facilitate the remedy selected for the waste being managed in the CAMU. As discussed in the proposal, EPA believes that the general basis for prohibiting the placement of liquids in landfills—that liquids fundamentally increase the risk of future releases from the landfill—also applies to CAMUs. The Agency does not believe that, in general, placement of liquids enhances the performance of long-term disposal units (65 FR 51091, August 22, 2000). Commenters generally supported this approach, and the Agency is promulgating these provisions as proposed.

EPA is promulgating four provisions related to the placement of liquids in CAMUs. First, at 40 CFR 264.552(a)(3)(i), the Agency prohibits the placement of bulk or non-containerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) in any CAMU except where placement of such wastes facilitates the remedy selected for the waste. Second, at 40 CFR 264.552(a)(3)(ii), EPA prohibits placement of containers holding free liquids in CAMUs, unless such placement facilitates the remedy selected for the waste.

Third, at 40 CFR 264.552(a)(3)(iii), EPA prohibits placement of any liquid that is not a hazardous waste in a CAMU unless such placement facilitates the remedy selected for the waste or a demonstration is made pursuant to 40 CFR 264.314(f). Under this demonstration, the Regional Administrator must determine that the only reasonable alternative to placement in a CAMU is placement in a landfill or unlined surface impoundment that contains (or may be reasonably anticipated to contain) hazardous waste and that placement in a CAMU will not present a risk of contamination of any underground source of drinking water, as defined in 40 CFR 144.3. Fourth, EPA specifies that the absence or presence of free liquids in either a containerized or a bulk waste must be determined in accordance with 40 CFR 264.314(c) and that sorbents used to treat free liquids in CAMUs must meet the requirements of 40 CFR 264.314(e).

These changes essentially extend the prohibitions currently in place on placement of liquids in hazardous waste landfills to CAMUs, with the exception that placement of liquids in CAMUs is allowed if it facilitates the remedy for the waste being managed in a CAMU. As discussed in the proposal, the Agency took this approach for two reasons. First, the general basis for prohibiting placement of liquids in hazardous waste landfills—that liquids fundamentally increase the risk of future releases from the landfill—generally applies to CAMUs. Therefore, the prohibitions on placement of liquids in hazardous waste landfills should apply equally to CAMUs. Second, unlike hazardous waste landfills, which are used for permanent disposal, CAMUs are used to implement a range of remedies, including treatment remedies (65 FR 51091, August 22, 2000). In some cases, remedies may involve placement of liquid CAMU-eligible waste for treatment or other management in a CAMU (e.g., dewatering of CAMU-eligible wastes containing liquids or placement of hazardous ground water in CAMU for infiltration); in other cases, placement of liquids in a CAMU may promote the remedy for non-liquid CAMU-eligible wastes (e.g., when liquids are used for soil washing or to promote certain types of bioremediation). To ensure that these legitimate remedial practices could continue, EPA proposed (and is today finalizing) an exemption to the general prohibition on placement of liquids in CAMUs when such placement facilitates the remedy.

Commenters supported the general prohibition on placement of liquids in CAMUs and the exemption for placement of liquids when such placement would facilitate the remedy, and the Agency is finalizing these provisions as proposed.

In the proposal (65 FR 51091), EPA specifically identified the use of water or leachate for dust suppression while a CAMU is under construction or operating as a reasonable cleanup waste management approach, allowable as facilitating ''the remedy selected for the waste.'' One commenter expressed concern that the regulatory standard, in fact, would not cover this situation. The commenter requested that EPA amend the proposed language so that it allowed placement of liquids where they facilitate ''the performance of the CAMU'' as well as ''the remedy selected for the waste.'' EPA appreciates the commenter's concern, but it does not believe a regulatory change is necessary. In EPA's view, if placement of a liquid facilitates the performance of a CAMU used to manage the waste as part of a cleanup remedy, then clearly it also facilities the remedy selected for the waste.

EPA also recognizes that it may have confused the issue by identifying dust suppression as a use of liquids that would not be subject to the liquids prohibition, because it would facilitate the performance of the remedy. In fact, EPA would not consider use of non-hazardous liquids for dust suppression or similar purposes to be subject to the prohibition in the first place. EPA has long maintained that use of nonhazardous liquids in landfills for dust suppression, watering vegetative caps, and similar purposes is not prohibited by the statutory or regulatory prohibition of liquids in landfills. Because the standard promulgated today simply repeats the statutory prohibition on nonhazardous liquid (with the added condition that placement of liquids would be allowed if it ''facilitates the remedy for the waste''), it similarly

discarded or intended to be discarded by being abandoned (or used as fuels or in a manner constituting disposal when these are not their normal manner of use). 40 CFR 261.33. Therefore the associated LDR requirement would not apply to the product as it was spilled, even if it was spilled after the effective date of the LDR prohibition. Thus, the spill would not constitute a land ban violation triggering consideration of the discretionary kickout provision. For the sake of consistency, however, EPA concludes that it will be easier for facility owners/operators to indicate (if the information is reasonably available) whether a release of a commercial chemical product occurred before or after the date of the land disposal prohibition for the relevant P or U listing.

allows application of nonhazardous liquid wastes for such uses.[17]

F. Design Standards for CAMUs

Today EPA is finalizing, essentially as proposed, three amendments to the design standards for CAMUs in which wastes will remain in place after closure. First, owners/operators must meet minimum liner requirements for new, replacement, or laterally expanded CAMUs. Second, owners/operators must meet minimum design criteria for CAMU caps. Third, owners/operators must notify and take corrective action, as necessary to protect human health and the environment, for any releases from CAMUs to ground water. Today's amendments also establish opportunities for owners/operators to propose, and Regional Administrators to approve, alternate liner and cap designs to accommodate site- and waste-specific circumstances.

EPA proposed these additional design standards as reasonable for CAMUs in which wastes will remain in place after closure and are appropriately consistent with current standards for the design, operation, and closure of other units used for long-term disposal. Given the site-specific nature of cleanups and the need to maintain the incentives for remediation that the CAMU rule provides, the Agency also proposed to allow alternate liner and cap designs, under certain circumstances (65 FR 51091–51095, August 22, 2000).

Comments on the proposal to make the CAMU design standards more specific were mixed. Some commenters supported the new design standards. A number of commenters opposed the Agency's decision to develop minimum national design standards for CAMUs. These commenters suggested that the new minimum national design standards would slow future cleanups using CAMUs or would lead owners/operators to cap cleanup wastes in place rather than pursue more aggressive remediation. Some commenters suggested that EPA abandon the minimum design standards for CAMUs altogether, or express the standards as guidance rather than in regulation. Others suggested that standards for CAMU design should be modeled after the risk reduction goals of the National Contingency Plan or otherwise based on a risk management finding.

As discussed throughout the proposal and today's rulemaking, EPA is attempting in these amendments to strike a reasonable balance between predictability in CAMU design and operation and flexibility to use CAMUs over a range of site- and waste-specific conditions. EPA believes that appropriate minimum national design standards are a key element of this balance.

The Agency is not persuaded that minimum national design standards will significantly affect the kinds of remedies selected at cleanup sites (since CAMUs approved to date generally meet these standards). Furthermore, EPA does not have evidence (and commenters did not provide specific evidence) that today's rule would increase the likelihood that facility owners/operators would cap wastes in place rather than pursuing more aggressive remedial approaches. As discussed in the proposal, the majority of new, replacement or laterally expanded CAMUs approved under the 1993 CAMU rule already include liners and capping requirements that would comply with the standards promulgated today. Where liners or caps were not used, there were legitimate reasons related to the cleanup for that decision, and the design generally would have been allowed under today's rule. (65 FR 51092, August 22, 2000; Corrective Action Management Unit (CAMU) Site Background Document, 2001). Nor did commenters provide evidence that today's rule would significantly slow approval of CAMUs. EPA designed the processes in today's rule to mirror those actually used today in CAMU approval, and therefore it does not believe today's rule would significantly add to existing processes. For these reasons, EPA sees no reason why specifying minimum standards, generally consistent with practice to date, would slow down or deter cleanups. Instead, these standards will provide for important predictability in CAMU decision-making and for transparency to the public.

The Agency also does not agree that minimum national design standards should be replaced by a risk-reduction performance goal. While EPA agrees that site-specific factors (including site-specific factors related to risk) are of central importance in cleanup and CAMU determinations, the Agency is not persuaded that a performance standard based solely on risk would ensure the minimum baseline of protection or provide the predictability in CAMU design and operation that the Agency and many stakeholders desire. As discussed above, site- and waste-specific factors are appropriately accommodated in the opportunities for owners/operators to propose and the Regional Administrator to approve alternate CAMU design standards. Commenters provided no specific examples of where a legitimate cleanup would not be accommodated by this approach.

On balance, most commenters who addressed the minimum design standards for CAMUs, including commenters who opposed or questioned the need for such standards, recognized that EPA had to balance a range of concerns in developing the CAMU amendments. Overall, these commenters thought that, if EPA was persuaded that the design standards for CAMUs should be more specific, the approach of establishing minimum national design standards for CAMUs with opportunities for Regional Administrators to approve alternate standards, and the specific standards and approaches proposed, were reasonable. The Agency appreciates this support, and is finalizing the minimum design standards as discussed below.

1. Liner Standard

In the 1993 CAMU rule, the fourth general decision criterion for designation of CAMUs (40 CFR 264.552(c)(4)) specifies that ''areas within the CAMU where wastes remain in place after closure of the CAMU shall be managed and contained so as to minimize further releases to the extent practicable.'' As discussed in the proposal, EPA intended this standard, in conjunction with the closure and post-closure provisions for CAMUs in 40 CFR 264.552(e), to ensure that long-term controls adequate to protect human health and the environment are imposed for CAMUs in which wastes will remain for long-term disposal (65 FR 51091, August 22, 2000).

In practice, pursuant to the 1993 CAMU rule, Regional Administrators have required liners on a site-specific basis for most new, replacement, or laterally expanded CAMUs. The 1993 CAMU rule, however, does not have explicit minimum liner requirements for CAMUs in which wastes will remain after closure. Some stakeholders expressed the concern that the 1993

[17] See, e.g., the April 30, 1986 guidance, ''Restrictions on Placement on Nonhazardous Liquids in Hazardous Waste Landfills'' OSWER Directive 9487.01–1A(85), in which EPA states, ''uses of nonhazardous liquids that are necessary to meet other regulatory or safety requirements, including EPA-approved corrective actions are not considered to be subject to the restrictions under RCRA section 3004(c)(3). . . . For this reason, uses such as the following should not be subject to the restrictions under section 3004(c)(3): dust suppression, fire fighting, intermittent watering of vegetative cover, moistening of a clay cap to prevent cracking or offgassing, washing of landfill equipment, and herbicide or pesticide treatment to control certain organisms that could break a cap or liner. In addition, EPA believes that the use of liquids for approved corrective action purposes (e.g., landfill washing or soil flushing to reduce hazardous waste concentrations) does not require an owner or operator to apply for an exemption under section 3004(c)(3).''

CAMU rule standard, while implemented appropriately in practice to date, was too open-ended and would benefit from increased detail to better ensure that liners are designed adequately and used where appropriate. This approach would also make CAMU design more predictable for the public. In response to these concerns, EPA proposed and is today finalizing a minimum national liner standard for new, replacement, or laterally expanded CAMUs in which wastes will remain after closure. To ensure the flexibility needed for cleanups, the Agency also proposed and is today finalizing opportunities for owners/operators to propose and Regional Administrators to approve alternate liner standards. Comments on the standards are addressed in the standard-specific sections, below.

a. Standard Liner Design (40 CFR 264.552(e)(3)(i))

Today's minimum national CAMU liner standard at 40 CFR 264.552(e)(3)(i) is modeled after the uniform design standard for municipal solid waste landfills currently in place at 40 CFR 258.40(a)(2). Under today's CAMU standard, all new, replacement, or laterally expanded CAMUs in which wastes will remain after closure must be constructed with a composite liner and a leachate collection system (unless the Regional Administrator approves an alternate site-specific standard). Today's standard requires a composite liner consisting of two components: (1) An upper flexible membrane liner with a minimum thickness of 30-mil, and (2) a lower component consisting of at least two feet of compacted soil with a hydraulic conductivity of no more than $1x10^{-7}$cm/sec. The rule requires the upper flexible membrane liner component to be installed in direct and uniform contact with the compacted soil component. Flexible membrane liners consisting of high density polyethylene must be at least 60-mil thick. The leachate collection system must be constructed to maintain less than a 30-cm depth of leachate over the liner. Commenters who addressed the specific minimum national liner design requirements generally supported the requirements as reasonable, and the Agency is finalizing these provisions as proposed.

The Agency believes that these standards are appropriate minimum national standards for new, replacement, or laterally expanded CAMUs in which wastes will remain after closure, because they will, among other things, be protective across a wide range of waste and site conditions. They also reflect what has generally been EPA and state practice at CAMUs to date. (See CAMU Site Background Document.) Indeed, commenters who addressed the specific liner and leachate collection standards proposed generally agreed that the RCRA Subtitle D standards were appropriate for CAMUs. In addition, by using the standards for municipal solid waste landfills as a guide, the Agency avoids the implementation issues associated with promulgation of a new standard. Guidance on application of the standards for municipal solid waste landfills is already available. See, for example, Solid Waste Disposal Facility Criteria, 56 FR 50978, October 9, 1991 and EPA's 1993 guidance, Solid Waste Disposal Facility Criteria: Technical Manual (EPA 530–R–93–017, November 1993), available on the Internet at *www.epa.gov/epaoswer/non-hw/muncpl/landfill/tecnman/intro.pdf.*

The new minimum national design standards (and alternate standards, discussed below) apply only to new, replacement, or laterally expanded CAMUs in which wastes will remain after closure. As discussed in the proposal, the terms ''new,'' ''replacement,'' or ''laterally expanded'' should be interpreted consistently with guidance EPA has developed for ''new,'' ''replacement,'' and ''laterally expanded'' landfills and surface impoundments in the context of the liner and leak detection requirements of RCRA section 3004(o) (65 FR 51092, August 22, 2000). Unlike hazardous waste landfills and surface impoundments addressed by section 3004(o), however, as discussed above, ''existing'' and ''new'' CAMUs are not defined by a specific date. For CAMUs, ''new'' has its common meaning. That is, a CAMU built as part of a remedial action would be ''new.'' An existing unit that a Regional Administrator designates as a CAMU is not ''new'' and would not be subject to the design standards promulgated today. Over the years, EPA has issued guidance on application of the terms ''new,'' ''replacement,'' and ''laterally expanded.'' The Agency has placed key elements of this guidance in the docket for today's rulemaking.

One commenter expressed the concern that the proposal did not adequately describe ''existing'' units. Citing a 1985 EPA memorandum on application of the section 3004(o) standards,[18] the commenter argued that relying on this interpretation of ''existing'' would eliminate virtually all nonhazardous solid waste management units at corrective action facilities.

The guidance cited was not placed in the docket for the proposal and does not define the Agency's approach for determining which units are ''existing'' for purposes of today's CAMU design standards. RCRA section 3004(o) established minimum liner and leachate detection standards for hazardous waste landfills and surface impoundments built after November 8, 1984, the effective date of HSWA. Therefore, EPA guidance at the time defined ''new'' in relation to the specific effective date of the section 3004(o) requirements—i.e., units built after that effective date were considered ''new.'' In referencing guidance on the terms ''new,'' ''replacement,'' and ''laterally expanded'' in the proposal, the Agency was referring to its general principles for application of these terms, not to its determinations of specific effective dates of section 3004(o) requirements for specific types of units. To respond directly, EPA clarifies that, for the purposes of the CAMU design standards promulgated today, solid waste management units that are in existence at the time of a remedial action are not considered ''new'' units if they are designated as a CAMU.

b. Alternate Liner Designs (40 CFR 264.552(e)(3)(ii))

EPA proposed two provisions that would allow Regional Administrators to approve alternate liner designs for new, replacement, or laterally expanded CAMUs in which wastes will remain after closure. Under certain circumstances, such designs may include alternatives that do not include a liner or leachate collection system.

Under 40 CFR 264.552(e)(3)(ii)(A), owners/operators may propose and Regional Administrators may approve alternate liner and leachate collection system designs based on a finding that alternate design and operating practices, together with location characteristics, will prevent migration of hazardous constituents into ground or surface water at least as effectively as the standard liner and leachate collection system. As discussed in the proposal, this standard is patterned on the statutory alternate liner standard for hazardous waste land disposal units at RCRA section (o)(2), promulgated by EPA at 40 CFR 264.301(d) (65 FR 51092, August 22, 2000). This allows for alternate liner and leachate collection

[18] The guidance document cited by the commenter is Applicability of the HSWA Minimum Technology Requirements Respecting Liners and Leachate Collection Systems, April 1, 1985, available in the RCRA permit policy compendium as document 9480.1985(01).

system designs for hazardous waste landfills provided the alternate design, in conjunction with location characteristics, will achieve technical performance equal to the standard liner and leachate collection system design. As discussed in the proposal (65 FR 51092), EPA expects this provision would provide flexibility for designs that take into account local factors, including state design protocols and availability of construction materials.

Several commenters addressed the proposal to include ''location characteristics'' as a consideration in determining whether an alternate liner design would prevent migration as effectively as the standard liner and leachate collection system. Commenters who addressed this issue agreed that allowing Regional Administrators to consider location characteristics when approving alternate liner designs is appropriate. Commenters suggested that location characteristics that might influence technical performance of alternate liner and leachate collection system designs could include climate, geology, hydrology, and soil chemistry at a site. The Agency agrees that these considerations are among the location characteristics that might be considered.

Commenters also suggested that the chemical and physical characteristics of specific wastes that will remain in a CAMU after closure should be considered ''location characteristics'' that may influence the technical performance of alternate liner and leachate collection designs. The Agency does not agree with this view. At the same time, it is reasonable for Regional Administrators to consider the physical and chemical characteristics of waste, such as a waste form's potential for leaching hazardous constituents, in comparing whether an alternate liner system will prevent migration as effectively as the standard liner and leachate collection system.

Under 40 CFR 264.552(e)(3)(ii)(B) owners/operators may propose and Regional Administrators may approve alternate approaches to liner and leachate collection systems for new, replacement, and laterally expanded CAMUs in which wastes will remain after closure, where a CAMU is ''to be established in an area with significant levels of contamination, and the Regional Administrator finds that an alternative design, including a design that does not include a liner, would prevent migration from the unit that would exceed long-term remedial goals.'' Commenters generally support this approach, and EPA is finalizing these provisions as proposed.

As discussed in the proposal, EPA believes that it may be appropriate to approve CAMU designs that do not include a liner or leachate collection system under certain circumstances (65 FR 51093, August 22, 2000). For example, at some highly contaminated facilities, CAMUs may be located in areas of significant contamination is pervasive throughout the subsurface. At such facilities, remedial approaches may involve long-term ground water pump-and-treat systems, or subsurface soil contamination may be expected to remain in place as a source of ground water contamination. At these types of facilities, a liner and leachate collection system to reduce migration of hazardous constituents into an already significantly contaminated subsurface likely would not meaningfully increase protection of human health or the environment and would not be the best use of cleanup resources. When approving alternate designs that do not include a liner or leachate collection system, the Regional Administrator must find that potential migration of hazardous constituents from the CAMU will be consistent with the remedial goals for the facility (for example, not cause cleanup goals to be exceeded at locations where potential receptors would be located) (see 65 FR 51093).

The Agency also believes that the alternate approaches to liners and leachate collection systems allowed under 40 CFR 264.552(e)(3)(ii)(B) will be helpful when CAMUs are used for land treatment. As discussed in the proposal, land treatment generally does not involve the use of liners because it typically requires that rainwater or introduced liquids percolate through the waste and the underlying soil column (65 FR 51093, August 22, 2000). Also, as discussed in the proposal, EPA expects that many CAMUs used for land treatment will be existing units (see discussion above) and will not be subject to the minimum liner standards established today. In situations where an existing unit is not used, the Agency believes that land treatment CAMUs will be established in areas of significant contamination and thus will be accommodated by this provision allowing approval of CAMUs without liners or leachate collection systems. The Agency specifically requested comment on whether its proposed approach to alternate liners and leachate collection systems adequately addressed land treatment. Commenters who addressed this issue believed that land treatment was adequately accommodated.

2. Cap Standard

Under the 1993 CAMU rule at 40 CFR 264.552(e)(4)(ii)(B), owners/operators are required to cap CAMUs in which waste will remain in place after closure. Similar to the 1993 approach to liner and leachate collection systems (discussed above), the 1993 CAMU rule did not have explicit minimum cap design criteria for CAMUs. Some stakeholders expressed the concern that the 1993 CAMU rule standard was too open-ended and would benefit from increased detail to better ensure that caps are properly designed. In response to these concerns, EPA proposed and is today finalizing a minimum national cap design standard for CAMUs in which wastes will remain after closure. To maintain the flexibility necessary to encourage cleanups, the Agency also proposed, and is today finalizing, opportunities for owners/operators to propose and Regional Administrators to approve alternate cap standards.

The proposed cap standard for CAMUs would have required caps for all CAMUs where waste remained in place after closure. However, the Agency also specifically requested comment on situations where treatment of waste in a CAMU would reduce concentrations of hazardous constituents to health-based levels or below. The Agency expressed the concern that, although ''waste'' may remain in such units after closure, capping would not be needed to protect humans or the environment, because constituent concentrations would already be at or below health-based levels. Therefore, requiring capping would be an unnecessary and inappropriate use of cleanup resources. EPA offered specific alternative regulatory language to address this issue in the proposal; under the alternate language, caps would be required only where waste remained in place at the closed CAMU ''above remedial levels or goals applicable to the site'' (65 FR 51094, August 22, 2000.)

Commenters who addressed this issue agreed that caps would not be appropriate where concentrations of hazardous constituents are at or below health-based levels. In response to these comments, the Agency is modifying the standard for CAMU caps as discussed in the proposal. The final standard now reads, in pertinent part: ''At final closure of the CAMU, for areas in which wastes will remain after closure of the CAMU with constituent concentrations above remedial levels or goals applicable to the site, the owner or operator must cover the CAMU with a final cover designed and constructed to

meet the following performance criteria * * * '' As discussed later in today's rulemaking, this approach is consistent with the Agency's approach to situations where concentrations of hazardous constituents are at or below health-based levels when wastes are first placed in a CAMU. (See discussion of 40 CFR 264.552(g).)

a. Standard Cap Design (40 CFR 264.552(e)(6)(iv))

Today's minimum national cap design standard for CAMUs in which wastes will remain after closure is modeled after the cap design standards for hazardous waste landfills at 40 CFR 264.310(a). Under today's rule, unless Regional Administrators approve alternate site-specific standards, CAMU caps must be designed and constructed to meet five performance criteria. First, the cap must provide long-term minimization of migration of liquids through the closed CAMU. Second, the cap must function with minimum maintenance. Third, the cap must promote drainage and minimize erosion or abrasion of the cover. Fourth, the cap must accommodate settling and subsidence so that the integrity of the cover is maintained. Fifth, the cap must have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present. As discussed earlier in this preamble (see section III.F, above), comments on the overarching concept of minimum national design standards for CAMUs were mixed. However, as with the standards for liners discussed above, commenters who specifically addressed the proposed minimum national standards for CAMU caps generally supported the proposed standards as reasonable. With the change discussed above, the Agency is finalizing the cap standard as proposed.

As discussed in the proposal, although the performance criteria for CAMU caps are modeled after the criteria for hazardous waste landfills, the Agency believes that CAMU caps will not generally be constructed like the caps required under RCRA Subtitle C for hazardous waste landfills (65 FR 51094, August 22, 2000). This is because the standard for permeability of the cap is set in relationship to the liner—the cap must be of equal or lower permeability than the liner. The minimum national standards for CAMU liners promulgated today apply only to new, replacement, or laterally expanded CAMUs and are modeled after the liner standards for municipal disposal facilities regulated under Subtitle D, not the standards for hazardous waste landfills regulated under Subtitle C. Given the range of liner approaches that may be taken for CAMUs under today's regulations (e.g., existing units where the new minimum national liner standards do not apply; new, replacement, or laterally expanded CAMUs with Subtitle D type liners; new, replacement, or laterally expanded CAMUs with alternate liner designs), the Agency expects a similar range of approaches to the design and construction of CAMU caps.

Also as discussed in the proposal, the minimum permeability standard for CAMU caps may be met in a variety of ways including with systems that are designed to use the water uptake capability of vegetation (65 FR 51094, August 22, 2000). As a result, it will not always be necessary for the construction materials of the cap to match the construction materials of the liner (if a liner is present) to meet the permeability standard. For more discussion on the range of cap designs that might meet the minimum permeability standard, see the preamble discussion to the July 1997 revised standards for municipal solid waste landfills (62 FR 40710, July 29, 1997).

b. Alternate Cap Designs (40 CFR 264.552(e)(6)(iv)(B))

EPA proposed and is today finalizing a provision allowing Regional Administrators to approve alternate cap designs. Under this provision, owners/operators may propose and Regional Administrators may approve alternate cap designs when such designs facilitate treatment or the performance of the CAMU. As discussed in the proposal, this provision might be used, for example, to promote continued biotreatment of wastes remaining in CAMUs after closure by allowing infiltration of rainwater through the cap into the wastes (65 FR 51094, August 22, 2000). Alternative designs might also be appropriate for caps that rely on evapotranspiration through plants to prevent infiltration of liquids. Commenters who addressed this issue generally supported the Agency's approach to alternate cap standards, and the Agency is finalizing these provisions as proposed.

3. Releases to Ground Water (40 CFR 264.552(e)(5)(iii))

The 1993 CAMU rule included at 40 CFR 264.552(e)(5) a provision for monitoring existing releases to ground water and identifying any new releases from wastes remaining in CAMUs after closure. The 1993 rule, however, did not include provisions that specifically require owners/operators to notify Regional Administrators of releases to ground water from CAMUs or to take corrective action for such releases. As discussed in the proposal, EPA expected that such requirements would be imposed on a site-specific basis under the general CAMU designation criteria at 40 CFR 264.552(c)(2) and other authorities (65 FR 51095, August 22, 2000). However, because protection from future releases is a critical aspect of CAMUs (or any hazardous waste management unit), the Agency proposed and is today finalizing an express requirement for ''notification to the Regional Administrator and corrective action as necessary to protect human health and the environment for releases to ground water'' from CAMUs. Commenters who addressed the issue generally supported this approach.

As discussed in the proposal, the new requirement for notification and corrective action as necessary to protect human health and the environment does not change the more general performance standards for CAMUs. Consistent with the Agency's policies on ground water remediation,[19] the Agency believes that decisions about the details of ground water monitoring programs, including monitoring and reporting (i.e., ''notification'') frequencies for CAMUs and, if necessary, decisions about corrective action for releases to ground water from CAMUs, should be made in the context of overall site remedial approaches (65 FR 51095, August 22, 2000). For example, as discussed in the proposal, monitoring and reporting frequencies are typically established on a site-specific basis in sampling and analysis plans that reflect site-specific conditions. These conditions may include the extent of existing contamination, distance to nearest ground water well, ground water flow rates, and statistical sampling protocols.

The Agency expects that notification requirements, will similarly be determined on a site-specific basis in the context of these types of site-specific plans. Like the standard for ground water monitoring established in the 1993 CAMU rule, the standard for notification and corrective action for releases to ground water established today—''as necessary to protect human health and the environment''—is a performance standard. The Agency expects that more detailed

[19] See, e.g., Corrective Action for Releases from Solid Waste Management Units at Hazardous Waste Management Facilities, Advance Notice of Proposed Rulemaking at 61 FR 19432, 19461 (May 1, 1996) and Presumptive Response Strategy and Ex Situ Treatment Technologies for Contaminated Ground Water at CERCLA Sites, EPA 540/R–96/023, October, 1996.

specifications or performance goals for ground water monitoring, notification, and corrective action will be included in CAMU permits or orders based on site-specific information and conditions.

G. Treatment Requirements (40 CFR 264.552(e)(4))

Today's rulemaking establishes a new framework for treatment of wastes placed in CAMUs. Under this new framework, ''principal hazardous constituents,'' or ''PHCs,'' must meet either minimum national treatment standards adapted from the LDR Phase IV soil treatment standards or, in specific circumstances, site-specific treatment standards based on defined adjustment factors. In the 1993 CAMU rule, EPA did not establish specific minimum treatment requirements. Instead, the Agency emphasized the importance of treatment in a performance standard, requiring that CAMUs ''enable the use, when appropriate, of treatment technologies * * * to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility or volume of wastes that will remain in place after closure.'' The new framework for treatment of wastes placed in CAMUs and the specific treatment standards and adjustment factors established today address concerns that the 1993 CAMU rule did not contain explicit requirements for treatment (or treatment standards) and that this deficiency might, in some cases, result in insufficient treatment of higher-risk wastes.[20] As EPA explained in the proposal (65 FR 51084), the Agency believes that minimum national standards will have significant benefits. Such standards can make the CAMU process more consistent nationally, and the results more predictable, as well as more explicit for the public. Such standards can also make implementation of the rule less vulnerable to mistakes or abuse.

Treatment requirements for CAMU-eligible wastes and, more generally, the application of RCRA LDR treatment standards to wastes managed during cleanups are, perhaps, the most difficult issues addressed by the CAMU amendments. The Agency's position on these issues was clearly articulated in the proposal and, because these are important and longstanding issues, bears repeating:

> In developing today's treatment requirements, EPA considered what approaches to treatment would be appropriate in the context of the primary purpose of the CAMU rule, i.e., in the context of reducing disincentives to cleanup. During cleanup it is not always straightforward, possible, or reasonable to require owners/operators to excavate or remove contaminated material, because of the costs and practical issues associated with potential application of the RCRA requirements for as-generated wastes to excavated material and because there is often a legal option to leave material in place. This is particularly an issue with respect to application of the LDR treatment standards for as-generated wastes to wastes managed for implementing cleanup. Part of the benefit of the LDR treatment standards for as-generated wastes is that they create an incentive to generate less waste. At cleanup sites, contamination has already occurred, i.e., ''wastes'' have already been generated, and the incentive to generate less waste tends to work against the goal of cleanup, which is often to maximize the amount of waste managed in order to more aggressively manage and, where appropriate, remove the threats it poses. For a fuller discussion of this issue, see the May 26, 1998, LDR Phase IV rule establishing the soil treatment standards, at 63 FR 28556, 28603. All of the Agency's attempts to address these issues have been designed to promote more aggressive cleanups, that is, to promote cleanups that rely more heavily on excavation and management and include an appropriate degree of treatment. EPA believes that, in general, these types of cleanup result in more permanent remedies. (65 FR 51095, August 22, 2000).

Comments on EPA's proposal to establish treatment requirements, and specific treatment standards and adjustment factors for wastes placed in CAMUs were mixed. As with the CAMU design and operating standards discussed above, some commenters supported the proposed establishment of a baseline treatment requirement for wastes placed in CAMUs. Other commenters opposed the new treatment requirements, arguing that they would slow future cleanups or recreate disincentives to excavating and managing wastes and contaminated materials during cleanup. Some commenters suggested that EPA eliminate the treatment requirements altogether or, if treatment must be required, provide that treatment requirements be developed on a site-specific basis considering site risks.

The Agency does not agree that proposed CAMU treatment standards should be eliminated. As discussed throughout the proposal and today's rulemaking, EPA is attempting in these amendments to strike a reasonable balance between predictability for CAMU operation and the flexibility necessary to use CAMUs over a range of site- and waste-specific conditions. EPA believes that appropriate minimum treatment requirements for wastes that are placed in CAMUs are an important element of this balance.

The Agency does not believe that today's treatment requirements will deter cleanups. As discussed in the proposal, EPA evaluated CAMUs approved under the 1993 rule against today's treatment requirements and concluded that existing CAMU remedies involving treatment would still require treatment under today's requirements and that, similarly, existing CAMU remedies that do not involve treatment would not require treatment under today's requirements (65 FR 51096, August 22, 2000 and CAMU Background Document). Likewise, the amount of treatment required in specific instances is not expected to change. Nothing in the comments on the proposal (nor in the Agency's update of its analysis for today's rule) counters these conclusions. As explained earlier, EPA also believes these standards will have significant benefits in terms of consistency, predictability and reduction in the likelihood of mistakes or abuse.

While the Agency agrees that site-specific factors, including site-specific factors related to risk, are appropriate (under certain circumstances) to consider in adjusting treatment requirements, the Agency is not persuaded that a risk-reduction standard alone would provide the predictability in decision making about treatment of wastes placed in CAMUs that the Agency and many stakeholders desire. It is EPA's conclusion, based on its evaluation of CAMUs approved under the current risk-based CAMU standards (and the lack of comments on that evaluation), that site- and waste-specific factors, including factors related to risk, are appropriately accommodated in the treatment standard adjustments, as discussed later in today's rulemaking. The Agency also notes that, while some commenters supported a completely risk-based approach, most supported the proposed treatment requirements as reasonable.

For these reasons, EPA is promulgating the treatment requirements essentially as proposed and as discussed below.[21]

[20] As discussed in the proposal, the Agency does not believe the 1993 CAMU rule has resulted in insufficient treatment in practice. Treatment has been used at more than 70% of CAMUs approved under the 1993 rule. EPA continues to believe that CAMU remedies that require treatment under the 1993 rule would likewise require treatment under today's rulemaking; similarly, EPA believes that CAMU remedies that, under the 1993 rule do not require treatment where treatment was not required under the 1993 rule would properly not require treatment under today's rulemaking (65 FR 51096, August 22, 2000).

[21] EPA suggests that readers interested in more specific insight into how EPA intends to apply the treatment conditions of today's rule may wish to

Continued

1. Identification of ''Principal Hazardous Constituents'' (PHCs) (40 CFR 264.552(e)(4)(i) and (ii))

The Agency proposed that the treatment standards established today would apply only to ''principal hazardous constituents,'' or ''PHCs.'' Commenters supported this approach, and the Agency is finalizing the PHC approach with one clarifying change. As discussed below, the Agency is amending the proposed regulatory language defining PHCs based on ground water risks to emphasize that the general performance standards for PHCs apply to the selection of these PHCs as well.

Under today's rulemaking, PHCs are defined as those constituents that ''pose a risk to human health or the environment that is substantially higher than the cleanup levels or goals at the site.'' The Regional Administrator selects PHCs from those constituents that would otherwise be subject to treatment under the RCRA LDR treatment standards for as-generated waste. As proposed, EPA is requiring that ''in general, the Regional Administrator will designate as principal hazardous constituents: carcinogens that pose a potential direct risk from ingestion or inhalation at the site at or above 10^{-3}; and non-carcinogens that pose a potential direct risk from ingestion or inhalation at the site an order of magnitude or greater over their reference dose.''

Today's rule also requires that: ''The Regional Administrator will also designate constituents as principal hazardous constituents, where appropriate, when risks to human health and the environment posed by the potential migration of constituents in wastes to ground water are substantially higher than the cleanup levels or goals at the site; when making such a designation, the Regional Administrator may consider such factors as constituent concentrations, and fate and transport characteristics under site conditions.'' Note that, in response to comment and to be consistent with the description of designation of ''other constituents'' as PHCs (below), the Agency has added the phrase ''when risks to human health and the environment are substantially higher than the cleanup levels or goals for the site.''

Finally, as proposed, the Agency is requiring that ''The Regional Administrator may also designate other constituents as principal hazardous constituents that the Regional Administrator determines pose a risk to human health and the environment substantially higher than the cleanup levels or goals at the site.''

Each of the PHC criteria are discussed more completely in the sections below.

a. Approach to Identifying PHCs

During the site characterization efforts associated with cleanup, owners/operators and overseeing agencies typically identify which wastes are hazardous, which materials warrant remediation or removal, and which constituents will be used to set site cleanup levels. This process results in the identification of what are generally known as the ''risk drivers'' at a site. As discussed in the proposal, EPA continues to expect that the site characterization and evaluation processes that lead to remedy selection and (in some cases) to the decision to consider use of a CAMU will reliably identify PHCs. The Agency emphasizes that it views identification of PHCs as a normal part of well-designed cleanup processes, not a separate analysis. Commenters who addressed this issue agreed that the site characterization typically carried out during well-designed cleanups would generally provide the information necessary to support a PHC determination and that, therefore, a separate analysis should not be needed.

As discussed in the proposal, the designation of PHCs is made in relation to site cleanup levels or goals—that is, PHCs are those constituents that pose a risk to human health and the environment substantially higher than cleanup levels identified as protective of human health and the environment for the site (65 FR 51097, August 22, 2000). EPA took this approach based on a view that it is appropriate to designate PHCs in the context of the cleanup levels or goals set for a site, because in situations where PHCs are designated, the CAMU will generally be a permanent disposal unit.[22] Site cleanup levels or goals typically take into account such factors as reasonably anticipated land use (e.g., residential, industrial, or agricultural) and exposure pathways of concern. Therefore, the Agency believes it is appropriate to designate PHCs in the context of these factors, because the PHC concept is meant to distinguish higher-level risks relative to the risk-reduction goals for a particular site. The Agency did not propose generic national concentrations for PHC determinations, since generic concentrations would almost certainly not reflect remedial activities at individual sites.

