ENVIRONMENTAL PROTECTION AGENCY

40 CFR Parts 144, 260, 264, 265, and 270

[FRL-2860-9]

Hazardous Waste Management System; Proposed Codification of Statutory Provisions

AGENCY: Environmental Protection Agency (EPA).

ACTION: Proposed rule.

SUMMARY: This proposal is a companion rule to EPA's Final rule that codifies in regulations those requirements specified by the Hazardous and Solid Waste Amendments of 1984 (HSWA), which took effect immediately or shortly after enactment (see 50 FR 28702). The final rule amends EPA's hazardous waste regulations to incorporate the statutory language of the HSWA into EPA's existing regulatory framework. This rule proposes changes to the existing regulations to assist in the implementation of the new statutory provisions. The proposal includes provisions to implement the statutory requirement for double liners and corrective action beyond the facility property boundary. A public hearing will be held to receive public comment on the proposed rule as well as on issues raised in the preamble.

DATES: Written comments should be submitted on or before May 27, 1986.

A public hearing will be held beginning at 9:30 a.m. on May 7, 1986 at the U.S. EPA, Washington, DC

ADDRESSES: Comments should be directed to Docket Clerk, Office of Solid Waste [WH-562], U.S. Environmental Protection Agency. Communications should be identified by regulatory docket reference code "CODR-2."

The public docket for this proposed rulemaking is located in Room S-212, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 and is available for viewing from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding legal holidays.

The public hearing on this proposed rule will be held in North Conference Area, Room #3, U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460 (entrance on ground floor near Safeway).

The hearing will begin at 9:30 a.m. with registration at 9:00 a.m. and will run until 4:30 p.m. unless concluded earlier. Anyone wishing to make a statement at this hearing should notify in writing Ms. Geraldine Wyer, Office of Solid Waste (WH-562), Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. Persons wishing to make oral presentations must restrict them to 15 minutes and are encouraged to provide written copies of their complete comments for inclusion in the official record.

FOR FURTHER INFORMATION CONTACT:

General Information: RCRA Hotline (800) 424-9346 toll free, (202) 382-3000 in Washington, DC,
or,
David Fagan, (202) 382-4692, Mail Code WH-563, Office of Solid Waste, U.S. Environmental Protection Agency, 401 M St., SW., Washington, DC 20460.

Technical Information:

Land Disposal Restrictions—Art Day, Office of Solid Waste, Mail Code WH-565, (202) 382-4680.

Minimum Technology Standards—Robert Tonetti, Office of Solid Waste, Mail Code WH-565, (202) 382-4654.

Corrective Action—Darsi Foss, Office of Solid Waste, Mail Code WH-563, (202) 382-4534.

Permit Modifications/Post-closure Permits—George Faison, Office of Solid Waste, Mail Code WH-563, (202) 382-4422.

RCRA Permit-by-Rule for Class I Underground Injection Wells (UIC)—Nandan Kenkeremath, Ofice of General Counsel, Mail Code LE-132W, (202) 382-7636.

SUPPLEMENTARY INFORMATION:

Preamble Outline

I. Authority

These regulations are issued under authority of sections 2002, 3004, 3005, 3006, and 3015 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended, 42 U.S.C. 6912, 6924, 6925, 6926, and 6935.

II. Background

The preamble to the final codification rule promulgated on July 15, 1985 (50 FR 28702) provides substantial detail on the background and purpose of today's efforts to incorporate into the existing Subtitle C regulations an additional set of requirements from the 1984 Hazardous and Solid Waste Amendments (HSWA or the Amendments). The preamble to the final rule should be read first to understand the context of this proposed rule. Briefly, the final rule simply adds the statutory language to the existing Subtitle C regulations, with a preamble that provides our legal interpretations of that language. This rule, by contrast, proposes changes to the Subtitle C regulations that are more than mere transpositions of the statutory provisions, which take effect immediately or shortly after enactment. The proposal and accompanying preamble deal with issues that are logical outgrowths of the new amendments rather than requirements imposed directly by the statute. Other regulatory proposals will be forthcoming on various issues which are also outgrowths of the new amendments, such as regulations on financial assurance for corrective action.

III. Section-by-Section Analysis

This section discusses the changes we are proposing to make to the Subtitle C regulations. It also raises for public comment numerous issues on how we should implement the new amendments. Each statutory provision is discussed as follows: first, the preamble summarizes the provision and explains how we have codified it in the final rule. Then it describes how we propose to either change the final rule or create a new regulation to facilitate implementation of the new provision. Finally, the preamble identifies major related issues. In some instances, we do not propose specific regulatory language, but rather, propose issues for comment. Based on public comments, EPA may decide to resolve issues through final regulatory changes or through guidance on implementation of existing regulatory provisions.

A. Land Disposal Restrictions

1. Nonhazardous Liquids in Landfills—Final Codification Rule

The HSWA amended section 3004 of the Resource Conservation and Recovery Act (RCRA) by imposing a ban on the placement of nonhazardous liquids in permitted or interim status landfills after November 8, 1985. The statute provides an exemption from this prohibition if the owner or operator of such a landfill demonstrates to EPA's satisfaction that: (1) The only reasonably available disposal alternative for these nonhazardous liquids is a landfill or unlined surface impoundment (including units not operating pursuant to a permit or interim status) which already contains, or may reasonably be anticipated to contain, hazardous waste, and (2) the disposal of the nonhazardous liquids in the owner's or operator's landfill will not present a risk of contamination to any underground source of drinking water. To implement this provision, the final codification rule adds paragraph (e) to §264.314 and parag aph (f) to § 265.314, which essentially repeats the statutory prohibition and exemption.

Proposed rule. We are proposing to amend the permit application requirement pertaining to landfills receiving liquids (§270.21(h)) to require an owner or operator invoking the exemption from the ban to demonstrate how he or she qualifies for the exemption. As with all the proposed permit application requirements in this rule, we believe that such demonstrations are necessary in order for EPA to implement and enforce the statutory provision.

Issues. In deciding whether an exemption from the ban on placement of nonhazardous liquids is warranted, two key tests must be met. First, the Agency must determine whether a disposal alternative can be deemed to be "reasonably available." Second, EPA must decide whether the disposal of nonhazardous liquids in the owner's or operator's landfill will present a "risk of contamination" to an underground source of drinking water. We solicit the public's view on the proper construction to be given to these terms. Specifically, we are interested in public comment on the factors to be considered in determining whether a disposal alternative is "reasonably available." Should cost be a consideration? What about location (i.e., distance to the disposal alternative)?

Similarly, in deciding whether placement of nonhazardous liquid in a landfill will pose a "risk of contamination" to any underground source of drinking water, what standard should be used? Should such placement automatically be deemed to pose a risk of contamination if there is any evidence of leakage from the landfill? Or should EPA only be concerned with leakage of contaminants in levels that exceed the ground-water protection standard contained in § 264.92?

2. Hazardous Wastes in Salt Domes, Salt Beds, and Underground Mines and Caves—Final Codification Rule

Under new section 3004(b), the Congress has placed controls, effective November 8, 1984, on the placement of hazardous wastes in salt-dome formations, salt-bed formations, underground mines, and caves. The applicable requirements depend on whether a hazardous waste falls into one of two categories.

For noncontainerized (or bulk) liquid hazardous waste, the placement of waste in the four settings identified above is prohibited until: (1) EPA determines, after notice and opportunity for hearings on the record in the affected areas, that such placement is protective of human health and the environment; (2) EPA promulgates performance and permitting standards for such facilities under Subtitle C; and (3) a permit is issued for the facility. The placement of all other hazardous waste in the four enumerated settings is prohibited until a permit is issued for the facility.

Issues. This provision raises several issues that we would like to highlight for public comment. First, it is unclear to what extent our current regulations will cover waste management activities that may occur in these formations. EPA currently regulates specific waste management units (e.g., container storage areas, tanks, piles, landfills, injection wells, etc.). Depending on how an owner or operator intends to manage wastes in one of the settings described above, our existing standards for specific units may be fully applicable and fully appropriate. We are seeking comment from parties contemplating the use of such locations for hazardous waste management describing how they plan to manage such wastes. Further, we ask that such commenters address the appropriateness of EPA's existing standards, including the Underground Injection Control (UIC) regulations codified in 40 CFR Parts 124 and 144 to 147 for those operations.

Second, the statute enumerates three steps EPA must take before it lifts the ban on placing noncontainerized liquid hazardous waste in the enumerated locations. It is unclear whether our existing program requirements can be used to satisfy these steps. Can our permit program, which provides for extensive notice and opportunity for public comment, satisfy the requirement for a hearing in section 3004(b)(1)(A)? Can EPA's standards for Parts 124, 264, 265, and 270 or, in the case of injection wells, Parts 144, 146, and 147 satisfy the requirement in section 3004(b)(1)(B) for "performance and permitting" standards for facilities located in the enumerated settings?

B. Minimum Technology Requirements

1. Double-Liner System—Final Codification Rule

Pursuant to the requirements of sections 3004(o)(1) and 3015(b), the final codification rule requires that certain landfills and surface impoundments have two or more liners and a leachate collection system above (in the case of landfills) and between the liners. These requirements have been codified in §§ 264.221(c) and 264.301(c) for permitted units and §§ 265.221(a) and 265.301(a) for interim status units. These sections require that the double liner and leachate collection systems be protective of human health and the environment. In addition, the interim double-liner standard of section 3004(o)(5)(B) has been codified in these sections. The preamble to the final codification rule discusses in detail the relationship of the requirements of §§ 264.221(c), 264.301(c), 265.221(a), and 265.301(a) to the statutory provisions of HSWA.

It should be noted that the HSWA contain retrofitting requirements for existing surface impoundments that were not included in the final codification rule because the codification rule included only those new provisions of RCRA that became effective in the short term. Although the requirements of section 3005(j) have not been codified in EPA's regulations, the provisions of this section will become effective as a matter of statute. Section 3005(j) requires any surface impoundment that was in existence and operating under interim status on November 8, 1984, to comply with section 3004(o)(1)(A), unless the impoundment qualifies for one of four exemptions set out in section 3005(j). The owner or operator of an existing surface impoundment who wishes to apply for an exemption must submit an application by November 8, 1986.

Proposed rule. The purpose of this proposed rule is to amend the double-liner requirements codified in §§ 264.221(c), 264.301(c), 265.221(a), and 265.301(a) by issuing the rules required by section 3004(o)(5)(A). That section of

RCRA requires that EPA issue regulations or guidance implementing the double-liner system requirements of section 3004(o)(1) by November 8, 1986. Until the effective date of EPA rules issued under section 3004(o)(5)(A), Congress provided that the interim double-liner standard of section 3004(o)(5)(B) could be used to meet the section 3004(o)(1) double-liner system requirement. However, we believe that the bottom-liner design allowed by section 3004(o)(5)(B) is not fully protective of human health and the environment in most cases. Therefore, we are today proposing to amend the final codification rule and supersede the provisions of section 3004(o)(5)(B) by issuing the rules required by section 3004(o)(5)(A).

