

**ENVIRONMENTAL PROTECTION AGENCY****40 CFR Parts 264 and 265**

[FRL 1446-8]

**Standards Applicable to Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities****AGENCY:** Environmental Protection Agency.**ACTION:** Final Rule and Interim Final Rule.

**SUMMARY:** Subtitle C of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (RCRA), directs the Environmental Protection Agency to promulgate regulations establishing a Federal hazardous waste management system. These Parts 264 and 265 regulations are the first phase of EPA's requirements under Section 3004 of RCRA for owners and operators of facilities that treat, store, and dispose of wastes which are identified or listed as hazardous under Part 261 of this Chapter.

The regulations under Part 265 establish requirements applicable during the interim status period (the period after an owner or operator has applied for a permit, but prior to final disposition of the application) respecting preparedness for and prevention of hazards, contingency planning and emergency procedures, the manifest system, recordkeeping and reporting, ground-water monitoring, facility closure and post-closure care, financial requirements, the use and management of containers, and the design and operation of tanks, surface impoundments, waste piles, land treatment facilities, landfills, incinerators, thermal, physical, chemical, and biological treatment units, and injection wells. In addition, there are included some general requirements respecting identification numbers, required notices, waste analysis, security at facilities, inspection of facilities, and personnel training.

The Part 264 regulations include the first phase of the standards which will be used to issue permits for hazardous waste treatment, storage, and disposal facilities. Included are requirements respecting preparedness for and prevention of hazards, contingency planning and emergency procedures, the manifest system, and recordkeeping and reporting. Also included are general requirements respecting identification numbers, required notices, waste analysis, security at facilities, inspection

of facilities, and personnel training. Additional Part 264 regulations will be promulgated later this year.

**DATES:**

**Effective Date:** These regulations, in the form published today, complete EPA's initial rulemaking on the subjects covered and are final Agency action. They become effective on November 19, 1980, which is six months from the date of promulgation as Section 3010 requires. Today's promulgation begins the various schedules provided by RCRA for filing notifications and permit applications, and for States to apply for interim authorization.

**Comment dates:** EPA will accept public comments on these regulations as follows:

**Deadline for Submission of Comments**

Final regulations—technical errors only (e.g., typographical errors, inaccurate cross references)—July 18, 1980.

Interim final regulations—July 18, 1980.

Starred (\*) Part 265 regulations—comments only on the propriety of making the standard applicable during interim status—July 18, 1980.

**ADDRESSES:** Comments on Interim Final portions should be sent to Docket Clerk [Docket No. 3004], Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.

**Public Docket:** The public docket for these regulations is located in Room 2711, U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C., and is available for viewing from 9:00 a.m. to 4:00 p.m., Monday through Friday, excluding holidays. Among other things, the docket contains background documents which explain, in more detail than the preamble to this regulation, the basis for many of the provisions in this regulation.

**Copies of Regulations:** Single copies of these regulations will be available approximately 30 days after publication from Ed Cox, Solid Waste Information, U.S. Environmental Protection Agency, 26 West St. Clair Street, Cincinnati, Ohio 45268 (513) 684-5362. Multiple copies will be available from the Superintendent of Documents, Washington, D.C. 20402.

**FOR FURTHER INFORMATION CONTACT:**

For general information, contact Alfred Lindsey, Office of Solid Waste (WH-565), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, D.C. 20460.

For information on implementation of these regulations, contact the EPA regional offices below:

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**Region IV**

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These regulations are issued under the authority of Sections 1006, 2002(a), 3001 through 3007, and 3010 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended, 42 U.S.C. §§ 6905, 6912(a) and 6921 through 6927, and 6930.

## II. Introduction

### A. Background

Early this year, EPA began issuing the regulations which comprise the Subtitle C hazardous waste management system. On February 26, 1980, it promulgated standards for generators and transporters of waste under Sections 3002 and 3003 of RCRA (Parts 262 and 263, respectively) and a public notice establishing procedures for filing a notice of hazardous waste activity under Section 3010. Today, in addition to these Part 264 and Part 265 regulations, EPA is publishing permit procedures, and guidelines for the approval of State hazardous waste programs under Sections 3005 and 3006 (Parts 122, 123, and 124) and the first phase of its Section 3001 hazardous waste list (part 261) and Part 260, which defines words and phrases used in Parts 261 through 265, and contains provisions generally applicable to all of those regulations.