As discussed in the proposal, in making determinations of whether PHCs are present in CAMU-eligible wastes, overseeing agencies and owners/operators cannot use pre-treatment of the waste to avoid a PHC determination that would otherwise be made. That is, PHC determinations and the related application of today's treatment standards and adjustment factors should be made based on constituent concentrations in CAMU-eligible waste as the waste is initially managed, not after pre-treatment or other activity intended to reduce constituent concentrations to below PHC levels.

In determining whether PHCs are present, based on risks from ingestion and inhalation, the Regional Administrator to will assume that an individual is directly exposed to the constituents in the CAMU-eligible waste, consistent with the exposure assumptions used to develop site-specific cleanup levels or goals, and to consider reasonably anticipated land use (which could be residential or non-residential). Fate and transport will only be considered for assessing the migration of constituents from waste into ground water or air, for the purpose of determining the risk posed by direct exposure to the ground water or inhalation. Some commenters questioned this approach, recommending that PHC determinations reflect plausible exposures that take into account the protection from exposure provided by a CAMU; these commenters argued that, where the engineering design of a CAMU makes direct contact implausible, EPA should not assume that the exposure might occur. EPA is not persuaded that designation of PHCs should reflect protection from exposure afforded by the engineering of a CAMU, at least when ingestion and inhalation are of concern (see discussion of waste-to-ground water pathway below). As discussed in the proposal, one of the reasons for specifying treatment requirements for CAMUs and for using the PHC approach is to protect against the potential for direct exposure to higher risk constituents in the event a CAMU fails (65 FR 51098, August 22, 2000). (Commenters did not challenge the possibility of such a failure occurring.) Therefore, in PHC determinations, fate and transport can be used only for assessing the potential migration of constituents from CAMU-

consult EPA's Corrective Action Management Unit (CAMU) Site Background Document (October 2001), which is available in the docket to today's rule.

[22] When CAMUs are not intended to be a permanent feature, the Agency believes they will generally be implemented through the provisions for storage and/or treatment only CAMUs, discussed in section I of today's preamble. In this case, the treatment standards would not apply to wastes within the CAMU, since their removal would be required at closure.

eligible waste into ground water or air for the purpose of determining the risk posed by direct exposure to the constituents in ground water or by inhalation at points where receptors are located.

Finally, as discussed in the proposal, the Regional Administrator does not have to wait to make site-specific PHC determinations until activities associated with development and approval of site-specific cleanup levels or goals have been completed. In many cases, it will be possible and appropriate for Regional Administrators to designate site-specific PHCs based on standard cleanup values (see discussion of the use of standard tables, later in today's rulemaking) and/or information available at the time CAMU determinations are made. The Agency believes that, as a general rule, if there is enough information at a site to make a CAMU determination, there will be enough information to identify PHCs in wastes proposed for management in the CAMU.

b. Constituents from Which PHCs Are Drawn (40 CFR 264.552(e)(4)(ii))

The set of constituents from which Regional Administrators might designate PHCs is the set of constituents that, absent a CAMU, would be subject to the LDR treatment requirements. That is, for listed wastes, the ''regulated hazardous constituents'' for the relevant listing found in 40 CFR 268.40, Treatment Standards for Hazardous Wastes); for characteristic hazardous waste, all ''underlying hazardous constituents'' (40 CFR 268.2(c), § 268.40(e)); and for contaminated soil, ''constituents subject to treatment'' (40 CFR 268.49(d)). As discussed in the proposal, the Agency believes that it is appropriate to limit PHCs to constituents that would otherwise be subject to the LDRs, because one of the primary objectives of the CAMU rule is to provide relief from application of the LDR requirements to wastes managed for implementing cleanup (65 FR 51096, August 22, 2000). Commenters supported this approach.

c. Carcinogenic and Non-Carcinogenic PHCs

Under today's rule, the Regional Administrator will generally identify carcinogenic constituents as PHCs when they pose a direct risk from inhalation or ingestion that is at or above a 10^{-3} risk level. As discussed in the proposal, the Agency believes that risks at or above 10^{-3} will generally be ''substantially higher than the cleanup levels or goals at the site'' given that EPA (and most state cleanup programs) generally sets site-specific cleanup levels or goals for carcinogenic constituents within the risk range of 10^{-4} to 10^{-6}, with 10^{-6} used as a point of departure.[23]

In the rare cases where site cleanup levels or goals are established at the upper end of the risk range (i.e., at 10^{-4} risk levels), constituents with concentrations at or above the 10^{-3} risk level should generally be identified as PHCs, because, in general, a level of risk an order of magnitude above the upper end of the risk range would typically be considered a risk substantially higher than site cleanup levels or goals. The Regional Administrator would look closely at concentrations above but near the 10^{-3} risk level in light of assumptions that underlie the risk estimate (e.g., waste characteristics and site conditions) prior to determining whether the particular constituents were principal hazardous constituents. For example, if a constituent posed risks close to a 10^{-3} level, based on conservative default assumptions (e.g., promulgated state default tables or generic assumptions used to determine bioavailability), and the underlying assumptions were not applicable at the site in question, the Regional Administrator could determine that the constituents should not be designated as principal hazardous waste constituents.

Today's rulemaking also provides that the Regional Administrator will generally designate non-carcinogenic constituents as PHCs when they pose a risk from inhalation or ingestion that is greater than or equal to ten times the hazard quotient[24] for the constituent (i.e., an order of magnitude or greater over the reference dose). Hazard quotients are used as a measure of unacceptable exposure to constituents that produce toxic endpoints other than cancer. As discussed in the proposal, the Agency believes that risks ten times the hazard quotient or greater will generally be ''substantially higher than the cleanup levels or goals for the site,'' given that EPA typically sets cleanup goals for individual non-carcinogens at a hazard quotient of one or less. (65 FR 51098, August 22, 2000).

Commenters supported this approach.

Carcinogenic and non-carcinogenic constituents may be identified as PHCs either through a site-specific risk assessment or by a comparison of site concentrations to standard values. As discussed in the proposal, many state (and federal) cleanup programs publish standard tables with cleanup levels based on risks from inhalation or ingestion under various exposure scenarios (65 FR 51097, August 22, 2000). The Regional Administrator may use these tables, where appropriate, to assist in making PHC determinations by extrapolating 10^{-3} risk levels from the standard 10^{-6} table values. While commenters generally agreed with the Agency that such tables could be useful in designating PHCs, some commenters were concerned that the Agency intended the Regional Administrator to require use of standard tables (and, therefore, standard exposure assumptions and assumptions about other factors) to the exclusion of more site-specific approaches. The Agency emphasizes that it is not requiring the use of standard tables to identify PHCs and that either standard tables or site-specific approaches may be used. The Agency recognizes that, in many cases, standard tables are developed using conservative exposure and other assumptions and that these assumptions may not match actual site-specific conditions. As discussed earlier in today's rulemaking, the Agency expects PHCs to be identified as a normal part of the site characterization and evaluation activities associated with well-designed cleanups.

Today's rule, like the proposal, requires that the Regional Administrator ''generally'' identify hazardous constituents as PHCs if constituent concentrations exceed the specified risk levels for carcinogens and non-carcinogens discussed above. However, as discussed in the proposal, there may be site-specific situations where these risk levels are not appropriate for determining PHCs (65 FR 51097, August 22, 2000). The Agency emphasizes that PHC determinations are made on a site-specific basis in the context of site cleanup levels or goals. In situations where the Regional Administrator decides not to identify constituents that meet the above descriptions as PHCs, the Agency expects them to document and explain the decision in the supporting materials associated with the CAMU determination.

[23] For a full discussion of the use of the risk range in setting site-specific cleanup levels or goals in the RCRA corrective action program, see the Corrective Action ANPR (61 FR 19432, 19450, May 1, 1996).

[24] The hazard quotient is the estimated site-specific exposure (dose) over a specified period divided by the reference dose for the constituent in question over similar exposure conditions. A reference dose is an estimate of a daily exposure to the general population of humans, including sensitive sub-populations, that is not likely to have an appreciable risk of adverse effects during a lifetime. The magnitude of an adverse effect is not always related directly to the magnitude of the hazard quotient. The Agency's Integrated Risk Information System (IRIS) database has a more detailed description of reference doses and hazard quotients, see *www.epa.gov/iris*.

d. PHCs Identified Based on the Waste-to-Ground Water Pathway (40 CFR 264.552(e)(4)(i)(B))

In addition to designating PHCs based on carcinogenic and non-carcinogenic risks to humans from direct exposure through inhalation and ingestion, Regional Administrators will, where appropriate, designate PHCs based on the risk posed by the potential migration of constituents from wastes to ground water. As discussed in the proposal, the Agency expects that in making such determinations Regional Administrators will consider site-specific factors that could affect constituent migration. These site-specific factors could include factors such as the location of the CAMU, the nature of the wastes placed in the CAMU (e.g., mobility), how the waste placed in the CAMU will be managed (e.g., the type of CAMU that will be used and potential rates of liquid percolation into and out of the unit), factors that affect transport of constituents to ground water, and beneficial uses of ground water. As discussed in the proposal, in situations where constituents in soil pose a significant potential threat through the ground water pathway (e.g., based on fate and transport modeling) and the soil is excavated for disposal in a CAMU, the Regional Administrator should strongly consider whether to designate such constituents as PHCs if they are not otherwise designated as PHCs under the approach for direct human exposure to carcinogens and non-carcinogens discussed above (65 FR 51098, August 22, 2000).

The approach to designating PHCs based on risks from the waste-to-ground-water pathway is different from the approach taken to designating PHCs based on direct exposure through ingestion. It does not specify a generally appropriate risk level that would typically define PHCs, and it allows for consideration of additional factors that potentially affect exposure. As discussed in the proposal, EPA believes that this approach is appropriate because, among other things, of the highly site-specific nature of the waste-to-ground-water pathway (65 FR 51098, August 22, 2000). Commenters supported this conclusion.

While commenters who addressed the issue generally supported EPA's proposed approach to identification of PHCs based on the waste-to-ground-water pathway, some commenters expressed concern about the specific regulatory language. Commenters argued that, because the regulatory language describing identification of PHCs based on the waste-to-ground-water pathway did not include the overall PHC standard of ''risks substantially higher than site cleanup levels or goals,'' the provision could be read as standardless. The Agency believes that the overreaching standard for identifying PHCs at 40 CFR 264.552(e)(4)(i) is clear; PHCs are constituents that, on a site-specific basis, ''pose a risk substantially higher than the cleanup levels or goals for the site.'' However, to eliminate any potential confusion over the PHC standard as it applies to the waste-to-ground-water pathway, the Agency has modified from the proposal the regulatory language describing the waste-to-ground-water pathway to reiterate the overall standard for identification of PHCs. The new language reads, ''The Regional Administrator will also designate constituents as principal hazardous constituents, where appropriate, when risks to human health or the environment posed by the potential migration of constituents in wastes to ground water are substantially higher than the cleanup levels or goals at the site; when making such a designation, the Regional Administrator may consider such factors as constituent concentrations, and fate and transport characteristics under site conditions.'' This revised regulatory language is consistent with the comparable regulatory language addressing the designation of PHCs based on other risks (see 40 CFR 264.552(e)(4)(i)(C) and discussion below).

e. Designation of Other PHCs (40 CFR 264.552(e)(4)(i)(C))

As discussed above, EPA is today establishing a general framework for site-specific identification of PHCs that emphasizes risks to humans from direct ingestion and inhalation and highlights the waste-to-ground-water pathway. The Agency believes that this framework will result in the identification of constituents that pose risks ''substantially higher'' than the cleanup levels or goals for a site. The Agency also believes that this approach will screen out constituents posing lower risks, and CAMU-eligible wastes with lower concentrations of higher-risk constituents. However, there may be other types of site-specific circumstances where constituents pose risks that are ''substantially higher than the cleanup levels or goals for the site,'' for example, based on risk scenarios not otherwise addressed in the other PHC determinations.

The Regional Administrator might, on a site-specific basis, for example, designate PHCs based on ecological concerns, potential risks posed by dermal contact, or constituent mobility. PHCs might be designated at risk levels higher or lower than the standard risk levels discussed for carcinogens and non-carcinogens above. For example, the Regional Administrator could determine that a highly mobile constituent posing a risk of 10^{-4} is a principal hazardous constituent at a site where protection of ground water is an especially significant issue. To emphasize that PHCs may be designated based on all appropriate site-specific considerations, EPA proposed and is today finalizing a provision that ''the Regional Administrator may also designate other constituents as principal hazardous constituents that the Regional Administrator determines pose a risk to human health and the environment substantially higher than the cleanup levels or goals for the site.''

Some commenters expressed concern that, by emphasizing the Regional Administrator's ability to designate PHCs based on risks other than those posed by direct exposure to humans through inhalation or ingestion or from the waste-to-ground-water pathway, the Agency would render moot the general guidelines for establishing PHCs. The Agency disagrees that this result will occur. As discussed throughout today's rulemaking, during cleanups overseeing agencies encounter a diversity of site-specific conditions. While EPA believes that considering risks posed by direct exposure to humans through inhalation and ingestion as well as risks posed by migration of contamination from wastes to ground water will most often result in appropriate identification of PHCs (because these are the issues that typically drive cleanup decisions), the Agency cannot rule out identification of PHCs based on other site-specific risk factors. As with other PHC designations, these designations would be made only when constituents pose risks that are ''substantially higher than the cleanup levels or goals for the site.'' The Agency would expect PHCs based on factors other than direct exposure to humans through ingestion or inhalation or risks from the waste-to-ground-water pathway would be considered where such factors were among the risk drivers for cleanup at a site, and contaminants were identified at levels substantially higher than cleanup goals.. On the other hand, the Agency does not expect that PHCs will be designated based on ecological risks unless ecological risk concerns are among the drivers for site cleanup levels or goals.

f. Relationship of PHCs to ''Principal Threats'' Guidance

In the proposal, the Agency discussed its approach to principal hazardous constituents and to treatment requirements in relation to the Agency's general and longstanding preference for treatment of higher-risk wastes during cleanup (65 FR 51098, August 22, 2000). The Agency observed that the PHC concept is consistent with the ''principal threats'' approach used in the CERCLA and RCRA corrective action programs to express the Agency's general preference for treatment of higher-risk wastes. Commenters were concerned that this presentation of the PHC approach as consistent with the ''principal threats'' approach could be misleading. These commenters noted that the principal threats approach is often used to inform choices between various remedial approaches and to determine which wastes are likely to need active management, while the PHC approach is meant to identify higher-risk constituents in CAMU-eligible wastes that would, absent the CAMU regulations, be subject to RCRA LDR treatment standards. Furthermore, these commenters noted that the PHC concept applies after a decision has been made to excavate and manage cleanup wastes.

The Agency agrees that the PHC approach and the ''principal threats'' concept apply at different points in cleanup processes and are used for different purposes. EPA's statements on this matter were only meant to observe that, like the ''principal threats'' concept, the PHC approach focuses on the higher-risk subset of wastes under consideration. For a fuller discussion of the application of the ''principal threats'' concept during RCRA corrective action, see Corrective Action ANPR (61 FR 19432, 19448 (May 1, 1996)). Also see ''A Guide to Principal Threats and Low Level Threat Waste,'' OSWER Directive 9380.3–06FS, November 1991.

2. Treatment Standards (40 CFR 264.552(e)(4)(iii))

Under today's new framework for treatment of wastes placed in CAMUs, principal hazardous constituents must be treated to achieve minimum national treatment standards or, in certain circumstances, site-specific treatment standards developed through application of a number of adjustment factors. As discussed in the proposal, the Agency believes that this approach—minimum national standards with appropriate opportunities for site-specific adjustments—represents a reasonable balance by setting specific treatment standards while preserving the flexibility needed to address a range of site- and waste-specific circumstances. The Agency also believes that the CAMU treatment standards and specified adjustment factors will provide a valuable benchmark against which the public can review treatment options under consideration. Details of the minimum national treatment standards and application of the adjustment factors are discussed below.

a. Minimum National Treatment Standards (40 CFR 264.552(e)(4)(iv))

(1) Standard of 90% Capped by 10XUTS

EPA proposed and is today finalizing a minimum national treatment standard of ninety (90) percent reduction in concentrations of PHCs unless such treatment would result in concentrations that are less than ten (10) times the relevant Universal Treatment Standard (UTS), in which case treatment would be capped at ten times the universal treatment standard. This standard was established for hazardous contaminated soil in the LDR Phase IV rule and is commonly referred to as ''90% capped by 10xUTS.'' For details on implementation of this standard, see the description in the LDR Phase IV rule, 40 CFR 268.49, 63 FR 28556, 28605 (May 26, 1998). Universal treatment standards are identified in 40 CFR 268.48, Universal Treatment Standards Table.

Today's treatment standard applies to both soil and non-soil wastes, including sludges and debris. Debris subject to today's treatment standards (i.e., CAMU-eligible debris that contain PHCs) must be treated using the current LDR treatment standards for hazardous debris at 40 CFR 264.45 or the CAMU treatment standards, whichever the Regional Administrator deems appropriate. Consistent with the approach it took for hazardous contaminated soils in the Phase IV rule, EPA is also requiring that wastes subject to today's treatment standards (i.e., CAMU-eligible waste that contains PHCs) that exhibit the hazardous characteristics of ignitability, corrosivity, or reactivity must be treated to eliminate such characteristics.

As discussed in the proposal, the Agency believes the 90% capped by 10xUTS treatment standard is appropriate and will generally result in meaningful treatment (65 FR 51100, August 22, 2000). Reducing concentrations of PHCs by 90% is a substantial reduction and, in cases where treatment is capped at 10xUTS, this is a relatively small increment over constituent concentrations established at the limits of the performance of available technology (i.e., the UTS levels that are established based on a Best Demonstrated Available Technology standard). The Agency continues to believe that the 90% capped by 10xUTS treatment standard is generally achievable in soils using technologies other than combustion. Because soil contaminated with hazardous waste is generally more difficult to treat than hazardous waste alone, the Agency believes that today's treatment standards can likewise be achieved in non-soil CAMU-eligible wastes using technologies other than combustion. For a fuller discussion of the achievability of the soil treatment standards, see the LDR Phase IV rule at 63 FR 28556, 28603 (May 26, 1998). As discussed in the proposal, in situations where today's treatment standards cannot be achieved using non-combustion technologies, the Agency has established an adjustment factor allowing Regional Administrators to adjust treatment standards based on a finding that the minimum national treatment standard is technically impracticable. The ''technical impracticability'' adjustment factor is discussed later in today's rulemaking.

Some commenters generally supported treatment standards, but opposed the 90% capped by 10xUTS standard as excessively stringent. They argued that this standard would likely limit the usefulness of CAMUs and therefore provide a significant disincentive to cleanups. The Agency does not believe that the 90% capped by 10xUTS standard is excessively stringent. As discussed in the proposal, the Agency's goal in designing today's treatment standards was that the treatment standards should provide a meaningful level of treatment and be achievable, but should not be so onerous as to discourage cleanup (65 FR 51100, August 22, 2000). The Agency also sought to ensure that today's treatment standards would not require treatment to levels significantly below those that are necessary to protect human health and the environment. The Agency continues to believe that the 90% capped by 10xUTS treatment standard, with opportunities to adjust treatment standards on a site-specific basis using the adjustment factors, meets these goals.[25] Given the fact that

[25] The Agency notes that, as part of comments opposing the 90% capped by 10xUTS treatment standard, one commenter observed that while ''the proposed regulations do allow for alternate treatment standards * * * departures from specific standard requirements are very often difficult to

Continued

treatment applies only to principal hazardous constituents, the general achievability of the numerical standards, the availability of adjustment factors, and EPA's analysis that treatment in CAMUs under the previous standards meet those of today's rule, EPA is not persuaded that the minimum national treatment standard promulgated today will reinstate disincentives to cleanups.

Today's treatment standard apply to PHCs in CAMU-eligible wastes when such wastes will be placed in a CAMU for permanent disposal. EPA is not requiring that treatment standards be met prior to placement. Treatment may occur either before or after wastes are placed in a CAMU—as is appropriate given that CAMUs will often be used to facilitate remedies involving treatment. Commenters who addressed the issue supported this approach. In addition, EPA is not requiring treatment when wastes are placed in CAMUs used for storage and/or treatment only. Requirements for CAMUs that will be used for storage and/or treatment only are discussed later in today's rulemaking.

(2) Use of TCLP and Alternative Leach Tests

EPA proposed that the Toxicity Characteristic Leaching Procedure (TCLP) be used to determine compliance with the CAMU 90%/10xUTS treatment standard under § 264.552(e)(4)(iv)(B) and (C) for metals. As noted in the proposal, the TCLP has been used as a broadly applicable leach test for assessing the potential mobility of both organic and inorganic constituents under plausible, reasonable worst-case management conditions for solid waste. The TCLP has performed reliably in many applications, with a few exceptions, and the Agency continues to believe that it is an appropriate evaluative test for waste classification and treatment compliance. This is particularly so when industrial wastes might plausibly be co-disposed under conditions similar to those typically present in municipal solid waste landfills, and also particularly when wastes are tested and managed without regulatory oversight. Thus, the TCLP is a reasonable and appropriate test for both identifying and evaluating the treatment of wastes, and today's rule establishes the TCLP as the default test for determining compliance with the CAMU treatment requirements. Today's rule also provides Regional Administrators with the flexibility to use alternatives to the TCLP for CAMU compliance, in some cases.

EPA noted in the CAMU proposal (65 FR 51101) that hazardous remediation waste will not often be co-disposed of with municipal solid waste in CAMUs. (No commenters on the proposal disputed this conclusion.) Since the TCLP reflects some key leaching conditions likely to be present in municipal solid waste landfills, but not necessarily in CAMUs, EPA, suggested that it may not always be the most appropriate predictor of waste leaching behavior in CAMUs. In addition, the Agency stated that the circumstances associated with disposal at a CAMU site will be well defined and known (although conditions at CAMUs will vary from site to site, depending on the wastes disposed of there and any previous uses of the site). Thus, leaching tests that more closely reflect individual site conditions might, in some instances, be better suited than the TCLP to estimate the behavior of waste disposed of in a CAMU. EPA sought public comment in the proposal on the appropriateness of using leach tests other than the TCLP for determining compliance with the CAMU treatment standards for metals, when warranted by site conditions.

For the most part, commenters on this issue expressed skepticism about the universal relevance of the TCLP test for cleanups, and generally supported the use of alternatives to the TCLP when warranted by site conditions. Several commenters broadly supported the use of alternative tests, while others specifically pointed to the Synthetic Precipitation Leaching Procedure or SPLP (which simulates acid rain conditions, rather than conditions in a municipal solid waste landfill). One commenter, for example, argued that the TCLP, by virtue of its design, does not appropriately simulate leachability of metals under circumstances in which metal-bearing wastes are not co-disposed with municipal wastes. On the other hand, another commenter stated that EPA should retain the TCLP as the standard test, but, where the TCLP may not be appropriate for ''unusual wastes,'' the Regional Administrator should be allowed to require the use of supplemental tests.

After reevaluating this issue in consideration of these comments, EPA concludes that the leaching conditions represented in the TCLP may not be present at many remediation sites, and that the TCLP will, therefore, not always be the most reliable test for predicting site-specific leaching behavior for waste disposed of at these sites. (See CAMU Site Background Document).[26] The TCLP anticipates general municipal solid waste landfill conditions (as reasonable, plausible worst-case management for waste), and is not tailored to reflect conditions of other waste management unit types or specific sites. It may, to some degree, either over- or under-predict leaching potential of some waste constituents at any particular site. For example, in the Agency's recent experience with monofilling of treated K088 waste (spent aluminum pot liners), the TCLP under-predicted arsenic leaching (see 62 FR 41005, July 31, 1997, and 62 FR 63458, December 1, 1997). On the other hand, some soils are less acidic than the TCLP (particularly in the western United States), and do not have the levels of acetic acid found in municipal solid waste landfills, and the TCLP might therefore over-predict leaching of some metals from these contaminated soils.[27] Because of these types of concerns, the Agency relied on other leach tests when waste was not being disposed of in municipal solid waste landfills in its recent rulemakings on inorganic chemicals and chlorinated aliphatics manufacturing wastes (see 65 FR 55695, September 14, 2000, and 65 FR 67100, November 8, 2000). EPA therefore concludes that, where a regulatory agency can specify a disposal site for remediation waste (such as a CAMU), and conditions at the specific cleanup site differ from those simulated by the TCLP, tests other than the TCLP that are tailored to reflect conditions at the site may be better suited to assess the likely leaching behavior of waste disposed of at that site (including in a CAMU).

Section 264.552(e)(4)(iv)(F) of today's final rule, therefore, provides the Regional Administrator the flexibility to specify alternative leach tests to determine compliance with the CAMU treatment requirements for metals (except where metals removal technologies are used, and compliance is based on total concentrations). Under today's rule, the Regional Administrator must find that an available alternative to the TCLP would ''more accurately

support and defend, even when they are entirely appropriate.'' The Agency reiterates that it sees the minimum national treatment standards and site-specific treatment standards developed through application of the adjustment factors as equally available.

[26] For additional information on this issue, see Evanko and Dzombak, 1997, Remediation of Metals-Contaminated Soils and Groundwater, Technology Evaluation Report TE–97–01, Groundwater Remediation Technologies Analysis Center, Pittsburgh, PA.

[27] Particularly metal salts that are more soluble under acidic conditions, or which are soluble in acetate (both TCLP conditions), such as lead or mercury. On the other hand, some eastern U.S. soils are moderately acidic (pH 4.5–5.5) or highly acidic (pH 3.5–4.5), and most soils are buffered to stable pH values (Brady and Weil, 1999).

reflect the conditions at the site that affect leaching.'' Thus, the tests must better reflect site conditions, based on available site-specific information. Site-specific use of alternatives to the TCLP would most often be appropriate in cases where disposal conditions are known and differ from municipal solid waste landfill conditions, the waste will not be co-disposed with municipal solid waste (where the TCLP would more likely be appropriate), and there is an appropriate alternative test that more accurately reflects the individual site conditions. Where important factors affecting leaching are similar to municipal solid waste landfill conditions, the TCLP will likely be most appropriate even if there is no municipal solid waste co-disposed with the CAMU wastes. This may occur when acidic chemicals (particularly organic acids, such as phenols and cresols) are found in CAMU remediation wastes. The flexibility in today's rules, allowing the Regional Administrator to specify alternatives to the TCLP, could mean that either more or less treatment will be needed to meet the standard compared with evaluating treatment with the TCLP.

In determining that an alternative test was likely to better predict waste behavior at a selected disposal site, the Regional Administrator would be expected to consider site- and waste-specific factors affecting metals leaching. These might include disposal site and waste pH, anticipated rainfall infiltration of the site, characteristics of other waste co-disposed at the site, and the anticipated long-term structural integrity and porosity of wastes stabilized using cement or other pozzolonic treatment materials. Appropriate use of alternative tests might include testing over a range of pH values known to occur at the site, or adjusting liquid/solid ratios either in the test or mathematically after testing to estimate metals leaching rates and annual mass that would be leached. In the K088 monofilling case cited above, for example, performing a leaching test in the highly alkaline range (pH > 11) might well have identified the high leaching potential of arsenic from the treated waste under the actual site conditions at the disposal facility (leachate pH of 13), before high arsenic levels were detected in the landfill leachate. EPA emphasizes that these findings are site-specific.

Today's rule requires that an alternative leach test be ''appropriate for use.'' Leach testing is currently an active research area.[28] While some alternatives to the TCLP exist today, other testing approaches may be developed into test protocols in the future. Ideally, an appropriate alternative leach test will have a defined test protocol that has been subjected to a peer review.[29] Tests that have been incorporated into EPA technical guidance, or used routinely by other federal agencies, or published by third-party technical accreditation organizations (such as ASTM or ANSI) may be appropriate. Of tests currently available, a plausible alternative for some sites may be the Synthetic Precipitation Leaching Procedure (SPLP; SW–846 Method 1312).[30] Other tests that rely on multiple pH values and that vary other test conditions to better reflect a range of possible site conditions are under development or have been adopted by European countries, including the Netherlands.[31] However, even for established tests, the relevance of the test to the particular site circumstances must be considered in selecting and using an alternative test at that site.

One commenter recommended that EPA discuss other leaching tests that could be applied to remediation wastes, and explicitly identify and recommend alternative types of leaching tests, or specify criteria for selection of leaching tests based on site-specific application criteria (e.g., waste type, environmental setting). This commenter urged EPA to develop a leaching test, or a series of leaching tests, that reflect site specific conditions. EPA has addressed this comment in the preceding paragraph, by identifying site and waste conditions that may affect metals leaching. EPA, however, is not at this time prepared to recommend a specific set of tests, given the evolving state of the science. EPA has been conducting a broad review of leach testing, including funding of research on waste leaching and leach testing, and will continue to monitor and participate in developments in this area and provide appropriate guidance as new information and testing approaches are developed and evaluated.

Another commenter appears to suggest that non-TCLP tests be used as supplemental to the TCLP for evaluating unusual wastes, rather than as an alternative to the TCLP. While this commenter clearly supports the use of TCLP as the default test for evaluating the effectiveness of treatment, it is unclear what conditions it believes warrant departure from the TCLP, except for the opinion that such departures would be ''unusual.''[32] The Agency disagrees that non-TCLP tests should only supplement the TCLP. Assuming that this is an accurate reading of this comment, the Agency disagrees that non-TCLP tests should only supplement the TCLP (that is, be used in addition to the TCLP), when the question is determining compliance with CAMU treatment requirements. Rather, the Agency believes that, in a situation (such as remediation) in which adequate administrative controls and knowledge of site and waste conditions supports it, the test most likely to be accurate for the particular waste under the identified conditions should be used. Because conditions vary from site-to-site, there is no one established test that will always be most accurate.

That being said, however, EPA notes that it is retaining the TCLP as the default test because some CAMU sites may have conditions similar to those simulated by the test (due to either the nature of the site contamination or where there is naturally acidic soil), and because the TCLP is well known and widely used for determining compliance with treatment requirements. The Agency has considerable experience with the TCLP in evaluating waste treatment over a number of years (which it does not have with possible alternative tests), and the Agency believes implementation and administration of CAMU remediations

[28] See, for example, van der Sloot, et al., 1997, *Harmonization of Leaching/Extraction Tests;* Garrabants and Kosson, 2000, *Use of a chelating agent to determine the metal availability for leaching from soils and wastes,* Waste Management 20, 155–165; Sanchez et al., 2000, *Environmental assessment of a cement-based solidified soil contaminated with lead,* Chemical Engineering Science 55, 113–128; Kosson, D.S., van der Sloot, H.A., Sanchez, F., and Garrabants, A.C. 2002, *An Integrated Framework for Evaluating Leaching in Waste Management and Utilization of Secondary Materials,* submitted for publication in Environmental Engineering Science, on 12/13/2001; and Sanchez, F., Kosson, D.S., Mattus, C.H., and Morris, M.I., 2001, *Use of a New Leach Testing Framework for Evaluating Alternative Treatment Processes for Mercury-Contaminated Mixed Waste (Hazardous and Radioactive*), Vanderbilt University Department of Civil and Environmental Engineering, December 14, 2001.

[29] See the *EPA Peer Review Handbook,* EPA document number EPA 100–B–00–001, December 2000, or a review of similar rigor.

[30] EPA has used and recommended use of the SPLP in some instances where municipal solid waste co-disposal is not occurring or is not plausible because it addresses one concern about the TCLP in these situations, the pH of the leaching solution.

[31] See Dutch Availability Test, NEN 7341; NEN 7349; and ongoing work of the CEN (European Committee for Standardization) working group CEN/TC292/WG2.

[32] The Agency is not clear as to what ''unusual'' wastes are of concern to the commenter. Any metal-bearing waste treated with solidification/stabilization treatment may generate a high pH, so these wastes are not unusual and are, in fact, common.

will be facilitated by establishing a default test, rather than requiring that a test be selected and supported in every CAMU decision.

Several commenters asked EPA to clarify that the Regional Administrator should define the testing approach for determining acceptable treatment at the onset of CAMU consideration, and that the approach should not be revised after treatment technologies have been selected or the CAMU approved. EPA expects that the Regional Administrator will approve specific leaching tests at the onset of CAMU designation, as part of the overall approach for determining acceptable treatment. At the same time, EPA cannot categorically say the testing approaches would never be changed after approval of the CAMU. For example, a change in testing approach might be warranted if the waste treatment method were changed, or if new site information unknown at the time of approval indicated that site conditions were somewhat different from what was originally believed. Commenters can be assured, however, that any changes to testing methods or other CAMU conditions would have to go through the appropriate procedural steps. In the case of permits, for example, EPA could only modify the permit only under certain defined circumstances, unless the change was requested by the permittee. See 40 CFR 270.41 and 270.42.

In allowing the Regional Administrator to approve alternatives to the TCLP, today's rule of course assumes of course that the Regional Administrator knows exactly how and where the CAMU-eligible waste will be disposed of—that is, the waste will be disposed of in a CAMU that he or she has approved. But, today's rule also includes an option that would allow the disposal of CAMU-eligible wastes in off-site hazardous waste landfills.[33] EPA expects that the TCLP would be used in these cases to measure compliance with treatment requirements, because the regulatory authority at the remediation site would not know the details of how the disposal site is managed or the local conditions at the site (indeed, in many cases, the regulator may not know which disposal site will eventually receive the waste—but only that the landfill must meet design standards for RCRA subtitle C landfills). Therefore, EPA believes that it will be generally unlikely that the Regional Administrator will be able to approve an alternative to the TCLP to measure treatment compliance before off-site disposal. Nevertheless, EPA recognizes that there may be limited circumstances where the Regional Administrator knows, with complete assurance, where the waste is going and also knows the specific conditions at the receiving site. (For example, this might conceivably occur where the disposal sites were in the same state under the oversight of the same regulator.) In this case, EPA believes that it might be reasonable for the Regional Administrator to accept (or require) alternative tests to the TCLP to demonstrate treatment compliance. Therefore, EPA has not precluded this possibility by regulation, although it believes that the TCLP will almost always be the appropriate test for off-site disposal.[34]

The Agency reiterates that today's rule changes retain the TCLP as the presumptive test for evaluating compliance with the CAMU treatment requirements. Alternatives to the TCLP may be used only as determined to be appropriate (based on an assessment of waste and site conditions) by the Regional Administrator. The Agency believes that, given the degree of regulatory supervision of CAMU site remediations, it is possible to appropriately implement the use of alternatives to the TCLP for determining CAMU treatment compliance, on a site-specific basis. EPA continues to find the TCLP to be an appropriate test for situations where regulatory agencies do not supervise waste testing and disposal, and where disposal in a municipal landfill (or a unit resembling a municipal landfill) is a plausible waste management or mismanagement scenario. The Agency emphasizes that the proposal, and today's rule, deal only with the use of the TCLP in determining compliance with the CAMU treatment requirements. Neither the proposal nor today's rule have any effect on existing requirements regarding use of the TCLP to determine whether a waste is hazardous or has been adequately treated under the LDR program.

(3) Assessment of 90% Reduction

As discussed in the proposal, EPA expects that the facility owner/operator will rely on normal waste and soil characterization techniques and procedures for representative sampling to determine 90% reduction in constituent concentrations. (65 FR 51101, August 22, 2000.) The Agency has recently issued draft guidance for public comment, in the context of the Phase IV Land Disposal Restrictions rule, on establishing and validating the 90% reduction levels for contaminated soil (see 66 FR 52198, October 18, 2001). EPA recommends the use of this guidance (when finalized) in assessing whether the 90% reduction standard for CAMU wastes has been achieved. In general, if the CAMU-eligible hazardous waste has a treatment standard that is measured by total constituent concentrations (i.e., organics and cyanide), then the 90% reduction would be measured using total constituent concentrations. If the treatment standard for the waste is measured using the TCLP or an approved alternative leach test (i.e., for metals), then the 90% reduction would also be measured using the TCLP or the proposed alternative leach tests. If wastes contaminated with metal constituents were treated using a technology which removed, rather than stabilized metals, the 90% reduction would be measured using total constituent concentrations.

b. Site-specific Treatment Standards based on Adjustment Factors (40 CFR 264.552(e)(4)(v))

EPA proposed and is today finalizing five factors that outline circumstances under which Regional Administrators may adjust the minimum national treatment standards on a site-specific basis: technical impracticability, consistency with site cleanup standard, community views, short-term risks, and protection offered by engineering controls under specified circumstances. When one or more of the adjustment factors are applied, EPA is requiring that the resulting site-specific treatment standard be ''protective of human health and the environment,'' as discussed below.

As discussed in the proposal, in developing the adjustment factors, the Agency identified circumstances both where it might be appropriate to require less treatment than would be required by the minimum national treatment standards (i.e., less treatment than 90% reduction in concentrations of PHCs capped by 10xUTS) and where it might be appropriate to require more treatment than would be required by the minimum national treatment standards.[35] When one or more

[33] For further discussion of this provision, see section K of today's preamble.