In a separate action, we plan to make available for comment a technical guidance document that provides guidance on the double-liner standards we are proposing today. We intend to review the comments we receive on the guidance document before we finalize today's proposal. To the extent that comments on the guidance are relevant to today's proposal, we will take them into consideration in developing our final rule on double-liner standards.

As in the past, we believe that in order to protect human health and the environment, the fundamental goal of the regulations is to minimize, to the extent that can be achieved, the migration into the environment of the hazardous components of waste placed in land disposal facilities. One element in EPA's strategy for achieving this goal is a liquids management strategy for land disposal facilities that is intended to minimize leachate generation in the waste management unit and to remove leachate from the waste management unit before it migrates into the subsurface environment. There are two aspects of the liquids management strategy. First, the generation of leachate should be minimized through the use of design controls and operational practices such as a run-on control system capable of preventing flow onto the active portion of the unit, not placing liquid waste or waste containing liquids in landfills, and reducing precipitation infiltration into the active portion of the unit. Current technology cannot completely prevent leachate generation during the active life and post-closure care period. Therefore, the second part is the use of technology to maximize the removal of liquids from the unit before the liquids can migrate into the environment.

The Agency assumes that these units will contain hazardous constituents that will be capable of migrating out of the units. The goal of the liners and leachate collection systems is to prevent migration by collecting and removing leachate before it can migrate during the unit's active life and post-closure care period. The secondary leachate collection system (i.e., the collection system between the top and bottom liners) also acts as a leak detection system for the top liner. This standard, together with the requirements that the final cover provide long-term minimization of the movement of liquid into the closed unit, represents the best way to achieve the overall goal of minimizing the rate and volume of leachate migration in the long term (i.e., beyond the 30-year post-closure care period) through efficient removal of leachate and minimization of infiltration.

The period of performance for liners and leachate collection systems is being extended to the end of the post-closure care period. The July 26, 1982, regulations required a single liner that was designed to prevent migration during the active life of the unit. At the time those regulations were developed, the Agency did not include a specific requirement for the liner to function for the long term. EPA's position was, and still is, that absolute prevention of migration forever, or for the long term, is beyond the current technical state of the art. Thus, at some time, some migration through the liner will probably occur.

We believe that, based on current available information from field studies, evaluation of existing liner installations (both hazardous and nonhazardous uses), and polymer science and technology, flexible membrane liners (FML's) can, in thicker gauges, be expected to function as containment barriers for liquids through the post-closure care period. Field experience to date has revealed that FML's have withstood a minimum of 27 years of exposure to severe environmental conditions (tropical exposure). These materials are still functional today, and, in many cases, exhibit physical properties that are at least 70 percent of the original values. Similar data on 20 years of exposure in a northern climate have shown negligible changes in strength. These data generally represent thinner materials that were available 20 to 25 years ago and have largely been replaced by improved formulations. These upgraded materials were developed to have a longer service life along with improved physical durability and chemical resistance. Improvements in materials and the use of thicker gauges of materials should extend the expected life of FML's beyond that of early materials that are still functioning today. The current Part 264 standards require that the primary leachate collection system (i.e., the leachate collection system above the top liner for landfills) must continue to be operated to collect and remove leachate during the post-closure care period until leachate is no longer detected. We believe that it is important to remove leachate during the post-closure care period because leachate will continue to be generated even after the final cover is installed. Leachate can be generated during the post-closure care period from precipitation infiltration through the final cover, lateral infiltration of ground water if sited in a saturated location, or drainage of liquids that entered the waste while the unit was open. Therefore, the liners must continue to function as originally designed to allow leachate collection and removal. These requirements for liners and leachate collection systems, in conjunction with the final cover, will provide maximum long-term minimization of migration out of the unit. We also believe that operation of the bottom liner and leachate collection system is important so that infiltration of precipitation through the final cover can be detected. This provides a means for EPA to verify whether or not the integrity and effectiveness of the final cover has been affected.

In place of the interim double-liner standard of section 3004(o)(5)(B), we are proposing two designs that we believe meet the double-liner system requirement of section 3004(o)(1) and are protective of human health and the environment. The regulations provide that these are minimum requirements. The following is a discussion of each of these two designs.

The first double-liner system design that we believe is protective of human health and the environment is quite similar to the interim double-liner system described in section 3004(o)(5)(B); however, it also has an important difference, as will be discussed. The terms "operating period" and "postclosure monitoring period," as used in section 3004(o)(5)(B), have been replaced with the terms "active life" and "postclosure care period", respectively, in order to be consistent with the regulatory terms used to describe the different time periods in the life of a unit. The proposed regulations include a top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life of the facility and the post-closure care

period, and a bottom liner designed, operated, and constructed to prevent the migration of any hazardous constituent through the liner during this period. To meet the standard, the top liner must be an FML, while the bottom liner must be a compacted soil material. For design purposes, the post-closure care period can nominally be assumed to be 30 years.

We believe this design is effective in protecting human health and the environment. If there is leakage through the top liner, the bottom liner is designed to contain any waste or leachate not collected and removed by the leachate collection and removal system by not allowing the waste or leachate to migrate out of the liner during the active life and post-closure care period. One disadvantage of the compacted soil liner design, however, is that the leachate that migrates into the liner during the active life and post-closure care period will remain in the soil liner after the post-closure care period and may migrate into the environment after the end of the post-closure care period. The ability of a unit using a compacted soil bottom liner to meet the long-term goal of minimizing migration out of the unit will depend on the compacted soil liner characteristics, the availability of leachate above the soil liner, and other site-specific factors. During and after the post-closure care period, the final cover over the unit is required by existing regulations to minimize infiltration into the closed unit.

We do not believe that the interim bottom-liner design of section 3004(o)(5)(B), i.e., 3 feet of compacted soil material with a hydraulic conductivity of not greater than $1x10^{-7}$ centimeters per second (cm/sec), will, in most cases, meet the bottom-liner performance standard or preventing the migration of any hazardous constituent through it during the active life and post-closure care period.

Thus, rather that the language of section 3004(o)(5)(B), which states that a 3-foot-thick layer of $1x10^{-7}$ cm/sec compacted soil material is *deemed* to meet the bottom-liner performance standard in all cases, we are proposing the 3-foot layer of $1x10^{-7}$ cm/sec compacted soil material as *minimum* characteristics of the bottom liner.

The proposed 3-foot minimum thickness for the bottom liner is approximately the minimum thickness required for construction of a structurally stable liner with uniform hydraulic properties. The minimum thickness of 3 feet provides greater assurance of uniformity in the overall hydraulic conductivity if a constructed liner than do thinner compacted soil liners. Discontinuous areas in a lift can dominate the effective field hydraulic conductivity of a soil liner. A thicker liner with more lifts and good scarification between lifts is not as likely to form a continuous conduit through the entire thickness of a soil liner.

Low permeability compacted soil materials can provide a barrier to significant leachate leakage if properly designed, constructed, and maintained. All low permeability compacted soil liners have a finite hydraulic conductivity. As a physical barrier, low permeability soils have been used successfully in pond liners, dams, and dikes for many years. Past uses generally did not require as stringent control of migration as is needed today for hazardous waste disposal units. However, technical knowledge exists on how to design and construct liners that will not fail due to subsurface subsidence, material loading, desiccation cracking, and other physical problems.

Most compacted soil liners are only partially saturated at the time of placement and become saturated due to the flow of leachate through them. Thus, unsteady-state, unsaturated-flow equations would be appropriate to describe leachate movement during the intial wetting up of the liner. Suction forces induced by capillary tension in unsaturated soil may dominate over gravitational forces. During early stages of wetting of a compacted soil liner, capillary attraction forces will predominate over gravitational forces. As the soil becomes wetter, the capillary forces decrease in importance. When the liner is saturated, capillary forces are negligible in relation to gravitational forces.

The Agency is currently in the process of developing a set of assumptions that will result in calculations of breakthrough times for compacted soil liners that will protect human health and the environment. We have estimated necessary clay liner thickness using assumptions that represent a case of upper liner and leachate collection system failure. Using a computer model (SOILINER 1985) that is currently being developed and has not yet been field tested, we have calculated the breakthrough time for the interim statutory design (i.e., a 3-foot-thick compacted clay liner with a saturated hydraulic conductivity of $1x10^{-7}$ cm/sec). Assuming a constant 1-foot head above the lower liner, breakthrough time predicted by this model is approximately 8 years. Assuming liquid above the lower liner for the entire active life and post-closure care period, such that flow from the overlying landfill or surface impoundment is sufficient to maintain continuous unsaturated impoundment (capillary) flow through the soil liner during that period, a compacted soil liner would need to be at least several time thicker to prevent breakthrough during the 40 years or more most landfills and surface impoundments will be operated, including the post-closure care period.

We believe that even small leaks in the top liner could allow a steady supply of leachate to a portion of the compacted soil liner, resulting in breakthrough in about 11 years. On the other hand, there may be some circumstances, such as location in an arid climate, in which a bottom liner of 3 feet of $1x10^{-7}$ cm/sec compacted soil would be all that is necessary to meet the bottom-liner performance standard.

EPA has published the SOILINER computer model ("Procedures for Modeling Flow Through Clay Liners to Determine Required Liner Thickness," SW–84–001, April 1984). We are updating this model and plan to further evaluate its appropriateness for estimating the thickness requirement or breakthrough time for compacted soil liners. The updated version is scheduled to be noticed for public comment in early 1986.

Breakthrough time may be defined in two ways: (1) On the basis of the movement of moisture in the liner, or (2) on the basis of the movement of constituents in the liner. One method investigated by EPA as a means of indicating breakthrough involves defining "breakthrough" based on a change in the moisture content at the liner base. However, problems associated with this approach limit its applicability. Therefore, methods that require a lesser amount of site-specific information are being reviewed by EPA.

Because we are concerned about the reliability and accuracy of calculations for unsaturated flow through a compacted soil liner, we believe that conservative assumptions should be used in estimating necessary compacted soil-liner thickness. However, we are not yet able to specify what assumptions should be made because we do not have sufficient field data and technical information to determine what failure rate should be associated with the components of the liner system. Therefore, we are requesting comments on what assumptions are appropriate.

For example, what assumptions should be made about top-liner failure? How do the primary and secondary leachate collection and removal systems affect the impingement rate of leachate

to the soil liner? What assumptions should be made about *liquid* impingement *into the unit* during the post-closure care period? What allowance, if any, should be made for attenuation of waste constituents by the soil liner? There is some doubt as to whether soil liners can be routinely and consistently constructed to meet a maximum hydraulic conductivity of 1×10^{-7} cm/sec. What assumptions should be made as to construction capabilities?

The Agency has questions about whether the performance standard for the bottom liner described above (i.e., preventing the migration of any hazardous constituent through the liner during the active life and post-closure care period) is the appropriate standard to achieve the regulatory goal of minimizing the migration rate and volume of hazardous constituents over the long term. We are today proposing to allow compacted soil bottom liners based on a calculation of breakthrough time. We are also considering whether to allow very thick compacted soil bottom liners based on rate of migration calculations. A rate of migration approach would require that we establish an acceptable rate of migration of liquids or hazardous constituents through compacted soil materials. This approach considers the magnitude and volume of leachate migration that may occur over the long term. The Agency is concerned about the lack of precision of breakthrough time estimates and solicits comments on other approaches to assess or predict movement of liquids through compacted soil bottom liners.