The preamble to the Section 3001 regulations should be read for an introduction to the hazardous waste management problem in the United States and an explanation of the framework of Subtitle C. It also discusses many of the general issues and difficult problems the Agency has faced in finalizing the Section 3001 and Section 3004 regulations.

The Agency developed its Section 3004 regulations in tandem with its Section 3001 regulations, holding numerous meetings with experts in hazardous waste management, States, Federal agencies, industry, environmental groups, and other individuals and organizations to discuss possible management standards. EPA also circulated draft regulations for comment and held several public hearings. Based on the comments received in meetings, hearings, and on its draft regulations, and on information the Agency collected, on December 18, 1978, EPA proposed national standards for the location, design, operation, monitoring, closure, and post-closure care of facilities which treat, store, or dispose of hazardous waste (43 FR 58982-59022). The standards were designed to protect human health and the environment by ensuring the proper design, construction, and operation of hazardous waste management facilities in accordance with the mandate of Section 3004 of RCRA.

EPA held five public hearings on its December 18, 1978, proposal, at which several hundred persons testified. The Agency received over one thousand sets of written comments on the proposed Section 3004 regulations. The Agency has carefully considered all of the

comments it received. Many of them raised difficult technical questions. Analysis and resolution of these questions is hampered in general by the Nation's lack of long-term experience with advanced waste management technologies. This limited experience has made it difficult to evaluate the accuracy of the often conflicting claims which the commenters made regarding the proposed Section 3004 standards.

It has become clear to the Agency that it may take several years, in some cases, to adequately develop the data and perform the analyses necessary to resolve the more complex technical issues raised by the regulations and the comments in a way that will allow promulgation of nationally applicable detailed technical standards. As a result, promulgation of regulations involving these issues is being postponed. On the other hand, some of the proposed regulations prescribed recordkeeping and reporting requirements, and many involved recognized "good management practices" which are not highly technical. This second category of standards is adequately supported by existing data, and can be promulgated now. Accordingly, the standards for hazardous waste management facilities will be promulgated and implemented in phases.

### B. Overview

*1. Phasing of the Regulations.* The Phase I standards are being promulgated today. They include a nearly complete set of interim status standards, in Part 265, and most of the general status (Part 264) administrative and non-technical operating standards. The interim status standards cover the following areas:

1. Purpose, Scope, and Applicability and other General Standards
2. Waste Analysis Requirements
3. Security
4. Inspections
5. Training
6. Preparedness and Prevention
7. Contingency Plans and Emergency Procedures
8. Manifest System, Recordkeeping, and Reporting
9. Ground-Water Monitoring
10. Closure and Post-Closure Care
11. Financial Requirements (Partial)
12. Use and Management of Containers
13. Tanks
14. Surface Impoundments
15. Waste Piles
16. Land Treatment
17. Landfills
18. Incinerators
19. Thermal Treatment
20. Chemical, Physical, and Biological Treatment

### 21. Underground Injection

The general status regulations promulgated today cover the first eight of these areas and are essentially identical to the corresponding interim status standards. The section of the preamble entitled "Interim Status Standards" explains when the interim status standards apply to facilities and when the general standards apply.

As previously mentioned, the Agency believes it may take several years to resolve all of the issues necessary to promulgate detailed national technical standards for some types of facilities (e.g., the design requirements for landfills). In the meantime, however, in order to issue permits which will protect human health and the environment, EPA must evaluate the technical capabilities of specific facilities to manage hazardous waste. Therefore, as an interim measure, EPA will publish in the near future Phase II of the Section 3004 regulations—a set of technical regulations which will allow permits to be issued based on the Agency's best engineering judgment of the technical requirements which individual facilities must meet. These regulations will allow permits to be processed in a manner that will ensure the protection of human health and the environment by evaluating hazardous waste management facilities in terms of both site-specific factors and the nature of the waste that the facility will manage. At a minimum, these regulations will contain a set of factors (e.g., distance to ground water and waste mobility) which must be considered. Where they are available, the regulations will also contain models, formulas, and performance standards to provide a standardized method of analysis. In determining whether a facility will adequately safeguard human health and the environment, the Regional Administrator will apply his best engineering judgment to data which the applicant submits concerning these factors.