[34] In particular, the regulator at the remediation site is unlikely to know conditions of co-disposal at the off-site landfill, which is often a critical factor in determining whether an alternative to the TCLP is acceptable.

[35] Of course, Regional Administrators do not need the adjustment factors to require more treatment than would be required by the minimum national treatment standards, since such treatment could be required, where necessary to protect human health or the environment, using the provision allowing for additional CAMU requirements when necessary to protect human health or the environment. See 40 CFR 264.552(i), discussed later in today's rulemaking. Agencies overseeing cleanups may also

adjustment factors are applied, the result is a site-specific treatment standard. Today's rule requires that such site-specific treatment standards be protective of human health and the environment. The Agency discussed the application of the ''protective of human health and the environment'' standard in the proposal through a specific example, which it repeats here:

An example of how this [protection of human health and the environment standard] would be implemented is a site where there are two technologies that are available to treat the CAMU waste. Technology A, although it would technically meet the proposed generic standards, presented an unacceptable risk to site workers (e.g., because of risks of explosion). Technology B, on the other hand, did not present that risk, but could only achieve a 75% reduction in PHC concentrations. In this case, because the factors associated with adjustment factor D (''short-term risks,'' discussed below) were present, the Regional Administrator could consider an alternative standard; such standard could only be imposed where the alternate level (75% reduction) was protective. EPA expects that the Regional Administrator would undertake this assessment of protectiveness of the alternate standard as part of the overall remedy decision process. In judging protectiveness of the alternate standard, the Agency would expect the Regional Administrator to consider, as appropriate, the characteristics of the waste, including such factors as concentrations and mobility, how the wastes will be managed (e.g., the type of unit), and site characteristics, such as depth to groundwater and factors that affect fate and transport to potential receptors. Note, as discussed below under adjustment factor E, that protection offered by the engineering of the unit as the initial basis for considering an alternate standard is limited to a specific set of circumstances. 65 FR 51101 and 51102, August 22, 2000.

Commenters generally supported the approach of allowing adjustment of the minimum national treatment standards to accommodate certain site-specific conditions and, in general, supported the specific adjustment factors established today. EPA is finalizing the adjustment factors as proposed.

One commenter expressed the concern that the Agency might use the adjustment factors to change treatment requirements in the middle of a cleanup. The Agency clarifies that it expects decisions about treatment standards (including application of the adjustment factors) to be made as a part of CAMU determinations and, as a general matter, apply for the life of the CAMU. After a CAMU has been approved, any changes made to treatment (or other) requirements would be in response to an evolution of understanding of site-specific conditions that might occur during an iterative cleanup process. The existence of adjustment factors does not make such changes any more or less likely than they were under the 1993 CAMU rule. Furthermore, any changes would be subject to appropriate procedural safeguards—for example, the permit modification process if a CAMU were incorporated into a permit, or, in the case of orders, procedures for amending orders.

(1) Adjustment Factor A: Technical Impracticability (40 CFR 264.552(e)(4)(v)(A))

Using the technical impracticability adjustment factor, the Regional Administrator may adjust the minimum national treatment standards on a site-specific basis when it is not technically practicable to achieve these standards because of factors related to technologies or cost.

As discussed in the proposal, in some cases a facility owner/operator may find that it is not technically practicable to achieve the minimum national treatment standards, or to conduct meaningful treatment at all, because of factors relating to the performance capability or cost of technology. Factors related to the technical performance capabilities of technology and cost are routinely discussed in the remedy decision process in the federal CERCLA and RCRA corrective action cleanup programs and as part of remedy selection in state cleanup programs. As explained in the preamble to the proposal, the Agency intends that the technical impracticability adjustment factor will include the general concepts of ''technically infeasible'' and ''inordinately costly,'' as those terms are used in the federal CERCLA program (65 FR 51102, 51103, August 22, 2000). As explained in the preamble to the CERCLA National Contingency Plan, technical impracticability should be based on ''engineering feasibility and reliability, with cost generally not a major factor unless compliance would be inordinately costly'' (55 FR 8666, 8748 (March 8, 1990)). These concepts are also described in the RCRA corrective action ANPR at 61 FR 19432 (May 1, 1990) and in the Role of Cost in the Superfund Remedy Selection Process, Publication 9200.3–23FS, September 1996.

Factors relating to the performance of technology and cost are also addressed in the RCRA LDR treatment standard requirements in the provisions for variances. As discussed in the proposal, the Agency intends for the technical impracticability adjustment factor to encompass the concepts contained in the current ''unachieveable'' LDR treatment variance at § 268.44(h)(1) and the ''technically inappropriate'' variance at § 268.44(h)(2)(i) (65 FR 51102, August 22, 2000). Under the ''unachieveable'' LDR treatment variance, a new treatment standard can be developed when it is not physically possible to meet the otherwise applicable treatment standard. The Agency believes this concept is equally appropriate for adjusting treatment standards for PHCs placed in CAMUs, because imposition of a treatment standard that is impossible to meet would likely result in a containment remedy that would not involve any treatment at all. See 53 FR 31138, 31199 (August 17, 1988) for a discussion of the ''unachieveable'' variance. Under the ''technically inappropriate'' variance, the Regional Administrator may approve a site-specific treatment standard if treatment to the otherwise applicable standard is not appropriate, even though such treatment is technically possible. For example, the Agency has repeatedly expressed the view that it is technically inappropriate to require combustion of large amounts of mildly contaminated environmental media. See, 53 FR 31138, 31199 (August 17, 1988) and 62 FR 64504 (December 5, 1997) for a discussion of the technically inappropriate variance.

EPA received no adverse comments on the technical impracticability adjustment factor and is today finalizing this factor as proposed.

(2) Adjustment Factor B: Consistency with Site Cleanup Levels (40 CFR 264.552(e)(4)(v)(B))

Under the ''consistency with site cleanup levels'' adjustment factor, the Regional Administrator may adjust the minimum national treatment standards, on a site-specific basis, to require more or less treatment of principal hazardous constituents when treatment to the minimum national treatment standards would result in concentrations of PHCs that are significantly above or below the cleanup levels for the site. In the proposal, the language in adjustment factor B did not specify that it would be used to adjust treatment requirements only for principal hazardous constituents, although this was clearly the Agency's intent (i.e., because the treatment standards in today's rule apply only to principal hazardous constituents). EPA has modified the final rule accordingly.

As discussed in the proposal, EPA intends that in considering whether to apply this adjustment factor, Regional

require additional treatment when selecting cleanup remedies.

Administrators will compare concentrations of PHCs that would be attained through treatment to the minimum national standards (i.e., 90% reduction in PHCs capped by 10 x UTS) to site cleanup levels that assume there is direct exposure of a receptor to the PHC (i.e., site cleanup levels based on direct exposure) (65 FR 51103, August 22, 2000). Site cleanup levels based on direct exposure could be drawn from default standards established under state or federal law, where appropriate, or from a more site-specific analysis and/or a site-specific risk assessment. Site cleanup levels are typically established in consideration of a number of factors that influence the risk potential of a site, including fate and transport considerations (e.g., migration of contamination from soil to ground water); distinctions between residential, industrial and other types of land use; and the locations of potential receptors. In some cases, these factors are standardized (e.g., when standard assumptions of exposure correspond with standard land use assumptions). In other cases, these factors are populated with site-specific data, for example, as might occur during a site-specific risk assessment. Consideration of the protection from exposure provided by the engineering of a CAMU cannot be included in the evaluation. This is because, as discussed earlier in today's rulemaking, the treatment requirements are designed, in part, to minimize the risks of adverse effects on humans or the environment in the unlikely event that the containment provided by a CAMU should fail.

In the proposal, EPA solicited comment on whether it should expressly state in adjustment factor B that site cleanup levels used for comparison had to be based on assumptions of ''direct exposure'' to the principal hazardous constituents (65 FR 51103). EPA explained that it assumed that state cleanup programs routinely used direct exposure scenarios in setting cleanup levels, and therefore it was not necessary to explicitly make use of a direct exposure scenario a condition in adjustment factor B language. One group of commenters stated that they disagreed with EPA's assumption that cleanup programs typically base site goals or levels on ''direct exposure,'' arguing instead that cleanup programs did not assume direct exposure without considering actual or likely exposure scenarios at a site. The commenters, therefore, recommended that EPA not specifically require direct exposure assumptions in adjustment factor B. On the other hand, these commenters also asked EPA to clarify in the preamble to the final rule that adjustment factor B should be interpreted consistently with the Agency's interpretation of the § 268.44(h)(3) variance—which allows land disposal restriction variances for contaminated soil where LDR standards ''would result in concentrations of hazardous constituents that are below * * * the concentrations necessary to minimize short- and long-term threats to human health and the environment'' and which further specifies that determinations that threats have been minimized may ''not consider post-land disposal controls'' (§ 268.44(h)(3)(ii)).

EPA believes that commenters may have misunderstood what EPA meant by ''direct exposure'' in the preamble, because the Agency certainly agrees that cleanup programs do and should consider ''actual or likely exposure'' in setting cleanup levels. As stated in the preamble to the proposal, EPA agrees that ''site-specific cleanup standards are typically derived after consideration of factors that influence the risk potential at the site, including fate and transport considerations (e.g., in setting levels in soils that are protective of ground water), distinctions between residential, industrial and other types of land use, and location of potential receptors'' (65 FR 51103). Again, cleanup levels based on these assumptions would certainly be appropriate under adjustment factor B. EPA also reaffirms—as it clearly stated in the CAMU proposal (65 FR 51103)—that it interprets adjustment factor B in a manner consistent with its interpretation of the § 268.44(h)(3) variance. In particular, as the Agency stated in the preamble to the regulation, ''Consistent concentrations that achieve [levels based on the Agency's risk range for cleanup levels or goals] should be calculated based on a reasonable maximum exposure scenario—that is, based on an analysis of both current and reasonably expected future land uses, with exposure parameters chosen based on a reasonable assessment of the maximum exposure that might occur.'' (See 63 FR 28606–28608, May 26, 1998). EPA does note, however, that this land disposal restriction variance explicitly provides that, in setting ''minimize threat'' levels, the Agency cannot consider ''post-land-disposal'' controls (§ 268.44(h)(3)(ii)), and in the preamble to the Phase IV rule EPA cautions that site-specific determinations under this variance ''cannot be based on the potential safety of land disposal units, or engineered structures such as liners, caps, slurry walls or any other practice occurring after land disposal'' (63 FR 28607). Similarly, as EPA explained in the preamble to the CAMU proposal, levels established under adjustment factor B could not reflect the ''protection offered by the CAMU itself'' (65 FR 51103).

Given that the commenters are mistaken in their concern that EPA intended to disallow consideration of actual or likely exposure scenarios in this adjustment factor, and given that no other commenters argued that cleanup programs do not routinely use ''direct'' exposure assumptions in setting cleanup levels or goals, the Agency continues to believe that adding the phrase ''direct exposure'' to this adjustment factor is unnecessary. As discussed above, EPA does reemphasize, however, that, in determining whether adjustment was appropriate under this adjustment factor—as in the LDR variance at § 268.44(h)(3)—EPA or the state would not consider protection offered by the disposal unit or engineering controls as a basis for adjusting treatment levels. As explained later in this preamble, protection offered by the CAMU as a basis for departing from the 90%/10×UTS standard is appropriately considered under adjustment factor E.

(3) Adjustment Factor C: Community Views (40 CFR 264.552(e)(4)(v)(C))

Under the community views adjustment factor, the Regional Administrator may require more or less treatment than would be required under the minimum national treatment standards based on the views of the affected community on the treatment levels or treatment methods. As discussed in the proposal, at some sites, communities express concerns about factors such as the long-term reliability of remedies, worker safety, cross-media transfer of pollutants, and interference with their day-to-day lives (e.g., from traffic, odors, or noisy technologies) (65 FR 51103, August 22, 2000). EPA expects that such community concerns could provide the impetus to either reduce or increase treatment requirements.

EPA believes it is reasonable to include community views as an explicit criterion to justify adjustment of treatment requirements, because, in the Agency's experience, treatment is often an area of specific concern to the public. For example, many communities are very concerned about the use of combustion technologies. Consideration of community views is supported by the requirement (discussed later in today's rulemaking) that the public be provided notice and an opportunity for public comment on all CAMU determinations

before such determinations are made final.

Commenters who addressed this issue supported the community views adjustment factor, and the Agency is finalizing this provision as proposed.

(4) Adjustment Factor D: Short-Term Risks (40 CFR 264.552(e)(4)(v)(D))

Under the short-term-risk adjustment factor, the Regional Administrator may require more or less treatment than would be required under the minimum national treatment standards if the technology necessary to achieve the minimum national treatment standards would cause unacceptable short-term risks to workers or the public. Unacceptable short-term risks might be presented by a technology necessary to achieve treatment standards, or by the analysis necessary to determine whether treatment standards have been achieved. As discussed in the proposal, short-term risks associated with remedies and proposed treatment technologies are routinely considered during the remedy-selection process under the federal CERCLA program and the RCRA corrective action program (65 FR 51104, August 22, 2000). Commenters who addressed this issue supported consideration of short-term risks in adjusting treatment requirements, and the Agency is finalizing the short-term risk adjustment factor as proposed.

(5) Adjustment Factor E: Engineering Design and Controls (40 CFR 264.552(e)(4)(v)(E))

EPA proposed and is today finalizing an opportunity for Regional Administrators to adjust the minimum national treatment standards on a site-specific basis to require less treatment than would otherwise be required because of the protection offered by the engineering design of a CAMU. Under this provision, Regional Administrators may adjust the minimum national treatment standard based on the long-term protection offered by the engineering design of the CAMU and related engineering controls in five sets of circumstances: first, when the minimum national treatment standards are substantially met and PHCs are of very low mobility; second, when cost-effective treatment has been used and the CAMU meets the liner and leachate collection requirements for new hazardous wastes land disposal units at 40 CFR 264.301(c) and (d); third, when the Regional Administrator determines that cost-effective treatment is not reasonably available, and the CAMU meets the liner and leachate collection requirements for new hazardous waste land disposal units at 40 CFR 264.301(c) and (d); fourth, when cost-effective treatment has been used and PHCs in the treated wastes are of very low mobility; and fifth, when the Regional Administrator determines that cost-effective treatment is not reasonably available, PHCs are of very low mobility, and the CAMU meets or exceeds the liner and leachate collection system standards for new, replacement, or laterally expanded CAMUs in 40 CFR 264.552(e)(3)(i) and (ii), or the CAMU provides substantially equivalent or greater protection. Each of these site-specific circumstances is described more completely below.

As discussed in the proposal, the Agency means the phrase ''engineering design of the CAMU and related engineering controls'' to include the design of the unit itself (*e.g.*, presence and type of liner, leachate collection, and cap) and any associated engineering systems such as slurry walls, systems that produce inward hydraulic gradients in the vicinity of the unit, French drains, associated pump and treat systems, and ground water monitoring systems (65 FR 51105, August 22, 2000). Along with an assessment of the protection offered by the engineering design and related engineering controls for a CAMU, the Agency expects that the Regional Administrator's determination regarding a site-specific treatment standard would consider whether wastes placed in the CAMU pose any potential for unacceptable releases over the long term. This consideration should examine factors such as the concentrations and mobility of the PHCs in the CAMU-eligible waste, the waste matrix (soil or other), the site environment (e.g., fate and transport considerations), and how wastes might be affected by potential liquid infiltration into the CAMU.

Commenters generally supported the standards of proposed adjustment factor E. One commenter argued that EPA's proposed approach was too complicated, and that EPA should allow a broader risk-based approach. As discussed earlier, EPA does not believe the risk-based approach would provide the level of consistent protection, or of predictability for the public, that EPA's seeks in today's rule. Other commenters stressed the importance of adjustment factor E in ensuring that today's rule would not discourage aggressive remediation. As indicated in EPA's study of past CAMU decisions (included in the docket), many currently approved CAMUs would be allowed today only with consideration of adjustment factor E. EPA, therefore, agrees with these commenters on the likely importance of this adjustment factor in promoting effective cleanups

The specific subfactors available under adjustment factor E are discussed below. See also the if/then options illustrated in the chart presented in the following section of this preamble, section G.2.b(6). EPA has modified the proposed regulatory language for adjustment factor E for the sake of clarity (addressing commenters' concern with the complexity of this adjustment factor), but has not changed the substantive standards of this factor.[36]

The minimum national treatment standards are substantially met and PHCs in the waste or residuals are of very low mobility (40 CFR 264.552(e)(4)(v)(E)(1)). Adjustment factor E(1) allows Regional Administrators to adjust the minimum national treatment standards to require less treatment than would otherwise be required, based on the long-term protection offered by the engineering design of the CAMU and related engineering controls when: (1) the minimum national treatment standards are ''substantially met,'' and (2) PHCs are of ''very low mobility.'' EPA proposed this provision to address concerns that, where constituents in the waste are of low mobility and where the minimum national treatment standards are substantially met, it may not be reasonable to impose strict compliance with the minimum standards given (1) the level of protection provided by substantial compliance, and (2) the added protection offered by the engineering design of a CAMU and related engineering controls.

As discussed in the proposal, the term ''substantially met'' for purposes of adjustment factor E is meant to reflect situations where a treatment technology may result in concentrations of PHCs that meet the minimum national treatment standards for the most part, but do not precisely attain the minimum national treatment standards for all of the PHCs. In the proposal, the Agency gave two examples of application of the ''substantially met'' standard, which it repeats here:

> For example, the most appropriate technology at a site for wastes containing organic contaminants that have low migration potential (*e.g.*, certain polyaromatic hydrocarbons) might be biodegradation. This technology might come close to, but not achieve, 10 X UTS for the contaminants with low migration potential. Given that the contaminants have a low

[36] The regulatory language of today's rule breaks out the individual provisions of proposed § 264.555(e)(4)(v)(E)(2)(i)-(iii) into four different subfactors, but the regulatory language and substantive conditions remain identical.

migration potential, the Regional Administrator could assess site-specific factors that affect mobility, including the geologic setting, precipitation, and evaporation, and make the determination that an alternate treatment standard based on this technology would provide long-term protection of human health and the environment. In another example, the treatment standards would be substantially met where the overwhelming majority of constituents have been treated to meet the treatment standards, but a very few immobile constituents do not meet the standards. 65 FR 51106, August 22, 2000.

The term ''very low mobility'' reflects the concept that certain constituents (including constituents that may present significant risks in the event of direct exposure) have very little ability to migrate from waste to receptors through media such as air, soil, or water . As discussed in the proposal, the ability of a constituent to migrate is a function of the physical and chemical properties of the constituent and of site-specific conditions such as the waste matrix, the site environment (e.g., fate and transport considerations), conditions associated with the disposa unit, and how wastes might be affected by potential liquid infiltration into a CAMU (65 FR 51105, August 22, 2000.) In the proposal, the Agency gave two examples of the application of the very low mobility standard, which it repeats here for guidance:

One example of immobile constituents are certain metals, such as lead, that have a strong affinity for organic matter and can, under proper site conditions (which are typically strongly affected by pH conditions), demonstrate very low mobility. Another common example of immobile constituents is polyaromatic hydrocarbons (PAHs), such as benzo(a)anthracene and benzo(a)pyrene. PAHs can reliably be considered non-mobile constituents (with the notable exception of when the PAHs are concentrated to the extent that they are in a free-phase—i.e., as non-aqueous phase liquids (NAPLs)—when they are dissolved in a mobile substrate, such as oil). PAHs can be present as a direct result of historical industrial processes, or may be found as a residuum of formerly more complex mixtures of organic contamination that have been exposed to breakdown processes in the environment, or as a result of applying biological treatment technologies to the wastes. At some sites, such as petroleum refineries, PAHs can be found in high concentrations in old refinery wastes and contaminated soils, PAHs tend not to be found in significant concentrations in ground water, because of their low mobility and tendency to adhere to organic matter in soils and sludges. 65 FR 51106, August 22, 2000.

Cost-effective treatment has been used and the CAMU meets the liner and leachate collection requirements for new hazardous wastes landfills at 40 CFR 264.301(c) and (d). (40 CFR 264.552(e)(4)(v)(E)(2). Under adjustment factor E(2), the Regional Administrator may adjust the minimum national treatment based on the long-term protection offered by the engineering design of a CAMU and related engineering controls when: (1) cost-effective treatment has been used, and (2) the CAMU meets the liner and leachate collection requirements for new hazardous waste landfills. As discussed in the proposal, this adjustment factor reflects the Agency's concerns about the uncertainties of long-term containment; thus, when the national treatment standards have not been substantially met, this adjustment factor would require more robust engineering controls to reduce the potential for and consequences of unit failure. It would also require cost-effective treatment. (If cost-effective treatment was not reasonably available, adjustment of the treatment standards would still be possible, as provided by adjustment factor E(3)).

As discussed in the proposal, the concept of ''cost-effective'' treatment for the purpose of adjustment factor E means that the additional cost associated with increased treatment is proportionate to the increase in protection that the treatment would provide. EPA expects that assessments of cost-effectiveness will be made based on a reasonable review of the costs and the increased protection provided by treatment and on the best professional judgment of the Regional Administrator (65 FR 51106, August 22, 2000). Commenters on ''cost-effectiveness'' supported EPA's proposed approach.

This adjustment factor requires a more rigorous approach to engineering design and related controls than the minimum national design standards for CAMUs in that it requires compliance with the liner and leachate collection requirements for new hazardous waste land disposal units at 40 CFR 264.301(c) and (d). As discussed in the proposal, the liner and leachate collection requirements for new hazardous waste landfills are well established and understood, and units constructed to meet the liner and leachate collection requirements for new hazardous waste landfills generally offer a high degree of protection over time (65 FR 51107, August 22, 2000). Because the engineering design and related engineering controls required by this provision are very robust, the Agency is not limiting this adjustment factor to PHCs of very low mobility.

As discussed in the proposal, the Agency does not expect that CAMUs typically will be constructed to meet the liner and leachate collection standards for new hazardous waste landfills (65 FR 51107, August 22, 2000). Where they are designed to meet these standards, however, adjustment factor E(2) would allow treatment levels to be adjusted based on the protection offered by the unit design.

The Regional Administrator determines that cost-effective treatment is not reasonably available, and the CAMU meets the liner and leachate collection requirements for new hazardous waste landfills at 40 CFR 264.301(c) and (d). (40 CFR 264.552(e)(4)(v)(E)(3)). Under adjustment factor E(3), the Regional Administrators may also adjust the minimum national treatment standards based on the long-term protection offered by the engineering design of a CAMU and related engineering controls when: (1) cost-effective treatment is not reasonably available, and (2) the CAMU meets the liner and leachate collection requirements for new hazardous waste landfills. As discussed in the proposal, today's rulemaking reflects the general presumption that PHCs will be treated if cost-effective treatment is reasonably available (65 FR 51106, August 22, 2000). The Agency recognizes, however, that cost-effective treatment is not always reasonably available. In such cases, today's rule would allow the Regional Administrator to adjust the minimum national treatment standard based on the engineering design of the CAMU and related engineering controls, even where treatment is not used (that is, under this adjustment factor, when the CAMU meets the liner and leachate collection requirements for new hazardous waste landfills, and, under adjustment factor E(5) (discussed below), when the CAMU meets the liner standards for new CAMUs promulgated today and PHCs in the waste are of very low mobility).

As discussed in the proposal, the Agency expects that reviews to determine whether potentially appropriate cost-effective treatment technologies are ''reasonable available'' will be carried out consistently with the types of technology evaluations that are commonly associated with remedy selection under federal and many state cleanup programs (65 FR 51106, 51107, August 22, 2000). These reviews consider the availability and timing of goods and services associated with implementing a technology and issues associated with administrative feasibility as well as technical capability, feasibility, and reliability of the technology. Thus, while an individual technology might appear, in theory, to be cost-effective and capable of meeting a treatment standard, it

might not be ''reasonably available'' because of practical and implementation issues. Because of the range of site- and waste-specific factors that inform the types of treatment technologies that might be appropriate, the level of effort involved in reviews for reasonable availability should be determined on a site-specific basis.

Under this adjustment factor, the potential increase in risk to human health and the environment that corresponds to reduced or no treatment (because cost-effective treatment is not available) is balanced by the requirement to meet the liner and leachate collection system design standards for new hazardous waste landfills. As discussed above, the liner and leachate collection requirements for new hazardous waste landfills are well established and understood, and units constructed to meet the liner and leachate collection requirements for new hazardous waste landfills generally offer a high degree of protection over time.

Cost-effective treatment has been used and PHCs in the treated waste are of very low mobility. (40 CFR 264.552(e)(4)(v)(E)(4). Under adjustment factor E(4), Regional Administrators may adjust the minimum national treatment standards based on the long-term protection offered by the engineering design of a CAMU and related engineering controls when: (1) cost-effective treatment has been used, and (2) PHCs are of very low mobility. As discussed in the proposal, this adjustment factor is meant to accommodate circumstances where cost-effective treatment is available and will be used for PHCs, but the treatment will not meet or substantially meet the minimum national treatment standards. The Agency believes that it is reasonable for the Regional Administrator to make adjustments to the minimum national treatment standards when the engineering design of CAMUs and related engineering controls offer adequate protection and PHCs have been treated using cost-effective treatment and are unlikely to reach a receptor because they are of very low mobility. In these circumstances, the Agency believes that, even if unexpected failure of a CAMU were to occur, the constituents would not migrate far (and therefore would not be likely to reach receptors). The concepts of ''cost-effective treatment'' and ''very low mobility'' are discussed above.

The Regional Administrator determines that cost-effective treatment is not reasonably available, PHCs in the wastes are of very low mobility, and the CAMU meets or exceeds the liner and leachate collection system standards for new, replacement, or laterally expanded CAMUs in 40 CFR 264.552(e)(3)(i) and (ii) or the CAMU provides substantially equivalent or greater protection. (40 CFR 264.552(e)(4)(v)(E)(5)). Under adjustment factor E(5), Regional Administrators may adjust the minimum national treatment standards based on the long-term protection offered by the engineering design of a CAMU and related engineering controls when: (1) Cost-effective treatment is not available, (2) PHCs in the wastes are of very low mobility, and (3) the CAMU meets the design and operation standards for new, replacement or laterally expanded CAMUs promulgated today (including alternative standards). As discussed in the preamble to the proposal, this adjustment factor requires less rigorous engineering design standards than adjustment factor (E)(2) because it is limited to situations where PHCs are of very low mobility (65 FR 5107, August 22, 2000).

In situations where PHCs are of very low mobility, the Agency believes that the possibility of an increase in risk to human health or the environment resulting from reduced treatment (because cost-effective treatment is not available and therefore treatment does not take place) is balanced by the requirement that a CAMU be designed to meet the minimum standards for new, replacement, or laterally expanded CAMUs established today (or alternative standards) at 40 CFR 264.552(e)(3)or that the ''CAMU provides substantially equivalent protection.'' The liner standards at 40 CFR 264.552(e)(3) are based on the standards for municipal solid waste landfills and are discussed earlier in today's preamble. As discussed in the proposal, the concept of a CAMU providing ''substantially equivalent protection'' to the liner standards under 40 CFR 264.552(e)(3) allows for consideration of the entire CAMU unit and location characteristics (65 FR 51107, August 22, 2000).

In the proposal, the Agency gave two examples of when it might find that a CAMU provides ''substantially equivalent protection.'' These examples are repeated here for guidance:

> If an existing unit without a liner were to be potentially used for a CAMU under the conditions of this adjustment factor, the Regional Administrator could examine the protectiveness offered by the CAMU components (e.g., cap, ground water monitoring, ancillary engineering features), as well as mobility of constituents in the waste within the unit (which will be very low), and geology associated with the unit, in assessing equivalent protection. In another example, soils contaminated with PAHs, with no cost-effective method of treatment reasonably available, are proposed to be disposed in an existing unit with a liner that does not meet the § 264.552(e)(3) standards. Given the very low mobility of these constituents and the calculated infiltration rate of rainwater into the unit, it might be calculated that only very low concentrations of constituents would potentially migrate from the unit, that any migration would be for a very short distance, and that the CAMU would provide substantially equivalent protection to the liner standard under § 264.552(e)(3). 65 FR 51107–51108, August 22, 2000.

(6) If / Then Chart Illustrating Application of Adjustment Factor E

Application of adjustment factor E relies on a number of site-specific determinations made in specific combinations. To assist program implementors in properly applying this adjustment factor, the Agency has prepared the following ''if/then'' chart, which was also included in the proposal, as guidance.

If	And If	And If	Then
Treatment standards in § 264.552(e)(4)(iv) are *not* substantially met.	Cost-effective treatment has *not* been used.	RA has *not* determined that cost-effective treatment is not reasonably available.	RA may *not* consider adjusting based upon the ''long term protection offered by the engineering design of the CAMU and related controls.''
Treatment standards in § 264.552(e)(4)(iv) are *not* substantially met.	The PHCs in the waste or residuals are of very low mobility.	.....	RA may consider adjusting based upon the ''long term protection offered by the engineering design of the CAMU and related controls.'' § 264.552(e)(4)(v)(E)(*1*)

If	And If	And If	Then
Cost-effective treatment has been used.	The CAMU meets the Subtitle C liner and leachate collection requirements for new land disposal units at § 264.301(c) and (d).	.....	RA may consider adjusting based upon the ''long term protection offered by the engineering design of the CAMU and related controls.'' § 264.552(e)(4)(v)(E)(*2*)
The Regional Administrator determines that cost-effective treatment is not reasonably available.	The CAMU meets the Subtitle C liner and leachate collection requirements for new land disposal units at § 264.301(c) and (d).	.....	RA may consider adjusting based upon the ''long term protection offered by the engineering design of the CAMU and related controls.'' § 264.552(e)(4)(v)(E)(*3*)
Cost-effective treatment has been used.	The PHCs in the treated waste are of very low mobility.	.....	RA may consider adjusting based upon the ''long term protection offered by the engineering design of the CAMU and related controls.'' § 264.552(e)(4)(v)(E)(*4*)
The Regional Administrator determined that cost-effective treatment is not reasonably available.	The PHCs in the waste are of very low mobility.	Either the CAMU meets or exceeds the liner standards for new, replacement, or laterally expanded CAMUs in paragraph (e)(3)(i) and (ii) of this section, or the CAMU provides substantially equivalent or greater protection.	RA may consider adjusting based upon the ''long term protection offered by the engineering design of the CAMU and related controls.'' § 264.552(e)(4)(v)(E)(*5*)

c. Relationship Between Minimum National Treatment Standards and Adjustment Factors

Commenters expressed a range of views about the relationship between the minimum national treatment standards and site-specific treatment standards developed through application of the adjustment factors. Some commenters expressed the view that ideally the minimum national treatment standards should be adjusted only in exceptional circumstances. Other commenters thought that EPA should clarify that facility owners/operators could choose either the minimum national treatment standards or site-specific treatment standards.

EPA expects program implementors, in making treatment determinations, to start from the minimum national treatment standard and then to consider whether, based on site-specific circumstances, any of the adjustment factors apply. The minimum national treatment standards may be adjusted only in accordance with the adjustment factors. The Agency, as a general matter, has a preference neither for nor against application of the factors. EPA recognizes that the minimum national treatment standards will often be the preferable approach; at the same time as discussed in the proposal, the adjustment factors reflect circumstances where, in EPA's view, adjustment of the minimum national treatment standards might be appropriate because they represent circumstances where failure to adjust treatment could result in discouraging aggressive cleanup (65 FR 51101, August 22, 2000). Therefore, as discussed above, the Agency believes it is appropriate to have neither a preference for nor against application of the factors.

d. Treatment in CAMUs Within a Reasonable Time (40 CFR 264.552(e)(4)(vi))

EPA proposed and is today finalizing provisions that allow treatment of PHCs to the minimum national treatment standards (or site-specific treatment standards based on application of the adjustment factors) to occur either before placement of wastes in CAMUs or within a reasonable time after placement of waste in a CAMU. This is different from the approach taken in the LDR requirements, where treatment generally is required prior to placement. As discussed in the proposal, the Agency believes it is appropriate to allow treatment requirements to be met either before or after placement of wastes in a CAMU so that CAMUs can be used to facilitate treatment remedies (65 FR 51108, August 22, 2000). As discussed throughout today's rulemaking, promoting aggressive remedial approaches that involve excavation and treatment of contaminated wastes and materials (i.e., removing disincentives to cleanup) is the primary purpose of the CAMU rule. The Agency received no adverse comment on this provision.

As discussed in the proposal, determinations of what is a ''reasonable time'' for treatment should be made on a site-specific basis in the context of the remedy selected for the waste (65 FR 51108, August 22, 2000). As a general rule, EPA expects that treatment technologies, such as biotreatment, that are implemented after wastes are placed in a CAMU will achieve treatment standards within months or years, not decades, except in very unusual circumstances. (Today's rulemaking also establishes specific provisions for storage and/or treatment only CAMUs, from which wastes will be removed at closure. Storage and/or treatment only CAMUs are described in detail later in today's rulemaking.)

d. Assessing Compliance With Treatment Standards (40 CFR 264.552(e)(4)(vii))

The Agency proposed and is today finalizing provisions to allow, on a site-specific basis, for the analysis of a subset of PHCs to determine whether treatment standards are achieved rather than requiring analysis of all PHCs present. As discussed in the proposal, the Agency believes that in many cases it will not be necessary to require analysis of all PHCs being treated to accurately assess whether treatment standards are being achieved for all constituents. The Agency received no adverse comment on this provision.

Analyzing a subset of constituents to assess performance of treatment is a common practice in cleanup and generally involves consideration of factors such as the difficulty of treatment and grouping of constituents with similar properties. Today's rule

requires that Regional Administrators consider those factors when making site-specific determinations about analysis of a subset of PHCs. As discussed in the proposal, EPA also expects the Regional Administrator to consider the ability to analyze the constituents when selecting the subset of PHCs to be evaluated (65 FR 51088, August 22, 2000). The Agency gave an example of application of this concept in the proposal, which it repeats here as guidance:

> A general strategy is to analyze, within a group of constituents with similar treatment properties, the most difficult constituents to treat, following the reasoning that treatment of the most difficult to treat constituents will result in treatment of the other constituents as well. For example, when wastes containing mixtures of organic molecules are subjected to bioremediation, certain compounds tend to be more recalcitrant and take longer to treat. It might be reasonable to focus analysis on measurement of the compounds that are most resistant to bioremediation, to assess whether the treatment standards had been met. 65 FR 51108, August 22, 2000.

H. Constituents at or Below Site Cleanup Levels or Goals (40 CFR 264.552(g))

EPA proposed that, where all wastes placed in a CAMU have constituent concentrations at or below cleanup [37] levels or goals applicable to the site, the CAMU would not have to meet the requirements for liners and leachate collection systems, caps, or ground water monitoring requirements discussed earlier in today's rulemaking or the design requirements for storage and/or treatment only CAMUs discussed below.[38] The Agency received no adverse comment on this approach and is promulgating it as proposed.

As discussed in the proposal, EPA believes that, if constituent concentrations in all wastes placed in a CAMU are at or below concentrations that are considered protective at the facility (i.e., are at or below cleanup levels or goals for the facility), it is not necessary to require that the CAMU meet design or operating requirements (65 FR 51108—51109, August 22, 2000). This approach is consistent with the Agency's ''contained-in'' policy. Under the 1993 CAMU rule, program implementors had considerable flexibility in developing CAMU design and operation requirements and could accommodate circumstances where wastes placed in the CAMU were at or below cleanup levels or goals for the facility. Because today's amendments establish more specific design and operating requirements for CAMUs, the exemption is necessary to retain this flexibility. EPA is limiting this provision to situations where all wastes in the CAMU are at or below site-specific cleanup levels or remedial goals. Thus, if an existing unit is used as a CAMU and that unit contains wastes with concentrations that are above cleanup levels or goals this exemption would not apply and, among other requirements, the unit would remain subject to the capping and ground water monitoring requirements established today. EPA anticipates that this section would be used when owners/operators seek a CAMU to obtain relief from RCRA LDR requirements for wastes that are no longer considered hazardous. Wastes that are no longer considered hazardous remain subject to the LDRs when, for example, a ''contained-in'' determination has been made because hazardous constituents are at concentrations below health-based levels but above applicable LDR treatment standards. EPA also anticipates that this section will be used for materials that are not addressed by the contained-in policy (e.g., CAMU-eligible sludges). See 65 FR 51108.