The second design that we are proposing today includes a top liner and a composite bottom liner. The proposed regulations provide that the top liner must be designed, operated, and constructed of materials to prevent the migration of any hazardous constituents into such liner during the active life and post-closure care period of the unit. The bottom liner consists of two components that are intended to function as one system, hence, the term "composite" liner. Like the top liner, the upper component of the bottom liner must be designed, operated, and constructed to prevent the migration of any hazardous constituent into this component during the active life and post-closure care period. The lower component of the bottom liner must be designed, operated, and constructed to minimize the migration of any hazardous constituent through the upper component if a breach in the upper component were to occur prior to the end of the post-closure care period.

As stated above, for design purposes, the post-closure care period can nominally be assumed to be 30 years. In order to meet this standard, the top liner will have to be a FML, while the bottom liner should consist of a FML upper component and a compacted soil lower component. The FML and compacted soil layer interface in the bottom liner should be designed to provide contact between the two layers resulting from the overburden load. The compacted soil layer should be a least 90 cm (3 feet) thick. The maximum in-place saturated hydraulic conductivity should be not more than 1×10^{-7} cm/sec.

We believe that this design is effective in protecting human health and the environment because the combination of the two components in the bottom-liner system provides for virtually complete removal of waste or leachate by the leachate collection system if a leak were to occur in the top liner.

Like the first design, the composite design relies on a number of assumptions, including assumptions on how the FML and soil materials will function. Because the characteristics of FML materials can be estimated more reliably than the characteristics of a compacted soil liner, the performance of the composite design can be predicted with more certainty.

The composite design relies on the FML component of the bottom liner to maximize the efficiency of the leachate collection system between the two liners. FML's typically achieve virtually complete rejection of fluids and are thus more effective than compacted soil liners in providing for leachate collection, detection, and removal. Because of this increased efficiency, EPA believes that the compacted soil layer need not be designed to be of sufficient thickness to contain leachate that is not removed (in contrast to the compacted soil bottom liner in the first design). As with the first design, the final cover required by existing regulations will minimize liquid infiltration into the closed unit, thus minimizing long-term migration of constituents out of the bottom liner.

The composite design assumes that current state-of-the-art construction techniques will allow for the construction of a virtually leak-free FML, and that the secondary leachate collection system protects the FML component of the bottom liner from mechanical types of damage that could cause leaks in the top liner. Based on this assumption, liquid should infiltrate into the liner at a much lower rate than if there were no FML component.

We believe that the compacted soil componet will serve as a backup in the event a breach does develop in the FML component of the composite liner. We realize that there is potential for damage (i.e., punctures) to and improper installation (e.g., open seams) of FML's—not uncommon events in the past. However, compacted soil (clay) layers are not subject to the same types of installation and operational problems as FML's. A problem that causes a hole in the FML component probably will not cause the same effect in the compacted soil layer. Hence, if there is a breach in the FML component of the composite liner, this design assumes that the low hydraulic conductivity in the compacted soil layer would reduce the flow through any beaches in the FML (compared to the flow rate through a beach in an FML that is not backed by a low permeability soil layer), thus increasing the effectiveness of the leachate collection, detection, and removal system between the two liners. The compacted soil layer will be effective in this regard only when in direct contact with the overlying FML component.

We believe that hydraulic conductivity is the major factor in determining the leachate rejection efficiency of a soil layer, and the the thickness of the soil layer in most cases is not as important. However, we consider that a minimum thickness is necessary to retain structural stability (prevent cracking, etc.). As noted earlier in the discussion regarding the first proposed design, we consider 3 feet to be a minimum thickness for stability of compacted soil liners. The characteristics of compacted soil liners vary and certain types may require greater thickness to provide the needed stability.

The Agency realizes that, depending upon the assumptions that are made about failure of the liner system components (see the earlier discussion regarding assumptions for compacted soil liner thickness), breakthough may occur before the end of the post-closure care period. However, liquid infiltration into the composite liner should be minimal because, in contrast to a compacted soil bottom liner, liquid should flow into the soil layer of the composite liner only through the small areas where the FML component has been breached. Hence, although there may be some migration out of the liner under certain failure conditions, we believe that the design will minimize migration.

In order to meet either of the two proposed designs, the proposed regulations require that both the top and

bottom liners be chemically resistant to the waste and leachate managed at the unit and be constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure through the post-closure care period, due to factors including pressure gradients, climatic conditions, and the stresses of construction and operation. The liners must be placed upon materials capable of supporting the combined load of the liner, waste, and cover. Both liners must be installed to cover all surrounding earth likely to be in contact with the waste of leachate. These proposed liner construction and installation requirements are identical to those already required for single-liner systems.

Under either of the two proposed designs, the leachate collection system between the liners must be designed, constructed, maintained, and operated to detect, collect, and remove liquids that may leak through any area of the top liner during the active life and post-closure care period. In order to accomplish this objective, the leachate detection, collection, and removal system between the liners must cover the sidewalls as well as the bottom of the unit.

For landfills, the proposed rule requires that the primary leachate collection system immediately above the top liner be designed, constructed, maintained, and operated to collect and remove leachate from the landfill during the active life and post-closure care period. The leachate collection systems above (for landfills) and between (for both landfills and surface impoundments) must be constructed of materials that can withstand the chemical attack from wastes or leachates and the stresses and disturbances from overlying wastes and operating practices. The proposed rule also requires that leachate collection systems be designed and operated to function without clogging through the active life and post-closure care period. The proposed leachate collection system construction requirements are similar to those already required for the leachate collection system above the liner for single lined landfills under § 264.301(a)(2). In contrast to the existing § 264.301(a)(2), however, the proposed standards require that the leachate collection systems be operated through the end of the post-closure care period.

In addition to the proposed changes to Parts 264 and 265, we are also proposing to amend Part 270 by adding requirements for submission of information in the Part B permit application on the liners and leachate collection systems for surface impoundments and landfills subject to the requirements of §§ 264.221(c) and 264.301(c). The proposed amendments to the Part 270 information requirements for surface impoundments are contained in § 270.17(b)(1), and for landfills in § 270.21(b)(1).

The Agency has performed risk analyses in an effort to determine the effectiveness of various double-liner and leachate collection system designs. Although some of the general findings of these analyses are mentioned below, detailed documentation can be found in the regulatory support documents for this rule. As noted earlier, in the discussions of the ability of the two proposed double-liner designs to minimize the migration of hazardous constituents out of the bottom liner, numerous assumptions must be made in any quantified analysis of the performance of various liner and leachate collection system designs.

Under certain assumptions, such as an analysis using: (1) Low failure rates for top liners, (2) the actual number of people using ground water as a drinking water source downgradient from existing hazardous waste landfills and surface impoundments (as best we can determine this), and (3) the actual distances downgradient from existing facilities to drinking water wells (again, as best we can determine), the absolute risk reduction of any liner and leachate collection system design, and the relative differences in risk reduction between various designs, are both very small. Therefore, the use of such assumptions results in a conclusion that requiring double-liner systems that are more stringent than the interim statutory double-liner design of section 3004(o)(5)(B) (i.e., a design that includes a bottom liner of 3 feet of clay having a hydraulic conductivity of no more than 1×10^{-7} cm/sec) may not result in significant human health benefits.

On the other hand, using other assumptions, such as: (1) Moderate to high failure rates for top liners, (2) an increase in the population using drinking water from wells downgradient of facilities, and (3) the placement of wells closer to the facilities, results in significant absolute risk reduction for many liner systems, and in larger relative differences in risk reduction between liner designs. Hence, replacing the interim statutory design, which includes a bottom liner of 3 feet of compacted clay, with other double-liner system designs, such as the proposed design that includes a composite bottom liner, could result in significant human health benefits.

Based on presently available information, the Agency does not view liner systems as the primary means of controlling the migration of hazardous constituents in the longterm. The Agency continues to believe that liners are best used to facilitate the collection and removal of leachate (47 FR 32284, July 26, 1982). Since the function of liner systems, then, is relatively short-term in nature, as opposed to providing protection for many decades or even hundreds of years, the effectiveness of liners is overshadowed by other factors in an analysis of long-term risk reduction. These other factors include: (1) The nature of the location of the unit with respect to climate, hydrogeology, and population, (2) the nature of the waste in the unit, and (3) the long-term performance of the final cover that is placed over the unit at closure.

The Agency is developing regulatory programs in each of these three areas. At the time that we promulgate rules in these additional areas, we may re-examine the need for liner designs that are more stringent than the interim statutory double-liner design of section 3004(o)(5)(B). For example, in the development of location standards, we might find that it is appropriate in certain locations to allow the use of the interim statutory design rather than require a design having a thick clay bottom liner or a composite bottom liner. In addition, in the development of restrictions on waste types that may be land disposed, we may find that the use of the interim statutory double-liner system is adequate for wastes that are not banned from land disposal. We are also looking at what variations in double-liner design might be appropriate when alternative final-cover designs are utilized.

The Agency is interested in comments on the interrelationship of engineering-, location-, and waste-related factors in determining the risk presented by hazardous waste landfills and surface impoundments. Should the Agency be considering tradeoffs in facility design based upon site-specific factors? Specifically, under what final cover, location, and waste-type conditions may the interim statutory design of section 3004(o)(5)(B) be appropriate? To what extent can such "tailoring" of requirements be achieved on the national and local levels? How implementable is such a "tailoring" approach to the permitting of landfills and surface impoundments?

Issues. One issue that we would like to raise for comment concerns the

provision in section 3015(b)(2) of the new statute, which calls for the owner of operator of an interim-status landfill or surface impoundment unit subject to the minimum technological requirements of section 3015(b)(1) to notify the Administrator "at least" 60 days prior to receiving waste at the unit. Section 3015(b)(1) applies to units that first receive waste after November 8, 1984. Owners or operators of these units must comply with the notice requirement.

We are concerned that notice 60 days prior to receipt of waste may not allow sufficient time to review, verify, and inspect (if necessary), a facility's compliance with the minimum technological requirements. We are considering additional notice requirements to increase our ability to oversee installation of liners and leachate collection systems at interim-status facilities. One option is to extend the notification to 120 days prior to receiving waste in order to allow more review time. Another possibility is to revise the notice provision to require notice 60 days (or some other reasonable time) prior to construction.

A second issue involves the use of a composite liner in place of an FML as the top liner. EPA is aware of a number of new landfill unit designs that include a top composite liner (FML/compacted low permeability soil liner). We realize that a compacted low permeability soil component below the FML top liner can increase the collection and removal efficiency of the primary leachate collection system if leaks develop. However, we are interested in comments on whether all types and thicknesses of composite top liners are protective of human health and the environment. What are the advantages and disadvantages of having a lower soil component below the FML? We are interested in comments assessing the effect of a composite top liner on the function of the other components of the system and on the ability of the liner system as a whole the achieve the regulatory goal of minimizing migration.