The third phase of this regulatory program will involve the resolution of the complex technical issues described earlier, and the reproposal and ultimate promulgation of more definitive counterparts of the Phase II standards. These more definitive standards are expected to supplant the Phase II standards and make the permitting process more straightforward. In addition to standards for specific types of facilities, the Phase III regulations may also include standards for specific industries and waste which require special management standards.

The Agency believes that this three-phase regulatory strategy will give maximum protection to human health and the environment without imposing the more complex regulations as national technical standards before the controversial issues surrounding them can be fully investigated. This strategy also should not complicate implementation of the hazardous waste program. Its only effect will be to postpone by some months the beginning of facility permitting using the Phase II standards. Any postponement in issuing these Part 265 interim status regulations, however, would cause an unwarranted delay in commencement of the Subtitle C management program.

All the standards EPA is promulgating today are written so as to be broadly applicable to large numbers of facilities and vast amounts of hazardous waste. The Agency has been faced with the task of balancing the goals of broad applicability and regulatory specificity. EPA believes that the technical regulations promulgated today are clear and sufficiently straightforward so that any reasonably qualified engineer should be able to interpret and implement them.

EPA has used all of the information available to it to try to write standards which begin to address its mandate in Section 3004—to promulgate such standards as may be necessary to protect human health and the environment. Some members of the regulated industry may argue that the Agency should wait to promulgate its Section 3004 standards until it has an even broader data base and can write much more specific nationally applicable technical standards. EPA does not believe that it would be reasonable to wait longer. The Agency has been called upon to address an extremely serious environmental problem and must proceed as quickly as possible given its limited resources.

These standards form only the bare outline of those that will be coming in Phases II and III. Interim status standards are not the final answer to the long-term environmental problems caused by hazardous waste disposal; they really form the outline of the technical standards and best engineering judgment permits that are to come. Nevertheless, through the use of the manifest system, the recordkeeping and reporting requirements, and the closure, waste analysis, training, inspection, and contingency plan requirements, EPA will begin to bring under control environmentally disastrous practices that up to now have often gone largely unregulated.

**2. Organization of Regulations and Preamble.** EPA has totally reorganized its Subtitle C regulations in response to comments that its proposed regulations were difficult to read. Regulations implementing Section 3004 were originally proposed as Subpart D of Part 250 of Title 40 of the Code of Federal Regulations. The proposed interim status standards were specified in paragraph (c) of § 250.40. The interim status standards have been recodified as Part 265, while the general status standards (i.e., those independently enforceable standards which will be used to issue permits and which apply to facilities without interim status) appear in Part 264. Definitions of terms used in these regulations, like those used in Parts 261 through 263, are contained in § 260.10.

Subparts A of Parts 264 and 265 specify how the regulations are to be used and which facilities are subject to which regulations. All facilities which treat, store, or dispose of hazardous waste (as defined in the Part 261 regulations), other than those excluded in Subpart A are, by and large, subject to these regulations. Some of the regulations, however, apply only to certain kinds of facilities or contain special conditions for certain classes of facilities.

Subparts B to H (excluding Subpart F) of Part 265 and Subparts B to E of Part 264 contain standards which apply generally to all types of facilities. Subparts I to R of Part 265 contain standards for specific types of facilities (landfills, tanks, incinerators, etc.). The corresponding facility-specific Part 264 standards will be promulgated in Phases II and III of this regulatory program.

The remainder of this preamble is divided into four sections. The first section discusses the role of the interim status standards and the major issues raised by the commenters on those standards. The next section deals with a number of general issues which pertain to all of the Section 3004 standards. Many of the issues discussed in this section pertain to the Phases II and III regulations as much or more than they do to the Phase I regulations. EPA is making an effort, insofar as decisions have been made, to inform the public of how the standards for hazardous waste management facilities will develop over time. The third section is a subpart-by-subpart analysis of the final Phase I rules. This analysis summarizes the major issues raised by the commenters on each section of the proposed rules, and explains how the final rules reflect the Agency's resolution of these issues. The last section of the preamble

describes the documents which support these regulations.