One commenter suggested that, even when constituent concentrations in cleanup wastes are at or below cleanup levels or goals, they may still pose a risk if the assumptions used to determine remedial goals change (e.g., if cleanup levels or goals are determined using exposure assumptions appropriate to nonresidential land use, and then the land use changes). This commenter recommended that administrative notices (e.g., deed notices) be required in situations where site-specific cleanup levels or goals assume non-residential land uses. The Agency agrees that when nonresidential exposure assumptions are used to establish cleanup levels or goals for a facility, it is important for overseeing agencies to consider the long-term implications of these decisions for facility land use. The Agency does not agree, however, that it should establish a specific requirement in this rule for administrative notice to address this issue. EPA believes the issues of determining appropriate land use and exposure assumptions and developing mechanisms to communicate, monitor, and maintain nonresidential land use assumptions should be addressed as part of overall remedy selection—i.e., during selection of the site-specific factors that will be used to inform site-specific cleanup levels or remedial goals—rather than as a part of CAMU determinations. Indeed, these questions are much closer to decisions as to appropriate cleanup levels than they are to the remediation waste management decisions more generally associated with CAMU determinations.

EPA notes that RCRA corrective action, Superfund, and other cleanup programs rely on a range of mechanisms to ensure that remedies remain protective when they are based on non-residential land uses. Mechanisms include informational requirements (e.g., deed notices), permits, state and local land use laws, environmental easements, and similar ''institutional controls.'' EPA expects that overseeing agencies will carefully consider the effectiveness of these mechanisms when supervising cleanups where non-residential land use assumptions are used. For more information on EPA's current views on use of institutional controls see Institutional Controls: A Site Manager's Guide to Identifying, Evaluating and Selecting Institutional Controls at Superfund and RCRA Corrective Action Cleanups, EPA 530–F–00–005, September, 2000. The Agency's current guidance on incorporating considerations of reasonably anticipated future land use in remedial decision making is Land Use in the CERCLA Remedy Selection Process (OSWER Directive No. 9355.7–04, May 25, 1995). The Agency does not minimize the importance of issues raised by potential changes in land use over time or reliance on institutional controls during cleanups. However, given the wide range of mechanisms now used in RCRA, CERCLA and other programs and the fact that the issue is more appropriately considered in the overall cleanup decision making than in CAMU determinations, EPA has not included specific notification requirements for non-residential future land use assumptions in today's rule.

I. Storage and/or Treatment Only CAMUs (40 CFR 264.552(f))

EPA proposed to distinguish between CAMUs that are used for storage and/or treatment only and CAMUs in which wastes will remain after closure. CAMUs used for storage and/or treatment only would be subject to the design, operating, and closure standards for staging piles. EPA proposed that storage and/or treatment only CAMUs

[37] In the proposal, EPA used both ''remedial'' levels or goals and ''cleanup'' levels or goals. As used in the proposal, there was no substantive difference between these terms and, for clarity, the Agency uses only to ''cleanup levels or goals'' in today's action.

[38] I.e., in this case the CAMU would not have to comply with the requirements for liners at 40 CFR 264.552(e)(3)(i), caps at 40 CFR 264.552(e)(6)(iv), ground water monitoring at 40 CFR 264.552(e)(5), or the design standards at 40 CFR 264.552(f).

that operated for longer than the staging pile time limits (a maximum of two-and-one-half years) would be subject to the minimum CAMU design and ground-water monitoring and corrective action standards promulgated today. Commenters generally supported this approach, and the Agency is finalizing this provision as proposed. EPA has reorganized the regulatory language for clarity, but has made no substantive changes from the proposal.[39]

Under today's rulemaking, CAMUs that are used for storage and/or treatment only and that do not exceed the staging pile time limits are subject only to the performance criteria and design, operating, and closure standards for staging piles at 40 CFR 264.554(d)(1)(i)—(ii), 40 CFR 264.554(d)(2) and 40 CFR 264.554(e), (f), (j), and (k). They are not subject to the CAMU designation criteria at 40 CFR 264.552(c) and the CAMU design, treatment, ground-water monitoring and corrective action, and closure requirements at 40 CFR 264.552(e)(3) through (6).[40] Under the staging pile regulations, the Regional Administrator establishes standards and design requirements that facilitate reliable, effective, and protective remedies; that prevent or minimize releases; and that minimize or control cross-media impacts. The Regional Administrator sets staging pile standards and design requirements by considering factors such as the length of time the staging pile will be in operation, the volumes of wastes that will be managed in the pile, the physical and chemical characteristics of the wastes, the potential for releases, the environmental factors that may influence migration of releases, and the potential for human and environmental exposure to releases. As discussed in the proposal, the Agency believes it is appropriate to use the staging pile standards for CAMUs that are used for storage and/or treatment only, because the staging pile standards both reflect the general concepts in the CAMU criteria (i.e., by establishing the standard that staging piles are to facilitate ''reliable'' and ''protective'' remedies) and focus more directly on factors specific to short-term waste management (65 FR 51110, August 22, 2000). CAMUs used for storage and/or treatment only will also be subject to the staging piles standards at 40 CFR 264.554(e) and (f) governing management of ignitable, reactive, or incompatible wastes and the staging pile standards at 40 CFR 264.554(j) and (k) for closure. (Note that, as discussed in the proposal, the staging pile closure standards establish different requirements for staging piles located in previously contaminated areas and for staging piles located in uncontaminated areas. These apply in the same way to storage and/or treatment only CAMUs located in previously contaminated or uncontaminated areas (65 FR 51110, August 22, 2000).)

If storage and/or treatment only CAMUs exceed the time limits for operation of staging piles (that is, two years with the potential for a single 180-day extension), today's rule requires the Regional Administrator to establish time limits for operation that are no longer than necessary to achieve a timely remedy selected for the wastes. As discussed in the proposal, it is the Agency's general expectation that storage and/or treatment activities will be completed within months or years rather than decades, except in very unusual circumstances. Storage and/or treatment only CAMUs that operate for longer than two and one-half years must comply with the design and operating requirements for CAMUs in which waste will remain after closure at 40 CFR 264.552(e)(3) and the ground-water monitoring and corrective action requirements of 40 CFR 264.552(e)(5). They would not be subject, however, to the treatment standards of 40 CFR 264.552(e)(4) or the closure standards of 40 CFR 264.552(e)(6).

Some commenters expressed concern with this approach, indicating that it was common for large, multi-phased cleanups to require repeated staging of cleanup wastes over a number of years (i.e., more than two years). These commenters suggested that the Agency eliminate the time limit for storage and/or treatment only CAMUs or, alternatively, count only the days during which waste was actually in the storage and/or treatment only CAMU towards the two-year time limit. (For example, if wastes are staged for three weeks and then removed and the unit is ''empty'' for three weeks before receiving more waste for staging, only the three weeks during which waste was in the unit would apply towards the two-year time limit.)

The Agency is not persuaded that it should eliminate the time limit for storage and/or treatment only CAMUs or count only the time when waste is actually being treated or stored. The Agency believes that when storage and/or treatment only CAMUs will operate for more than two and one-half years, it is appropriate to apply the minimum national standards for CAMU design and ground-water monitoring and corrective action established today. Storage and/or treatment only CAMUs that operate for longer than two and one-half years have greater potential to release hazardous constituents to the environment (if only because they are in place for longer periods of time), and, therefore, in EPA's view should be treated in a manner similar to units designed for more permanent disposal. EPA is also not persuaded that it should count towards the two and one-half year time limit only the time that waste is actually stored and/or treated in a CAMU. Even though ''waste'' may not be stored in the pile during this period, past residuals may remain. Also, The Agency believes that the practical difficulties associated with such an approach are would be great. For example, would the permit have to specify the extent of removal necessary from a storage and/or treatment only CAMU such that the clock should stop? What type of record-keeping and inspection system would be necessary to document the days and times waste was actually being stored and/or treated in a CAMU? Determining, on a site-specific basis, the answers to these questions would almost certainly delay cleanups.

Finally, and most important, EPA is not convinced that the proposed approach (finalized today) will constrain cleanups in the way commenters suggested. Commenters appeared most concerned with application of the CAMU design and ground-water monitoring and corrective action requirements to storage and/or treatment only CAMUs operating for longer than two and one-half years. EPA notes that the minimum national standards for CAMU design apply only to new, replacement or laterally expanded units; they do not apply to existing units designated as CAMUs. Thus, existing units designated as storage and/or treatment only CAMUs would not have to be retrofitted, even if they were operated for more than two and one-half years. Furthermore, new CAMUs (including new CAMUs used for storage and/or treatment only) that are sited in areas of significant

[39] EPA revised these regulations by clearly separating the requirements for storage and/or treatment only CAMUs that meet the staging pile time limits (new paragraph (f)(1)) from the requirements for those that do not (new paragraph (f)(2)). The Agency reduced the section by eliminating the proposed paragraph (f)(1), but included the paragraph's conditions in the new paragraphs (f)(1) and (2).

[40] Although the treatment requirements in 40 CFR 264.552(e) would not apply, of course, nothing in this language would preclude the Regional Administrator from imposing additional treatment requirements using, for example, the overall CAMU or remedy decision process, or the provision allowing the Regional Administrator to impose requirements for CAMUs ''as necessary to protect human health and the environment.''

contamination are eligible for alternative design standards based on site-specific circumstances. The Agency believes that CAMUs used for long-term storage and/or treatment will often be located in areas of significant contamination (because facility owners/operators and regulators will choose to keep wastes confined to already contaminated areas, where practical) and therefore will be eligible for a determination that a liner is not needed under 40 CFR 264.552(e)(3)(ii)(B). Alternatively, CAMUs used for long-term storage and/or treatment may include operating practices that, together with location characteristics, will allow for a determination that alternate design approaches are acceptable under 40 CFR 264.552(e)(3)(ii)(A). For example, a roof constructed over a CAMU used for long-term storage and/or treatment, perhaps combined with pavement or a single liner, could prevent the migration of hazardous constituents into the ground water or surface water at least as effectively as the standard liner and leachate collection systems under certain circumstances (e.g., when waste is placed in the CAMU only intermittently).

As for concerns over ground-water monitoring and corrective action requirements, EPA understands the commenter's point, but it continues to expect that ground-water monitoring and corrective action requirements are going to be appropriate for land-based units that will be in place for many years. EPA does note, however, that the requirements for ground water monitoring and corrective action in § 264.552(e)(5) are expressed as performance standards. For example, ground water monitoring must be ''sufficient to * * * detect and characterize'' releases in ground water. Therefore, monitoring could be reduced where releases were very unlikely, as long as it met the regulatory performance standard. Similarly, corrective action requirements must be sufficient to ensure that the regulatory agency is notified of future releases to ground water and corrective action is taken as necessary to protect human health and the environment. The commenter did not explain why it considered this requirement to be unreasonable.

The Agency is sympathetic to arguments that some complex, phased cleanups may in fact take ''decades rather than years.'' Nonetheless, as discussed above, the Agency believes these cleanups are appropriately accommodated using the provisions for storage and/or treatment only CAMUs (and, where applicable, the provisions allowing alternate design approaches) promulgated today.

J. Staging Piles (40 CFR 264.554)

The Agency specifically requested comments on whether it should revise the staging pile regulations to allow treatment in staging piles, which would complement the provisions for storage and/or treatment only CAMUs. In addition, EPA requested comment on an industry group suggestion that, at a minimum, limited physical operations (that might technically meet the definition of treatment) be allowed in staging piles.

As in the past, comments on the idea of treatment in staging piles were mixed. Some commenters supported the idea of treatment in staging piles and believed that the staging pile standards would result in unit designs and operating criteria that protect against the potential risks of treatment. Commenters pointed out, for example, under 40 CFR 264.554(d)(1)(ii), staging piles must be designed to ''prevent or minimize releases of hazardous waste or hazardous constituents in to the environment'' and to ''minimize or adequately control cross-medial transfer.'' Other commenters opposed the idea of significant treatment in staging piles; they believed, among other things, that it would be misleading to the public (given the name 'staging piles') to allow treatment. They also argued that issues associated with significant treatment are more properly addressed using the CAMU designation process, which is likely to involve a higher level of government and public oversight.

After further consideration of this issue, the Agency has decided not to allow significant treatment in staging piles and to continue to require use of CAMUs (or other appropriate types of RCRA units) for significant treatment activities. EPA agrees with one commenter that issues associated with significant treatment (e.g., air emissions, use of chemical extractants) is more appropriately addressed through the CAMU designation process, where they will receive what EPA described in the proposal as ''the high degree of attention and analysis that has typically accompanied CAMU decisions.'' (65 FR 51111) At the same time, the Agency is persuaded that, given the broad definition of treatment in RCRA, an absolute ban on any treatment in staging piles might severely limit their use and could preclude legitimate staging activities for which they were designed. The Agency, therefore, is revising the staging pile regulations at 40 CFR 264.554 to explicitly allow physical operations that are intended to prepare wastes for subsequent management or treatment. As discussed in the proposal, these operations include mixing, sizing, blending, and other similar physical operations that are intended to prepare wastes for subsequent management or treatment (65 FR 51111, August 22, 2000). These types of activities are common practices during cleanups where it is necessary to first consolidate and then size or blend contaminated soils or other wastes to facilitate subsequent treatment.

Because of the broad definition of ''treatment'' under RCRA, physical activities to manage or prepare wastes for further management—such as the activities described above—could be considered treatment under certain circumstances.[41] However, the Agency is convinced that it is appropriate to allow for these types of activities in staging piles—they are legitimately part of typical staging activities at many cleanup sites; disallowing these activities could significantly reduce the usefulness of staging piles; and they generally do not raise issues beyond those that would arise merely from accumulating and storing remediation waste in piles. Today's amendment to the staging pile regulations will clarify that these types of physical activities are allowed for the purposes of managing remediation wastes in staging piles, regardless of whether they might otherwise, technically, meet the RCRA definition of ''treatment'' and provides facility owners/operators assurance that routine staging operations such as the physical mixing, blending and sizing of waste will not result in violations of the staging pile requirements. More significant treatment operations involving something other than physical treatment—that is, where the chemical character of the waste is changed through chemical or biological treatment (such as solvent-based soil washing or biotreatment)—are subject to the CAMU regulations discussed earlier in today's rulemaking. EPA has concluded that it is appropriate to continue to regulate these more aggressive approaches to treatment under the CAMU process because of the likely higher level of public interest and the fact that they do not fit within the

[41] Section 1004 of RCRA defines ''treatment'' as ''any method, technique, or process, including neutralization, designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to render such waste nonhazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume* * * .''

staging pile regulation's original concept of ''staging.''

K. Placement of CAMU-Eligible Wastes in Off-Site Hazardous Waste Landfills

In response to comments on the August 2000 proposal and to a later proposal from a group of industry representatives, EPA published a supplemental proposal on November 20, 2001 (66 FR 58085). In this proposal, EPA took comment on industry's suggestion that placement of CAMU-eligible wastes be allowed in off-site hazardous waste landfills under certain circumstances. In addition, EPA also proposed to allow disposal of CAMU-eligible wastes in on-site hazardous waste landfills under the same conditions. In the supplemental proposal, EPA explained in detail why, in its view, allowing disposal of CAMU-eligible waste in hazardous waste landfills would promote more aggressive remediation and provide remediators at cleanup sites with additional options—options that might frequently be more protective than disposal in a CAMU, that would likely lead to more thorough cleanups, and that would promote opportunities for redevelopment.

In the November 2001 document, EPA stated its intention to include the new conditions it was proposing (if it chose to go forward with them) in today's final rule, scheduled for signature by December 21. Consistent with this goal and because of the relatively limited nature of the proposal (depending, as it did, on the basic structure of the August 2000 proposal), EPA provided an abbreviated comment period of fifteen days. To ensure prompt notice to commenters and an adequate time for comment, EPA provided electronic copies of the supplemental proposal to all commenters on the August 2000 proposal immediately after it was signed on November 14, 2001. No commenters expressed concern about the length of the comment period on the supplemental proposal as it applied to off-site disposal of CAMU-eligible wastes.

EPA received overwhelmingly favorable comments on the general approach in the proposal. No commenters expressed disagreement with EPA's view that allowing placement of CAMU-eligible wastes in off-site hazardous waste landfills would promote more aggressive remediation. Several commenters asked EPA to clarify implementation issues and raised questions about the workability of the approach described in the supplemental proposal, depending on how it was interpreted. In response to these commenters, EPA is finalizing the supplemental proposal at 40 CFR 264.555, generally as proposed, but it is clarifying the implementation process and adding new procedural requirements, based on comments. These revisions are designed to ensure that the off-site provision can be practically implemented and therefore that it achieves its goal of promoting aggressive remediation. The details of the requirements are discussed below.

1. Conditions for Off-Site Landfill Placement

Section § 264.555(a)(1)–(3) establishes the basic conditions that must be met for the Regional Administrator to approve placement of CAMU-eligible waste in a hazardous waste landfill unit at an off-site location under the terms of § 264.555.[42]

a. Limitation to CAMU-Eligible Wastes

In the supplemental proposal, EPA limited placement of remediation wastes in hazardous waste landfills under the terms of § 264.555 to CAMU-eligible waste, but also proposed to include the ''discretionary kickout'' provision of § 264.552(a)(2). The Agency proposed to include the kickout provision because the reasons behind it apply as much to placement of CAMU-eligible waste in hazardous waste landfills as it does to placement in CAMUs. The supplemental proposal, however, did not include the special provisions of § 264.552(a)(1)(iii) and (a)(3), which would have allowed placement of ''as-generated'' wastes and liquids under specific circumstances. EPA concluded that, in the case of ''as-generated'' wastes, a special exception would be unnecessary, because there is no current regulatory constraint on placement of non-hazardous as-generated wastes in RCRA permitted landfills (except of course in cases of waste incompatibility, or similar situations). As for liquids, EPA saw no reason why the current RCRA ban on liquids in landfills should not continue to apply to hazardous waste landfills receiving CAMU-eligible wastes. The circumstances EPA has identified where the RCRA ban on liquids might be inappropriate for CAMUs are specific to remediation.

Commenters provided no negative comments on this aspect of the proposal, and therefore EPA is finalizing it as proposed.

b. Limitation to Placement in Off-Site Landfills

In the supplemental proposal, EPA allowed disposal of CAMU-eligible wastes in on-site hazardous waste landfills, as well as off-site waste landfills. One group of commenters—who was one of the two industry groups who recommended the off-site disposal option to EPA—correctly noted that industry's original proposal did not extend to on-site hazardous waste landfills. This commenter expressed concern that it did not fully understand the implications of this additional provision, and strongly urged EPA to defer extending the conditions of today's rule to on-site landfills. Because of the compressed schedule of this supplemental rulemaking, EPA has decided to proceed at this time only with aspects of the proposal that interested parties support, and to defer final decisions on other aspects to ensure that EPA does not adopt a course of action that may have unintended consequences. Accordingly, EPA is not extending the relief in today's rule to the disposal of CAMU-eligible wastes in on-site hazardous waste landfills and has revised the language of § 264.555(a) to limit the applicability today's rule to ''landfills not located at the site from which the waste originated.''

c. Treatment Requirements

In the supplemental proposal, treatment requirements for CAMU-eligible wastes placed in permitted hazardous waste landfills would largely track the treatment requirements for CAMU-eligible wastes placed in CAMUs. That is, treatment requirements would be limited to principal hazardous constituents. Treatment would have to meet the national treatment standards of § 264.552(e)(4), with an opportunity for the Regional Administrator to adjust treatment based on specific enumerated factors.

The Regional Administrator would be able to apply the following adjustment factors without any special conditions: adjustment factor A (technical impracticability), adjustment factor C (community acceptance), adjustment factor D (short-term risk), and adjustment factor E(1) (national minimum treatment standard is substantially met and waste PHCs are of very low mobility). EPA proposed not to allow use of adjustment factor B (which

[42] EPA emphasizes that ''CAMU-eligible'' waste may of course continue to be managed off-site in any way that was allowable before today's rule. Today's rule sets alternative treatment conditions for hazardous ''CAMU-eligible'' waste placed off-site hazardous waste landfills. Furthermore (to respond to a question raised by one commenter), off-site management of non-hazardous ''CAMU-eligible'' waste is not subject to the requirements of this section, and this waste may be managed off-site (including in hazardous and non-hazardous landfills) consistent with state law.

considers cleanup levels or goals at the remediation site), because it concluded that these levels would be irrelevant to placement in off-site landfills. In addition, EPA proposed to tighten adjustment factor E(2) (which allows the Regional Administrator to consider the protection provided by the engineering design of the CAMU) to require treatment of principal hazardous constituents in all cases where this adjustment was exercised.

Comments on this aspect of the proposal were largely favorable, and EPA is finalizing the treatment requirements as proposed (see § 264.555(a)(2)).

Regarding use of adjustment factor E(2), § 264.555(a)(2)(iii) of today's rule allows the Regional Administrator to adjust the national treatment standards based on the design of the landfill in accordance with § 264.552(e)(4)(v)(E)(2).[43] This section allows the Regional Administrator to adjust treatment levels based on ''the engineering design of the CAMU and related engineering controls'' ''where cost-effective treatment has been used and the CAMU meets the Subtitle C liner and leachate collection requirements for new land disposal units at § 264.301(c) and (d). * * *'' But § 264.555(a)(2)(iii) of today's rule adds a treatment performance standard for CAMU-eligible wastes going to off-site landfills under this adjustment factor—the treatment would have to significantly reduce ''the toxicity or mobility of the principal hazardous constituents in the waste, minimizing the short-term and long-term threat posed by the waste, including the threat at the remediation site.'' Consistent with the proposal, adjustment factors (E)(3), (4), and (5) would not be allowed.

Thus, today's rule significantly tightens the conditions of adjustment factor (E) for CAMU-eligible wastes being placed in off-site hazardous waste landfills. As explained in the proposal, EPA is taking this approach to address possible concerns about potential transfer of risk to the off-site location when the Regional Administrator relies on the protection afforded by the disposal unit to adjust the treatment standards. First, adjustment factors E(3)–(5) would not be available—since either these factors do not require treatment, or they do not require that the receiving disposal unit meet subtitle C design standards. And second, today's rule requires treatment of PHCs in CAMU-eligible wastes disposed of off-site under adjustment factor E(2).

EPA notes that—as one commenter pointed out—the inclusion of ''the threat at the remediation site'' in the treatment performance standard in § 264.555(a)(2)(iii) contemplates that the Regional Administrator, in implementing this adjustment factor, would make the same kind of balancing of risks allowed in the ''environmentally appropriate'' land disposal restriction variance at § 268.44(h)(2)(ii). That is, in concluding that a particular treatment regime ''minimized threat'' under this adjustment factor, the Regional Administrator could weigh the risks associated with leaving waste in place (or of significantly delaying cleanup) against any possible risks associated with subsequent management of the waste in a permitted hazardous waste landfill.

d. Disposal Requirements

In the supplemental proposal, EPA limited hazardous waste landfills receiving CAMU-eligible wastes to those with RCRA permits, not including landfills under RCRA interim status. The proposal did not specify who had to hold the permit for the landfill. For example, landfills accepting CAMU-eligible wastes might be off-site commercial units, or they might be at facilities controlled by the owner/operator of the remediation site. The proposal also required that the landfill meet the technical design and operating requirements for new landfills in 40 CFR part 264, subpart N. This requirement would ensure that the landfill met the minimum technology requirements for hazardous waste landfills (i.e., the double synthetic liner and detailed leachate collection requirements of § 264.301(c)). In addition, the landfill would be subject to the specific landfill ground-water monitoring requirements of subpart F of part 264 and the closure requirements of subpart G.

EPA received no negative comments on this aspect of the supplemental proposal and is finalizing § 264.555(a)(3) as proposed.

2. Approval Procedures

a. Approval of CAMU-Eligible Waste for Placement in a Subtitle C Landfill

Under the supplemental proposal, CAMU-eligible waste would be approved for placement in a hazardous waste landfill under procedures identical to CAMU approval procedures. Facility owner/operators wishing to send CAMU-eligible waste to a RCRA hazardous waste landfill would generally have to provide the same information as persons requesting approval of an on-site CAMU. Commenters generally supported this approach and EPA is finalizing it in § 264.555(b)–(c) largely as proposed.[44]

The supplemental proposal indicated simply that the ''Regional Administrator'' would approve CAMU-eligible waste for disposal in a landfill, without any further specification on which ''Regional Administrator.'' One commenter asked EPA to clarify whether the ''Regional Administrator'' was the regulator at the remediation site or at the receiving site; another commenter argued that the Regional Administrator approving the action under § 264.555(c) should be the person with regulatory oversight at the receiving landfill. On the other hand, several commenters assumed that EPA meant the Regional Administrator with RCRA regulatory oversight at the location of the cleanup would approve action under § 264.555(c)—that is, the Regional Administrator who would make an off-site decision was the same regulator who would likely be overseeing the cleanup (for example, if it was being conducted as part of a RCRA corrective action).

In developing the supplemental proposal, EPA did not clearly state whether the regulatory authority at the location of the cleanup site or at the receiving landfill would typically review and approve (or deny) proposals for off-site placement under § 264.555. For example, EPA stated in the preamble that ''the Regional Administrator (or the authorized state program) at the location of the hazardous waste landfill would be responsible for placement of CAMU-

[43] Note that, under § 264.555(g), the ''design of the CAMU'' in § 264.552(e)(4)(v)(E) means the design of the permitted Subtitle C landfill. Because the permitted landfill must meet the prescriptive design standards for new hazardous waste landfills, the Regional Administrator would typically base this adjustment on protection offered by a generic landfill meeting these standards. See discussion later in this section of the preamble.

[44] One commenter asked what information the ''person seeking approval'' would need to provide the Regional Administrator. Under § 264.555(b), the applicant would be required to provide information required under the general CAMU information requirement (§ 264.552(d)) relevant to an off-site determination. That is, the applicant would have to provide information ''sufficient'' for the Regional Administrator to approve CAMU-eligible waste for off-site disposal under § 264.555(c). This would include information to show the Regional Administrator that the waste is CAMU-eligible, to identify PHCs, to adjust treatment levels as appropriate (e.g., to demonstrate technical impracticability), and similar information. The applicant would not be expected to provide information not relevant to the decision (e.g., the specific design of the receiving landfill, since the landfill would be required, by regulation, to meet subtitle C design requirements, and this information would typically be enough to allow the Regional Administrator at the remediation site to make a decision).

eligible waste in the landfill.'' At the same time, however, most of the questions associated with that approval relate closely to specific circumstances, processes, and decisions at the cleanup site (including remedy decisions)—for example, the identification of principal hazardous constituents, which are based on site-specific cleanup goals or levels; technical impracticability adjustments; adjustments because of short-term risks; and similar questions. More broadly, the question of whether (and how much) waste treatment is needed is typically part of the remedial decision process. Therefore, the approval process under § 264.555(c) will inevitably be closely connected to the remedy selection decision at the cleanup site.

After reviewing comments and considering this question further, EPA concludes that the regulatory authority most appropriate for determining that CAMU-eligible waste from a particular remediation is suitable for disposal in a subtitle C landfill, as a general matter, is the regulatory authority at the remediation site. As described above, the question of how the cleanup wastes should be managed is inherently part of the remedy decision, and the information needed to make decisions will be available to the regulatory authority at the cleanup site. Furthermore, the decision on how to manage remediation waste is typically made in an iterative process at the remediation site, with the facility owner and the regulator considering a broad range of alternatives as the investigation and remedy selection proceed. In this process, the options for off-site disposal become a factor in determining which remedy is selected—including, perhaps, whether the waste is excavated in the first place.

In addition, several commenters made the point that extended regulatory review processes (on a remediation-by-remediation basis) at potential disposal sites would generally repeat review processes already conducted at the remediation site, and that such processes could, as a practical matter disrupt or significantly delay the cleanup process. For example, the decision for off-site disposal is often made only late in the process (at a point where on-site options are rejected), and then it is often made only generically, i.e., the decision is made that the waste might safely sent off-site for disposal in a hazardous waste landfill, but the specific site would not yet be identified. At the point where off-site disposal has been chosen, the facility owner, in such cleanups, might solicit bids from hazardous waste management companies with processes or landfills meeting certain criteria. It would obviously be unrealistic to expect each potential bidder to go through an extended approval process with its regulator (except in the case of very large cleanups) before it submitted a bid. At smaller sites, the time between the decision to manage wastes off-site and the actual movement of wastes might only be days. In both cases, if an extended off-site approval process began only after an off-site location had been accepted, cleanup could be significantly delayed, with no meaningful gains in environmental protection.

Thus, for the off-site provisions of today's rule to work effectively to promote aggressive cleanups at a wide range of sites, EPA believes that the regulatory authority at the cleanup site should make the basic decision as to what conditions would most appropriately apply to CAMU-eligible waste disposed of off-site at a subtitle C landfill.

For these reasons, EPA is finalizing § 264.555(a)–(c) generally as proposed, but specifying that the ''Regional Administrator'' approving CAMU-eligible waste for subtitle C landfill disposal will be the Regional Administrator (or state regulatory authority) with RCRA oversight over the site where the remediation is occurring. In this case, disposal in a hazardous waste landfill would be allowed, as long as the conditions of § 264.555 were met. Consistent with this expectation, EPA is modifying proposed § 264.555(b)—which describes the information that the person seeking approval must provide—by removing the parenthetical phrase ''(including the location of the landfill).'' As explained earlier, in many cases, remediators at the cleanup site may not know the location of the specific landfill at the time of the application, or indeed at the time eligibility for off-site disposal in a Subtitle C landfill has been approved.

One state commenter raised a concern about allowing a state director at a remediation site to determine adjusted treatment standards for CAMU-eligible waste, when that waste would be disposed of in another state. The commenter argued that the state regulator overseeing the receiving landfill should be responsible for making any adjustments to the national treatment standards. In particular, the commenter was concerned that the regulator in the generating state would not be knowledgeable about the receiving facility; that the state overseeing the receiving landfill might disagree with the treatment standards determined by the generating state; and that the receiving state would likely feel compelled to repeat the work of the generating state regulator, leading to duplicative effort.

EPA understands these concerns, but it continues to believe, for the reasons described above, that: (1) The regulator at the site of remediation is the most appropriate authority to make the *general* finding that cleanup waste from a particular site is appropriate for off-site disposal in a subtitle C landfill under today's rule, and (2) the off-site provisions in today's rule will be successful in promoting more aggressive remediation only if the basic decisions on the appropriateness of disposal in a subtitle C landfill are made at the cleanup site, with regulators at the receiving landfill playing their normal role (through the permitting process) in determining what particular wastes are appropriate for disposal at that site.

In answer to the points raised by the commenter, EPA agrees that the regulator at the receiving landfill will certainly be more knowledgeable about site conditions at that particular landfill. The Agency, however, does not believe that this fact is important to decisions on adjustments, because the design standards for the off-site landfill are specified by regulation. That is, the off-site landfill will have to meet the subtitle C design standards for new hazardous waste landfills. These are very specific standards, which not only require double liners and a leachate collection system, but specify such details as the thickness and composition of the liners; the size of the gravel (or other material) in the leachate collection layer; the minimum slope of that layer; and similar details . Thus, the regulator at the remediation site will have ample information on the engineering design of the unit to adjust a treatment standard based on the protection offered by the design of the receiving landfill (if adjustment factor E is exercised). At the same time, location-specific factors at the receiving facility (e.g., site-specific hydrology)—which is the kind of information that the regulator at the remediation site would be unlikely to know—would not be an allowable consideration in adjusting a treatment standard based on the engineering design of the landfill.

EPA acknowledges that, when wastes move from one state to another, the regulator in the receiving state may conclude that treatment levels approved by the neighboring state are unacceptable for a particular landfill, or that the receiving state may feel that it needs to review the work of the neighboring state. EPA certainly expects that, in such cases, overseeing states will be able to generally rely on the

protections built into today's rule, and the protections of the permitted landfill receiving the waste,[45] so that they can be comfortable allowing receipt of waste that meets its terms. But, the Agency also acknowledges that there is a potential for redundant reviews. Nevertheless, EPA remains convinced—for the reasons stated above—that today's rule will only be successful in promoting aggressive cleanups if the state overseeing the cleanup makes the basic judgments on whether a particular remediation waste is eligible for off-site disposal, and what level of treatment is required under today's rule, before disposal in a subtitle C landfill (regardless of where that landfill is located). Otherwise, as explained above, today's rule is not likely to achieve its intended goals.

b. Permitting and Acceptance at the Receiving Landfill

Proposed § 264.555(d) required that the Regional Administrator modify the permit for a hazardous waste landfill to allow receipt of CAMU-eligible waste under the terms of § 264.555, before it could receive such waste. In some cases, state or federal regulations would already require a permit modification at a facility, but in others—for example, where the waste met the waste acceptance criteria in the permit—they might not. But, in any case, proposed § 264.555(d) ensured that the permit was modified through a public process to allow receipt of CAMU-eligible waste under the terms of proposed rule.

The modification would follow permit modification procedures specified in § 270.42 or comparable state regulations, but at a minimum it would include public notice, opportunity for comment, and an opportunity for a hearing. (EPA assumes in most cases that states would choose the class 2 permit modification process, although class 3 modifications would meet the general performance standard as well.) This process would ensure that the local public had the opportunity to comment on whether and how CAMU-eligible wastes would be managed under the facility permit. Commenters supported this approach, and EPA is finalizing it as proposed. (Several commenters did express concern that EPA expected states to modify a facility's permit for each new remediation; today's rule would not require this. The issue is discussed in detail below.)

As part of the permit modification process at the receiving landfill, the Regional Administrator would include in the permit any requirements he or she determined were necessary or appropriate. During the permitting process, the Regional Administrator would be able to accommodate any special concerns of the local community. For example, the Regional Administrator might include special requirements in the permit to address potential risks from hazardous constituents in the waste, including principal hazardous constituents, to protect human health or the environment through the RCRA ''omnibus'' provision.[46] Further, the permit would include requirements to ensure that treatment standards for CAMU-eligible wastes imposed under § 264.555(a)(2) would apply; and, as specified in proposed § 264.555(d), the permit would also include recordkeeping requirements to demonstrate compliance with treatment standards approved for the waste. Under the current permitting requirements at § 264.13(a)(1), the facility owner/operator at the receiving landfill would be required to conduct an analysis of the waste that, ''at a minimum,'' contains ''all the information which must be known to treat, store, or dispose of the waste in accordance with this part'' (which would include information to show that treatment levels approved by the Regional Administrator were met). The plans for this analysis would be incorporated into the facility waste analysis plan (see § 264.13(b)), and the results of the analysis kept in the facility operating records in accordance with § 264.73(b)(3).

Commenters raised the question of whether a receiving land disposal facility would have to modify its permit every time it received CAMU-eligible waste from a new off-site location. Several commenters (including one state) argued that individual permit modifications would be unnecessary and counterproductive, where CAMU-eligible waste already met the acceptance criteria in a facility permit.

This was not EPA's intention in the proposal, and EPA expects that such modifications would ordinarily not be needed. Rather, EPA intends that an off-site facility would modify its permit once (with public notice, comment, and opportunity for a hearing). In fact, EPA expects that, once today's rule is effective, some commercial hazardous waste landfills will immediately seek enabling permit modifications, before they have been approached by potential customers—and EPA encourages them to do so.[47] Once an enabling permit modification has been approved, the modification would allow the facility to accept any CAMU-eligible waste that had been approved for off-site disposal by the appropriate regulatory authority at the remediation site. As part of the permitting process, the permitting authority of course could impose any additional conditions it determined were necessary, but EPA expects that complying with the terms of § 264.555, combined with the design and management standards required at the receiving facility under its RCRA permit, would provide sufficient assurance that CAMU-eligible waste would be safely managed.

One commenter argued that a permit modification at the receiving landfill should not be necessary at all. This commenter argued that permits specify the types of waste a facility may receive, and establish safe management conditions for that waste. If CAMU-eligible wastes approved for disposal under today's rule met the permit acceptance criteria, the commenter then questioned why a permit modification would be necessary at all. This commenter noted that, in many other cases, ''CAMU-eligible'' wastes currently go to hazardous waste landfills without permit modifications, because they meet the facilities' permit acceptance criteria. The commenter asked why EPA was requiring a permit modification under today's rule even where a facility's would otherwise allow acceptance of the CAMU-eligible waste without modification.

EPA appreciates the view of this commenter, but at the same time it notes that other commenters—including one state regulator—stressed the importance of the regulator and the local public at the receiving landfill having an opportunity to review and approve the fact that the landfill would receive wastes under the terms of today's rule. EPA also notes that the industry groups who recommended that these CAMU amendments include an off-site option supported an EPA requirement for a

[45] The receiving landfill, as explained below, would have to have a RCRA permit allowing it to receive the type of waste in question. RCRA permits establish detailed facility-wide requirements, including detailed waste analysis procedures, unit design, and waste management practices. These requirements, in EPA's view, will ensuring that the waste is managed protectively at the receiving facility.

[46] 46 Under the RCRA ''omnibus'' provision, ''each permit . . . shall contain such terms and conditions as the Administrator (or the State) determines necessary to protect human health and the environment.'' RCRA section 3005(c)(3).