The secondary leachate collection system will detect liquids that migrate through the composite top liner but will not detect liquids migrating into the composite liner. This means that a breach in the top synthetic component will not be detected until liquids have migrated through the low permeability soil component and appear in the secondary leachate collection system. Increasing the thickness of the soil component increases the time necessary to determine the rate of migration through a top composite liner. Therefore, we are considering limiting the thickness of the lower soil component in a top composite liner to that necessary to provide structural stability and uniform hydraulic properties (e.g., approximately 3 feet) and construction techniques. We are also considering whether the use of a top composite liner necessitates the use of a bottom liner of the same design. We solicit comment on whether the bottom liner should have hydraulic properties as or more restrictive than those of the top liner in order for the secondary leachate detection, collection, and removal system to function adequately.

A third major issue raised by the new technological requirements concerns the consequences of finding leachate in the secondary leachate collection system between the liners and the determination of what is an unacceptable amount of leachate or hazardous constituents contained therein. The HSWA require a leachate collection system between the liners for both surface impoundments and landfills, but the statute does not answer the question of what action, if any, should be taken if liquid appears in the leachate collection system between the liners at any time during the active life or the post-closure care period. If unacceptable amounts of leachate or hazardous constitutents are detected, one option is to promulgate a rule requiring the owner or operator to either repair or retrofit the liner, or to close the unit if the unit was not already in the post-closure care period. This option would likely have significantly greater impact on owners and operators of landfills than those owning or operating surface impoundments. Another option would be to require the owners or operators to simply remove the liquid or accelerate the frequency of ground-water monitoring.

A fourth major issue relates to the requirements under the good faith provision of section 3015(b)(3) of the HWSA. The provision states that the the owner or operator of a surface impoundment or landfill who installs liners and a leachate collection system pursuant to the requirements of section 3015, and in good faith compliance with EPA regulations and guidance documents governing liners and leachate collection systems, shall not be required to install a different liner or leachate collection system at the time that the facility receives its first permit, except that the Administrator may require installation of a new liner at the time of permit issuance if he has reason to believe that the liner installed during interim status is leaking.

The statute does not define the term "leaking" for purposes of section 3015(b)(3). EPA believes that this is a significant issue and intends to discuss options for defining the term "leaking" in an upcoming proposed regulation on leak detection systems under section 3004(o)(4). This regulation is scheduled for proposal in the **Federal Register** later this year.

A fifth issue concerns the definition of the term "compacted soil material." EPA has a significant amount of information on the characteristics, chemical compatibility, design, construction, and operational performance of clay liners, along with some information on bentonite admixtures. Other amended soil materials containing man-made products or natural materials, such as soil cement, lime/soil mixtures, soil asphalt, or fly ash/soil mixtures, have ben proposed as liner materials at hazardous waste land disposal facilities. However, EPA has little information as to the performance of these other materials when used as liners at hazardous waste facilities. We are interested in comments on what materials should be included within the term "compacted soil material" for use as a bottom liner (or a portion of a bottom liner) in our regulations implementing the minimum technological requirements.

2. Variance From Double-Liner System—Final Codification Rule.

Section 3004(o)(2) of the HSWA allow the owner or operator of a landfill or surface impoundment to obtain an exemption from the requirements for liners and leachate collection systems set out in section 3004(o)(1)(A). The owner or operator must demonstrate that alternative design and operating practices, together with location characteristics, will prevent the migration of any hazardous constituent into ground water or surface water at least as effectively as the proposed liners and leachate collection system. Section 3004(o)(3) exempts certain monofills from the double-liner reguirement.

The final codification rule adds paragraphs (d) and (e) to § 264.221 incorporating these variances into the surface impoundment standards. Similarly, § 264.301(d) and (e) are added to incorporate the statutory variance into the design standards for landfills.

Proposed rule. We are today proposing to amend § 270.17(b)(1) by adding general language requiring surface impoundment applicants who apply for the varience in § 264.221(d) or (e) to submt appropriate information.

Similarly, § 270.21(b)(1) is proposed to be amended by adding the same general language for landfills. We are interested in comments on what performance criteria the Agency should use to evaluate applications for variances from the double-liner requirements and what type of information should be submitted by applicants.

Issues. We have construed the statute to allow interim status facilities to apply for the variance from the double-liner requirement. (See the discussion in the preamble to the final codification rule.) This raises several issues. The first is whether the variance should be self-implementing during interim status or whether there should be a procedure for the Regional Administrator to grant the variance on a case-by-case basis. The legislative history accompanying the variance suggests that some form of demonstration is required, because the variances were not intended to be self-implementing (S. Rep. No. 284, 98th Cong., 1st Sess. 26 (1983)).

A second issue is what procedures should be used if the Regional Administrator reviews the variances. Should we follow a procedure analogous to those used for permitting (Part 124), or should a procedure similar to that used for closure plans during interim status (§ 265.112) be used? Until we develop specific requirements on this point, owners or operators seeking the variance should seek approval on a case-by-case basis from the Regional Administrator. We believe this approach is consistent with the statutory language in sections 3004(o)(2) and (3), which refers to "findings" or "waivers" made by the Administrator to allow the variances.

3. Variance From Ground-Water Monitoring—Final Codification Rule

The HSWA introduce a new variance from ground-water monitoring requirements for engineered structures that meet certain requirements. Specifically, the variance applies to an engineered structure that: (1) Does not receive or contain liquid waste (or waste containing free liquids), (2) is designed and operated to exclude liquid from precipitation or other runoff, (3) has multiple leak detection systems within the outer layer of containment that are operated throughout the life of the unit, including the closure and post-closure care periods, and (4) prevents the migration of hazardous constituents beyond the outer layer of containment prior to the end of the post-closure care period. Section 264.90(b) of the existing regulations has been amended to incorporate this new ground-water monitoring waiver. This requirement is codified at § 264.90(b)(2)(v).

Issue. The legislative history provides that leachate collection systems must be built into each internal containment layer. The statutory language, on the other hand, refers only to leak detection systems. We are considering developing a regulation that would require the installation of leachate collection systems at each internal containment layer and seek public comment on the advisability of this approach.

C. Corrective Action Requirements

1. Permit Application Requirements—Final Codification Rule

The HSWA amend section 3004 of the RCRA by adding paragraph (u) governing releases at permitted facilities. The new subsection provides that any permit issued after November 8, 1984, must require corrective action for releases of hazardous waste or constituents from any solid waste management unit, regardless of when waste was placed at such unit. The provision, which is codified in §§ 264.90 and 264.101, applies to any solid waste management unit, including an inactive unit, at any treatment, storage, or disposal facility seeking a permit under Subtitle C of the RCRA.

The preamble to the final codification rule identifies the types of units and facilities potentially subject to the corrective action requirement and defines the basic terms and concepts that establish the jurisdiction of the provision, including the definitions of "facility," "release," and "solid waste management unit." It also explains that the concept of protection of human health and the environment will be applied as the benchmark for requiring corrective action.

Proposed rule. We are proposing to amend the existing Part B permit application requirements of § 270.14 by adding a separate provision (paragraph (d)) concerning solid waste management units at facilities seeking a RCRA permit. The new provision requires owners and operators of such units to provide two types of information. First, it requires descriptive information on the unit itself (e.g., location, dimensions, type of unit, etc.). Second, it calls for the submission of all available information pertaining to any release from the unit. Some of the information required under § 270.14(d) for solid waste management units is also required to be submitted for hazardous waste units under other sections of Part 270 (e.g., § 270.14(b)(19) requires the owner or operator to identify on a topographic map the location of hazardous waste). It is unnecessary to submit information under § 270.14(d) if the same information has been submitted under another provision of Part 270. Note, however, that some information under proposed § 270.14(d) is not required of hazardous waste management units under the existing regulations, and thus must be submitted for these units as well as for solid waste management units.

Issues. In order to implement corrective action requirements the Agency must first make a determination as to the existence or likelihood that there is or has been a release. This determination evolves from an assessment of available information about the facility and from a subsequent preliminary investigation of the site. The Preliminary Assessment/Site Investigation (PA/SI) approach to identifying existing and potential releases at RCRA facilities is similar to that conducted by Superfund. The PA/SI will be utilized to determine if there is or has been (or it is likely that there is or has been) a release to the environment, as well as to determine what subsequent investigations may be necessary to further identify and characterize the release. Subsequent investigations may be various levels of remedial investigations at one or more units. These investigations will be conducted by the owner/operator under a permitted schedule of compliance, or under enforcement authorities, such as section 3008(h) or section 3013 orders.

The RCRA PA/SI process will differ from the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) process in several respects. For example, the burden of responsibility upon a facility owner or operator is greater under RCRA. Owner/operators will, under this proposed rule, be required to perform the sampling and analysis parts of the PA/SI under the direction of EPA.

2. Cleanup Beyond the Facility Boundary—Proposed Rule

Section 3004(v) of the HSWA require EPA to amend its regulations to impose upon owners and operators of hazardous waste treatment, storage, and disposal facilities the obligation to clean up any contamination that has migrated beyond the facility boundary. Specifically, this provision requires that the owner or operator institute corrective action beyond the facility boundary where necessary to protect human health and the environment, unless the owner or operator demonstrates to EPA that, despite the owner's or operator's best efforts, he is

unable to obtain the necessary permission to undertake such action. This provision applies to all facilities, including facilities containing landfills, surface impoundments, and waste piles that are embraced by the new definition of "regulated unit" (i.e., units receiving waste after July 26, 1982).

The existing corrective action regulations for "regulated units" and solid waste management units include the requirement for financial assurance to complete the corrective action. This rule will clarify that this requirement also extends to corrective action beyond the facility boundary.

We are proposing to add §§ 264.100(e) and 264.101(c) to the current regulations to reflect this new requirement. The two provisions essentially repeat the statutory language in section 3004(v). Section 264.100(e) applies the requirement to regulated units; § 264.101(c) applies it to solid waste management units.

Issues. We are soliciting comment on the appropriate construction to be given to the requirement that the owners or operators exercise their "best efforts" to obtain permission from adjacent landowners to conduct corrective action measures on adjoining land. Specifically, how are "best efforts" to be defined? What kind of documentation, if any, should we require as evidence of this effort? What kind of corrective action measures should be taken on-site if permission to extend corrective action measures is denied? Should we impose on-site corrective action measures that seek, through modification of the hydraulic gradient, to cause off-site contamination to migrate back on-site? Is such hydraulic modification feasible in all cases? Some cases? Alternatively, should the owner or operator who is denied permission to clean up off-site, and who cannot reverse the process of contamination through any other means, be required to purchase the water rights in areas where the ground water has been degraded by contamination from his site? What kind of off-site corrective measures are appropriate for releases to air, surface water, or soils?

3. Injection Wells With Permits-by-Rule—Final Codification Rule

The final codification rule clarified that a UIC permit issued to a Class I hazardous waste injection well after November 8, 1984, no longer is a RCRA permit-by-rule until corrective action requirements are imposed consistent with 40 CFR 264.101 (50 FR 28752 [amending 40 CFR 270.60(b)]). Therefore, in order for such a well without a RCRA permit-by-rule to be authorized under RCRA, it must retain its interim status (see 50 FR 38946, September 25, 1985, regarding Class I well interim status requirements). Once a Class I well injecting hazardous waste receives and complies with a UIC permit, complies with § 144.14, and complies with the corrective action requirements in § 264.101, the well's Class I permit becomes a RCRA permit-by-rule. We are proposing the following amendment.

Proposed rule—Information Requirements—§ 144.31(g). The Agency proposes to add certain information requirements to the permit application regulation for Class I hazardous waste injection wells. This amendment would require the applicant to provide information on the dates the well was operated, and to provide all available information on all wastes that have been injected into the well. In addition, the applicant must submit all available information on any known or likely release from any active hazardous waste injection well at the facility. The applicant may be required to submit such information for other solid waste management units if it is determined that the information is needed to protect human health and the environment. Finally, the applicant must conduct investigations at the facility as necessary to determine whether a release of hazardous waste from an active injection well is occurring, has occurred, or is likely to have occurred.

Corrective Action—§ 144.56. The Agency also proposes to impose the corrective action requirements for releases of hazardous waste or constituents from active injection wells through the UIC permit. Corrective action for such releases which go beyond the facility property boundary will also be required, unless specified conditions are met. Completion or corrective action for releases from other units at the facility generally will be addressed through the facility's final RCRA permit, or may be addressed through corrective action orders issued under section 3008. Until the entire facility has been addressed pursuant to section 3004(u), the injection well must maintain its interim status, even if it has obtained a UIC permit (see § 270.60(b) as amended July 15, 1985). The corrective action requirements for the well itself may be imposed pursuant to 40 CFR §§ 144.52(a)(9), 144.56, and HSWA, and are more stringent interim status requirements until incorporated into a RCRA permit or permit-by-rule (see § 144.1(a) UIC requirements for hazardous waste injection promulgated pursuant to RCRA as well as the Safe Drinking Water Act (SDWA).

Interim Status—§ 144.1(h). The Agency also proposes an amendment to the UIC regulations to clarify interim status requirements for Class I injection wells that inject hazardous waste. A Class I well injecting hazardous waste that had interim status before the HSWA were enacted does not lose its interim status under EPA rules simply because it was issued a UIC permit. As indicated above under EPA rules, a UIC permit issued after November 8, 1984, is not a RCRA permit-by-rule until corrective action requirements are imposed for all units at the facility (see § 270.60(b) as amended July 15, 1985). Thus, under EPA rules, a well's interim status terminates upon issuance of a RCRA permit or a RCRA permit-by-rule, not simply upon issuance of a UIC permit alone (see § 270.73). Until a well receives its RCRA permit or RCRA permit-by-rule, it must comply with the applicable interim status requirements imposed by §§ 265.1(c)(2) and 265.430, and Parts 144, 146, and 147 (and by the UIC permit). See § 144.1(a) (UIC rules adopted, insofar as they relate to hazardous waste, pursuant to RCRA).

Issues. The injection well provisions proposed here raise issues similar to those raised by the parallel information requirement and corrective action standards and requirements proposed for disposal units other than injection wells. We solicit, therefore, comments on those requirements insofar as they relate to injection wells. Specifically, the Agency is considering amending the RCRA permit-by-rule regulations (40 CFR 270.60) to include a requirement that the same information on solid waste management units that is proposed under § 270.14(d) for RCRA permits also be required to be submitted by owners/operators of UIC facilities in order to obtain a permit-by-rule. The Agency also solicits comment on what corrective action, if any, is necessary or feasible if a release from an injection well were to contaminate an aquifer underlying the surficial aquifer, or a very deep aquifer that still meets the definition of "underground source of drinking water" in § 144.3.

D. Permits

1. Permit Modifications/Application—Proposed Rule.

The recent statutory amendments to section 3005(c) provide the Agency with broad authority to modify RCRA permits. However, the current regulations concerning permit modifications only allow permits to be modified during their terms for specified causes, as set forth in §§ 270.41 and 270.42. Currently, permits may be modified because of new amendments

only if the permittee requests such modification (§ 270.41(a)(3)).

On February 8, 1983, we proposed to amend this provision to allow EPA as well as the permittee to initiate a permit modification when the standards or regulations on which the permit is based have been changed (48 FR 5872). This proposal accompanied a proposed amendment to the permit duration regulation that would allow lifetime permits. In the preamble, the Agency noted that the purpose of the proposed permit modification amendment was to create a mechanism to bring facilities into compliance with regulations promulgated after issuance of the lifetime permit.

As stated in the final codification rule, the Agency is unable to promulgate the lifetime permit provision because it is inconsistent with the amendment to section 3005, which provides a maximum 10-year life for RCRA permits.

However, we consider the February 8, 1983, proposed permit modification revision to be consistent with congressional intent to grant the Administrator broad authority to modify RCRA permits. Many regulatory amendments will be necessitated by the new statutory amendments. These regulatory amendments will in many instances affect the standards on which the permit was based. In order to reflect these amendments in the permit we are today proposing a new amendment to § 270.41(a)(3) allowing the Agency to initiate modifications to a permit, without first receiving a request from the permittee, if statutory changes or new or amended standards affect the basis of the permit. In addition, EPA has the authority to issue a permit addressing the HSWA requirements, which will be combined with a post-HSWA, State-issued permit. Such issuance may be necessary to address provisions of the HSWA, e.g., corrective action, which were not needed at the time of the initial permit issuance.

2. Permit as a Shield Provision—Proposed Rule.

The HSWA, in several instances, provide that certain requirements apply to facilities that may have RCRA permits, e.g., land disposal ban on bulk or noncontainerized liquids. These provisions are self-implementing, which means that permitted facilities are required to comply with these requirements regardless of their current permit provisions. However, § 270.4 currently provides that compliance with a RCFA permit constitutes compliance, for purposes of enforcement, with Subtitle C of RCRA. The § 270.4 "permit as a shield" provisions are inconsistent with the requirement in HSWA that permitted facilities meet certain statutory requirements. Accordingly, the Agency is today proposing to amend § 270.4(a). The amendment limits the scope of the permit as a shield provision to the extent that the facility is not in compliance with the following: (1) Requirements that go into effect by statute, or (2) regulations promulgated under Part 268 restricting the placement of hazardous wastes in or on the land. The shield would apply to those permits which have incorporated these requirements.

Examples of requirements going into effect by statute include bans on disposal of bulk liquids in salt-dome formations, bans on land disposal of solvents and dioxins, and bans on land disposal and storage of wastes for which the Administrator has failed to make a determination in accordance with section 3004(g). Regulations promulgated under Part 268 include the regulations implementing restrictions on land disposal and storage of hazardous wastes in accordance with sections 3004(d–g) and (j), and treatment standards for wastes being restricted from land disposal in accordance with section 3004(m).

3. Permit Conditions as Necessary To Protect Human Health and the Environment—Final Codification Rule

In enacting the HSWA, Congress amended section 3005(c) to provide that each RCRA permit contain such terms as the Administrator (or the State) determines necessary to protect human health and the environment. The Agency codified this new requirement in § 270.32(b).

Proposed rule. We are today proposing to amend § 270.10, which specifies the application requirements for hazardous waste management facilities, by adding a new paragraph (k). Section 270.10(k) provides that when it is or may be necessary to issue permits containing conditions necessary to protect human health and the environment, the Administrator has the authority to require information concerning such conditions from the permit applicant or permittee. We believe that such information-gathering authority is necessary to enable EPA to draft these conditions.

The language is § 270.32(b) gives the Agency a new tool to ensure that permits issued to hazardous waste management facilities can be tailored to meet the environmental circumstances unique to that facility. The provision will enable EPA to address specific environmental problems that are not adequately covered in our regulations. We recognize, however, that this tool must be wielded carefully. We plan to issue guidance on this provision of the new law and solicit comments on the considerations that should be addressed by this guidance.

4. Post-Closure Permits—Final Codification Rule

Section 3005(i) provides that ground-water monitoring and corrective action requirements applicable to permitted land disposal units (the requirements of Subpart F of Part 264) apply to any landfill, surface impoundment, waste pile, or land treatment unit that received hazardous waste after July 26, 1982. The legislative history shows that Congress clearly intended this provision to override an existing regulation that subjected such units to these requirements only if they received waste after January 26, 1983. Consequently, in the final codification rule, EPA amended this regulation by inserting the earlier date. Section 264.90(a) now applies monitoring and corrective action requirements to permitted landfills, surface impoundments, waste piles, and land treatment units that received waste after July 26, 1982.

Proposed rule. EPA has no means of implementing the Part 264 Subpart F standards for certain units that received wastes after July 26, 1982. This problem is caused by two gaps in the permit requirements codified at 40 CFR 270.1(c). EPA is proposing today to amend this provision to eliminate these gaps.

Section 270.1(c) requires permits for all operating hazardous waste management units. It also requires "post-closure" permits for non-operating units, but limits this requirement to units that closed after January 26, 1983. Because of this effective date, a unit that closed between July 26, 1982 and January 26, 1983, might be subject to the Subpart F standards, but would not be required to obtain an RCRA permit to implement these standards. As EPA explained in the preamble to the permitting regulations, and as Congress recognized in the legislative history of section 3008(h), EPA designed the Subpart F requirements for the extensive interaction between owners/operators and EPA that the permit process provides (see 47 FR 32336, July 26, 1982; Conference Report, H. Rep. 98–1133, 98th Cong., 2d Sess. at 110–111, 1984). It would be extremely difficult to apply Subpart F without a permit-type mechanism. In fact, EPA chose January 26, 1983, as the starting point for the post-closure permit requirement to parallel the starting date for the Subpart F requirements (47 FR 32336, July 26,

1982). EPA is today proposing to revise § 270.1(c) to incorporate the earlier starting date recently added to § 264.90(a). Landfills, surface impoundments, waste piles, and land treatment units that receive waste after July 26, 1982, will be subject to post-closure permits.

This change will once again establish parallel effective dates for the Subpart F and permitting requirements.

This change to the earlier date, however, will not completely close the implementation gap. Section 270.1(c) can be read to exclude from post-closure permit requirements certain units that meet requirements for closure by removal under the Part 265 interim status regulations. For example, § 265.228(b) exempts a surface impoundment from post-closure requirements if it can demonstrate that none of the materials remaining (e.g., standing liquids, waste and waste residues, the liner [if any], and underlying and surrounding contaminated soil) are "hazardous wastes." A material that no longer meets the regulatory definition of "hazardous waste" may, however, still contain hazardous constituents listed in Appendix VIII of Part 261. Consequently, a unit that closes by removal under Part 265 might still have contamination that would subject it to the Part 264 Subpart F standards for ground-water monitoring or corrective action if it were issued a permit. The owner/operator of such a unit, however, might assert that the § 270.1(c) requirement for a post-closure permit would not apply as currently written, arguing either that § 270.1(c) can be interpreted as requiring post-closure permits only for units with formal post-closure care responsibilities, or that § 270.1(c) simply does not apply to a unit that no longer manages "hazardous waste."