[47] One commenter suggested that the one-time permit modification approach would lead to a network of approved facilities for EPA, states, and remediation waste generators to use for future projects involving off-site management of eligible wastes. EPA agrees that this result would be highly desirable and would promote more aggressive remediation.

permit modification, including public notice and an opportunity for a hearing at the off-site landfill. Therefore, EPA is retaining the proposed requirement in § 264.555(d) that the receiving facility undergo an enabling permit modification before receiving CAMU-eligible waste under today's rule. But it clarifies that there would be no need for subsequent permit modifications, as long as the CAMU-eligible waste met the waste criteria in the facility's permit.

At the same time, several commenters raised concerns that decisions on CAMU-eligible waste from any particular cleanup might be of concern to the local public and the regulatory authority at a receiving facility. Therefore, today's rule provides for an abbreviated notice procedure that must be completed before CAMU-eligible waste is placed in a permitted off-site landfill. These procedures are laid out in § 264.555(e). First, the landfill—which will already have been approved to receive CAMU-eligible waste under § 264.555(d)—would notify the local public and the RCRA permitting authority of its intent to receive off-site waste from a particular cleanup. (This notice might, for example, be submitted during the bidding process on the waste.) In this case, the public would be the persons listed on the facility's mailing list, required under 40 CFR 124.10(c)(ix). The notice would identify the location of the remediation site, the principal hazardous constituents, and the treatment requirements. Second, the public would have fifteen days to provide comments or express concerns to the regulatory agency. (Because the permit had already been modified through a public process to receive CAMU-eligible waste under this provision, commenters suggested and EPA has concluded that an abbreviated notice procedure is appropriate.) Finally, the Regional Administrator would have an additional fifteen days to object to the placement of the CAMU-eligible wastes in the landfill. The Regional Administrator would have the authority to extend the review period an additional thirty days because of public concern or insufficient information. If the Regional Administrator objects, or if he or she does not notify the owner/operator that he or she has chosen not to object, the waste could not be placed in the landfill until the objection had been resolved, or, alternatively, the permit had been appropriately modified through the procedures of § 270.42.[48]

EPA notes that, while this process requires action by the Regional Administrator within 30 days, it does not mean off-site disposal would be approved by default. Disposal could not occur without notification by the Regional Administrator that he or she does not object to the placement of the CAMU-eligible waste. EPA took this approach because it did not want the public to be at a disadvantage solely because the Agency (or an authorized state) failed to act within a specified period of time. At the same time, EPA recognizes that this approach may raise concerns with owner/operators of facilities interested in receiving CAMU-eligible wastes from off-site locations. Thus it urges these owner/operators to work closely with the appropriate regulatory authorities and the local public to look for ways to ensure that the process is expedited—consistent with the needs and interests of the regulator and the local community.

Toward this end, EPA has also included in today's rule a provision (§ 264.555(e)(iv)) that would allow the facility, the local public, and the regulatory agency to work together to identify situations where, because of minimal risk, they could agree that the limited notification procedures of § 264.555 were not necessary. For example, the facility, the regulatory agency and the community might agree that notification was not necessary if the total volume of waste from a particular remediation very minimal, or if CAMU-eligible waste met a particular level of treatment (for example, the waste was treated to the generic national standards of 90%/10XUTS, and none of the adjustment factors was used). EPA expects that these situations will be the exception. At the same time, however, EPA believes this provision will significantly improve the usefulness of today's rule, especially given the concern of one commenter that the rule should address obstacles to smaller-volume projects, for which off-site management often makes the most sense.

EPA, of course, understands that the regulatory authority and the local public may choose to limit the scope of today's regulation by requiring—through the initial permitting process at potential receiving facility—additional notice or review (e.g., a longer public comment period on notifications) before CAMU-eligible waste from a new remediation is received, or before certain categories or volumes of CAMU-eligible wastes were received from remediation sites. EPA expects that these issues would be addressed as part of the site-specific permitting process at the off-site hazardous waste facility seeking approval to receive CAMU-eligible waste from off site.

Commenters were particularly concerned that EPA might require that the receiving facility's permit be modified for each remediation. Commenters pointed out that this approach would be impractical and argued that it would likely eliminate the benefits (in aggressive remediation) that it hopes to achieve through § 264.555. The incentives for off-site disposal at hazardous waste landfills provided by today's rule, according to commenters, may often be most useful in the case of relatively small cleanups (or portions of cleanups). In such cases, the facility owner might be hoping to achieve clean closure—perhaps to allow redevelopment or to remove liability. Yet in these cases, the cost of a permit modification (even a ''minor'' modification) could well exceed the income received from a small shipment of remediation waste. Furthermore, such a process would create essentially the same practical problems that would occur if the § 264.555(c) approval process took place at the disposal site for every remediation. As one commenter put it, cleanup projects might be stopped indefinitely while one or more off-site facilities decided whether to participate in bidding on a project and then worked through the permit modification process. Thus, EPA believes it is impractical as well as unnecessary to require permit modifications with every CAMU-eligible waste shipment under today's rule.

3. Other Requirements

EPA emphasizes that the off-site portion of today's rule is narrow in scope. Specifically, the Regional Administrator may approve CAMU-eligible waste for placement in off-site hazardous waste landfills under only limited circumstances. Meanwhile, the waste would remain a RCRA hazardous waste, subject to all applicable RCRA hazardous waste requirements. For example, the manifest, recordkeeping, and reporting requirements of part 262 and part 264, subpart E would apply. In other words, the waste would require a manifest when shipped to an off-site facility, and standard RCRA waste-management requirements would apply

[48] EPA expects that permit modifications would only be necessary or appropriate as a last resort. That is, most objections are likely to be resolved short of requiring a modification to the permit modification. EPA, however, included this option because it provides a formal process, with clear requirements for public notice and typically with rights of appeal, which may be appropriate in some few cases. EPA has not specified in this rule what category of modification would be required, although the Agency expects that—if a modification process were determined to be necessary—the state would find a class 2 process to be most appropriate.

(e.g., waste analysis, storage requirements prior to placement, etc.).

In addition, when the waste is sent off-site, the rule (§ 264.555(e)) specifies that the generator of the waste (i.e., the owner/operator of the remediation site) is subject to the reporting, recordkeeping, and tracking requirements of § 268.7(a)(4). This section establishes requirements that apply ''when exceptions allow certain wastes or contaminated soil that do not meet the [land disposal restriction] treatment standards to be land disposed.'' With the initial shipment of waste, the generator will be required to send a one-time written notice to the land disposal facility providing specific information, such as the EPA waste identification numbers, the manifest number of the first shipment, and waste analysis data. EPA proposed this requirement and received no negative comment on it.

One commenter, however, suggested that § 268.7(a) be amended to include ''appropriate'' notice and certification. EPA believes that it has already, for the most part, addressed the commenter's concern by clarifying that the hazardous waste generator at the cleanup site must comply with § 268.7(a)(4), which requires a one-time written notice from the generator to the land disposal facility. The notice must indicate the hazardous waste numbers and the manifest number of the first shipment; a statement that the waste is not prohibited from land disposal; available waste analysis data; and specific information relating to the treatment of debris. EPA does recognize, however, that CAMU-eligible wastes may be treated off-site under today's rule, and that this activity might not be adequately covered by § 268.7(a)(4), which applies to waste generators. Therefore, to ensure adequate tracking and accountability when CAMU-eligible waste is treated off-site, § 264.555(f) of today's rule has been modified to require that off-site treatment facilities meet the certification requirements of § 268.7(b)(4), amended so that the treatment facility is required to certify that the treatment meets the requirements of the off-site provision of today's rule (as opposed to the requirements of the land disposal restrictions).

Finally, today's rule does not in any way restrict remediation waste management options that already exist. For example, the land disposal restriction variances of § 268.44(h) will remain available as an alternative (or complementary) approach for CAMU-eligible wastes sent for disposal. Furthermore, as described above, non-hazardous wastes will also be unaffected, because their management and disposal are generally not regulated under the federal RCRA hazardous waste program, and they will not need special approval under today's rule to allow placement in a landfill.

L. Grandfathering CAMUs (40 CFR 264.550 and 40 CFR 264.551)

EPA proposed that two types of CAMUs would remain subject to the 1993 CAMU regulations after promulgation of the CAMU amendments (i.e., after today's rulemaking): (1) CAMUs that are approved prior to the effective date of today's rulemaking and (2) CAMUs that were not approved prior to the effective date of today's rulemaking but for which substantially complete applications (or equivalents) were submitted to the Agency on or before 90 days after publication of the proposal (i.e., where substantially complete applications (or equivalents) were submitted on or before November 20, 2000). This approach is referred to as ''grandfathering.''

As discussed in the proposal, EPA continues to believe that it would be a poor use of cleanup resources to require reevaluation, in light of today's amendments, of CAMUs that are already approved or are substantially in the approval process (65 FR 51111–51112, August 22, 2000). The Agency's review of CAMUs approved under the 1993 rule showed that the CAMU decisions made under the 1993 rule would generally have been the same, or similar, to decisions that would likely be made under today's amendments. In general, commenters strongly supported the grandfathering approach, and EPA is today finalizing the grandfathering provisions as proposed.

The proposed effective date for the CAMU amendments was 90 days after publication in the **Federal Register**. Under RCRA Section 3010(b), RCRA regulations become effective six months after promulgation unless the Administrator provides for a shorter period because the ''regulated community does not need six months to come into compliance'' or for ''other good cause.'' As discussed in the proposal (65 FR 51118), EPA proposed a 90-day effective date, believing that it provided ample time for facilities to adjust to the new procedures and waste management standards in today's rule, especially given that the 90-day effective date would only affect unapproved CAMUs that do not meet the criteria for grandfathering.

A number of commenters expressed the concern that ninety days from public notice of the final CAMU amendments does not provide enough time to allow for approval of CAMUs under the 1993 rule and suggested that the Agency instead provide a 180-day effective date. Commenters appear concerned that a 90-day period would not provide enough time for EPA or authorized states to approve CAMU applications for units that were not already grandfathered by virtue of having a substantially complete application submitted by November 20, 2000. Given the scope of the grandfathering relief provided in the proposal, EPA believes this concern is unwarranted. CAMUs will be grandfathered if the application is approved within ninety days after the publication of the rule, or if the Agency received a substantially complete application (or equivalent [49]) within 90 days of the proposal of today's amendments (i.e., by November 20, 2000).[50] Therefore, facility owners/operators who submitted a ''substantially complete'' application to the appropriate regulatory agency by November 20, 2000, do not need to worry about whether their applications have been approved by the effective date of today's rule; their CAMUs—if approved—are grandfathered and will be subject to the standards that were in place when they submitted their applications (that is, to the 1993 CAMU rule standards). The 90-day effective date would have relevance only to applications that were not substantially complete by November 20, 2000, or (for applications not complete by that time) that had not been approved by the effective date.

The Agency does not see any justification for further extending the process that it laid out in the proposal. The purpose of the grandfathering provision is to avoid disruptions of CAMUs that have already been approved or that are well along in the review process. It is not to accommodate facility owners who submit new CAMU applications after the proposal of the CAMU amendments in an effort to obtain approval before the amendments become final. Therefore, although EPA understands commenters' interest in extending the effective date further, it is

[49] CERCLA decision documents and state cleanup program decision documents in which CAMUs are proposed as applicable or relevant and appropriate requirements are considered ''equivalent'' documents.

[50] As discussed in the proposal, ''substantially complete'' does not mean that the Regional Administrator must have deemed an application ''complete'' under § 270.10(c). Some commenters seemed confused on this point. For additional guidance on the meaning of substantially complete, see the proposal at 65 FR 51112 (August 22, 2000).

unpersuaded that an additional 90 days is needed or that a failure to provide that additional time will disrupt ongoing remedial activities or significantly set back ongoing reviews of CAMU applications.[51]

CAMUs that are grandfathered will remain subject to the 1993 CAMU rule for the life of the CAMU ''so long as the waste, waste management activities, and design of the CAMU remain within the general scope of the CAMU as approved.'' As discussed in the proposal, the Agency believes that there are two types of site-specific circumstances under which decision makers would generally determine that changes are ''within the general scope of the CAMU as approved.'' First, any change that could be made without modification of the approved CAMU conditions in a permit or other authorizing document would be considered ''within the general scope of the CAMU as approved'' and would therefore be grandfathered. Second, changes that require modification of the CAMU authorizing document but still remain within the general scope of the CAMU as originally approved may be allowed on a site-specific basis. These changes might include allowing additional placement of essentially the same wastes (or wastes with similar constituents and origin) that were originally approved for placement in a CAMU, or retaining the same basic design but enlarging a CAMU to accommodate an extra volume of waste. One commenter asked for clarification on the effect of permit changes to extend the duration of a CAMU. Changes to an authorizing document, including document renewals, to allow continued operation of a CAMU, as long as the continued operation of that duration was within the original ''general scope,'' would not affect the grandfathered status of the CAMU (e.g., where the intended life of an approved CAMU extended beyond the existing duration of the unit or facility permit, renewal of the permit to extend the CAMUs authorization would be ''within the general scope of the CAMU as approved''). See 65 FR 51112, August 22, 2000. Commenters supported the approach in the proposal, and EPA's views on these issues are unchanged.

Some commenters expressed concern that changes determined outside the scope of the CAMU as originally approved would automatically result in an entirely new CAMU approval process or cause an entire CAMU to lose its ''grandfathered'' status. This was not EPA's intention. EPA clarifies that an entirely new CAMU approval process is not needed for changes that are determined outside the scope of the originally approved CAMU, and such changes will not cause an entire CAMU to automatically lose its grandfathered status. Changes that are determined to be outside the scope of the originally approved CAMU (like other changes) would be subject to review and approval of the Regional Administrator and today's requirements would apply to them, if applicable. For example, a change to add a new type of waste to a CAMU that is considered outside the scope of the originally approved CAMU would trigger a duty to comply with today's treatment requirements with respect to that waste, but it would not require a new review, for example, of waste already disposed of in the CAMU or waste within the scope of the original approval.

EPA understands how its proposed language on grandfathering led to the commenters' concern, and therefore the Agency is making a change to that language to clarify its original intent. The proposed language (§ 264.550(b)) stated that grandfathered CAMUs are subject to the earlier CAMU standards, in § 264.551, ''so long as the waste, waste management activities, and design of the CAMU remain within the general scope of the CAMU as approved.'' To make it clear that a change in one feature of the CAMU (for example, the waste to be managed) would not automatically require a reapproval of the entire CAMU under the new standards, EPA has revised the final clause to read: ''CAMU waste, activities, and design will not be subject to the new standards as long as the waste, activities, and design remain within the general scope of the CAMU as approved.'' Thus, the placement of new waste in a grandfathered CAMU outside the scope of the original approval would require that the new waste meet the treatment standards of today's rule, and certainly operating and closure standards for the CAMU would be modified if necessary to address the new waste, but the entire CAMU would not have to undergo reapproval under the terms of today's rule.

M. Public Participation (40 CFR 264.552(h))

EPA proposed to expand and clarify the requirements providing for public participation in decisions to establish CAMUs by making prior public notice and an opportunity for public comment mandatory for all final CAMU determinations. EPA also proposed to expressly require the Regional Administrator to include in CAMU public notices the rationale for any proposed application of the treatment adjustment factors discussed earlier in today's rulemaking. Consistent with its overall policy to encourage full, fair, and equitable public participation throughout cleanup processes, the Agency believes that the public must be provided opportunities to participate in CAMU decision making and is finalizing the public participation requirements as proposed.

Today's public participation requirements for CAMUs expand on the public participation requirements established in the 1993 CAMU rule. This rule required the Regional Administrator to document his or her decision rationale and make the documentation available to the public, and it required that the incorporation of CAMUs into existing permits be done through the permit modification procedures (including the public participation procedures) of § 270.41 or § 270.42. The rule did not establish procedures for incorporating CAMUs into orders, or mandate that there be an opportunity for public comment before a decision outside of the permit context. Under today's rules, the Regional Administrator must provide ''public notice and reasonable opportunity for public comment before designating a CAMU.'' Thus, under today's regulations, the public will have an opportunity to be involved in all final CAMU determinations before final decisions are made, whether a CAMU is authorized under a RCRA permit or an order. Commenters generally supported the explicit requirement for public notice and opportunity for comment prior to final CAMU determinations.

As discussed in the proposal, the Agency believes that the standard of ''reasonable opportunity'' should, as a general minimum, include informing people about a prospective CAMU and providing a meaningful opportunity for people to comment to the Regional Administrator before a final agency determination is made regarding the CAMU (65 FR 51113, August 22, 2000). At the same time, by not including more detailed provisions on how public participation should be conducted, the Agency believes that the ''reasonable opportunity'' standard provides the flexibility that is necessary to ensure that CAMUs can be considered and approved within the broader context of cleanup decisions using the wide variety of administrative mechanisms that may be associated with cleanups.

[51] The Agency also notes that the signature of the final rule was delayed by several months beyond EPA's original expectations, thereby giving commenters much of the time they requested.

In many cases, the Agency expects that CAMUs will be approved as part of a larger remedy selection decision. In general, remedy decision processes already include opportunities for public review and comment. The Agency expects that CAMUs approved as part of a broader remedy selection decision would undergo public notice and comment as part of that decision. The Agency believes that placing CAMUs in the context of the broader remedies of which they are a part will be helpful to the public reviewing CAMU proposals. (Where CAMUs are approved as part of a permit modification, the existing permit modification procedures (including the public participation) of § 270.41 or § 270.42(c) would apply; however, even in these cases, EPA expects that the CAMU approval and the remedy decision could be done as a single modification.) In addition to public notice and an opportunity for comment before a final CAMU determination is made, the ''reasonable opportunity'' standard includes the idea that Regional Administrators provide sufficient information (e.g., a description of the proposed CAMU) to allow the public to consider the proposal in a meaningful way.

In addition to the requirement that Regional Administrators provide a ''reasonable opportunity'' for public comment before making a CAMU determination, today's rulemaking specifically requires Regional Administrators to include the rationale for any proposed adjustments to the CAMU treatment standards. As discussed in the proposal, the Agency is including this provision to highlight the importance of the treatment adjustment factors and because decisions about treatment, including the degree of treatment necessary at any given site, are often of great interest to the public.

In the proposal, EPA requested comment on whether to apply the public participation procedures in the Agency's RCRA Expanded Public Participation Rule (60 FR 63417, December 11, 1995, 40 CFR part 124, subpart B) to all CAMU decisions. Comments on the idea of requiring the expanded public participation requirements at all final CAMU determinations were mixed. Some commenters strongly supported applying the expanded public participation requirements to all final CAMU determinations. (The expanded public participation requirements now apply only to CAMUs approved as part of an initial permit. They do not apply to CAMUs incorporated into permits through permit modifications (see 40 CFR 124.31(a))—although these modifications do require the facility to notify the public and hold a public meeting at the time it applies for the modification (see 40 CFR 270.42(c))—or to CAMUs required through orders.) Other commenters thought application of the expanded public participation rule requirements—such as pre-application meetings—would not be appropriate for all final CAMU decisions. After considering these comments carefully, the Agency has decided not to apply the expanded public participation requirements by regulation to all CAMU determinations.[52]

EPA is taking this approach, in part, because the conditions of the expanded public participation rule mirror the specifics of the RCRA Part B permit process, and therefore may not fit well with other mechanisms that might be used to approve CAMUs. For example, the expanded public participation rule requires public notice in the local newspaper *and* by radio or television. EPA believes this level of specificity is inappropriate as a general requirement outside the context of RCRA Part B permits. The requirements for a preapplication meeting conducted by the facility owner are similarly detailed, and the meeting itself is likely to be redundant at many cleanups where public involvement is addressed through the broader remedial process. Instead, the Agency believes that the ''reasonable opportunity'' standard discussed above and the requirement that Regional Administrators include express information about any proposed adjustment to CAMU treatment requirements provide an appropriate minimum performance standard for public involvement in final CAMU determinations (i.e., they guarantee that the public will have a meaningful opportunity to be involved in all final CAMU determinations before a final decision is made) while maintaining the flexibility for regulators to tailor the specifics of the public involvement process to the particular site, the specific needs and interests of the public in the area, and the particular mechanism used.

The Agency reiterates that today's regulations represent the minimum amount of public involvement that is appropriate for final CAMU determinations. The Agency strongly encourages all CAMU decision makers to consider additional opportunities for public involvement in important cleanup decisions, such as final CAMU determinations, within the context of the broader cleanup. The Agency's current guidance on public participation during corrective action can be found in the September 1996 RCRA Public Participation Manual (see Chapter 4 in particular).

As discussed in the proposal, the Agency is continuing to review the best ways of enhancing the role of the public in RCRA cleanup decisions (including CAMU determinations), as part of its evaluation of public involvement in the overall RCRA corrective action program undertaken as part of the RCRA Cleanup Reforms. Public participation in the CAMU process will be informed by this initiative. The Agency continues to seek feedback from all stakeholders on the RCRA Cleanup reforms. Additional information is available at *www.epa.gov/epaoswer/osw/cleanup.htm* or by calling the RCRA Hotline at 1–800–424–9346 or the other numbers listed in the **ADDRESSES** section of today's rulemaking.

N. Additional Requirements ((40 CFR 264.552(i))

As discussed throughout today's rulemaking, cleanup situations will vary considerably across sites. As part of its effort to balance predictability and certainty in cleanup decision making with site-specific flexibility, EPA proposed and is today finalizing a number of minimum technical standards for CAMU design and operation, while at the same time allowing Regional Administrators to approve alternate standards on a site-specific basis. The Agency also proposed to modify the requirement from the 1993 CAMU rule to expressly allow the Regional Administrator to establish additional CAMU requirements on a site-specific basis to

[52] Under § 270.42, permit modifications to approve CAMUs are classified as Class 3 modifications. Class 3 permit modification procedures, which were developed prior to the Expanded Public Participation rule, are similar to the procedures in that rule in requiring public participation before the Agency publishes a proposal to approve a draft permit (or a proposed decision to deny), but they differ in important respects. Under the Class 3 permit modification requirements, permit applicants must notify the public at the time they request a permit modification (rather than before the application is submitted), and they must hold a public meeting and solicit comment on the modification request, before EPA proposes to issue or deny the modification request. The expanded public participation requirements for part B permits, on the other hand, require that the facility hold an informal meeting to inform community members of proposed hazardous waste management activities *before* they apply for a permit; the permitting agency must announce to the public when the permit application is submitted; and the permitting agency may require a facility to set up an information repository. The part B expanded public participation procedures do not apply to Remedial Action Plans issued under the Hazardous Waste Identification Rule for Contaminated Media (see 63 FR 65898, November 30, 1998), or to post-closure permits (40 CFR 124.31(a)).

protect human health and the environment. The Agency proposed that ''notwithstanding any other provision of this section, the Regional Administrator may impose additional requirements as necessary to protect human health and the environment.'' Commenters generally supported this approach, and the Agency is today finalizing this provision as proposed.

As discussed in the proposal, the Agency believes that this new construction of the Regional Administrator's existing authority (under the 1993 CAMU rule) to impose ''additional requirements as necessary to protect human health and the environment'' is appropriate to clarify that, on a site-specific basis, Regional Administrators may impose additional requirements beyond the more detailed minimum technical and operational standards for CAMUs established today. Such additional requirements might include, for example, additional treatment of PHCs beyond the treatment standards, additional engineering or monitoring specifications, and prohibitions on the placement of specific CAMU-eligible wastes in a CAMU.

While agreeing with the general concept of allowing Regional Administrators to impose additional requirements as necessary to protect human health and the environment, one commenter expressed concern that the proposed regulatory language did not adequately emphasize the site-specific nature of decisions to impose additional requirements beyond the requirements established today, or the need for such requirements to be supported in the administrative record for a CAMU and to be consistent with the overall objectives of the CAMU regulations. The Agency is not persuaded that a change to the rule language is needed to clarify these points. The Agency agrees that, like other elements of CAMU decision making, decisions to impose additional requirements (like any other Agency decision made in approving a CAMU) must be made on a site-specific basis and supported by the administrative record. As discussed in the proposal, this requirement for the most part only confirms an obligation that EPA already has as part of the ''omnibus'' provision in RCRA permitting at 40 CFR 270.32(b)—that is, that the Regional Administrator must establish, in individual permits, ''. . . terms and conditions as the Administrator or State Director determines necessary to protect human health and the environment.'' The RCRA omnibus provision for permits does not include specific regulatory language emphasizing that the decision must be site-specific or that actions must be justified in the administrative record, yet such decisions are held to those standards (See, e.g., *In re Caribe General Electric Products*, Inc., RCRA Appeal, No. 98–3 (February 4, 2001); *In re Ash Grove Cement Co.*, RCRA Appeals Nos. 96–4 and 96–5, 1997 EPA App. LEXIS 30 (November 14, 1997). Similarly, EPA does not believe such language is needed here.

IV. Relationship To Other Regulatory Programs

Today's amendments do not change the relationship between other state and federal programs and the CAMU regulations. These amendments solely affect the way hazardous cleanup wastes are managed in corrective action management units. These rules set standards for hazardous waste management units when EPA or a state chooses to take advantage of the flexibility provided by the CAMU rule, but they do not affect, in any way, other aspects of RCRA cleanups, e.g., how cleanup levels are set or when treatment is required at RCRA corrective action facilities. Although these standards borrow, as appropriate, from approaches in current remediation programs (including RCRA corrective action for solid waste management units), they were not designed for making remedial decisions outside the CAMU context, such as in state or federal cleanup programs, where program-specific remedial decision-making processes are already in use. Today's rule leaves in place, and leaves untouched, all of EPA's current policies and regulations covering hazardous waste cleanups, including such familiar policies as the ''area of contamination'' concept, ''contained-in'' decisions, the regulatory definition of ''remediation waste,'' and the various remediation-specific LDR variances. For a discussion of these and other policies, see the May, 1996 Corrective Action ANPR (61 FR 19432), the October 1998 Memorandum, Management of Remediation Waste Under RCRA, EPA530–F–98–026, RCRA Docket No. F–2000–ACAP–S0025, and the preamble discussion to the HWIR-media rule at 63 FR 65874, 65877–65878 (November 30, 1998) (these references are in the RCRA docket;). The preamble to the 1993 CAMU rule discusses the relationship between the CAMU rule and other regulatory programs, including CERCLA (see 58 FR 8658, 8679 (February 16, 1993)).

V. How Will Today's Regulatory Changes be Administered and Enforced in the States?

A. Applicability of Federal Rules in Authorized States

Under section 3006 of RCRA, EPA may authorize a qualified state to administer and enforce a hazardous waste program within the State in lieu of the federal program, and to issue and enforce permits in the state. A state may receive authorization by following the approval process described under 40 CFR 271.21. See 40 CFR part 271 for the overall standards and requirements for authorization. EPA continues to have independent authority to bring enforcement actions under RCRA sections 3007, 3008, 3013, and 7003. An authorized state also continues to have independent authority to bring enforcement actions under state law.

After a state receives initial authorization, new federal requirements promulgated under RCRA authority existing prior to the 1984 Hazardous and Solid Waste Amendments (HSWA) do not apply in that State until the State adopts and receives authorization for equivalent State requirements. In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)), new federal requirements and prohibitions promulgated pursuant to HSWA provisions take effect in authorized states at the same time that they take effect in unauthorized states. As such, EPA carries out HSWA requirements and prohibitions in authorized states, including the issuance of new permits implementing those requirements, until EPA authorizes the state to do so.

Authorized states are required to modify their programs when EPA promulgates federal requirements that are more stringent or broader in scope than existing federal requirements. RCRA section 3009 allows the states to impose standards more stringent than those in the federal program. See also § 271.1(i). Therefore, authorized states are not required to adopt federal regulations, both HSWA and non-HSWA, that are considered less stringent than existing federal requirements.

B. Authorization of States for Today's Final Rule (Other than § 264.555)

Today's CAMU amendments will be primarily implemented pursuant to section 3004(u) and (v) of RCRA, which are HSWA provisions. This authority also formed the statutory basis for the original federal Corrective Action Management Unit (CAMU) regulations (see 58 FR 8658, 8677 (February 16, 1993)). Therefore, the Agency is adding

this rule to Table 1 in § 271.1(j), which identifies the federal program requirements that are promulgated pursuant to HSWA. The Agency received a number of comments regarding the statutory authority for today's amendments. They are discussed below.

Today's amendments to the CAMU regulations (except for § 264.555) are more stringent than the existing federal CAMU regulations.[53] Thus, states that have already been granted authorization for the existing 1993 CAMU rule must revise their programs so that they are not less stringent than the federal program, including today's amendments. Further, because today's amendments to the CAMU regulations are promulgated under HSWA authority, in states authorized for the 1993 CAMU rule that choose to not seek interim authorization-by-rule, EPA will implement today's amendments until these states receive interim or final authorization. EPA will also continue to implement the amended CAMU regulations consistent with applicable, more stringent state law in those states that have not received authorization for corrective action. As explained in the 1993 CAMU rule preamble (see 58 FR 8658 (February 16, 1993)), the CAMU rule is integral to the HSWA corrective action program, and where EPA implements the corrective action requirements, EPA also implements the CAMU rule consistent with applicable more stringent state law. Note that section 3009 of RCRA allows state laws or regulations to be more stringent or broader in scope than the federal regulations.

States that are authorized for corrective action but have not received authorization for the 1993 CAMU rule are not required to seek authorization for today's amended CAMU regulations because those states' authorized regulations for corrective action and Land Disposal Restrictions (LDRs) are more stringent than the federal regulations, which provide for CAMUs. Because CAMUs are used as part of a corrective action and are often integral to the implementation of corrective action at individual facilities, states are strongly encouraged to adopt and seek authorization for the CAMU regulations. After publication of today's final CAMU amendments, states may continue to receive authorization for the 1993 CAMU rule. However, EPA strongly discourages states from seeking authorization for the CAMU regulations without today's amendments because EPA will implement these amendments in those states.

One commenter argued that EPA should promulgate today's ''modified rule'' under non-HSWA authority. Specifically, the commenter believes that the amendments are better promulgated under the authority of section 3004(a) of RCRA, which provides the authority for hazardous waste management unit standards, than under the corrective action standards of RCRA sections 3004(u) and 3008(h). This commenter also argued that there is no basis on which to conclude that the CAMU rule, when applied to facilities not subject to RCRA corrective action, is promulgated pursuant to HSWA authorities.

In response, EPA first notes that the comment urges the Agency to change its approach for the CAMU rule as a whole, not just for today's amendments. However, redesignating the entire CAMU rule as non-HSWA was not at issue in the CAMU amendments proposal. The only issue the Agency discussed in the proposal was the authority for the modifications to the CAMU rule. 65 FR 51114. Any comments that are not specific to those amendments are therefore outside the scope of today's rulemaking. The Agency is thus not changing the designation of the CAMU rule to non-HSWA.

As for whether the amendments alone are appropriately considered HSWA, the Agency continues to believe that they are for several reasons. First, today's amendments simply flesh out otherwise existing requirements of the CAMU rule. Just because these provisions are now more detailed does not mean that the authority under which they are implemented must change. More specifically, even with the added detail, the standards remain very tailored to the cleanup scenario, and they were designed to further the objectives of the corrective action program. For example, the identification of principal hazardous constituents, the balancing criteria inherent in much of the rule (for example, in the adjustment factors), the way many of the conditions derive from site remedial decisions (e.g., the alternative liner standards or the treatment adjustment factor based on cleanup levels), and similar aspects of the rule are inextricably linked to the remedy decisions at corrective action sites. In fact, the standards promulgated today are integral to satisfying EPA's obligation to ensure that corrective actions both move forward expeditiously and protect human health and the environment. RCRA section 3004(u); 40 CFR 264.101. They are therefore appropriately considered promulgated pursuant to the corrective action authorities.

Second, as stated in the proposal, although the CAMU rule language was amended in the HWIR-Media rule to make it clear that CAMUs may be used at ''cleanup-only'' facilities,[54] today's amendments (like the original CAMU rule) were developed primarily with corrective action sites in mind. For example, almost all of the CAMUs identified in EPA's site background document are at RCRA corrective action facilities.

Similarly, the Agency does not believe that it would be appropriate to treat the CAMU rule as it applies to non-RCRA corrective action sites as non-HSWA while treating the rule in all other instances as HSWA. Although one commenter argued that the ''Agency took no position on whether [allowing CAMUs to be used at ''cleanup-only'' facilities] was a HSWA determination or not,'' the Agency generally believes it is best to avoid bifurcating individual rules into HSWA and RCRA requirements. In any event, this comment is also outside the scope of today's rulemaking as it pertains to any provisions other than today's amendments. As discussed above, the Agency does not believe it would make sense to implement the amendments under a different authority than the balance of the rule.

Finally, EPA notes that it has addressed the specific concerns that, it assumes, lie behind the comments that this rule should be a RCRA rule. In the approach EPA has adopted in today's rule allowing interim authorization-by-rule, states will be able to become interim-authorized for the rule before it takes effect, eliminating any possible transitional problems or dual regulation that the original base RCRA authorization process was designed to avoid. Further, EPA has eliminated from today's final rule the two aspects of the proposal that commenters identified as causing potential transition problems—the exclusion of states with problematic

[53] The following section does not apply to § 264.555 of today's rule, because it is a less stringent HSWA provision. For a discussion of this provision, see section V.E of this preamble.

[54] ''Clean-up only'' facilities are sites that are subject to RCRA permitting requirements solely because clean-up activities at the facility trigger those requirements. The HWIR-Media rule eliminated facility-wide corrective action requirements in permits issued to clean-up only facilities. The Agency notes that under the HWIR-Media amendment to the CAMU rule, the universe of facilities subject to the CAMU rule did not change. The language was necessary to preserve the status quo, since the HWIR-Media rule removed cleanup-only facilities from the universe of facilities subject to RCRA's section 3004(u) facility-wide corrective action requirement. (63 FR 65880, November 30, 1998).

audit immunity and privilege laws from eligibility for authorization-by-rule, and the termination of interim authorization if EPA has not acted on final authorization within a specific period of time. Since EPA has addressed any potential disruption resulting from classifying today's rule as a HSWA rule, the commenters' only remaining concern would be that they would become subject to the more stringent requirements of the rule before they preferred to be. Given how intimately linked the requirements in today's rule are to the HSWA requirement for protective corrrective action at RCRA facilities, and given Congress's clear direction in HSWA that corrective action requirements should be immediately effective (even in authorized states), EPA believes that it would frustrate the intent of Congress to allow years of delay in the actual implementation of this rule.[55]

C. Interim Authorization-by-Rule for States Currently Authorized for the CAMU Regulations

1. Background and List of States Eligible for Interim Authorization-by-Rule

As described above, today's amendments are promulgated under HSWA statutory authority and are more stringent than the existing CAMU regulations (except for § 264.555). Thus, in states that are authorized for the 1993 CAMU rule, there is the potential for dual implementation of the CAMU regulations if these states are not authorized for today's amendments before they become effective. This dual implementation is a result of states continuing to implement the provisions of the 1993 CAMU rule, while EPA implements today's amendments.

To avoid this potential disruption in the implementation of the RCRA cleanup program caused by the regulatory authority for CAMUs being split between states and EPA, we proposed two authorization actions that would enable states to gain interim authorization for today's final amendments. First, EPA proposed a new authorization procedure called interim authorization-by-rule. Second, EPA proposed to use this new procedure to grant interim authorization to states that have final authorization for the 1993 CAMU rule and meet other eligibility criteria. Today, EPA is promulgating the interim authorization-by-rule procedure and listing those states which are eligible for interim authorization-by-rule.

EPA has determined that states which have met the criteria promulgated today in 40 CFR 271.27 are eligible for interim authorization-by-rule. These eligible states will have interim authorization if they notify EPA that they are willing and able to implement the amended CAMU regulations under 40 CFR 271.27(a)(2). This interim authorization is granted through a process that is promulgated as a part of today's rule in 40 CFR 271.27. Currently, 28 states are authorized for the existing CAMU regulations and meet the criteria for interim authorization-by-rule. These states are also authorized for corrective action. The eligible states are: Alabama, Arizona, California, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Louisiana, Nevada, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Tennessee, Texas, Utah, Vermont, Virginia, Washington, Wisconsin, and Wyoming.

2. Eligibility criteria and process for interim authorization-by-rule

Under today's interim authorization-by-rule procedure, states are eligible for interim authorization for the CAMU amendments if they have final authorization for the 1993 CAMU rule (58 FR 8658, February 16, 1993), and notify EPA within 60 days after publication of today's notice that they intend to and are able to use today's amendments as guidance in the implementation of their CAMU regulations until they adopt equivalent provisions. As discussed in the preamble to the proposed rule, these authorized states are currently responsible for the implementation of the CAMU rule, including reviewing applications for CAMUs from facilities and overseeing the operation of approved CAMUs. EPA continues to believe that in general, CAMUs approved under the standards in the 1993 rule could be approved under today's amended CAMU regulations. Thus, EPA has determined that these states have regulations which are substantially equivalent to the amended CAMU regulations.