As explained above in the discussion of the first regulatory gap, implementation of Part 264 Subpart F standards is extraordinarily difficult at units not subject to permit requirements. EPA believes that this potential gap in the applicability of the permit requirements in § 270.1(c) is inconsistent with the plain language of section 3005(i), which requires "any" landfill, surface impoundment, waste pile, or land treatment unit that accepts waste after July 26, 1982, to meet applicable Part 264 Subpart F requirements. It is also inconsistent with the purpose of section 3005(i), which is to prevent future Superfund sites (H. Rep. 98-198, 98th Cong., 1st Sess. at 45, 1983). EPA believes that Congress intended *all* landfills, surface impoundments, waste piles, and land treatment units that accepted wastes after July 26, 1982, to meet the applicable Part 264 Subpart F requirements, regardless of whether they satisfy interim status closure or post-closure requirements. Accordingly, EPA is proposing to amend § 270.1(c) to clarify that, for regulated units, closure under interim status does not provide any exemption from the requirement to obtain a permit implementing applicable Part 264 Subpart F ground-water monitoring and corrective action standards.

EPA, however, recognizes that not all permitted units are subject to the requirements of Part 264 Subpart F after completing closure. Specifically, surface impoundments and waste piles are exempt from all post-closure requirements under §§ 264.228 and 264.258 if the owner or operator closes by removing or decontaminating all waste residues, contaminated containment system components (liners, etc.), contaminated subsoils, structures, and equipment contaminated with waste and leachate. Likewise, land treatment units are exempt from Part 264 Subpart F if the owner/operator demonstrates that no hazardous constituents have migrated beyond the treatment zone during the unit's active life and that there are no hazardous constituents in the treatment zone above background at the time of closure under § 264.280(e).

Since section 3005(i) subjects interim status-regulated units only to those Subpart F standards "which are applicable" to new permitted units, and since Part 264 Subpart F requirements are not applicable to new permitted units that close under §§ 264.228, 264.258, or 264.280(e), section 3005(i) imposes Subpart F requirements only upon interim-status units that fail to satisfy the requirements of closure by removal or decontamination in §§ 264.228, 264.258, or 264.280(e). By proposing to amend § 270.1(c), EPA will require post-closure permits for all such regulated units as the most satisfactory means of implementing applicable Part 264 standards, including the Subpart F ground-water monitoring and corrective action standards at units that close before they obtain operating permits (45 FR 33198, May 19, 1980; 47 FR 32336, July 26, 1982).

EPA is currently considering two options for determining whether an interim status unit has satisfied the Part 264 closure by removal standards or, alternatively, will require a post-closure permit implementing Part 264 Subpart F and other post-closure requirements. Under the first, EPA would require owners/operators to apply for post-closure permits for all regulated units. In the permit application, the owners/operators could present soil and ground-water data demonstrating that they have already met the applicable closure by removal standard and are thus exempt from the Part 264 ground-water monitoring and corrective action standards. [The owner/operator may have met the standard when closing under Part 265 or as a result of an enforcement action; e.g., pursuant to section 3008(h).] The Regional Administrator would then have the discretion to decline to issue a permit. The other option would consist of developing a process for submitting and evaluating information outside of the permit process. The owner/operator would then be able to choose between applying for a post-closure permit or submitting an "equivalency" demonstration. EPA is not proposing specific regulatory language at this time but solicits comment on the general "equivalency" concept and the two options for implementation.

IV. Regulatory Analysis

A. Regulatory Impact Analysis

Executive Order 12291 requires each Federal agency to determine if a regulation is a "major" rule as defined by the order and "to the extent permitted by law," to prepare and consider a Regulatory Impact Analysis (RIA) in connection with every major rule. The order further requires that a preliminary RIA be transmitted to the Office of Management and Budget (OMB) at least 60 days before publication of a notice of proposed rulemaking. We have determined that this proposal is a major rule. However we have not prepared a preliminary RIA because OMB has agreed to waive the requirement for the proposed rule. We will address the cost impacts and effectiveness of this rule when we issue it as a final rule.

Although we did not prepare a preliminary RIA, we have developed some preliminary estimates for the range of costs that the proposed rule may impose on hazardous and solid waste management units of various kinds and sizes, and for the total costs of the regulations. We estimated lowerbound, upperbound, and most likely estimates for the provisions in the proposed rule that impose significant costs. The costs of the individual provisions were then aggregated to develop total cost estimates. Our general approach for estimating the

costs is described in the preamble to the final codification rule. Presented below is preliminary costs information for the provisions of the proposed rule that impose significant incremental costs over the final codification rule.

1. Double-Liner System.

The proposed rule replaces the statutory interim design standard in the final rule with two performance-based, double-liner systems. The costs reported here reflect only one of the options, i.e., a double-liner system with a synthetic liner on the top and a composite synthetic/clay liner on the bottom. Thus, the cost of the proposed rule is the incremental cost of installing a "composite" double-liner system rather than the statutory interim design. See the preamble to the final rule for a description of the number of facilites subject to the double-liner requirement.

Landfills. The first-year unit cost ranges from $12,300 for the smallest landfills to $396,000 for the largest. On a per-ton basis, the incremental first-year cost is $19/Mt for the smallest landfills and just over $2/Mt for the largest landfills. These cost estimates assume that the clay for the liner is available on-site. If this were not the case, the costs would be larger, ranging from 12 to 53 percent more than those calculated, depending on facility size.

The first-year cost for all 199 landfills is $13.7 million; the estimate is the same for the lower and upper bounds. The annualized costs are $14.3 million.

Surface Impoundments. The annualized costs of complying with the proposed liner system instead of the interim statutory liner vary from $2,500 for the smallest impoundments to just under $40,000 for the largest. The annualized incremental cost per ton is less than $1 for all unit sizes.

The total annualized cost of the surface impoundment provision is $1.5 million and is the same for the lower and upper bounds.

Total Costs. The first-year costs are all from landfills and equal $13.7 million in both the lowerbound and upperbound estimates. The annualized cost of the provision is $15.9 million.

2. Cleanup Beyond the Facility Boundary

The proposed rule expands the requirement to take corrective action from releases occurring within, to releases extending beyond the facility property boundary. The costs presented in this section reflect the incremental costs to actually conduct the corrective action beyond that required in the final codification rule. The costs of meeting a financial responsibility test for the incremental expenditures that result from cleaning up larger plumes are presented in the next section.

We developed estimates of the incremental corrective action costs for two populations of waste management units: (1) Hazardous waste land disposal units, and (2) solid waste management units at Subtitle C facilities. The unit costs of corrective action for both populations are based on counterpumping and treating contaminated ground water. We assumed that the mean length of the plumes that are cleaned up is 2000 feet and that the mean distance from the waste management units to the facility boundary is 500 feet. Thus, the incremental cost of the proposed rule is based on cleaning up the additional 1500 feet of plume beyond the facility boundary for the population of facilities affected by the rule.

Hazardous Waste Land Disposal Units. The size of the affected population will depend on the number of land disposal units that are leaking. To account for this uncertainty, we developed low, most likely, and high population estimates of the number of leaking land disposal units at a facility. The lowerbound estimate assumes that all facilities with land disposal units must take corrective action beyond the boundary, but that corrective action will not be required until the end of the operating life of the units, i.e., in 20 years. We further assumed there are no releases from facilities in arid climates and that facilities granted Alternative Concentration Limits (ACL's) under § 264.94 are exempt from the requirements. We assumed that 10 percent of the land disposal facilities are in arid climates and that ACL's will be granted to an additional 10 percent of the land disposal facilities.

The upperbound estimate assumes that releases are detected immediately at all land disposal units, and corrective action beyond the boundary must begin immediately. The most likely population estimate is an average of the upper and lower bounds; 90 percent of the facilities have releases from land disposal units, which are detected over the next 20 years.

The "first"-year lowerbound costs for land disposal units occur in year 20 and have a present value of $70,000 per unit. The annualized present value of the costs starting in year 20 is $30,000 per unit. If corrective action begins immediately as it does in the upper bounds, the rule imposes a first-year cost of $127,000 per unit and an annualized cost of $55,000.

Solid Waste Management Units. The assumptions we used to estimate the number of leaking solid waste management units for purposes of developing low, high, and most likely estimates of the number of facilities that must take corrective action are described in the preamble to the final codification rule. We used the same assumptions to estimate the cost of the proposed requirement to clean up releases beyond the facility boundary.

Unlike the unit costs for hazardous waste land disposal units, the unit costs for the low, high, and most likely estimates for solid waste management units are the same because under all three scenarios we assumed corrective action must be taken immediately. The first-year cost is $127,000 per unit; the annualized cost is $55,000.

Total Costs. The incremental first-year costs of cleaning up plumes beyond the facility boundary for both types of units (i.e., hazardous waste disposal and solid waste management units) range from $155 million to $645 million. The most likely estimate is $232 million. The lowerbound annualized cost is $67 million, the upperbound is $280 million, and the most likely is $101 million.

3. Financial Responsibility for Cleanup Beyond the Facility Boundary.

The final rule requires facilities to provide financial assurance for corrective action for releases within the property boundary. The proposed rule extends the financial assurance requirement to address the cost of cleaning up releases that extend beyond the facility boundary. We used the same estimates of the numbers of facilities affected by the above corrective action provision to derive high, low, and most likely estimates of the number of facilities affected by this requirement.

We assumed firms will use one (or a combination) of three mechanisms to demonstrate financial assurance: A trust fund, letter of credit, or the RCRA financial test. The cost of trust funds and letters of credit are a percentage of the amount of financial assurance required, plus a fixed fee; a fixed fee is the only cost of the financial test. The fixed-fee portion of the cost of financial assurance has been accounted for already in the cost estimates for financial assurance in the final rule, therefore, we are concerned with only that portion of the cost of financial assurance that depends upon the amount of assurance required to conduct corrective action beyond the facility boundary. The expected cost of a letter of credit is 0.7 percent of the amount in which the letter is issued. The cost of a trust fund is expected to be 0.5 percent of the trust fund balance, with an upperbound estimate of 1 percent

and a lowerbound estimate of 0.1 percent.

The financial assurance demonstration required by this proposed rule covers only the additional cost of extending cleanup beyond the facility boundary. This cost reflects the cost of cleaning up an additional 1500 feet of plume, estimated at $127,000 during the first year, plus $28,000 per year over the average length of time that pumping is required (48 years). The total cost is $1.47 million per unit. The amount of financial assurance required is the estimate of the cost of corrective action not yet performed. Thus, the amount of financial assurance required is initially $1.47 million; the amount required declines to zero by the end of year 48, at which time there is no corrective action left to be performed and, thus, no financial assurance is required.

Firms that use the trust fund will not necessarily have a trust fund balance equal to the required amount of financial assurance. It is probable that firms will have a period of several years to pay into the trust fund, at the end of which the trust fund balance must be equal to the cost estimate of corrective action not yet performed. The most likely pay-in period (PIP) is 10 years. The lowerbound trust fund cost estimate is based on a PIP of 20 years; the upperbound estimate assumes a PIP of 0 years (i.e., immediate full funding of the trust fund).

The lowerbound estimate of the cost of financial assurance for corrective action is based on the assumption that 70 percent of the affected firms can satisfy the financial responsibility requirement with a financial test or guarantee, 10 percent with a letter of credit, and 20 percent with a trust fund. The per-facility incremental cost of a letter of credit is $147,420, the lowerbound per-facility cost of a trust fund is $9,948, and the lowerbound estimate of the number of affected facilities is 754. The lowerbound estimate of the incremental cost for all firms is $6.7 million (discounted at 3%); the annualized cost is $267,000 per year (annualized over 48 years, which is the expected duration of the corrective action).

For the upper bound, we assumed that 50 percent use a financial test, 20 percent a letter of credit, and 30 percent use a trust fund. The upperbound per-facility cost of a trust fund is $210,000, and the upperbound estimate of affected facilities is 4031. This results in a total incremental cost of $368 million (discounted at 3%), and an annualized cost of $14.6 million (annualized over 48 years).

The most likely cost estimate assumes that 60 percent of the affected firms use a financial test, 15 percent use a letter of credit, and 25 percent use a trust fund. The most likely per-facility cost of a trust fund is $74,878, and the most likely number of affected firms is 1073. The most likely estimate of the incremental cost of financial assurance is $36.9 million (discounted at 3%), and the annaulized cost is $1.4 million (annualized over 48 years).

B. Regulatory Flexibility Act

Under the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, at the time an agency publishes any proposed or final rule in the **Federal Register**, it must prepare a Regulatory Flexibility Analysis which describes the impact of the rule on small businesses and organizations, unless the Agency's Administrator certifies that the rule will not have a significant economic impact on a substantial number of small entities.

The Agency has examined the proposed rule's potential impacts on small business and has concluded that this regulation will not have a significant impact on a substantial number of small entities.

In a cost analysis of today's proposal, EPA compared costs to its 1982 implemenation criteria for a Regulatory Flexibility Analysis. Under the most stringent regulatory scenario, neither costs nor impacts of the proposed rule met the criteria for significant impact.

Accordingly, I hereby certify that this proposed rule will not have a significant impact on a substantial number of small entities. Therefore, this proposed rule does not require a Regulatory Flexibility Analysis.

C. Paperwork Reduction Act

The information collection requirements in this proposed rule have been submitted for approval to OMB under the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 *et seq.* Comments on these requirements should be submitted to the Office of Information and Regulatory Affairs; OMB; 726 Jackson Place, NW., Washington, DC 20503 marked "Attention: Desk Officer for EPA." The final rule will respond to any OMB or public comments on the information collection requirements.

List of Subjects

40 CFR Part 144

Administrative practice and procedure, Confidential business information, Hazardous waste, Indian Lands, Reporting and recordkeeping requirements, Surety bonds, Water supply.

40 CFR Part 260

Administrative practice and procedure, Confidential business information, Hazardous waste.

40 CFR Part 264

Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds.

40 CFR Part 265

Hazardous waste, Insurance, Packaging and containers, Reporting and recordkeeping requirements, Security measures, Surety bonds, Water supply.

40 CFR Part 270

Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Reporting and recordkeeping requirements, Water pollution control, Water supply.

Dated: March 14, 1985.

Lee M. Thomas,

Administrator.

Therefore, it is proposed that 40 CFR Chapter I be amended as follows:

PART 144—REQUIREMENTS FOR THE UNDERGROUND INJECTION CONTROL PROGRAM

1. The authority citation for Part 144 is revised to read as follows:

Authority: Safe Drinking Water Act, as amended (42 U.S.C. 300(f) *et seq.*); and Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6901 *et seq.*).

2. In § 144.1 by adding the following new paragraph (h) to read as follows:

§ 144.1 Purpose and scope of Part 144.

* * * * *

(h) *Interim Status Under RCRA for Class I Hazardous Waste Injection Wells.* The minimum national standards which define acceptable injection of hazardous waste during the period of interim status under RCRA are set out in the applicable provisions of this Part, Parts 146 and 147, and § 265.430 of this chapter. The issuance of a UIC permit does *not* automatically terminate RCRA interim status (although it does terminate the applicability of Part 265 of this chapter to the well; see § 265.1(c)(2) of this chapter). A Class I well's interim status does, however, automatically terminate upon issuance to that well of a RCRA permit, or upon the well's receiving a RCRA permit by rule under § 270.60(b) of this chapter. Thus, until a Class I well injecting hazardous waste receives a RCRA permit or RCRA

permit-by-rule, the well's interim status requirements are the applicable requirements imposed pursuant to this Part and Parts 146, 147, and 265 of this chapter, including any requirements imposed in the UIC permit.

3. In § 144.31 by adding a new paragraph (g) to read as follows:

§ 144.31 Application for a permit; authorization by permit.

* * * * *

(g) *Information Requirements for Class I Hazardous Waste Injection Wells Permits.* (1) The following information is required for each active Class I hazardous waste injection well at a facility seeking a permit:

(i) Dates well was operated.

(ii) Specification of all wastes which have been injected in the well, if available.

(2) The owner or operator of any facility containing one or more active hazardous waste injection wells must submit all available information pertaining to any release of hazardous waste or constituents from any active hazardous waste injection well at the facility.

(3) The owner or operator of any facility containing one or more active Class I hazardous waste injection wells must conduct such preliminary site investigations as are necessary to determine whether a release is occurring, has occurred, or is likely to have occurred.

4. By adding a new § 144.56 to read as follows:

§ 144.56 Corrective action for class I hazardous waste injection wells.

(a) The owner or operator of a facility seeking a permit for the injection of hazardous waste must institute corrective action as necessary to protect human health and the environment for all releases of hazardous waste or constituents from any active Class I injection well at the facility, regardless of the time at which waste was placed in such well.

(b) Corrective action will be specified in the permit. The permit will contain schedules of compliance for such corrective action, where such corrective action cannot be completed prior to issuance of the permit, and assurances of financial responsibility for completing such corrective action.

(c) The owner or operator must implement corrective measures beyond the facility property boundary where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Regional Administrator that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such measures.

PART 260—HAZARDOUS WASTE MANAGEMENT SYSTEM: GENERAL

5. The authority citation for Part 260 is revised to read as follows:

Authority: Secs. 1006, 2002(a), 3001 through 3007, 3010, 3014, 3015, 3017, 3018, 3019, and 7004, Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), 6921 through 6927, 6930, 6934, 6935, 6937, 6938, 6939, and 6974).

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

6. The authority citation for Part 264 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3004, and 3005 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended (42 U.S.C. 6905, 6912(a), 6924, and 6925).

7. In § 264.100 by redesignating paragraph (e)(1) and (2) as (e)(3) and (4), by adding new paragraph (e)(1) and (2), and by revising the introductory text of paragraph (e) to read as follows:

§ 264.100 Corrective action program.

* * * * *

(e) In addition to the other requirements of this section, the owner or operator must conduct a corrective action program to remove or treat in place any hazardous constituents under § 264.93 that exceed concentration limits under § 264.94 in ground water:

(1) Between the compliance point under § 264.95 and the downgradient property boundary; and

(2) Beyond the facility boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Regional Administrator that, despite the owner's or operator's best efforts, the owner or operatory was unable to obtain the necessary permission to undertake such action.

* * * * *

8. In § 264.101 by adding paragraph (c) to read as follows:

§ 264.101 Corrective action for solid waste management units.

* * * * *

(c) The owner or operator must implement corrective actions beyond the facility property boundary, where necessary to protect human health and the environment, unless the owner or operator demonstrates to the satisfaction of the Regional Administrator that, despite the owner's or operator's best efforts, the owner or operator was unable to obtain the necessary permission to undertake such actions. Assurances of financial responsibility for such corrective action must be provided.

9. In § 264.221 by revising paragraph (c) to read as follows:

§ 264.221 Design and operating requirements.

* * * * *

(c) The owner or operator of each new surface impoundment, each new surface impoundment unit at an existing facility, each replacement of an existing surface impoundment unit, and each lateral expansion of a surface impoundment unit must install two or more liners and a leachate collection system between such liners. The requirements of this paragraph apply with respect to all waste received after the issuance of the permit. The liners and leachate collection system must protect human health and the environment. At a minimum, the liners and leachate collection system must meet the following requirements:

(1) The liner system must include:

(i) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. The bottom liner must be constructed of at least a 3-foot-thick layer of compacted clay or other compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec; or

(ii) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner consisting of two components. The upper component of the bottom liner must be designed, operated, and constructed to prevent the migration of any hazardous constituent into this component during the active life and post-closure care period. The lower component of the bottom liner must be designed, operated, and constructed to minimize the migration of any hazardous constituent through the upper component if a breach in the upper component were to occur prior to the end of the post-closure care period. The

lower component must be constructed of compacted soil material with a hydraulic conductivity of no more than 1 $\times 10^{-7}$ cm/sec.

(2) The liners must be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(ii) Placed upon materials capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift; and

(iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

(3) The leachate collection system between the liners must be designed, constructed, maintained, and operated to detect, collect, and remove liquids that leak through any area of the top liner during the active life and post-closure care period. The leachate collection system must be:

(i) Constructed of materials that are chemically resistant to the waste managed in the surface impoundment and the leachate expected to be generated and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the surface impoundment; and

(ii) Designed and operated to function without clogging during the active life and post-closure care period.

* * * * *

10. In § 264.301 by revising paragraph (c) to read as follows:

§ 264.301 Design and operating requirements.

* * * * *

(c) The owner or operator of each new landfill, each new landfill unit at an existing facility, each replacement of an existing landfill unit, and each lateral expansion of a landfill unit must install two or more liners and a leachate collection system above and between such liners. The requirements of this paragraph apply with respect to all waste received after the issuance of the permit. The liners and leachate collection system must protect human health and the environment. At a minimum, the liners and leachate collection systems must meet the following requirements:

(1) The liners must include:

(i) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. The bottom liner must be constructed of at least a 3-foot-thick layer of compacted clay or other compacted soil material with a hydraulic conductivity of no more than 1 $\times 10^{7}$ cm/sec; or

(ii) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner consisting of two components. The upper component of the bottom liner must be designed, operated, and constructed to prevent the migration of any hazardous constituent into this component during the active life and post-closure care period. The lower component of the bottom liner must be designed, operated, and constructed to minimize the migration of any hazardous constituent through the upper component if a branch in the upper component were to occur prior to the end of the post-closure care period. The lower component must be consturcted of compacted soil material with a hydraulic conductivity of no more than 1 $\times 10^{7}$ cm/sec.

(2) The liners must be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(ii) Placed upon materials capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift; and

(iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

(3) The leachate collection system immediately above the top liner must be designed, constructed, maintained, and operated to collect and remove leachate from the landfill during the active life and post-closure care period. The Regional Administrator will specify design and operating conditions in the permit to ensure that the leachate depth over the top liner does not exceed 30 cm (1 foot).

(4) The leachate collection system between the liners must be designed, constructed, maintained, and operated to detect, collect, and remove liquids that may leak through any area of the top liner during the active life and post-closure care period.