Today's rule requires states that want interim authorization to notify EPA within 60 days after publication of today's notice that the state intends to and is able to use today's amendments as guidance in the implementation of their CAMU regulations until it adopts equivalent provisions. This requirement is located at 40 CFR 271.27(a)(2). During the 60-days period after today, the eligible states listed above should evaluate today's final amendments and decide whether they can and want to seek interim authorization-by-rule. If a state decides to seek interim authorization-by-rule, the state must send a letter to the Regional Administrator which informs EPA of this intention. After this 60-day period ends, EPA will publish an additional **Federal Register** notice identifying which states have submitted the notification to EPA, and thus have interim authorization for the CAMU amendments.

EPA received several comments regarding the state notification deadline. One commenter thought that the time period for notification was too short, while others believed that it was reasonable. EPA is reassured by state commenters who had no concerns regarding the deadline, which remains at 60 days after publication of today's rule. EPA has alerted states to this deadline, and EPA continues to discuss today's rule with states in order to ensure they are aware of the notification deadline. EPA also believes that this determination will be straightforward for states, and the procedural requirement is minimal.

One commenter believed that states eligible for interim authorization-by-rule should be able to submit their notifications to EPA of their ability to have interim authorization after the proposed 60-day deadline, as long as the notification is submitted before interim authorization for the CAMU rule amendments expires. EPA understands the reasons for this comment, but intends to complete the interim authorization-by-rule process by the effective date of today's final rule since the final action will be the placement of a **Federal Register** notice which informs the public what states have interim authorization for today's CAMU amendments. EPA is concerned that confusion may arise if different states qualify for interim authorization-by-rule at different times. Moreover, given the few changes from the proposal, EPA sees no reason, and the commenter provided none, why states cannot submit their notifications within 60 days. As described below, states that are authorized for the 1993 CAMU rule may also be able to apply for interim authorization using an expedited process similar to that used today. Note that this interim authorization would expire on August 30, 2004.

Eligible states may choose not to use this interim authorization-by-rule process. If they are not able to, or choose

[55] Under the RCRA authorization process, states have up to two years to amend their regulations to come into compliance with more stringent RCRA requirements. Generally, states meet this requirement. However, if they fail to do so, EPA's recourse is to begin steps to withdraw the state program's authorization to run the RCRA program. Under current regulations, state program withdrawal is a lengthy process.

not to seek interim authorization-by-rule, they can follow the process outlined in section F below for states that are authorized for corrective action, but not the 1993 CAMU rule.

In the August 22, 2000 proposed rule (65 FR 51116), EPA sought comment on restricting the eligibility of states with audit privilege and immunity laws for interim authorization-by-rule. Specifically, EPA proposed that under § 271.27(a)(2), states with audit privilege and immunity laws that raised EPA concerns about whether the state had adequate enforcement as required for the purpose of final authorization under RCRA section 3006(b) would not be eligible for interim authorization-by-rule for today's CAMU amendments.

In the August 22, 2000 proposed rule, Oregon, Nevada, and Illinois were identified as states with audit privilege and immunity laws that would not be eligible for the CAMU interim authorization-by-rule. Since publication of the proposed rule, Oregon and Nevada have taken actions which resolved EPA's concerns with their audit laws. Therefore, the audit laws in Oregon and Nevada no longer present a barrier to the authorization of federal environmental programs. Oregon and Nevada are eligible for interim authorization-by-rule for today's CAMU amendments and neither state will be ineligible for final authorization of today's CAMU amendments due to audit privilege and immunity laws.

In addition, EPA has decided interim authorization-by-rule for states with audit privilege and immunity laws that raise EPA concerns regarding the adequacy of state enforcement authorities for the purpose of final authorization under RCRA section 3006(b). However, because audit privilege and immunity laws, without sufficient safeguards and conditions, can undermine the enforcement authority that a state must possess as a condition of having final authorization to implement federal environmental programs, states granted interim authorization-by-rule will still be required to resolve their audit law conflicts where necessary to meet minimum federal requirements as a condition of final CAMU program authorization.

EPA bases its decision on the following rationale. First, interim authorization does not necessarily require a finding by EPA that the state program provides adequate enforcement, but rather a finding that the state program requirements are substantially equivalent to the federal program requirements. Second, even if adequacy of enforcement were considered part of equivalence, Illinois's CAMU program is substantially equivalent, if not completely equivalent, to the federal program. The judgment of substantial equivalence must be made looking at the program as a whole, and EPA does not believe that the fact that Illinois's enforcement authority may be circumscribed in the specific circumstances affected by its audit privilege law undermines the substantial equivalence of its CAMU program as a whole. This conclusion is supported by the fact that the audit privilege issues are not an aspect of Illinois's CAMU program per se but affect its hazardous waste program generally. Third, interim authorization will provide a state with the opportunity to address problems and issues associated with the state's environmental audit privilege and/or penalty immunity law. EPA will continue to work with states during this interim approval period to remedy any deficiencies in their laws or help implement today's CAMU amendments. Additionally, it is EPA's position that any subsequently enacted audit law or other law that conflicts with minimum federal authorization requirements would make a state ineligible for final authorization of the CAMU program.

The State of Illinois continues to have an audit privilege law that raises EPA concerns as to the adequacy of state enforcement authorities for the purpose of final authorization under RCRA section 3006(b). While Illinois is eligible for interim authorization-by-rule of today's CAMU amendments, under the approach outlined above, final authorization of Illinois's CAMU program will not be granted until Illinois resolves its audit law conflicts to meet the minimum requirements for authorization under RCRA section 3006(b).

In addition, Illinois has another law, referred to as the ''Illinois Site Remediation Law'' that raises EPA concerns regarding the adequacy of state enforcement authorities for the purpose of final authorization under RCRA section 3006(b). The Illinois Site Remediation Law [56] replaces strict liability with limited liability requiring proof of causation for all remediations under the Illinois Environmental Protection and Groundwater Protection Acts, including the RCRA program. This law increases the state's burden of proof necessary to establish a violation under federally approved Illinois programs, thereby affecting the adequacy of the state's enforcement authority under these programs. EPA has notified Illinois of its concerns regarding the Illinois Site Remediation Law.[57] As a condition for final authorization of the CAMU program, and, unless circumstances regarding the Site Remediation Law change, Illinois must modify its Site Remediation Law to meet the minimum requirements for final authorization under RCRA section 3006(b). EPA will continue to work closely with Illinois officials to address authorization issues for both the Illinois Audit Law and the Illinois Site Remediation Law.

D. Expiration of Interim Authorization

In the August 22, 2000 notice, EPA proposed to extend the period of interim authorization for the CAMU amendments from January 1, 2003 (the date interim authorization expires under § 271.24(c)) to a date three years after the effective date of today's amendments. EPA has considered comments on this proposal, and has modified the date interim authorization expires for today's amendments to be the date of final authorization, provided that states submit a final application for authorization to EPA by August 30, 2004. Under the provisions in §§ 271.21(e)(2)(ii), (e)(2)(iv), and (e)(4)(ii), states have two years after July 1, 2002 to amend their CAMU regulations, and then an additional 60 days to submit a final authorization application to EPA, resulting in the August 30, 2004 deadline. This final deadline is different than the proposed approach, which would have required states to receive final authorization from EPA by January, 2005. As reflected in their comments, states were concerned that under the proposed approach, there would be no deadline for states to submit their application that would ensure EPA approval by the expiration of interim authorization.

Under the approach in today's final rule, the deadline which states must meet to retain regulatory authority for today's amendments occurs sooner than in the proposal, but is at an interim step in the authorization process, and is not dependent on EPA action. Further, interim authorization may actually extend for a longer period of time than in the proposal because it extends until final EPA action is taken on a state's authorization application. This revised deadline is now located in new § 271.27(b) and amended § 271.24(c).

[56] Illinois Environmental Protection Act, 415 ILCS 5/58.9.

[57] See January 11, 1999, letter from David Ullrich, Region V Acting Regional Administrator, to Mary Gade, Director, Illinois Environmental Protection Agency, and James Ryan, Illinois Attorney General, detailing EPA's authorization concerns with the Illinois Site Remediation Law.

The final approach continues to require a deadline for state action because of the temporary nature of interim authorization. EPA continues to believe that final authorization should be the goal.

EPA believes that this extension to the expiration of interim authorization for the CAMU amendments rule will provide states sufficient time to amend their regulations so they are equivalent to the federal CAMU regulations, and then allow them to go through the final authorization process in § 271.21. If a state does not submit its final application for today's amendments before the deadline of August 30, 2004, interim authorization will expire, and EPA would then be responsible for implementing the new CAMU amendments in these states. (EPA would not implement the provisions in the 1993 CAMU rule that were unaffected by the amendments; the authorized states would continue to implement them.) EPA believes that this potential reversion of the implementation authority to EPA will act as a strong incentive for states with interim authorization to expeditiously seek final authorization. Further, EPA does not believe that this final authorization process will be particularly difficult. See below for additional detail regarding EPA's intention to expedite the authorization of states for the CAMU rule amendments. As part of the authorization process, EPA commits to reviewing and granting approval of a final authorization application within the time frame for interim authorization, provided that states expeditiously amend their regulations to include today's final amendments.

E. Authorization for § 264.555

Section § 264.555 of today's rule—which allows placement of CAMU-eligible wastes in off-site hazardous waste landfills—is less stringent than the existing regulations. Therefore, it will become effective only in those states which are not authorized for these parts of the hazardous waste program. Further, because the issues addressed by § 264.555 have no counterpart in the existing CAMU regulations (or any other RCRA regulation), this provision will would not be substantially equivalent to those regulations. Thus, states which are authorized for the 1993 CAMU rule will not be able to gain interim authorization-by-rule for the provisions in today's notice. The final CAMU amendments rule will not include the provisions in today's notice in the interim authorization-by-rule sections in proposed §§ 271.24(c) and 271.27 (see 65 FR 51115).

However, if a state were, through implementation of state waiver authorities or other state laws, to allow compliance with the provisions of today's notice in advance of adoption or authorization, EPA would not generally consider such implementation a concern for purposes of enforcement or state authorization. Of course, the state could not implement the requirements in a way that was less stringent than the federal requirements in today's rule, which, in this case, would include the public participation standards of today's rule. (This is similar to the approach the Agency took in promulgation of the 1993 CAMU rule. See 58 FR 8677, February 16, 1993.)

F. Authorization of States Currently Authorized for Corrective Action, but not the Existing CAMU Rule

There are a number of States authorized for corrective action that are not authorized for the 1993 CAMU rule. This situation applies in the following twelve states or territories: Arkansas, Colorado, Guam, Kentucky, Maine, Michigan, Minnesota, Missouri, Mississippi, Montana, New Hampshire, and Ohio. In addition to these states, some states authorized for the 1993 CAMU rule may not choose to receive interim authorization-by-rule. Because CAMUs expedite clean-ups, EPA encourages all of these states to seek final authorization for the CAMU regulations, including today's amendments as soon as possible. (Alternatively, states could request and receive interim authorization under § 271.24.) EPA also believes that the authorization process for the CAMU regulations can and should be completed expeditiously.

1. State Applications for Final Authorization

As discussed in the proposal, the state authorization revision procedures in § 271.21(b) provide EPA with the discretion to consider the circumstances of individual states when determining what should be the content of a state's application for final authorization. EPA believes that states which are authorized for corrective action and are seeking authorization for the amended CAMU rule generally will not need to submit a revised Program Description (PD) and Memorandum of Agreement (MOA) to EPA, where the state program seeking authorization for the CAMU regulations is the same program that is authorized for corrective action.

The implementation of the CAMU regulations requires states to make clean-up decisions that are in effect the same types of decisions states already implement through their corrective action programs. Therefore, EPA believes that the adoption and implementation of the CAMU regulations requires the same technical and resource capability that states already have to operate the corrective action program. Generally, no changes to the MOA between the state and EPA should be needed as a result of the CAMU regulations because Agency coordination issues have been addressed during the authorization process for corrective action. However, EPA would have the discretion to request these documents or other information, if necessary.

EPA believes that states should address the CAMU regulations in a revised Attorney General's (AG) statement of authority if necessary, or through other appropriate mechanisms. The CAMU regulations create a new type of waste management unit that can be used only in certain situations after a facility application and Agency review process. Thus, states may need to establish new statutory or regulatory authority, or interpret their existing authorities to determine that they can approve and regulate these units.

2. Authorization Approach for States That Adopt the CAMU Regulations by Reference or Verbatim

Many states adopt federal regulations verbatim or incorporate them by reference into their regulations. It is likely that many states will adopt the CAMU regulations in this manner. When states adopt federal regulations using these methods, it is not difficult for EPA to determine whether the state regulations are equivalent to their federal counterparts. Because of this ease of review, and the high priority of state authorization for the CAMU regulations, the Agency believes that the authorization process for these states under § 271.21 will be quick. Thus, once EPA receives an acceptable authorization application from a state which incorporates the CAMU amendments by reference or adopts them verbatim, EPA intends to immediately proceed to publish a direct final rule which grants final authorization to that state. Under this mechanism, the rule would become effective unless EPA received an adverse comment, in which case EPA would withdraw the rule prior to the effective date. An exception to this expectation would be cases where in EPA's judgment, known issues with the existing state program greatly affect the program's prospects for authorization.

An example of such issues would be questions regarding a state's enforcement authority (e.g., audit law issues), or capability (e.g., resource issues). It should also be noted that EPA will process all state authorization applications for the CAMU regulations as quickly as possible, regardless of the method of state adoption.

VI. Effective Date

In today's final rule, EPA is retaining the proposed effective date of 90 days. Regulations promulgated pursuant to RCRA Subtitle C generally become effective six months after promulgation. However, RCRA section 3010(b) provides for an earlier, or immediate, effective date in three circumstances: (1) Where the industry regulated by the rule at issue does not need six months to come into compliance; (2) the regulation is in response to an emergency situation; or (3) for other good cause. Because today's rule ''grandfathers'' CAMUs (see discussion above in ''Grandfathering CAMUs''), a 90-day effective date would only affect any unapproved CAMUs that do not meet the criteria for grandfathering (i.e., CAMUs for which a ''substantially complete'' application had not been submitted by November 20, 2000, and which had not been approved by the effective date). Thus, at the time this rule becomes effective, all existing and approved CAMUs will, by definition, be ''in compliance'' (because they will be grandfathered), and therefore industry will have no problem in coming into compliance by the effective date. (Several commenters expressed concern that 90 days did not provide enough time for them to modify CAMU applications and become approved by the effective date. These commenters, however, did not argue that they would be out of compliance unless EPA provided for a 6 months effective date; instead, their main concern was with the scope of grandfathering relief. These comments are discussed earlier in today's preamble in the section on grandfathering.)

One commenter believed that the effective date for today's final rule should be six months after publication to allow states a longer time period to notify EPA that they intend to and are able to use today's amendments as guidance in the implementation of their CAMU regulations. However, as discussed above, most states supported this notification deadline.

VII. Conforming Changes (40 CFR Part 260, Subpart S, § 260.10)

Today's rule changes the title of 40 CFR part 264, subpart S from ''Corrective Action for Solid Waste Management Units'' to ''Special Provisions for Cleanup.'' The current title reflects the Agency's intention in 1993, when it was added to the CFR, to finalize the comprehensive corrective action regulations for solid waste management units proposed in September 1990. 58 FR 8658 (February 16, 1993). As discussed more fully above, in the section titled ''Releases to Ground water (§ 264.552(e)(5)),'' the Agency withdrew the majority of that proposal in October 1999. In addition, the current provisions of subpart S, as well as those finalized today, address CAMUs, temporary units, and staging piles, which are all units which may only be used for the management of cleanup wastes, and which, in some instances, may be used at sites not subject to RCRA corrective action. In addition, today's rule includes provisions applicable to cleanup wastes disposed of off-site. EPA therefore believes that this change ensures that the title of subpart S more accurately conveys the provisions that are contained within it.

The conforming changes to § 260.10 are made to implement the distinction being drawn in today's rule between CAMUs that are grandfathered and CAMUs that are subject to today's standards at § 264.552. As discussed above in the section titled ''Eligibility of Wastes for Management in CAMUs,'' EPA is modifying the definition governing the types of wastes that can be managed in a CAMU, and is changing the name of waste eligible for management in CAMUs from ''remediation waste'' to ''CAMU-eligible waste.'' This revised definition applies to new CAMUs but not to CAMUs that qualify to continue implementation under today's ''grandfathering'' provisions (see § 264.550). EPA is making two conforming changes as a result of modifying the definition of remediation waste in this fashion. The first change is to remove the existing definition of CAMU at § 260.10 and to include it directly in § 260.551(a) (the introductory paragraph to the 1993 CAMU provisions, which becomes, as a result of the regulations finalized today, the regulations applicable to grandfathered CAMUs). The second change is to modify the existing definition of CAMU at § 260.10 by changing ''remediation wastes'' to ''CAMU-eligible wastes,'' and to place the definition directly in the amended CAMU regulations at § 264.552(a).

EPA also changed the term ''remediation waste'' to ''CAMU-eligible waste'' throughout the CAMU regulatory language.

EPA received no comments on these conforming changes and is therefore finalizing them as proposed.

VIII. Analytical and Regulatory Requirements

A. Planning and Regulatory Review Under Executive Order 12866

Under the Planning and Regulatory Review Executive Order 12866 (58 FR 51735 (October 4, 1993)), an agency must determine whether the regulatory action is ''significant'' and therefore subject to OMB review and the requirements of the Executive Order. The Order defines ''significant regulatory action'' as one that is likely to result in a rule that may:

(A) Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or state, local, or tribal governments or communities;

(B) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;

(C) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or -

(D) raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in the Executive Order.

Pursuant to the terms of Executive Order 12866, it has been determined that today's final rule is a ''significant regulatory action'' because of novel legal or policy issues arising in the rule. As such, this action was submitted to OMB for review. Changes made in response to OMB suggestions or recommendations will be documented in the public record. The final rule is estimated to have annual incremental costs between $217,000 and $452,000, and therefore is not viewed as economically significant under the Executive Order.

EPA has prepared an economic support document for the final rule entitled Economic Analysis of the Amendments to the Corrective Action Management Unit Rule.'' This document can be found in the docket for today's final rule.

This section of the analysis discusses: (1) The economic analysis background and purpose, (2) the CAMU administrative approval costs assessment, (3) the analysis of impacts resulting from the treatment and unit design requirements, (4) the assessment of potential change in CAMU usage to result from the rule, and (5) the summation of these impacts. There were

no comments on the proposed rule specifically addressing the economic analysis methodology or results. The Agency discusses economics-related comments in the relevant sections below. For a complete discussion of the comments received on the proposed rule, please see the response to comments document in the docket for today's final rule.

This section also provides a qualitative discussion of the potential impacts of allowing the placement of CAMU-eligible wastes in off-site hazardous waste landfills. See section III.K of today's preamble for a more detailed discussion of this provision.

1. Economic Analysis Background and Purpose

A CAMU is: ''An area within a facility that is used only for managing CAMU-eligible wastes for implementing corrective action or cleanup at the facility.'' (40 CFR 264.552) CAMUs may be used to consolidate hazardous wastes from various areas at the facility. While one of the chief reasons for CAMU usage is to facilitate more treatment of cleanup wastes in general (see discussion earlier in the preamble), wastes placed in CAMUs are not subject to the land disposal restriction requirements for treatment. In addition, under the 1993 CAMU Rule, CAMUs are not required to meet the existing 40 CFR part 264 and part 265 minimum design, operating, closure, and post-closure requirements for hazardous waste units.

The CAMU provisions being finalized today amend the existing CAMU rule. This economic analysis examines the impacts from these final amendments compared to the existing CAMU rule provisions. This section briefly discusses the baseline and post-regulatory scenarios in the analysis, and provides an overview of the incremental impacts assessed.

a. Framework of the Analysis

The Agency faced two important questions in developing the framework for this analysis. The first was how to address defining the universe of facilities affected by today's final rule. The second was how to assess the incremental changes in CAMUs under the baseline and post-regulatory scenarios.

The universe of facilities which could potentially employ a CAMU in remediation, and thus could be affected by today's final rule, includes facilities performing cleanups under RCRA corrective action, Superfund, and state cleanup authorities. There are over 6,000 facilities which could potentially be reached through corrective action authority; this figure does not include Superfund sites or other cleanup sites where CAMUs may be used. Of these facilities, today's final rule would not impose costs on any existing CAMUs that continue to manage wastes in the general manner for which they were approved, or, of course, on any facilities which manage their wastes without the use of a CAMU (e.g., they send their wastes off-site). Today's final standards apply to CAMUs which are not subject to the existing standards under the grandfathering provisions. However, to determine the number of facilities, out of this total number, which would in fact require remediation at some point in the future under one of these authorities, and would employ a CAMU in the remedy, would require significant effort and yield uncertain results.

Therefore, EPA considered the use of existing data on CAMU usage. The Agency first examined the 1993 CAMU RIA, which was performed in support of the current CAMU rule. In this RIA, the Agency projected the number of facilities which would employ CAMUs in the future. This projection was based on use of expert panels which reviewed, on a facility-by-facility basis, a randomly selected sample of 79 corrective action facilities and determined when CAMUs would be employed in remediation. The impacts estimated for these facilities were extrapolated to the corrective action universe to develop a national estimate of impacts for the CAMU rule. The Agency estimated that the existing rule would result in CAMUs being employed at approximately 1,500 facilities, which translates to approximately 75 CAMUs per year over a 20 year period.

However, based on data showing actual CAMU usage over the past eight years, the Agency believes the 1993 RIA projections do not represent an accurate forecast of the expected use of CAMUs in the future. These data, discussed in more detail below, show an actual CAMU approval rate of approximately six CAMUs per year. The disparity between the 1993 RIA projections and the actual usage is likely the result of four factors. First, the 1993 RIA baseline is very different from the remedial setting which has existed in recent years. Chiefly, the RIA assumed significant excavation and treatment of wastes at sites, with heavy reliance on combustion technologies and little use of innovative treatment or remedial approaches. These alternative approaches tend to be less expensive than combustion technology, and are much more available and in use than was anticipated in the 1993 RIA. Therefore, the pervasive demand for CAMUs to lower large remedial costs did not materialize as anticipated in the 1993 RIA. Second, due to its timing, the RIA estimates do not include impacts on CAMU use which resulted from various remedial policy developments such as the stabilization initiative and the use of environmental indicators. These developments have resulted in increased stabilization of sites, and thus less excavation and treatment of wastes (in the short term). This shift created conditions which reduced the need to rely on CAMUs as much as had been originally estimated in the 1993 RIA projections. Additionally, the availability of alternatives to CAMUs, such as staging piles and areas of contamination and the Phase IV LDR soil treatment standards, has potentially decreased the use of CAMUs somewhat compared to that originally projected. Third, given the historical rate at which facilities have progressed through the various stages of corrective action to reach a final remedy decision, the Agency thinks that the CAMU usage projections from the RIA were unrealistically high. The number of final remedy decisions at corrective action sites across the nation has not reached 75 per year. Therefore, it would be impossible to have an average of 75 CAMUs approved annually. Finally, the Agency believes that CAMU use has been dampened over the past eight years due to the uncertainty surrounding the use of CAMUs which resulted from the CAMU litigation, which followed shortly after the rule's promulgation.

Therefore, the Agency employed the data on existing CAMUs in the CAMU Site Background Document. EPA collected these data from regional and state site managers as part of this rulemaking effort. This report contains information on 47 CAMUs approved to date or scheduled for approval prior to the effective date of the rule (as of spring 2001). Under the grandfathering provisions in today's final rule, these CAMUs will remain subject to the 1993 CAMU regulations (as long as they continue to operate within the general scope of the originally issued CAMU authorizing document (e.g., permit)). For each CAMU, the Agency obtained information on the use of the CAMU at the site, types of wastes managed, treatment required, and unit design. These data are contained in the CAMU site background document, which is included in the docket for today's final rule.

Using these data, the Agency estimated an annual CAMU approval rate for the past eight years, and applied that rate to project CAMU usage in the future. In projecting future use based on

historical data, the Agency assumes that the 47 CAMUs are reasonably representative of expected future CAMU use. This assumption rests on the completeness of the data in the CAMU Site Background Document. As noted, this document contains information from all the CAMUs approved to date for which the Agency had good data, and therefore provides a reasonable basis for understanding how the CAMU rule has been implemented to date. For purposes of this analysis, the Agency assumes there will be no new regulations or policy initiatives which would affect CAMU usage in the future. (**Note:** One exception is the anticipated change is the removal of the uncertainty associated with the CAMU litigation. The Agency has assessed the order-of-magnitude impacts from this change on the CAMU usage rate as a part of the analysis of the incremental impacts of today's final rule.)

EPA also used these historical data to identify the differences in a CAMU under the existing rule (baseline case) as compared to a CAMU under the provisions being finalized today (post-regulatory case). As discussed in more detail below, the Agency used the information on the 47 existing CAMU remedies to assess consistency with the final provisions in today's rule. This assessment involved a facility-by-facility comparison of the existing remedy (baseline case) with the proposed provisions (post-regulatory case). In such an approach, the Agency again assumes that these actual CAMU remedies selected in the past are reasonably representative of CAMU remedies which would be selected under baseline conditions in the future. The Agency believes this assumption to be sound for the same reasons stated above regarding CAMU usage. EPA thinks these remedies are the reasonable outcome of the existing CAMU regulations implemented within the context of standard remedial goals for cleanup.

b. Baseline Case Description

The baseline scenario provides a reference against which the impacts of a particular action (e.g., a regulation) are measured. For the purposes of this analysis, the baseline is defined as the 1993 CAMU rule as implemented to date. The data underlying EPA's baseline analysis are described in the CAMU Site Background Document, which is included in the docket to today's final rule. This document provides detailed information on 47 existing CAMUs approved (or scheduled for approval) as of Spring 2001. Of the 47 CAMUs, eight are storage and/or treatment only CAMUs. According to these data, approximately 70 percent of facilities using CAMUs are performing treatment of waste. As mentioned above, EPA assumes that the 47 existing CAMUs are representative of future site characteristics and CAMU usage rates.

The Agency has not attempted to adjust this baseline to account for the effects of the uncertainty surrounding the CAMU ''litigation cloud,'' which EPA believes has slowed the implementation of the CAMU rule since shortly after its promulgation. As discussed above, the 47 CAMUs implemented under the existing rule represent the CAMUs known to be fully approved. These CAMUs were approved as a part of the overall remedy at the facility, and therefore would generally be expected to follow the remedy selection criteria for long-term reliability and protectiveness recommended in EPA guidance (in addition to the CAMU requirements).

The baseline is discussed in greater detail in the Economic Analysis of the Final Amendments to the CAMU Rule.

c. Post-Regulatory Case Description

The post-regulatory scenario is modeled as the CAMU rule amended by the provisions in today's final rule. The reader is directed to the preamble discussion and rule language for an understanding of the final rule provisions. The economic analysis focuses on the impacts from the finalized information submittal requirements related to the CAMU approval process, the treatment requirements and adjustment factors, and the liner and cap requirements. Although today's final amendments to the CAMU rule would be more stringent than the existing federal CAMU regulations, EPA believes in practice that CAMUs are already generally meeting these standards under the existing rule. Additionally, a bounding analysis is included which examines the overall impact of the final provisions on the rate of CAMU usage. See the Economic Analysis of the Final Amendments to the CAMU Rule for a more detailed discussion of the post-regulatory scenario for this analysis.

d. Incremental Impacts

The analysis of today's final rule focuses on two potential impacts: (1) the incremental impacts associated with the changes to the approval process for CAMUs; and (2) the incremental impacts associated with the change in treatment, unit design, and use of storage and/or treatment only CAMUs. Additionally, the Agency has prepared a bounding analysis estimating the impacts from a change in the overall usage of CAMUs resulting from today's final amendments. The methodology and results for these two components of the analysis, and for the bounding analysis, are discussed below. EPA has also provided a qualitative discussion of the potential impacts of allowing the disposal of CAMU-eligible waste in off-site hazardous waste landfills.

2. CAMU Administrative Approval Costs Assessment

Today's final amendments to the CAMU rule formalize a number of administrative steps in the CAMU approval process. This analysis examines the incremental impacts associated with those administrative steps compared to the approval process in the baseline. The estimates are formulated through input by EPA Regional and state regulators. The regulators contacted have extensive knowledge of the approval process under the existing CAMU rule, and understand the changes to that approval process that would be brought about by the final amendments. The analysis estimates total incremental impacts ranging between $77,200 and $242,400 per year.[58]

The Agency followed three steps in assessing the incremental impacts from the CAMU approval process formalized in the final rule. First, the Agency selected four CAMU experts from the Regions and four from the states. These experts were selected based on their knowledge of CAMU implementation under the existing rule and their knowledge of the final amendments. Of the 47 CAMUs, the vast majority were approved by the regions/states from which the eight experts came. Second, the Agency obtained incremental cost/burden estimates from CAMU experts through phone contacts made separately with each expert. Experts were provided with a copy of Appendix A of the settlement agreement reached between EPA and the Petitioners (this document is included in the docket for today's final rule). The phone contacts followed a set of questions designed to cover all areas of the final rule (these questions are included in the Economic Analysis of the Final Amendments to the CAMU Rule). EPA requested that experts estimate the additional approval burden

[58] This analysis does not include any administrative costs related to disposal of CAMU-eligible wastes off-site under the conditions of today's rule. Please see ''Paperwork Reduction Act'' section below for discussion of the additional paperwork burden associated with this provision. Also, see the assessment of the total impacts from today's rule in the ''Planning and Regulatory Review'' section for a qualitative discussion of the overall impacts associated with this provision.

for both regulators and owner/operators, as each would participate variously in performing such approval steps. Third, the Agency tabulated the burden estimates made by the CAMU experts. This process provided the Agency with expert estimates of the incremental impacts for the CAMU approval process. The estimates provided by individual experts ranged from a low of four hours total to a high of 1,875 hours total per CAMU. Using the individual estimates of burden provided by the experts, EPA calculated an average total burden range. EPA estimates the range of total incremental burden, calculated as an average of the eight expert estimates, to be between 210 hours and 514 hours per permanent CAMU, and between 34 hours and 50 hours per storage and/or treatment only CAMUs.

Expert views differed significantly on the impacts. Four of the experts believed the formalization of a process associated with certain steps might potentially reduce overall burden. Such a formalized process, they believed, would result in less time spent discussing the proper approach to take at a particular stage in the approval process. Alternatively, several experts thought that the changes in process requirements were so onerous that they could potentially drive facilities away from using CAMUs.

The experts estimated additional burden associated with four areas of the final amendments: (1) Information submission associated with the determination of whether wastes were subject to LDRs at the time of disposal. This requirement is a part of the provision in the final amendments which deals with CAMU waste eligibility; (2) identification of principal hazardous constituents (PHCs); (3) treatment standards and use of adjustment factors to provide site-specific flexibility in meeting the national treatment standards. Many experts focused on adjustment factor E (§ 264.552(e)(4)(v)(E)), which would offer adjustment from the treatment standards based on the long-term protection offered by the unit, in making their burden estimates. Many experts believed this factor to be the most complicated, and therefore the most likely to require significant formalized written justification; and, (4) the liner and cap standards in the final rule.

Employing these burden estimates, the Agency calculated the cost impact attributable to these provisions. The Agency performed the following steps in estimating total burden. First, the Agency estimated the number of CAMUs approved annually. The per CAMU estimate of additional burden is multiplied by an estimate of the number of CAMUs approved per year. As discussed in the Economic Analysis of the Final Amendments to the CAMU Rule, EPA assumed this rate to be the same as that calculated for the baseline. This rate was estimated to be six CAMUs per year, or five permanent CAMUs and one storage and/or treatment only CAMU per year. This analysis does not consider any changes in the number of CAMUs approved per year which could result from the rule. Second, the Agency multiplied the additional hours estimated for approval by the annual number of CAMUs approved. This calculation results in an estimate of the total incremental burden associated with the final amendment approval process. This burden estimate ranges from 1,050 hours per year to 2,570 hours per year for permanent CAMUs, and 34 hours per year to 50 hours per year for storage and/or treatment only CAMUs. Third, the Agency obtained a labor rate to apply to the estimates of additional hours. EPA used a range of hourly labor rates ($71.24/hour to $92.52/hour) from the recently approved Part B Permit ICR because the CAMU experts did not provide a breakdown of labor categories in their estimates. Fourth, the Agency multiplied the total incremental hours estimated for the CAMU approval process under the final amendments by the labor rate. This approach produced an estimate for the total incremental impacts attributable to the approval process in the rule ranging from $77,200 per year to $242,400 per year.

This range represents the annual incremental impacts estimated to result from the final amendments, assuming that six CAMUs are approved per year. If the annual approval rate changed, the annual impacts for that year would change accordingly. Dividing that range by six (the number of CAMUs approved per year) yields an estimate of the incremental impact per CAMU; this estimate ranges between approximately $12,900 and $40,400 per CAMU. This calculation assumes that all the costs for CAMU approval occurred within a single year. A bounding analysis conducted using the highest burden estimate to calculate the impacts for the approval process yields an impact of $882,500 per year, or $147,000 per CAMU.

3. Assessment of the Incremental Impacts Related to the Treatment and Unit Design Provisions, and to the Storage and/or Treatment Only CAMU Provisions

This section examines the incremental impacts attributable to the treatment and unit design provisions, and to the storage and/or treatment only CAMU provisions in today's final rule. As described in the analytical framework discussion above, this analysis examines what changes would be required to make the 47 existing baseline CAMUs consistent with the new amendments. Based on these estimated changes, the Agency determines the impacts of the final amendments. (Please see the side-by-side comparison of the existing CAMU regulations and today's final rule language which is included as an appendix in the Economic Analysis of the Final Amendments to the CAMU Rule for today's final rule.)

The Agency first examines the treatment and unit design specifications employed for existing CAMUs under the baseline. These baseline CAMU remedies were assessed in light of the treatment and unit requirements promulgated today. An assessment was made of expected differences in treatment and unit design anticipated under the final amendments, and the resulting costs for those changes were quantified.

The section next addresses the storage and/or treatment only provisions in the CAMU amendments. EPA assesses how the storage and/or treatment only CAMU provisions have been implemented in the baseline by examining the temporary CAMUs approved to date under the existing rule. These CAMUs were analyzed in light of the new storage and/or treatment only CAMU provisions in the final amendments.

a. Treatment and Unit Design Standards Implemented in the Baseline

Data on the implementation of the existing CAMU rule shows that the 39 permanent CAMUs approved to date have generally employed significant treatment of wastes (approximately 70 percent of CAMUs employed treatment of wastes prior to disposal) with disposal in protective units (i.e., generally employing liners for new units, protective caps, and ground water monitoring). EPA has detailed information on 47 CAMUs in the baseline (see the CAMU Site Background Document in the docket for today's final rule for a complete discussion of each CAMU). These data provide a reasonable datum from which to assess the incremental impacts associated with the new treatment and unit design provisions in the final amendments.

b. Treatment and Unit Design Provisions in the Post-Regulatory Case

The final amendments would establish national minimum treatment standards which all principal hazardous constituents must meet prior to placement in a CAMU, unless the Agency determines in a given case that the standards are inappropriate (see discussion of adjustment factors below). This national minimum standard, which is essentially taken from the treatment standard promulgated for hazardous soils in the Phase IV LDR Final Rule, among other things, requires treatment of wastes to 90 percent reduction from the original concentrations, capped by 10 × UTS levels. This standard would apply for all CAMU-eligible wastes.

Accompanying the national minimum treatment standard are five adjustment factors, which provide site-specific flexibility in applying these treatment standards through identification of certain conditions under which full compliance with the national standard may be adjusted. This adjustment may be employed to make treatment more or less stringent, and may be used to adjust a treatment level or method. These final treatment requirements and adjustment factors were crafted through examination of the current implementation of the CAMU rule in the baseline, and the general process involved in remedial selection in the corrective action program, as well as the treatment variances used for as-generated waste under the Land Disposal Restrictions program.

The final amendments would also establish standards for liners at all new and replacement units or lateral expansion of existing units, and caps at units where waste is left in place. The reader is directed to the relevant discussions on the final provisions in their appropriate preamble sections above (see ''Liner Standard,'' ''Cap Standard,'' and ''Adjustment Factors to the Treatment Standard'').

c. Incremental Impacts Associated with Final Treatment and Unit Design Provisions

Having examined the provisions on treatment and unit design in the final amendments, the Agency then assessed the incremental impacts from these provisions with respect to current baseline implementation of the CAMU rule. The Agency examined how the baseline requirements have been implemented to date, and assessed where changes would be required at these facilities under post-regulatory conditions. See Economic Analysis of the Final Amendments to the CAMU Rule for details on this comparison.