(5) The leachate collection systems must be:

(i) Constructed of materials that are chemically resistant to the waste managed in the landfill and the leachate expected to be generated and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and

(ii) Designed and operated to function without clogging during the active life and post-closure care period.

* * * * *

PART 265—INTERIM STATUS STANDARDS FOR OWNERS AND OPERATORS OF HAZARDOUS WASTE TREATMENT, STORAGE, AND DISPOSAL FACILITIES

11. The authority citation for Part 265 continues to read as follows:

Authority: Secs. 1006, 2002(a), 3004, 3005, and 3015, Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act, as amended (42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935).

12. In § 265.221 by revising paragraph (a) to read as follows:

§ 265.221 Design requirements.

(a) The owner or operator of each new surface impoundment, each new surface impoundment unit at an existing facility, each replacement of an existing surface impoundment unit, and each lateral expansion of a surface impoundment unit that is within the area identified in the Part A permit application under § 270.13 of this chapter must install two or more liners and a leachate collection system between such liners. The requirements of this paragraph apply with respect to all waste received beginning May 8, 1985. The liners and leachate collection system must protect human health and the environment. At a minimum, the liners and leachate collection system must meet the following requirements:

(1) The liner system must include:

(i) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner designed, operated, and constructed to prevent the migration of any constituent through such liner

during such period. The bottom liner must be constructed of at least a 3-foot-thick layer of compacted clay or other compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec; or

(ii) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner consisting of two components. The upper component of the bottom liner must be designed, operated, and constructed to prevent the migration of any hazardous constituent into this component during the active life and post-closure care period. The lower component of the bottom liner must be designed, operated, and constructed to minimize the migration of any hazardous constituent through the upper component if a breach in the upper component were to occur prior to the end of the post-closure care period. The lower component must be constructed of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(2) The liners must be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(ii) Placed upon materials capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift; and

(iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

(3) The leachate collection system between the liners must be designed, constructed, maintained, and operated to detect, collect, and remove liquids that may leak through any area of the top liner during the active life and post-closure care period. The leachate collection system must be:

(i) Constructed of materials that are chemically resistant to the waste managed in the surface impoundment and the leachate expected to be generated and of sufficient strength and thickness to prevent collapse under the pressure exerted by overlying wastes, waste cover materials, and by any equipment used at the surface impoundment; and

(ii) Designed and operated to function without clogging during the active life and post-closure care period.

* * * * *

13. In § 265.301 by revising paragraph (a) to read as follows:

§ 265.301 Design requirements.

(a) The owner or operator of each new landfill, each new landfill unit at an existing facility, each replacement of an existing landfill unit, and each lateral expansion of a landfill unit that is within the area identified in the Part A permit application must install two or more liners and a leachate collection system above and between such liners. The requirements of this paragraph apply with respect to waste received beginning May 8, 1985. The liners and leachate collection systems must protect human health and the environment. At a minimum, the liners and leachate collection systems must meet the following requirements:

(1) The liners must include:

(i) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner designed, operated, and constructed to prevent the migration of any constituent through such liner during such period. The bottom liner must be constructed of at least a 3-foot-thick layer of compacted clay or other compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.; or

(ii) A top liner designed, operated, and constructed of materials to prevent the migration of any hazardous constituent into such liner during the active life and post-closure care period, and a bottom liner consisting of two components. The upper component of the bottom liner must be designed, operated, and constructed to prevent the migration of any hazardous constituent into this component during the active life and post-closure care period. The lower component of the bottom liner must be designed, operated, and constructed to minimize the migration of any hazardous constituent through the upper component if a breach in the upper component were to occur prior to the end of the post-closure care period. The lower component must be constructed of compacted soil material with a hydraulic conductivity of no more than 1×10^{-7} cm/sec.

(2) The liners must be:

(i) Constructed of materials that have appropriate chemical properties and sufficient strength and thickness to prevent failure due to pressure gradients (including static head and external hydrogeologic forces), physical contact with the waste or leachate to which they are exposed, climatic conditions, the stress of installation, and the stress of daily operation;

(ii) Placed upon materials capable of providing support to the liners and resistance to pressure gradients above and below the liners to prevent failure of the liners due to settlement, compression, or uplift; and

(iii) Installed to cover all surrounding earth likely to be in contact with the waste or leachate.

(3) The leachate collection system immediately above the top liner must be designed, constructed, maintained, and operated to collect and remove leachate from the landfill during the active life and post-closure care period. The design and operation of the system must ensure that the leachate depth over the top liner does not exceed 30 cm (1 foot).

(4) The leachate collection system between the liners must be designed, constructed, maintained, and operated to detect, collect, and remove liquids that leak through any area of the top liner during the active life and post-closure care period.

(5) The leachate collection systems must be:

(i) Constructed of materials that are chemically resistant to the waste managed in the landfill and the leachate expected to be generated and of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the landfill; and

(ii) Designed and operated to function without clogging during the active life and post-closure care period.

* * * * *

PART 270—EPA-ADMINISTERED PERMIT PROGRAMS: THE HAZARDOUS WASTE PERMIT PROGRAM

14. The authority citation for Part 270 is revised to read as follows:

Authority: Sections 1006, 2002, 3004, 3005, 3007, 3019, and 7004, Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912, 6924, 6925, 6927, 6939, and 6974).

15. In § 270.1 by revising the introductory text of paragraph (c) follows:

§ 270.1 Purpose and scope of these regulations.

* * * * *

(c) *Scope of the RCRA Permit Requirement.* RCRA requires a permit

for the "treatment," "storage," or "disposal" of any "hazardous waste" as defined in § 270.2. Owners and operators of hazardous waste management units must have permits during the acting life (including the closure period) of the unit. Owners or operators of surface impoundments, landfills, land treatment units, and waste pile units that received wastes after July 26, 1982, must have post-closure permits, as necessary to implement applicable Part 264—Ground-Water Monitoring, Unsaturated Zone Monitoring, Corrective Action, and Post-closure Care Requirements of this chapter.

* * * * *

16. In § 270.4, paragraph (a) is revised to read as follows:

§ 270.4 Effect of a permit.

(a) Compliance with a RCRA permit during its term constitutes compliance, for purpose of enforcement, with Subtitle C of RCRA except for those requirements not included in the permit which become effective by statute, or those regulations promulgated under Part 268 of this chapter restricting the placement of hazardous wastes in or on the land.

* * * * *

17. In § 270.10 by adding a new paragraph (k) to read as follows:

§ 270.10 General application requirements.

* * * * *

(k) The Director may require a permittee or an applicant to submit information in order to establish permit conditions under §§ 270.32(b)(2) and 270.50(d) of this chapter.

18. In § 270.14, the introductory text of paragraph (c) is revised and paragraph (d) is added to read as follows:

§ 270.14 Contents of Part B: General requirements.

* * * * *

(c) Additional information requirements. The following additional information regarding protection of ground water is required from owners or operators of hazardous waste facilities containing a regulated unit except as provided in § 264.90(b) of this chapter:

* * * * *

(d) Information requirements for solid waste management units.

(1) The following information is required for each solid waste management unit at a facility seeking a permit:

(i) The location of the unit on the topographic map required under paragraph (b)(19) of this section.

(ii) Designation of type of unit.

(iii) General dimensions of the unit.

(iv) When the unit was operated.

(v) Specification of all wastes that have been managed at the unit, if available.

(2) The owner or operator of any facility containing one or more solid waste management units must submit all available information pertaining to any release of hazardous wastes or constituents from such unit or units.

(3) The owner/operator must conduct sampling and analysis of ground water, land surface, and subsurface strata, surface water, or air, which may include the installation of wells, where the Director ascertains it is necessary to complete a preliminary site investigation that will determine if a more complete investigation is necessary.

19. In § 270.17, paragraph (b)(1) is revised to read as follows:

§ 270.17 Specific Part B information requirements for surface impoundments.

* * * * *

(b) * * *

(1)(i) The liner system (except for an existing portion of a surface impoundment), if the surface impoundment must meet the requirements of § 264.221(a) of this chapter. If an exemption from the requirement for a liner is sought as provided by § 264.221(b) of this chapter, submit detailed plans and engineering and hydrogeological reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of any hazardous constituents into the ground water or surface water at any future time; or

(ii) The liners and leachate collection system, if the surface impoundment must meet the requirements of § 264.221(c) of this chapter. If an exemption from the requirements for liners and a leachate collection system is sought as provided by § 264.221(d) of this chapter or § 264.221(e) of this chapter, submit appropriate information.

* * * * *

20. In § 270.21, paragraphs (b)(1) and (h) are revised to read as follows:

§ 270.21 Specific Part B information requirements for landfills.

(b) * * *

(1)(i) The liner system and leachate collection and removal system (except for an existing portion of a landfill), if the landfill must meet the requirements of § 264.301(a) of this chapter. If an exemption from the requirements for a liner and leachate collection and removal system is sought as provided by § 264.301(b) of this chapter, submit detailed plans and engineering and hydrogeologic reports, as appropriate, describing alternate design and operating practices that will, in conjunction with location aspects, prevent the migration of hazardous constituents into the ground water or surface water at any future time; or

(ii) The liners and leachate collection systems, if the landfill must meet the requirements of § 264.301(c) of this chapter. If an exemption from the requirements for liners and leachate collection systems is sought as provided by § 264.301(d) of this chapter or § 264.301(e) of this chapter, submit appropriate information.

* * * * *

(h)(1) If bulk or noncontainerized liquid waste or waste containing free liquids is to be landfilled prior to May 8, 1985, an application of how the requirements of § 264.314(a) of this chapter will be met.

(2) If nonhazardous liquid waste is to be landfilled after November 8, 1985, an explanation of how the requirements of § 264.314(e) (1) and (2) of this chapter will be met.

* * * * *

21. In § 270.41, paragraph (a)(3) is revised to read as follows:

§ 270.41 Major modification or revocation and reissuance of permits.

* * * * *

(a) * * *

(3) *New statutory requirements or regulations.* The standards or regulations on which the permit was based have been changed by statute, through promulgation of new or amended standards or regulations, or by judicial decision after the permit was issued. Permits may be modified during their terms for this cause as follows:

(i) Director may modify the permit when the standards or regulations on which the permit was based have been changed by statute or amended standards or regulations.

(ii) Permittee may request modification when:

(A) The permit condition to be modified was based on a promulgated regulation under Parts 124 of this chapter, 260–268 of this chapter, or 270 of this chapter; and

(B) EPA has revised, withdrawn, or modified that portion of the regulation on which the permit condition was based; or

(C) A permittee requests modification in accordance with § 124.5 of this chapter within 90 days after Federal Register notice of the action on which the request is based.

(iii) For judicial decisions, a court of competent jurisdiction has remanded and stayed EPA promulgated regulations if the remand and stay concern that portion of the regulations on which the permit condition was based or if a request is filed by the permittee in accordance with § 124.5 of this chapter within 90 days of judicial remand.

* * * * *

[FR Doc. 86-6753 Filed 3-27-86; 8:45 am]
BILLING CODE 6560-50-M