EPA estimated the incremental costs associated with these standards through the following steps. First, the Agency compared the data on each baseline CAMU against the provisions in the final CAMU amendments. For this assessment, EPA addressed the following questions for each CAMU remedy, where necessary: (1) Does the facility have constituents that would likely be designated as PHCs? (2) For a facility where PHCs are determined to likely be present, was treatment performed to reduce PHC concentrations? (3) Where treatment was being performed, was it meeting the final national minimum standards? (4) Was the CAMU an existing unit? and (5) What liner and cap requirements were instituted for the CAMU? Second, based on this assessment, the Agency made a determination as to whether the CAMU was consistent with the treatment and unit design provisions of the final amendments. Third, where the Agency identified inconsistency with the final national minimum standards, application of the adjustment factors was considered. Potential use of adjustment factors was only considered appropriate where site-specific factors were consistent with the circumstances described in today's preamble for the different adjustment factors. And fourth, where the adjustment factors were not applicable, the Agency identified the steps that would be necessary to render the CAMU consistent with the final provisions. Each of the above steps was performed by EPA based on a detailed knowledge of the baseline CAMU requirements, the final rule provisions, and the details of the existing CAMU being analyzed. Please see the site summaries for the 47 CAMUs which are included in the CAMU Site Background Document (included in the docket for today's final rule). Additionally, the reader is directed to the preamble discussion of the adjustment factors for elaboration on how each adjustment factor would be applied at a given facility.

EPA performed this evaluation for the 39 permanent baseline CAMUs approved to date. The Agency estimated costs in the cases where additional requirements were identified as necessary for the CAMU to reach consistency with the final provisions. Results for the 39 permanent CAMUs are shown below in Exhibit VIII–1; results for the eight storage and/or treatment only CAMUs are discussed following the exhibit.

For the 39 permanent CAMUs, EPA estimates that 26 facilities would potentially require use of one of the adjustment factors to achieve consistency with the final amendments. Note that the potential use of adjustment factors was considered where such use would be consistent with the circumstances described in today's preamble for each adjustment factor. Of the five adjustment factors provided for in the amendments, adjustment factor A for technical impracticability was estimated to be applied eight times to achieve consistency, adjustment factor B addressing consistency with site cleanup goals was estimated to be possibly needed 13 times to achieve consistency, and adjustment factor E providing adjustment from the treatment standards based on the long-term protection offered by the unit was estimated to be possibly applied 11 times to achieve consistency. (Note that the estimated frequency of use for the individual adjustment factors does not sum to the overall number of facilities using adjustment factors due to the Agency identifying different available options for adjustment factor use at several facilities.)

As shown in Exhibit VIII–1, the analysis revealed three facilities for which the unit design employed in the original CAMU decision was not consistent with the final amendments. In two cases, a final cap would be required to achieve consistency with the final provisions. EPA estimated costs for these caps based on the specific information for the given facility. These costs are shown in the exhibit, and discussed in greater detail in the background document for the economic analysis. EPA estimated costs for the cap at one facility to range from $642,000 to $1,203,000, and costs for the cap at the other facility at approximately $221,000. Additionally, one CAMU would require a liner to achieve consistency with the final provisions. EPA estimated costs for addition of a liner based on the specific information for the given facility. These costs are shown in the exhibit, and are estimated to be $225,000.

EXHIBIT VIII–1.—COMPARISONS OF BASELINE PRACTICES AND POST-REGULATORY FOR PERMANENT CAMUS

CAMU comparison: Baseline to post-regulatory	Number of CAMUs	Significance of differences	Estimated incremental impact
Treatment and Unit Design Consistent With Post-Regulatory	36	N/A	N/A.
Treatment Not Consistent With Post-Regulatory Requirements	0	N/A	N/A.
Unit Design Not Consistent With Post-Regulatory Requirements	3	Two Facilities May Have Required Additional Cap Design Features*.	Cap Costs: 1. $642,000 to $1,203,000, 2. $221,000.
		One Facility May Have Required a Liner.	Liner Costs: 3. $225,000. [Total=$1,088,000 to $1,649,000]
Treatment and Unit Design Not Consistent with Post-Regulatory Requirements.	0	N/A	N/A.

*These two CAMUs address the disposal of off-site soils contaminated with lead that resulted from smelting operations. Both facilities remain subject to long-term maintenance and periodic review.

The total estimated costs associated with ensuring that all the permanent CAMUs approved under the existing rule are consistent with the final amendments is estimated to range from approximately $1,088,000 to $1,649,000. EPA then annualized these costs over 20 years at 7 percent, divided the resulting range by the number of permanent CAMUs (39 total), and multiplied it by the number of CAMUs projected to be approved each year. This set of calculations yields the expected costs for the rule due to the treatment and unit design requirements of $140,000 to $210,000 per year. The Agency believes that these estimates reasonably cover the additional requirements to achieve such consistency with the final standards. However, EPA acknowledges the possibility that, due to the variability of site characteristics and the limitations of the available data for the given CAMUs, additional negligible costs such as minor additional treatment of small volumes of waste could be incurred at any given facility. This analysis does not consider any changes in the number of CAMUs approved per year which could result from the rule.

Several commenters on the proposed rule believed that the amended treatment and unit design standards for permanent CAMUs are too prescriptive and stringent. According to the Agency's analysis, however, almost all of the 39 existing permanent CAMUs are meeting the treatment and design standards in the baseline. As discussed above, EPA estimates moderate incremental costs associated with these amended standards. One commenter acknowledged that the existing permanent CAMUs analyzed for the proposed rule analysis ''would generally meet the revised standards.'' However, the commenter believed that this stringent implementation of the existing CAMU rule was, at least in part, the effect of the ''litigation cloud'' resulting from the legal challenge to that rule. They provided no evidence in support of such a claim. The Agency generally believes that the types of remedies seen at the CAMUs approved to date represent the logical outcome of a responsible implementation of the 1993 CAMU rule and reflect EPA's intentions in that rule. However, the Agency agrees with the commenter's point that the clarification of EPA's intentions provided in today's final rule is preferable as a matter of public policy.

d. Incremental Impacts Associated With the Storage and/or Treatment Only CAMU Provisions

The 1993 CAMU Rule provisions did not contain standards that were specific to temporary CAMUs (which are now called storage and/or treatment only CAMUs in the final provisions). However, data indicate that eight storage and/or treatment only CAMUs were approved in the baseline, and were generally employed for short-term treatment or storage of wastes at a site. These data provide a useful datum from which to assess the potential for incremental impacts resulting from the final amendments as they address storage and/or treatment only CAMUs.

The Agency analyzed the potential incremental costs associated with achieving consistency with the final rule standards for the storage and/or treatment only CAMUs. No inconsistencies were identified for these nine CAMUs; therefore, there were no incremental costs estimated for these units. This analysis does not consider any changes in the number of CAMUs approved per year which could result from the rule.

As stated above, EPA made these comparisons based upon the types of contaminants, the unit design standards achieved, and the general circumstances surrounding the use of CAMUs.

4. Assessment of the Incremental Change in the Number of CAMUs Approved

One potential impact anticipated to result from today's final rule is a change in the average number of CAMUs approved per year. This section presents the Agency's bounding analysis of the impacts associated with an incremental change in the number of CAMUs.

The 1993 CAMU Rule was designed to provide incentives for remediation by removing certain regulatory requirements that affect the management of hazardous remediation waste during cleanup. The rule allows facilities to manage hazardous waste in a CAMU without triggering the Land Disposal Restrictions (LDR) requirements, and to dispose of hazardous remediation waste in a CAMU. The CAMU is exempt from minimum technology requirements (MTRs), although it is subject to performance-based standards intended to protect human health and the environment. The rule established performance standards for the design, operation, and closure of CAMUs, and provided the site-specific flexibility that EPA believes is necessary to encourage remediation at cleanup sites. However, EPA was sued on the CAMU rule shortly after its promulgation. The resulting uncertainty surrounding the viability of the CAMU rule, along with other factors discussed above such as the increased use of Areas of Contamination (AOCs) and staging piles, the introduction of the Phase IV Land Disposal Restriction (LDR) soil treatment standards, and the stabilization initiative in corrective action, led to considerably less use of CAMUs than the Agency originally anticipated.

With today's final rule, the Agency intends to resolve the litigation uncertainties which have dampened CAMU usage. Such resolution could

promote the increased use of CAMUs. However, as discussed above, the Agency does not expect CAMU usage to approach the rate projected in the 1993 CAMU RIA (roughly 75 CAMUs per year). The Agency believes that the ''litigation cloud'' only accounts for part of the difference between actual CAMU usage over the past eight years and the usage estimated in the 1993 RIA. Other factors contributing to a potential change in future CAMU use include the impact of the formalized approval process, and the effect of the treatment and unit design provisions. It is very difficult to assess the significance of these factors on the individual decision at a given facility regarding whether to use a CAMU in remediation. This complexity led the Agency to prepare an order-of-magnitude analysis which seeks to establish the general direction of change in CAMU usage, and to quantify the approximate impacts from such change. These estimates focus only on the potential for changes in the number of CAMUs approved, and do not address the possible impacts from the formalized approval process or the treatment and unit design requirements of today's final rule. These impacts are presented to illustrate the potential savings which could come from such a change in CAMU usage, and should not be considered a part of EPA's estimate of the actual impacts from today's final rule.

The Agency assessed the overall direction of the expected change in CAMU use for the three time periods identified for purposes of this analysis: (1) Grandfathering Window (August 2000 through 2001); (2) Early After Promulgation (2002 for one year); and, (3) Post-Promulgation Equilibrium (2003 for four years). These time periods were designed by the Agency in order to portray the effects of the factors identified above according to logical breaks in their influence.

The Agency estimated the potential change in the number of CAMUs employed for each of the three time periods based roughly on the baseline CAMU usage figure of six CAMUs per year. Given the complexity of projecting the effect of these influences on CAMU usage in the future, these estimates are provided for illustrative purposes only. The cost savings from this change were estimated using results from the 1993 CAMU RIA (see page 3–9 of that report). This analysis, prepared in support of the CAMU rule, estimated the cost savings at a randomly selected sample of corrective action sites based on expert panel assessments of the costs for remediation with and without a CAMU. These figures were extrapolated to determine the national cost impacts for the CAMU rule. The RIA presents an annual average cost savings per CAMU of $0.5 million to $0.8 million per facility in 1992 dollars (changing the figures to 2001 dollars yields an annual cost savings per CAMU ranging from $0.6 million to $0.9 million).

This range was employed for purposes of this analysis to estimate order-of-magnitude cost impacts resulting from the changes in CAMU usage due to today's final rule. The annual cost savings per CAMU figure presented in the 1993 RIA provides the only readily available data from which to quantify the impacts of a shift from remediation without a CAMU to use of a CAMU. Although, the Agency believes that this cost savings estimate could significantly overestimate actual savings, due to the assumptions employed in the 1993 RIA regarding excavation and combustion of cleanup wastes.

Within each of the three time periods examined, a facility could either shift from not using a CAMU (baseline) to using a CAMU (post-regulatory), or using a CAMU (baseline) to not using a CAMU (post-regulation). In the case where a facility did not use a CAMU, there is a range of possible alternatives which could be considered. For purposes of this analysis, the Agency bracketed this range with leaving waste untouched on one hand, or performing full remediation without a CAMU on the other hand. As stated above, EPA employed the cost savings estimate from the 1993 RIA to model the cost savings for the case of a shift from performing full remediation without a CAMU (baseline) to using a CAMU (post-regulatory). EPA did not possess data on either the possibility of a shift from leaving waste in place (baseline) to using a CAMU in remediation (post-regulatory), or the cost impacts associated with such a shift. Finally, EPA does not believe it is reasonable to assume that facilities will shift away from CAMU use as a result of today's final rule; the anticipated costs from today's rule are not significant enough to result in such shifts. However, in the Post-Promulgation Equilibrium time period, EPA modeled the case of a shift from CAMU use (baseline) to full remediation without a CAMU (post-regulatory). While the Agency does not expect such a change, it is modeled below for illustrative purposes. The impacts from the changes in CAMU usage for the three time periods are assessed below according to these categories of change identified and discussed above (see Exhibit VIII–2 below).

EXHIBIT VIII–2.—ASSESSMENT OF THE POTENTIAL CHANGE IN CAMU USAGE RESULTING FROM THE FINAL RULE

Categories of potential change in CAMU usage	Scope of the assessment (August 2000 through approximately 2006)		
	Grandfathering window (August 2000 to Jan. 2002: approximately 1½ years)[1]	Early after promulgation (Jan. 2002 to Jan. 2003: 1 year)[2]	Post-promulgation equilibrium (Jan. 2003 through approximately 2006)[3]
Baseline: Full remediation (no CAMU). Post-Reg: CAMU	No Change in CAMU Use Found	Change Highly Uncertain	Potential for 5 facilities estimated (annual savings of $0.6 to $0.9 million per facility).
Baseline: Leave wastes untouched (no CAMU). Post-Reg: CAMU	No Change in CAMU Use Found	Change Highly Uncertain	Potential for 5 facilities estimated (no cost info available).
Baseline: CAMU Post-Reg: Full remediation (no CAMU)	No Change Estimated	Change Highly Uncertain	Potential for 5 facilities estimated (annual cost of $0.6 to $0.9 million per facility).
Baseline: CAMU Post-Reg: Leave wastes untouched (no CAMU).	No Change Estimated	Change Highly Uncertain	Potential for 5 facilities estimated (no cost info available).

[1] Publication of the proposed amendments (August 2000) to the anticipated effective date of Final rule (March–April 2002), which is 90 days after promulgation of the Final rule (December 2001).

[2] The effective date of Final rule to one year after effective date of Final rule.
[3] One year after effective date of Final rule for roughly 5 years of ''equilibrium.''

For greater details on the approach to estimating these impacts, please refer to the Economic Analysis of the Final Amendments to the CAMU Rule in the docket for today's final rule. These impacts are presented in the exhibit above.

a. Grandfathering Window

For this time period, no additional costs or savings are estimated. The data collected in the revision of the CAMU Site Background Document showed no increase in CAMU usage during this period.

b. Early After Promulgation

As the exhibit above shows, EPA believes that the factors influencing potential changes in CAMU usage during this period are too uncertain to provide an assessment of the potential impacts for this time period. Beside the factors identified above, there may be a reduction in CAMU usage resulting from the anticipated increase in CAMUs within the grandfathering time window. Please see the background document for greater discussion on this issue.

c. Post Promulgation Equilibrium

For this time period, the cost savings associated with a potential increase or decrease in CAMU usage of 5 CAMUs per year are estimated as:

$$5 \text{ CAMUs per year} \times \frac{\$0.6 - \$0.9 \text{ million per year}}{\text{per CAMU}} = \$3.0 - \$4.5 \text{ million per year}$$

This estimate, ranging from a positive cost of $4.5 million per year to a savings of $4.5 million per year, is a rough figure based upon the projected change in CAMU usage for this period. Again, while it is possible that the facilities which shift to or from CAMU usage under this scenario would be those which left waste untouched, cost figures on this shift were not available. Therefore, no estimate of impacts associated with such a shift is provided.

The main competing influences in this time period are the removal of the uncertainty surrounding the litigation of the CAMU rule, and the potential dampening effect of the formalized approval process and treatment/unit design standards.

Several commenters stated that the ''onerous'' approval process and the ''excessively stringent'' treatment standards established in the amendments would result in decreased use of CAMUs. In fact, some commenters believed that the amendments would result in facilities choosing to cap-in-place rather than selecting more environmentally protective options. EPA's analysis of the approval process and treatment requirements suggests that these provisions will result in minimal to modest cost increases over the existing rule to facilities employing a CAMU.[59]

For illustrative purposes only, EPA estimated the total annual impacts of the rule including the estimates just calculated for the potential changes in CAMU usage, along with the estimates developed for the approval process and for the treatment and unit design standards. The range of estimates for this bounding analysis are shown by year for the scope of the analysis in Exhibit VIII–3 below. The Agency developed an upper bound estimate by adding the high-end cost associated with a potential change in CAMU usage, $4.5 million per year, to the high-end cost for the approval process, $242,000 per year, and the high-end cost for the treatment and unit design standards, $210,000 per year. This summation yields an upper bound cost for the rule of $5.0 million per year. EPA developed a lower bound estimate by adding the low-end impact associated with a potential change in CAMU usage, $4.5 million per year in savings, to the low-end of the cost for the approval process, $77,000 per year, and the low-end cost for the treatment and unit design standards, $140,000 per year. This summation yields a savings for the rule of approximately $4.3 million. Therefore, the bounding analysis provides a range from approximately $4.3 million in savings to $5.0 million in costs.

EXHIBIT VIII–3.—TOTAL IMPACTS FOR THE RULE INCLUDING CHANGES IN THE NUMBER OF CAMUS PER YEAR A BOUNDING ANALYSIS: OVER THE SCOPE OF ANALYSIS

[In millions of dollars]

Bounding analysis estimates	Impact estimates for each year within the scope of analysis					
	2001	2002	2003	2004	2005	2006
Impacts from CAMU usage changes (Illustrative in Nature).	No Change Estimated.	Too Uncertain to Estimate.	$4.3 savings—$5.0 cost.	$4.3 savings—$5.0 cost.	$4.3 savings—$5.0 cost.	$4.3 savings—$5.0 cost

The question may be raised as to how this cost savings for increased CAMU usage in the above bounding analysis compares with the $1 to $2 billion annual savings in the 1993 CAMU RIA. The 1993 RIA baseline represented facilities performing remediation under the corrective action requirements, generally excavating wastes and treating in compliance with the land disposal restriction (LDR) requirements via combustion technologies. Given the resulting high costs for such baseline remedial approaches, the relief provided by the original CAMU regulation was presumed to be widely applied in the post-regulatory case. Therefore, significant CAMU usage was estimated. The baseline for today's final rule is described by the historical data EPA obtained on those facilities which have

[59] Additionally, one of the Agency's chief motives in entering into the settlement agreement was the resolution of the CAMU legal challenge which may have deterred the use of CAMUs in cleanup decisions. However, as discussed above, the Agency is unclear as to the long-term result of the amendments in effecting CAMU usage.

approved CAMUs over the past eight years. The projections made above regarding the potential change in CAMU usage resulting from today's final provisions are based roughly on these baseline CAMU usage figures. Therefore, the increase in CAMU usage projected in the post-regulatory case in the above bounding analysis for today's final rule is relatively low.

The difference in projected CAMU usage from the 1993 RIA and the actual usage seen in the CAMU Site Background Document is believed to be attributable to four factors. These four factors were discussed above under the analytical framework. The ''litigation cloud'' effect is just one of the factors posited to account for this difference. Therefore, the potential resolution of this litigation uncertainty through today's final rule is not anticipated to result in the significant CAMU usage estimated in the 1993 RIA. Furthermore, the increased CAMU usage estimated in the above bounding analysis is not intended to serve as an update to the 1993 RIA projections. Rather, due to the complexity involved in estimating CAMU usage in the post-regulatory case for today's final rule, the above estimates are made for illustrative purposes only, and do not represent a definitive statement of the expected savings from the rule.

5. Assessment of the Total Impacts for the Final Amendments to the CAMU Rule

This section presents a brief assessment of the total impacts of the Final Amendments to the CAMU Rule. The Agency presents the total impacts estimated for the formalized CAMU approval process and for the treatment/unit design standards, and storage and/or treatment only provisions for CAMUs below in Exhibit VIII–4; the estimates for the bounding analysis discussed above are not included in the exhibit. In addition, EPA qualitatively discusses the potential impacts of § 264.555, which allows CAMU-eligible waste to be disposed of off-site in hazardous waste landfills, without meeting the land disposal restrictions. Please see the Economic Analysis of the Final Amendments to the CAMU Rule for a full discussion of these impacts.

EXHIBIT VIII–4.—TOTAL ANNUAL IMPACTS ESTIMATED OVER THE SCOPE OF ANALYSIS, ASSUMING CONSTANT RATE OF 6 CAMUS PER YEAR

[In thousands of dollars]

Impacts assessed for CAMU amendments	Impact estimates for each year within the scope of analysis					
	2001	2002	2003	2004	2005	2006
1. CAMU Approval Process Impacts	No Costs Incurred	$77–$242	$77–$242	$77–$242	$77–$242	$77–$242
2. Impacts from Treatment and Unit Design Requirements.	No Costs Incurred	$140–$210	$140–$210	$140–$210	$140–$210	[1]$140–$210
Total impacts	No Costs Incurred	$217–$452	$217–$452	$217–$452	$217–$452	$217–$452

[1] This cost was calculated from a capital cost, annualized over 20 years. Therefore, it would continue for 15 more years.

The total impacts associated with the final rule are estimated as the sum of the incremental approval costs and the incremental treatment/unit design costs. The analysis provides estimates of the impacts from the rule from the grandfathering window to five years following the effective date of the rule (2001 to 2006). As discussed above, the impacts for the treatment and unit design standards are annualized figures associated with two facilities which required additional unit design criteria be met to achieve consistency with the final amendments. The cost impacts estimated for the potential change in the number of CAMUs are considered in the bounding analysis, which are discussed above. The total impacts are determined to range from $217,000 per year to $452,000 per year.

EPA also qualitatively examined the potential impact of allowing CAMU-eligible wastes to be disposed of off-site, under certain conditions, without meeting the land disposal restrictions. Despite the existence of various alternatives to full Subtitle C management of cleanup wastes under the baseline requirements (e.g., treatability variances), facilities are still likely to reduce the scope of their remedial efforts (or not conduct cleanup at all) because of Subtitle C requirements. Under the baseline conditions, facilities that send hazardous remediation waste off-site for disposal would typically incur significant costs to meet the requirements of the land disposal restrictions. Under today's rule, however, these facilities have the option of treating CAMU-eligible waste to the national minimum treatment standards (or the adjusted standards) and sending the waste off-site for disposal in a hazardous waste landfill. In this case, facilities may have enough of an incentive to clean up that they will increase their remedial efforts over what they would have pursued under baseline conditions. For these facilities, increasing the amount of cleanup may actually increase costs. These costs, however, would be borne voluntarily and therefore reflect (in the facility owner's view) an overall gain for the facility.

Thus, EPA believes that the off-site provision of today's rule will result in an overall reduction of costs to facilities through a reduction in treatment requirements when cleanup waste is sent off-site for disposal in hazardous waste landfills.

B. Regulatory Flexibility Act (RFA) as Amended by the Small Business Regulatory Enforcement Fairness Act (SBREFA)

This section of the preamble addresses the potential impacts incurred by small entities as a result of the final CAMU amendments. For the proposed rule, EPA analyzed the potential impacts on small entities for the 39 CAMUs approved at that point in time. EPA received no comments on the proposed analysis. As discussed earlier, EPA has updated the number of existing CAMUs through reviews performed by the states and Regions. This analysis, therefore, updates the analysis performed for the proposed rule by assessing the potential impacts to small entities for the nine newly identified CAMUs, and by making other minor adjustments to the CAMUs identified in the proposed rule analysis. There is no change, however, to the conclusion reached in the proposed rule analysis, that this action will not have a significant economic impact on a substantial number of small entities.

1. Methodology to Assess Small Entity Impacts

The RFA generally requires an agency to prepare a regulatory flexibility analysis of any rule subject to notice and comment rulemaking requirements under the Administrative Procedure Act or any other statute unless the agency certifies that the rule will not have a significant economic impact on a substantial number of small entities. Small entities include small businesses, small organizations, and small governmental jurisdictions.

For purposes of assessing the impacts of the final amendments to the rule on small entities, small entity is defined as: (1) A small business that meets the RFA default definitions for small business (based on SBA size standards *www.sbaonline.sba.gov/size*); (2) a small governmental jurisdiction that is a government of a city, county, town, school district or special district with a population of less than 50,000; and (3) a small organization that is any not-for-profit enterprise which is independently owned and operated and is not dominant in its field.

After considering the economic impacts of today's final rule on small entities, I certify that this action will not have a significant economic impact on a substantial number of small entities. EPA has determined that there are three facilities employing CAMUs which are small entities, and that these facilities would incur impacts ranging from no impact to 0.01 to 0.32 percent of net sales if they had to apply for their CAMU under the amended standards. Additionally, there are five facilities for which EPA could not obtain the data to determine size status, but which EPA had the data to assess impacts. For these five facilities, the impacts ranged from 0.01 to 0.07 percent of net sales. The Agency was unable to obtain data for an additional two facilities. However, these facilities are not expected to incur significant impacts as a result of today's rule. The Agency reached this determination based on the analysis which is described below.

a. Framework for the Analysis

The Agency faced two important questions in developing the framework for analyzing small entity impacts. The first was how to define the universe of facilities affected by today's rule. The second was how to assess the incremental changes in CAMUs under the baseline and post-regulatory scenarios.

The universe of facilities which could potentially employ a CAMU in remediation, and thus could be affected by today's rule, includes facilities performing cleanups under RCRA corrective action, Superfund, and state cleanup authorities. There are over 6,000 facilities which can be potentially reached through corrective action authority; this figure does not include Superfund sites or other cleanup sites where CAMUs may be used in the future. Of these facilities, today's final rule would not impose costs on any existing CAMUs that continue to manage wastes in the general manner for which they were approved, or, of course, on any facilities which manage their wastes without the use of a CAMU (e.g., they send their wastes off-site). Today's final standards would apply only to CAMUs which do not remain subject to the existing standards under the grandfathering provisions. However, to determine the number of facilities, out of this total number, which would in fact require cleanup at some point in the future, and would employ a CAMU in the remedy, would require significant effort and yield uncertain results.

Therefore, EPA considered the use of existing data on CAMU usage. The Agency first examined the 1993 CAMU RIA, which was performed in support of the existing CAMU rule. In this RIA, the Agency made a projection of the number of facilities which would employ CAMUs in the future. This projection was based on use of expert panels which reviewed, on a facility-by-facility basis, a randomly selected sample of 79 corrective action facilities and determined when CAMUs would be employed in remediation. The impacts estimated for these facilities were extrapolated to the corrective action universe to develop a national estimate of impacts for the CAMU rule. The Agency estimated that the existing rule would result in CAMUs being employed at approximately 1,500 facilities, or approximately 75 CAMUs per year over a 20 year period. The identities of these facilities, which would have been required for assessing the small entity impacts associated with the rule, were not determined; no impacts assessment was performed for the 1993 CAMU rule.

However, based on data depicting the actual CAMU usage rate over the past eight years at six CAMUs per year, the Agency believes the 1993 RIA projections do not represent an accurate forecast of the expected use of CAMUs in the future. (Some reasons for this disparity between the 1993 RIA projections and the actual usage are discussed above). Therefore, the Agency considered using the data on actual CAMU approval for this analysis. This report contains information on 47 CAMUs approved under the existing rule for which the Agency had good quality data. For each CAMU, the Agency obtained information on the use of the CAMU at the site, types of wastes managed, treatment required, and unit design; the data are contained in the CAMU Site Background Document, which is included in the docket for today's final rule.

Using these data, the Agency estimated an annual CAMU approval rate for the past eight years, and applied that rate to project CAMU usage in the future. In projecting future use based on historical data, the Agency assumes that the 47 CAMUs are reasonably representative of expected future CAMU use. This assumption rests on the completeness of the data in the CAMU Site Background Document; this document contains information from all the CAMUs to date for which the Agency had good data. Therefore, it provides a reasonable basis for understanding how the CAMU rule has been implemented to date. For purposes of this analysis, the Agency assumes there will be no new regulations or policy initiatives which affect CAMU usage in the future.

Use of these historical data also mitigated the problems associated with determining the differences in a CAMU under the existing rule (baseline case) as compared to a CAMU under the final provisions (post-regulatory case). As discussed in more detail above, the Agency used the information on the 47 existing CAMU remedies to assess consistency with the final provisions in today's rule. This assessment involved a facility-by-facility comparison of the existing remedy (baseline case) with the final provisions (post-regulatory case). In such an approach, the Agency again assumes that these historical data are reasonably representative of future CAMU remedies under baseline conditions. The Agency believes this presupposition to be sound for the same reasons stated above regarding CAMU; there were no comments received on the proposed rule regarding this approach.

Therefore, the analysis of the small entity impacts anticipated to result from today's final rule rests on an assessment of facilities which have existing CAMUs, not an analysis of facilities which will actually be impacted in the future by this rule. As stated above, the Agency believes that this rule will not significantly affect the nature of CAMU usage related to the types of facilities employing CAMUs in the future. Thus, the Agency believes the analysis of future small entity impacts based on historical CAMU usage is reasonable.

b. Methodological Approach for SBREFA Analysis

This analysis employs the data on the existing CAMUs from the CAMU Site Background Document to assess the potential for impacts on small entities resulting from the final rule. The Agency performed two screening analyses using these data. Screening analyses are the tools the Agency uses to assess the potential for the rule to result in a significant impact on a substantial number of small entities, and thus the need for development of a Small Business Advocacy Review Panel. First, the Agency examined those facilities which employed CAMUs in the baseline to determine whether any of these facilities were small entities, and if so whether they incurred a significant impact as a result of the final rule. Second, for those facilities for which the size status could not be determined, the Agency assumed small entity status, and performed a significant impact screen using the Sales Test (i.e., assessing the ratio of incremental costs to net sales for a facility). As there are no small organizations or small governmental jurisdictions which currently have CAMUs, these entities are not anticipated to incur any impacts resulting from the rule. The results from each screening analysis are discussed below.

c. Examination of Existing CAMUs for Small Entity Status

EPA collected data on the employee size and net sales for the 47 facilities employing CAMUs in the baseline (the sources from which these data were obtained are listed in the background document). Using these data, EPA determined, according to the SBA size standards (see *www.sbaonline.sba.gov/size/section04b.htm),* whether any of the 47 facilities were small entities. Of the facilities for which data existed to determine size status, only three were identified as small entities. The impact incurred on these three small entities was under 0.01 percent of net sales. This finding suggests that it is very unlikely that these facilities would be significantly impacted by the rule. See the Economic Analysis of the Final Amendments to the CAMU Rule in the docket for today's final rule for greater detail on this analysis.

d. Significant Impact Screen of Facilities for Which Size Was Undetermined

The Agency examined the seven facilities for which data concerning size status were not available. Using the Standard Industrial Classification (SIC) Code for a given facility, the Agency was able to obtain data for five of these facilities on the estimated receipts for small entities within the SIC code and the number of small entities within the SIC code (these data were obtained from *www.sba.gov/advo/stats/int_data.html).* (The latest available industry Census data is from 1997, prior to the establishment of the North American Industry Classification Code System (NAICS) codes.) The estimated receipts for these entities were employed as a surrogate for net sales. From these data, the average estimated receipts per small firm within the SIC code was determined. This figure, the average estimated receipts per small firm, was then assumed to be representative of the receipts for the facility in question. The Sales Test ratio (i.e., the ratio of the average estimated receipts per firm by SIC code to the annual incremental costs of the final rule incurred by the facility) was then calculated.

For the five facilities for which data existed to calculate the Sales Test ratio, this ratio ranged between 0.01 percent and 0.07 percent. The Agency believes this range of percentages reasonably validates a conclusion of no significant impacts for these facilities. However, there were two facilities for which the data required to make this calculation were not available. Based on the annual incremental costs projected for these two facilities as a result of the final rule, it seems very unlikely that these facilities, if they were small entities, would incur significant impacts. See the Economic Analysis of the Final Amendments to the CAMU Rule in the docket for today's final rule for greater detail on this analysis.

2. The Impacts Estimated on Small Entities

Based on the two screening analyses described above, the Agency has concluded that today's final rule would not have a significant impact on a substantial number of small entities. (In addition, no small entity impacts are expected from the provision allowing off-site disposal of CAMU-eligible waste (40 CFR 264.555), as facilities use this provision only when it is to their advantage; in fact, EPA expects that this provision will be particularly useful to small entities.)

C. Paperwork Reduction Act

The information collection requirements in this final rule will be submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. An Information Collection Request (ICR) document has been prepared by EPA (ICR No. 1573.07) and a copy may be obtained from Sandy Farmer by mail at OP Regulatory Information Division; U.S. Environmental Protection Agency (2137); 401 M St., SW., Washington, DC 20460, by e-mail at *farmer.sandy@epamail.epa.gov,* or by calling (202) 260–2740. A copy may also be downloaded off the Internet at *http://www.epa.gov/icr.* The requirements are not effective until OMB approves them.

The U.S. Environmental Protection Agency (EPA) is amending the regulations for CAMUs under RCRA. EPA originally established regulations applicable to CAMUs at 40 CFR part 264, subpart S (58 FR 8658, Feb. 16, 1993). EPA is amending these regulations to, among other things, more specifically define the eligibility of wastes to be managed in CAMUs, establish treatment requirements for wastes managed in CAMUs, and set technical standards for CAMUs. With regard to paperwork requirements, the rule adds language identifying specific types of information that facilities must submit in order to gain CAMU approval at § 264.552(d)(1)–(3) and requires that CAMU-authorizing documents require notification for ground water releases as necessary to protect human health and the environment at § 264.552(e)(5).

The general requirement for information submission, at § 264.552(d), requires the owner or operator to submit sufficient information to enable the Regional Administrator to designate a CAMU. EPA is modifying the existing information requirement under § 264.552(d) to include submission of the specific information listed under final § 264.552(d)(1)–(3)). The modifications are additions to the existing general requirement, and add three specific information submission requirements (unless not reasonably available) to directly address the final amendments pertaining to CAMU eligibility: (1) The origin of the waste and how it was subsequently managed (§ 264.552(d)(1)); (2) whether the waste was listed or identified as hazardous at the time of disposal and/or release to the environment (§ 264.552(d)(2)); and (3) whether the waste was subject to the land disposal requirements of Part 268 at the time of disposal and/or release to the environment (§ 264.552(d)(3)). Additionally, EPA is requiring certain facilities to notify EPA of releases to ground water. EPA will use this information to monitor releases and make determinations of when the releases might cause danger to human health or the environment. Facility owners or operators may use these data

to keep track of releases and prevent them from reaching unacceptable levels.

EPA is amending the requirements for designating a CAMU under the authority of sections 1006, 2002(a), CFR, 3005(c), 3007, 3008(h), and 7004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended by the Hazardous and Solid Waste Amendments (HSWA) of 1984. In particular, under sections 2002 and 3007 of RCRA, EPA is requiring the information collection amendments to the CAMU rule described above because they are needed for the Agency to effectively designate and track the operation of CAMUs.

In addition, the rule requires persons seeking approval to send CAMU-eligible wastes off-site (without meeting land disposal restriction requirements) to submit enough information to allow the Regional Administrator to provide that approval (see 40 CFR 264.555).

EPA estimates the total annual respondent burden and cost for the final new paperwork requirements to be approximately 1,354 hours and $123,958. The bottom line respondent burden over the three-year period covered by this ICR is 4,107 hours, at a total cost of approximately $371,874. The Agency burden or cost associated with this final rule is estimated to be approximately 189 hours and $7,860 per year. The bottom line Agency burden over the three-year period covered by this ICR is 567 hours, at a total cost of approximately $23,580.[60]

Section 3007(b) of RCRA and 40 CFR part 2, subpart B, which defines EPA's general policy on public disclosure of information, contain provisions for confidentiality. However, the Agency does not anticipate that businesses will assert a claim of confidentiality covering all or part of the information that will be requested pursuant to the final amended CAMU rule. If such a claim were asserted, EPA must treat the information in accordance with the regulations cited above. EPA also will make sure that this information collection complies with the Privacy Act of 1974 and OMB Circular 108.

Burden means the total time, effort, or financial resources expended by persons to generate, maintain, retain, or disclose or provide information to or for a federal agency. This includes the time needed to review instructions; develop, acquire, install, and utilize technology and systems for the purposes of collecting, validating, and verifying information, processing and maintaining information, and disclosing and providing information; adjust the existing ways to comply with any previously applicable instructions and requirements; train personnel to be able to respond to a collection of information; search data sources; complete and review the collection of information; and transmit or otherwise disclose the information.

An Agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a currently valid OMB control number. The OMB control numbers for EPA's regulations are listed in 40 CFR part 9 and 48 CFR chapter 15.

D. Unfunded Mandates Reform Act

Title II of the Unfunded Mandates Reform Act of 1995 (UMRA), Public Law 104–4, establishes requirements for federal agencies to assess the effects of their regulatory actions on state, local, and tribal governments and the private sector. Under section 202 of the UMRA, EPA generally must prepare a written statement, including a cost-benefit analysis, for proposed and final rules with ''federal mandates'' that may result in expenditures to state, local, and tribal governments, in the aggregate, or to the private sector, of $100 million or more in any one year. Before promulgating an EPA rule for which a written statement is needed, section 205 of the UMRA generally requires EPA to identify and consider a reasonable number of regulatory alternatives and adopt the least costly, most cost-effective or least burdensome alternative that achieves the objectives of the rule. The provisions of section 205 do not apply when they are inconsistent with applicable law. Moreover, section 205 allows EPA to adopt an alternative other than the least costly, most cost-effective or least burdensome alternative if the Administrator publishes with the final rule an explanation why that alternative was not adopted.

Before EPA establishes any regulatory requirements that may significantly or uniquely affect small governments, including tribal governments, it must have developed under section 203 of the UMRA a small government agency plan. The plan must provide for notifying potentially affected small governments, enabling officials of affected small governments to have meaningful and timely input in the development of EPA regulatory proposals with significant federal intergovernmental mandates, and informing, educating, and advising small governments on compliance with the regulatory requirements.

EPA has determined that this rule does not contain a federal mandate that may result in expenditures of $100 million or more for state, local, and tribal governments, in the aggregate, or the private sector in any one year. The amendments final today establish approval process changes and treatment/unit design requirements which are overall already in use in the baseline. Therefore, the incremental impacts, as discussed in this analysis, are not estimated to be significant. See the above analysis for an overview of the impacts estimated for the final amendments. Thus, the CAMU Final Amendments are not subject to the requirements of sections 202 and 205 of the UMRA.

Finally, EPA has determined that this final rule contains no regulatory requirements that might significantly or uniquely affect small governments. Under today's final rule, small governments will not implement the CAMU rule and are not generally expected to use CAMUs based on current patterns of CAMU usage seen in historical data. In addition, the CAMU rule makes no distinction between small governments and any potential regulated party.

E. National Technology Transfer and Advancement Act

As noted in the proposed rule, section 12(d) of the National Technology Transfer and Advancement Act of 1995 (''NTTAA''), Public Law 104–113, section 12(d) (15 U.S.C. 272 note) directs EPA to use voluntary consensus standards in its regulatory activities unless to do so would be inconsistent with applicable law or otherwise impractical. Voluntary consensus standards are technical standards (e.g., materials specifications, test methods, sampling procedures, and business practices) that are developed or adopted by voluntary consensus standards bodies. The NTTAA directs EPA to provide Congress, through OMB, explanations when the Agency decides not to use available and applicable voluntary consensus standards.

The final rulemaking involves technical standards (e.g., use of the TCLP or other tests to assess compliance with treatment requirements). The Agency did not identify any potentially applicable voluntary consensus standards during its efforts to develop appropriate standards (e.g., during its discussions with Agency personnel and

[60] Subsequent to conducting the Information Collection Request Analysis, EPA updated the number of CAMUs used for ''permanent'' disposal and the number used for ''storage and/or treatment'' only. The ICR estimates that 31 of the 39 CAMUs in the CAMU Site Background Document were for permanent disposal; the correct number is 30 of 39. EPA will make the necessary recalculations to the ICR in the context of the final rule. EPA believes that the change in estimated burden as a result of such recalculations will be inconsequential.

stakeholders who are experts in the areas addressed by this rulemaking). EPA also did not receive comments identifying potentially available voluntary consensus standards.

F. Consultation and Coordination with Indian Tribal Governments (Executive Order 13175)

Executive Order 13175, entitled ''Consultation and Coordination with Indian Tribal Governments'' (65 FR 67249, November 6, 2000), requires EPA to develop an accountable process to ensure ''meaningful and timely input by tribal officials in the development of regulatory policies that have tribal implications.'' ''Policies that have tribal implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on one or more Indian tribes, on the relationship between the federal government and the Indian tribes, or on the distribution of power and responsibilities between the federal government and Indian tribes.''

Today's final rule does not have tribal implications because Indian tribal governments do not implement the CAMU rule. It will not have substantial direct effects on tribal governments, on the relationship between the federal government and Indian tribes, or on the distribution of power and responsibilities between the federal government and Indian tribes, as specified in Executive Order 13175. Thus, Executive Order 13175 does not apply to this rule.

G. Protection of Children from Environmental Health Risks and Safety Risks (Executive Order 13045)

Executive Order 13045: ''Protection of Children from Environmental Health Risks and Safety Risks'' (62 FR 19885, April 23, 1997) applies to any rule that: (1) Is determined to be ''economically significant'' as defined under Executive Order 12866, and (2) concerns an environmental health or safety risk that EPA has reason to believe may have a disproportionate effect on children. If the regulatory action meets both criteria, the Agency must evaluate the environmental health or safety effects of the planned rule on children, and explain why the planned regulation is preferable to other potentially effective and reasonably feasible alternatives considered by the Agency.

This final rule is not subject to the Executive Order because it is not economically significant as defined in Executive Order 12866, and because the Agency does not have reason to believe that this rule presents disproportionate or additional risks to children. The Agency does not believe that the risks addressed by today's amendments—i.e., the risks from on-site management of hazardous cleanup wastes—present a disproportionate risk to children. The final rule, among other things, sets minimum CAMU treatment and design standards designed to help ensure the protectiveness of CAMUs. EPA's analysis of these requirements shows that CAMUs are already meeting the minimum standards in this rule. As amended by the final rule, the CAMU rule would continue to require that a decision concerning overall protectiveness of any specific CAMU be made by the Regional Administrator based on site-specific circumstances, including risks to children where appropriate. The Agency is committed to ensuring that these site-specific assessments include an assessment of risks to children where appropriate. Therefore, the Agency believes that these amendments do not present disproportionate or additional risks to children at facilities employing a CAMU.

H. Federalism (Executive Order 13132)

Executive Order 13132, entitled ''Federalism'' (64 FR 43255, August 10, 1999), requires EPA to develop an accountable process to ensure ''meaningful and timely input by state and local officials in the development of regulatory policies that have federalism implications.'' ''Policies that have federalism implications'' is defined in the Executive Order to include regulations that have ''substantial direct effects on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.''

This final rule does not have federalism implications. It will not have substantial direct effects on the states, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government, as specified in Executive Order 13132. First, any direct effects on the states will not be substantial, because, as described more fully above, the Agency expects the increased analytical costs for oversight agencies (i.e., EPA or authorized states) associated with the rule to be insignificant. In addition, although the final amendments would limit the discretion available to oversight agencies under the current CAMU rule, the Agency's record demonstrates that the CAMU decisions expected under the amendments are generally the same as those reached under the current regulatory framework. In addition, EPA does not believe the final rule would have a substantial direct effect on states as regulated parties, since based on past patterns of CAMU usage, state governments are not generally expected to use CAMUs.

As for the EPA-state relationship and distribution of power and responsibilities, today's rule includes state authorization provisions that would allow the large majority of states currently authorized for the CAMU provisions to become interim authorized for the amendments at the same time those amendments become effective. Thus, for those states, there will be no period in which the amendments are in effect federally, but not as a matter of state law. Even for those CAMU-authorized states that do not become interim authorized under this procedure, the Agency does not believe that any impact of the rule would be substantial. Although the Agency would implement the amendments in such states until they become authorized, EPA does not expect that this will generally result in changes to the state's individual CAMU decisions under state law, since, as described above, state CAMU decisions will likely be consistent with today's amendments. Thus, Executive Order 13132 does not apply to this rule.

The Agency notes, in addition, that prior to entering into the CAMU settlement agreement, EPA did discuss with the states potential impacts on states from amendments to the CAMU rule. During these discussions, individual states expressed concerns about potential disruption caused by the authorization process that would be required in states that are already authorized for the 1993 CAMU rule, the reduced discretion that would be available under any amendments to the CAMU rule, and the potentially more elaborate process that would be involved in making CAMU decisions.

EPA recognizes that these are valid concerns, and addressed them in the proposal and today's final rule. For example, EPA has included a provision that grandfather existing CAMUs and those that are substantially in the approval process. The rule also includes an approach to authorization that is intended to reduce disruption for states with authorized CAMU programs, and to expedite authorization for states that have corrective action programs but are not yet authorized for CAMU. In addition, EPA recognizes that increased process would be introduced by this rule, but, as is described in the background section of today's preamble, has tried to find a reasonable balance by

adding sufficient detail to achieve the proposal's goals while preserving site-specific flexibility that provides incentives to cleanup. Finally, the rule is designed to incorporate the CAMU designation process into the existing decision-making process that is typically used by states and EPA for cleanups, including that used for making CAMU determinations. For example, EPA designed the principal hazardous constituent process, and certain final adjustment factors to reference the overall cleanup decision-making process within which the CAMU decision is made.

I. Environmental Justice (Executive Order 12898)

On February 11, 1994, the President issued Executive Order 12898, entitled ''Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations,'' and an accompanying memorandum to federal department and agency heads. The Order establishes a policy to help ensure that all communities, including minority communities and low-income communities, live in a safe and healthful environment. As noted in the presidential memorandum, it is designed to focus federal attention on the human health and environmental conditions in minority communities and low-income communities to realize the goal of achieving environmental justice. The Order also is intended to foster nondiscrimination in federal programs that substantially affect human health or the environment, and to give minority communities and low-income communities greater opportunities for public participation in, and access to public information on, matters relating to human health and the environment. In general, to the greatest extent practicable and permitted by law, the Order directs federal agencies to make environmental justice part of their mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.

Today's final rule is intended to amend the existing CAMU rule through, among other things, establishing a formalized process for approval of CAMUs, as well as setting national minimum treatment and unit design standards for CAMUs. The treatment and unit design standards formalize the existing expectations that site decisions be made within the overall decision making process in a manner protective of human health and the environment. The Agency's analysis shows that CAMUs are already meeting these minimum standards. Therefore, the Agency believes that these amendments, although formalizing such requirements, would not appreciably affect the risks at facilities where CAMUs are employed. This rule does not specifically address the overall remedial decision making process within which CAMUs are approved. Thus, EPA believes that this rule will not have any disproportionately high and adverse human health or environmental effects on minority populations or low-income populations. The Agency continues its commitment to ensuring that environmental justice concerns are addressed within remedial decisions in corrective action.

J. Congressional Review Act

The Congressional Review Act, 5 U.S.C. 801 et seq., as added by the Small Business Regulatory Enforcement Fairness Act of 1996, generally provides that before a rule may take effect, the agency promulgating the rule must submit a rule report, which includes a copy of the rule, to each House of the Congress and to the Comptroller General of the United States. EPA will submit a report containing today's rule and other required information to the U.S. Senate, the U.S. House of Representatives, and the Comptroller General of the United States prior to publication of the rule in the **Federal Register**. A Major rule cannot take effect until 60 days after it is published in the **Federal Register**. This action is not a ''major rule'' as defined by 5 U.S.C. 804(2). This rule will be effective 90 days following publication.

K. Energy Effects (Executive Order 13211)

Today's final rule is not a ''significant energy action'' as defined in Executive Order 13211, ''Actions Concerning Regulations That Significantly Affect Energy Supply, Distribution, or Use'' (66 FR 28355 (May 22, 2001)) because it is not likely to have a significant adverse effect on the supply, distribution, or use of energy. Further, EPA has concluded that this rule is not likely to have any adverse energy effects.

List of Subjects in 40 CFR Parts 260, 264, and 271

Environmental protection, Administrative practice and procedure, Air pollution control, Confidential business information, Hazardous materials transportation, Hazardous waste, Indians-lands, Insurance, Intergovernmental relations, Packaging and containers, Penalties, Reporting and recordkeeping requirements, Security measures, Surety bonds, Water pollution control, Water supply.

Dated: December 21, 2001.

Christine Todd Whitman,

Administrator.

For the reasons set out in the preamble, 40 CFR Parts 260, 264 and 271 are amended as follows.

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

1. The authority citation for Part 260 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6921–6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974.

2. Section 260.10 is amended:

a. By removing the definition of ''Corrective action management unit (CAMU).''

b. By revising the definition of ''Remediation waste.''

The revision reads as follows:

§ 260.10 Definitions.

* * * * *

Remediation waste means all solid and hazardous wastes, and all media (including ground water, surface water, soils, and sediments) and debris, that are managed for implementing cleanup.

PART 264—STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

3. The authority citation for Part 264 is revised to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, 6927, 6928(h), and 6974.

4. The title for Part 264 Subpart S, ''Corrective Action for Solid Waste Management Units,'' is revised to read ''Special Provisions for Cleanup.''

5. Section 264.550 is added to Subpart S to read as follows:

§ 264.550 Applicability of Corrective Action Management Unit (CAMU) Regulations.

(a) Except as provided in paragraph (b) of this section, CAMUs are subject to the requirements of § 264.552.

(b) CAMUs that were approved before April 22, 2002, or for which substantially complete applications (or equivalents) were submitted to the Agency on or before November 20, 2000, are subject to the requirements in § 264.551 for grandfathered CAMUs; CAMU waste, activities, and design will not be subject to the standards in § 264.552, so long as the waste,

activities, and design remain within the general scope of the CAMU as approved.

6. Section 264.552 is redesignated as § 264.551 and newly designated § 264.551 is amended by revising the section heading and paragraph (a) introductory text to read as follows:

§ 264.551 Grandfathered Corrective Action Management Units (CAMUs).

(a) To implement remedies under § 264.101 or RCRA Section 3008(h), or to implement remedies at a permitted facility that is not subject to § 264.101, the Regional Administrator may designate an area at the facility as a corrective action management unit under the requirements in this section. Corrective action management unit means an area within a facility that is used only for managing remediation wastes for implementing corrective action or cleanup at the facility. A CAMU must be located within the contiguous property under the control of the owner or operator where the wastes to be managed in the CAMU originated. One or more CAMUs may be designated at a facility.

* * * * *

7. A new § 264.552 is added to read as follows:

§ 264.552 Corrective Action Management Units (CAMU).

(a) To implement remedies under § 264.101 or RCRA Section 3008(h), or to implement remedies at a permitted facility that is not subject to § 264.101, the Regional Administrator may designate an area at the facility as a corrective action management unit under the requirements in this section. Corrective action management unit means an area within a facility that is used only for managing CAMU-eligible wastes for implementing corrective action or cleanup at the facility. A CAMU must be located within the contiguous property under the control of the owner or operator where the wastes to be managed in the CAMU originated. One or more CAMUs may be designated at a facility.

(1) *CAMU-eligible waste means:*

(i) All solid and hazardous wastes, and all media (including ground water, surface water, soils, and sediments) and debris, that are managed for implementing cleanup. As-generated wastes (either hazardous or non-hazardous) from ongoing industrial operations at a site are not CAMU-eligible wastes.

(ii) Wastes that would otherwise meet the description in paragraph (a)(1)(i) of this section are not ''CAMU-Eligible Wastes'' where:

(A) The wastes are hazardous wastes found during cleanup in intact or substantially intact containers, tanks, or other non-land-based units found above ground, unless the wastes are first placed in the tanks, containers or non-land-based units as part of cleanup, or the containers or tanks are excavated during the course of cleanup; or

(B) The Regional Administrator exercises the discretion in paragraph (a)(2) of this section to prohibit the wastes from management in a CAMU.

(iii) Notwithstanding paragraph (a)(1)(i) of this section, where appropriate, as-generated non-hazardous waste may be placed in a CAMU where such waste is being used to facilitate treatment or the performance of the CAMU.

(2) The Regional Administrator may prohibit, where appropriate, the placement of waste in a CAMU where the Regional Administrator has or receives information that such wastes have not been managed in compliance with applicable land disposal treatment standards of part 268 of this chapter, or applicable unit design requirements of this part, or applicable unit design requirements of part 265 of this chapter, or that non-compliance with other applicable requirements of this chapter likely contributed to the release of the waste.

(3) Prohibition against placing liquids in CAMUs.

(i) The placement of bulk or noncontainerized liquid hazardous waste or free liquids contained in hazardous waste (whether or not sorbents have been added) in any CAMU is prohibited except where placement of such wastes facilitates the remedy selected for the waste.

(ii) The requirements in § 264.314(d) for placement of containers holding free liquids in landfills apply to placement in a CAMU except where placement facilitates the remedy selected for the waste.

(iii) The placement of any liquid which is not a hazardous waste in a CAMU is prohibited unless such placement facilitates the remedy selected for the waste or a demonstration is made pursuant to § 264.314(f).

(iv) The absence or presence of free liquids in either a containerized or a bulk waste must be determined in accordance with § 264.314(c). Sorbents used to treat free liquids in CAMUs must meet the requirements of § 264.314(e).

(4) Placement of CAMU-eligible wastes into or within a CAMU does not constitute land disposal of hazardous wastes.

(5) Consolidation or placement of CAMU-eligible wastes into or within a CAMU does not constitute creation of a unit subject to minimum technology requirements.

(b)(1) The Regional Administrator may designate a regulated unit (as defined in § 264.90(a)(2)) as a CAMU, or may incorporate a regulated unit into a CAMU, if:

(i) The regulated unit is closed or closing, meaning it has begun the closure process under § 264.113 or § 265.113 of this chapter; and

(ii) Inclusion of the regulated unit will enhance implementation of effective, protective and reliable remedial actions for the facility.

(2) The subpart F, G, and H requirements and the unit-specific requirements of this part 264 or part 265 of this chapter that applied to the regulated unit will continue to apply to that portion of the CAMU after incorporation into the CAMU.

(c) The Regional Administrator shall designate a CAMU that will be used for storage and/or treatment only in accordance with paragraph (f) of this section. The Regional Administrator shall designate all other CAMUs in accordance with the following:

(1) The CAMU shall facilitate the implementation of reliable, effective, protective, and cost-effective remedies;

(2) Waste management activities associated with the CAMU shall not create unacceptable risks to humans or to the environment resulting from exposure to hazardous wastes or hazardous constituents;

(3) The CAMU shall include uncontaminated areas of the facility, only if including such areas for the purpose of managing CAMU-eligible waste is more protective than management of such wastes at contaminated areas of the facility;

(4) Areas within the CAMU, where wastes remain in place after closure of the CAMU, shall be managed and contained so as to minimize future releases, to the extent practicable;

(5) The CAMU shall expedite the timing of remedial activity implementation, when appropriate and practicable;

(6) The CAMU shall enable the use, when appropriate, of treatment technologies (including innovative technologies) to enhance the long-term effectiveness of remedial actions by reducing the toxicity, mobility, or volume of wastes that will remain in place after closure of the CAMU; and

(7) The CAMU shall, to the extent practicable, minimize the land area of the facility upon which wastes will

remain in place after closure of the CAMU.

(d) The owner/operator shall provide sufficient information to enable the Regional Administrator to designate a CAMU in accordance with the criteria in this section. This must include, unless not reasonably available, information on:

(1) The origin of the waste and how it was subsequently managed (including a description of the timing and circumstances surrounding the disposal and/or release);

(2) Whether the waste was listed or identified as hazardous at the time of disposal and/or release; and

(3) Whether the disposal and/or release of the waste occurred before or after the land disposal requirements of part 268 of this chapter were in effect for the waste listing or characteristic.

(e) The Regional Administrator shall specify, in the permit or order, requirements for CAMUs to include the following:

(1) The areal configuration of the CAMU.

(2) Except as provided in paragraph (g) of this section, requirements for CAMU-eligible waste management to include the specification of applicable design, operation, treatment and closure requirements.

(3) Minimum design requirements. CAMUs, except as provided in paragraph (f) of this section, into which wastes are placed must be designed in accordance with the following:

(i) Unless the Regional Administrator approves alternate requirements under paragraph (e)(3)(ii) of this section, CAMUs that consist of new, replacement, or laterally expanded units must include a composite liner and a leachate collection system that is designed and constructed to maintain less than a 30-cm depth of leachate over the liner. For purposes of this section, *composite liner* means a system consisting of two components; the upper component must consist of a minimum 30-mil flexible membrane liner (FML), and the lower component must consist of at least a two-foot layer of compacted soil with a hydraulic conductivity of no more than 1x10–7 cm/sec. FML components consisting of high density polyethylene (HDPE) must be at least 60 mil thick. The FML component must be installed in direct and uniform contact with the compacted soil component;

(ii) Alternate requirements. The Regional Administrator may approve alternate requirements if:

(A) The Regional Administrator finds that alternate design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituents into the ground water or surface water at least as effectively as the liner and leachate collection systems in paragraph (e)(3)(i) of this section; or

(B) The CAMU is to be established in an area with existing significant levels of contamination, and the Regional Administrator finds that an alternative design, including a design that does not include a liner, would prevent migration from the unit that would exceed long-term remedial goals.

(4) Minimum treatment requirements: Unless the wastes will be placed in a CAMU for storage and/or treatment only in accordance with paragraph (f) of this section, CAMU-eligible wastes that, absent this section, would be subject to the treatment requirements of part 268 of this chapter, and that the Regional Administrator determines contain principal hazardous constituents must be treated to the standards specified in paragraph (e)(4)(iii) of this section.

(i) Principal hazardous constituents are those constituents that the Regional Administrator determines pose a risk to human health and the environment substantially higher than the cleanup levels or goals at the site.

(A) In general, the Regional Administrator will designate as principal hazardous constituents:

(*1*) Carcinogens that pose a potential direct risk from ingestion or inhalation at the site at or above 10^{-3}; and

(*2*) Non-carcinogens that pose a potential direct risk from ingestion or inhalation at the site an order of magnitude or greater over their reference dose.

(B) The Regional Administrator will also designate constituents as principal hazardous constituents, where appropriate, when risks to human health and the environment posed by the potential migration of constituents in wastes to ground water are substantially higher than cleanup levels or goals at the site; when making such a designation, the Regional Administrator may consider such factors as constituent concentrations, and fate and transport characteristics under site conditions.

(C) The Regional Administrator may also designate other constituents as principal hazardous constituents that the Regional Administrator determines pose a risk to human health and the environment substantially higher than the cleanup levels or goals at the site.

(ii) In determining which constituents are ''principal hazardous constituents,'' the Regional Administrator must consider all constituents which, absent this section, would be subject to the treatment requirements in 40 CFR part 268.

(iii) Waste that the Regional Administrator determines contains principal hazardous constituents must meet treatment standards determined in accordance with paragraph (e)(4)(iv) or (e)(4)(v) of this section:

(iv) Treatment standards for wastes placed in CAMUs.

(A) For non-metals, treatment must achieve 90 percent reduction in total principal hazardous constituent concentrations, except as provided by paragraph (e)(4)(iv)(C) of this section.

(B) For metals, treatment must achieve 90 percent reduction in principal hazardous constituent concentrations as measured in leachate from the treated waste or media (tested according to the TCLP) or 90 percent reduction in total constituent concentrations (when a metal removal treatment technology is used), except as provided by paragraph (e)(4)(iv)(C) of this section.

(C) When treatment of any principal hazardous constituent to a 90 percent reduction standard would result in a concentration less than 10 times the Universal Treatment Standard for that constituent, treatment to achieve constituent concentrations less than 10 times the Universal Treatment Standard is not required. Universal Treatment Standards are identified in § 268.48 Table UTS of this chapter.

(D) For waste exhibiting the hazardous characteristic of ignitability, corrosivity or reactivity, the waste must also be treated to eliminate these characteristics.

(E) For debris, the debris must be treated in accordance with § 268.45 of this chapter, or by methods or to levels established under paragraphs (e)(4)(iv)(A) through (D) or paragraph (e)(4)(v) of this section, whichever the Regional Administrator determines is appropriate.

(F) Alternatives to TCLP. For metal bearing wastes for which metals removal treatment is not used, the Regional Administrator may specify a leaching test other than the TCLP (SW846 Method 1311, 40 CFR 260.11(11)) to measure treatment effectiveness, provided the Regional Administrator determines that an alternative leach testing protocol is appropriate for use, and that the alternative more accurately reflects conditions at the site that affect leaching.

(v) Adjusted standards. The Regional Administrator may adjust the treatment level or method in paragraph (e)(4)(iv) of this section to a higher or lower level, based on one or more of the following

factors, as appropriate. The adjusted level or method must be protective of human health and the environment:

(A) The technical impracticability of treatment to the levels or by the methods in paragraph (e)(4)(iv) of this section;

(B) The levels or methods in paragraph (e)(4)(iv) of this section would result in concentrations of principal hazardous constituents (PHCs) that are significantly above or below cleanup standards applicable to the site (established either site-specifically, or promulgated under state or federal law);

(C) The views of the affected local community on the treatment levels or methods in paragraph (e)(4)(iv) of this section as applied at the site, and, for treatment levels, the treatment methods necessary to achieve these levels;

(D) The short-term risks presented by the on-site treatment method necessary to achieve the levels or treatment methods in paragraph (e)(4)(iv) of this section;

(E) The long-term protection offered by the engineering design of the CAMU and related engineering controls:

(*1*) Where the treatment standards in paragraph (e)(4)(iv) of this section are substantially met and the principal hazardous constituents in the waste or residuals are of very low mobility; or

(*2*) Where cost-effective treatment has been used and the CAMU meets the Subtitle C liner and leachate collection requirements for new land disposal units at § 264.301(c) and (d); or

(*3*) Where, after review of appropriate treatment technologies, the Regional Administrator determines that cost-effective treatment is not reasonably available, and the CAMU meets the Subtitle C liner and leachate collection requirements for new land disposal units at § 264.301(c) and (d); or

(*4*) Where cost-effective treatment has been used and the principal hazardous constituents in the treated wastes are of very low mobility; or

(*5*) Where, after review of appropriate treatment technologies, the Regional Administrator determines that cost-effective treatment is not reasonably available, the principal hazardous constituents in the wastes are of very low mobility, and either the CAMU meets or exceeds the liner standards for new, replacement, or laterally expanded CAMUs in paragraphs (e)(3)(i) and (ii) of this section, or the CAMU provides substantially equivalent or greater protection.

(vi) The treatment required by the treatment standards must be completed prior to, or within a reasonable time after, placement in the CAMU.

(vii) For the purpose of determining whether wastes placed in CAMUs have met site-specific treatment standards, the Regional Administrator may, as appropriate, specify a subset of the principal hazardous constituents in the waste as analytical surrogates for determining whether treatment standards have been met for other principal hazardous constituents. This specification will be based on the degree of difficulty of treatment and analysis of constituents with similar treatment properties.

(5) Except as provided in paragraph (f) of this section, requirements for ground water monitoring and corrective action that are sufficient to:

(i) Continue to detect and to characterize the nature, extent, concentration, direction, and movement of existing releases of hazardous constituents in ground water from sources located within the CAMU; and

(ii) Detect and subsequently characterize releases of hazardous constituents to ground water that may occur from areas of the CAMU in which wastes will remain in place after closure of the CAMU; and

(iii) Require notification to the Regional Administrator and corrective action as necessary to protect human health and the environment for releases to ground water from the CAMU.

(6) Except as provided in paragraph (f) of this section, closure and post-closure requirements:

(i) Closure of corrective action management units shall:

(A) Minimize the need for further maintenance; and

(B) Control, minimize, or eliminate, to the extent necessary to protect human health and the environment, for areas where wastes remain in place, post-closure escape of hazardous wastes, hazardous constituents, leachate, contaminated runoff, or hazardous waste decomposition products to the ground, to surface waters, or to the atmosphere.

(ii) Requirements for closure of CAMUs shall include the following, as appropriate and as deemed necessary by the Regional Administrator for a given CAMU:

(A) Requirements for excavation, removal, treatment or containment of wastes; and

(B) Requirements for removal and decontamination of equipment, devices, and structures used in CAMU-eligible waste management activities within the CAMU.

(iii) In establishing specific closure requirements for CAMUs under paragraph (e) of this section, the Regional Administrator shall consider the following factors:

(A) CAMU characteristics;

(B) Volume of wastes which remain in place after closure;

(C) Potential for releases from the CAMU;

(D) Physical and chemical characteristics of the waste;

(E) Hydrological and other relevant environmental conditions at the facility which may influence the migration of any potential or actual releases; and

(F) Potential for exposure of humans and environmental receptors if releases were to occur from the CAMU.

(iv) Cap requirements:

(A) At final closure of the CAMU, for areas in which wastes will remain after closure of the CAMU, with constituent concentrations at or above remedial levels or goals applicable to the site, the owner or operator must cover the CAMU with a final cover designed and constructed to meet the following performance criteria, except as provided in paragraph (e)(6)(iv)(B) of this section:

(*1*) Provide long-term minimization of migration of liquids through the closed unit;

(*2*) Function with minimum maintenance;

(*3*) Promote drainage and minimize erosion or abrasion of the cover;

(*4*) Accommodate settling and subsidence so that the cover's integrity is maintained; and

(*5*) Have a permeability less than or equal to the permeability of any bottom liner system or natural subsoils present.

(B) The Regional Administrator may determine that modifications to paragraph (e)(6)(iv)(A) of this section are needed to facilitate treatment or the performance of the CAMU (e.g., to promote biodegradation).

(v) Post-closure requirements as necessary to protect human health and the environment, to include, for areas where wastes will remain in place, monitoring and maintenance activities, and the frequency with which such activities shall be performed to ensure the integrity of any cap, final cover, or other containment system.

(f) CAMUs used for storage and/or treatment only are CAMUs in which wastes will not remain after closure. Such CAMUs must be designated in accordance with all of the requirements of this section, except as follows.

(1) CAMUs that are used for storage and/or treatment only and that operate in accordance with the time limits established in the staging pile regulations at § 264.554(d)(1)(iii), (h), and (i) are subject to the requirements for staging piles at § 264.554(d)(1)(i) and (ii), § 264.554(d)(2), § 264.554(e) and (f),

and § 264.554(j) and (k) in lieu of the performance standards and requirements for CAMUs in this section at paragraphs (c) and (e)(3) through (6).

(2) CAMUs that are used for storage and/or treatment only and that do not operate in accordance with the time limits established in the staging pile regulations at § 264.554(d)(1)(iii), (h), and (i):

(i) Must operate in accordance with a time limit, established by the Regional Administrator, that is no longer than necessary to achieve a timely remedy selected for the waste, and

(ii) Are subject to the requirements for staging piles at § 264.554(d)(1)(i) and (ii), § 264.554(d)(2), § 264.554(e) and (f), and § 264.554(j) and (k) in lieu of the performance standards and requirements for CAMUs in this section at paragraphs (c) and (e)(4) and (6).

(g) CAMUs into which wastes are placed where all wastes have constituent levels at or below remedial levels or goals applicable to the site do not have to comply with the requirements for liners at paragraph (e)(3)(i) of this section, caps at paragraph (e)(6)(iv) of this section, ground water monitoring requirements at paragraph (e)(5) of this section or, for treatment and/or storage-only CAMUs, the design standards at paragraph (f) of this section.

(h) The Regional Administrator shall provide public notice and a reasonable opportunity for public comment before designating a CAMU. Such notice shall include the rationale for any proposed adjustments under paragraph (e)(4)(v) of this section to the treatment standards in paragraph (e)(4)(iv) of this section.

(i) Notwithstanding any other provision of this section, the Regional Administrator may impose additional requirements as necessary to protect human health and the environment.

(j) Incorporation of a CAMU into an existing permit must be approved by the Regional Administrator according to the procedures for Agency-initiated permit modifications under § 270.41 of this chapter, or according to the permit modification procedures of § 270.42 of this chapter.

(k) The designation of a CAMU does not change EPA's existing authority to address clean-up levels, media-specific points of compliance to be applied to remediation at a facility, or other remedy selection decisions.

8. Section 264.554 is amended by adding (a)(1) and adding and reserving (a) (2) to read as follows:

§ 264.554 Staging piles.

* * * * *

(a) * * *

(1) For the purposes of this section, storage includes mixing, sizing, blending, or other similar physical operations as long as they are intended to prepare the wastes for subsequent management or treatment.

(2) [Reserved]

* * * * *

9. Section 264.555 is added to Subpart S to read as follows:

§ 264.555 Disposal of CAMU-eligible wastes in permitted hazardous waste landfills.

(a) The Regional Administrator with regulatory oversight at the location where the cleanup is taking place may approve placement of CAMU-eligible wastes in hazardous waste landfills not located at the site from which the waste originated, without the wastes meeting the requirements of RCRA 40 CFR part 268, if the conditions in paragraphs (a)(1) through (3) of this section are met:

(1) The waste meets the definition of CAMU-eligible waste in § 264.552(a)(1) and (2).

(2) The Regional Administrator with regulatory oversight at the location where the cleanup is taking place identifies principal hazardous constitutes in such waste, in accordance with § 264.552(e)(4)(i) and (ii), and requires that such principal hazardous constituents are treated to any of the following standards specified for CAMU-eligible wastes:

(i) The treatment standards under § 264.552(e)(4)(iv); or

(ii) Treatment standards adjusted in accordance with § 264.552(e)(4)(v)(A), (C), (D) or (E)(*1*); or

(iii) Treatment standards adjusted in accordance with § 264.552(e)(4)(v)(E)(*2*), where treatment has been used and that treatment significantly reduces the toxicity or mobility of the principal hazardous constituents in the waste, minimizing the short-term and long-term threat posed by the waste, including the threat at the remediation site.

(3) The landfill receiving the CAMU-eligible waste must have a RCRA hazardous waste permit, meet the requirements for new landfills in Subpart N of this part, and be authorized to accept CAMU-eligible wastes; for the purposes of this requirement, ''permit'' does not include interim status.

(b) The person seeking approval shall provide sufficient information to enable the Regional Administrator with regulatory oversight at the location where the cleanup is taking place to approve placement of CAMU-eligible waste in accordance with paragraph (a) of this section. Information required by § 264.552(d)(1) through (3) for CAMU applications must be provided, unless not reasonably available.

(c) The Regional Administrator with regulatory oversight at the location where the cleanup is taking place shall provide public notice and a reasonable opportunity for public comment before approving CAMU eligible waste for placement in an off-site permitted hazardous waste landfill, consistent with the requirements for CAMU approval at § 264.552(h). The approval must be specific to a single remediation.

(d) Applicable hazardous waste management requirements in this part, including recordkeeping requirements to demonstrate compliance with treatment standards approved under this section, for CAMU-eligible waste must be incorporated into the receiving facility permit through permit issuance or a permit modification, providing notice and an opportunity for comment and a hearing. Notwithstanding 40 CFR 270.4(a), a landfill may not receive hazardous CAMU-eligible waste under this section unless its permit specifically authorizes receipt of such waste.

(e) For each remediation, CAMU-eligible waste may not be placed in an off-site landfill authorized to receive CAMU-eligible waste in accordance with paragraph (d) of this section until the following additional conditions have been met:

(1) The landfill owner/operator notifies the Regional Administrator responsible for oversight of the landfill and persons on the facility mailing list, maintained in accordance with 40 CFR 124.10(c)(1)(ix), of his or her intent to receive CAMU-eligible waste in accordance with this section; the notice must identify the source of the remediation waste, the principal hazardous constituents in the waste, and treatment requirements.

(2) Persons on the facility mailing list may provide comments, including objections to the receipt of the CAMU-eligible waste, to the Regional Administrator within 15 days of notification.

(3) The Regional Administrator may object to the placement of the CAMU-eligible waste in the landfill within 30 days of notification; the Regional Administrator may extend the review period an additional 30 days because of public concerns or insufficient information.

(4) CAMU-eligible wastes may not be placed in the landfill until the Regional Administrator has notified the facility owner/operator that he or she does not object to its placement.

(5) If the Regional Administrator objects to the placement or does not notify the facility owner/operator that he or she has chosen not to object, the facility may not receive the waste, notwithstanding 40 CFR 270.4(a), until the objection has been resolved, or the owner/operator obtains a permit modification in accordance with the procedures of § 270.42 specifically authorizing receipt of the waste.

(6) As part of the permit issuance or permit modification process of paragraph (d) of this section, the Regional Administrator may modify, reduce, or eliminate the notification requirements of this paragraph as they apply to specific categories of CAMU-eligible waste, based on miminal risk.

(f) Generators of CAMU-eligible wastes sent off-site to a hazardous waste landfill under this section must comply with the requirements of 40 CFR 268.7(a)(4); off-site facilities treating CAMU-eligible wastes to comply with this section must comply with the requirements of § 268.7(b)(4), except that the certification must be with respect to the treatment requirements of paragraph (a)(2) of this section.

(g) For the purposes of this section only, the ''design of the CAMU'' in 40 CFR 264.552(e)(4)(v)(E) means design of the permitted Subtitle C landfill.

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

10. The authority citation for Part 271 continues to read as follows:

Authority: 42 U.S.C. 9605, 6912(2), and 6926.

11. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication in the **Federal Register**, to read as follows:

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

Promulgation date	Title of Regulation	Federal Register reference	Effective date
* * *	* * *	*	*
January 22, 2002	Corrective Action Management Unit Standards Amendments	[FR pages numbers]	April 22, 2002.
* * *	* * *	*	*

12. Section 271.24 is amended by revising paragraph (c) to read as follows:

§ 271.24 Interim authorization under section 3006(g) of RCRA.

* * * * *

(c) Interim authorization pursuant to this section expires on January 1, 2003, except that interim authorization for the revised Corrective Action Management Unit rule (except 40 CFR 264.555) promulgated on January 22, 2002 and cited in Table 1 in §271.1 expires on August 30, 2004 if the State has not submitted an application for final authorization.

13. A new § 271.27 is added to Subpart A to read as follows:

§ 271.27 Interim authorization-by-rule for the revised Corrective Action Management Unit rule.

(a) States shall be deemed to have interim authorization pursuant to section 3006(g) of RCRA for the revised Corrective Action Management Unit rule if:

(1) The State has been granted final authorization pursuant to section 3006(b) of RCRA for the regulation entitled ''Corrective Action Management Units and Temporary Units,'' February 16, 1993 and cited in Table 1 in §271.1; and

(2) The State notifies the Regional Administrator by March 25, 2002 that the State intends to and is able to use the revised Corrective Action Management Unit Standards rule as guidance.

(b) Interim authorization pursuant to this section expires on August 30, 2004 if the State has not submitted an application for final authorization.

[FR Doc. 02–4 Filed 1–18–02; 8:45 am]

BILLING CODE 6560–50–P