**3. Interim Final Provisions.** Most sections of these regulations have been changed in response to comments. Those sections which have been modified substantially are being issued as interim final regulations so that the public can comment on the modified standards before they are promulgated as "final final" regulations. All of the Part 264 and Part 265 regulations are promulgated today, however, for purposes of the six-month effective date under Section 3010(b).

Those sections of the regulations which EPA is promulgating as interim final are as follows:

#### PART 264

##### Sec.

264.12 Required notices.

#### PART 265

##### Subpart B—General Facility Standards

265.12 Required notices.

265.17 General requirements for ignitable, reactive, or incompatible wastes.

##### Subpart F—Ground-Water Monitoring

265.90 Applicability.

265.91 Ground-water monitoring system.

265.92 Sampling and analysis.

265.93 Preparation, evaluation, and response.

265.94 Recordkeeping and reporting.

##### Subpart G—Closure and Post-Closure

265.111 Closure performance standard.

265.112 Closure plan; amendment of plan.

265.113 Time allowed for closure.

265.117 Post-closure care and use of property; period of care.

265.118 Post-closure plan; amendment of plan.

##### Subpart I—Use and Management of Containers

265.176 Special requirements for ignitable or reactive waste.

##### Subpart J—Tanks

265.198 Special requirements for ignitable or reactive waste.

##### Subpart K—Surface Impoundments

265.228 Closure and post-closure.

##### Subpart L—Waste Piles

265.251 Protection from wind.

265.252 Waste analysis.

265.253 Containment.

265.256 Special requirements for ignitable or reactive waste.

265.257 Special requirements for incompatible wastes.

##### Subpart M—Land Treatment

265.272 General operating requirements.

265.273 Waste analysis.

265.276 Food chain crops.

265.278 Unsaturated zone (zone of aeration) monitoring.

265.280 Closure and post-closure.

**Subpart N—Landfills**

- Sec.
- 265.310 Closure and post-closure.
- 265.314 Special requirements for liquid waste.
- 265.315 Special requirements for containers.

**Subpart O—Incinerators**

- 265.343 General operating requirements.
- 265.345 Waste analysis.
- 265.347 Monitoring and inspections.
- 265.351 Closure.

**Subpart P—Thermal Treatment**

- 265.373 General operating requirements.
- 265.375 Waste analysis.
- 265.377 Monitoring and inspections.
- 265.381 Closure.
- 265.382 Open burning; waste explosives.

**Subpart Q—Chemical, Physical, and Biological Treatment**

- 265.405 Special requirements for ignitable or reactive waste.

**Subpart R—Underground Injection**

- 265.430 Applicability.

Certain sections of the Part 265 regulations were proposed as general status standards, and have not been so substantially modified that the Agency is accepting further public comments on their substance. However, because they have now been incorporated in the interim status standards, EPA will accept comments on the propriety of their inclusion as such. As the preamble indicates, almost all of the additions to the interim status standards were made in response to comments, but EPA believes that additional public comments will assist the Agency in any necessary adjustments to the Part 265 standards. The Agency will accept comments on the propriety as interim status standards of the following sections:

**PART 265**

**Subpart B—General Facility Standards**

- Sec.
- 265.13 General waste analysis.

**Subpart J—Tanks**

- 265.192 General operating requirements.
- 265.193 Waste analysis and trial tests.

**Subpart K—Surface Impoundments**

- 265.222 General operating requirements.
- 265.223 Containment system.
- 265.225 Waste analysis and trial tests.
- 265.229 Special requirements for ignitable or reactive waste.
- 265.230 Special requirements for incompatible wastes.

**Subpart M—Land Treatment**

- 265.281 Special requirements for ignitable or reactive waste.
- 265.282 Special requirements for incompatible wastes.

**Subpart N—Landfills**

- Sec.
- 265.302 General operating requirements.
- 265.312 Special requirements for ignitable or reactive waste.

**Subpart Q—Chemical, Physical, and Biological Treatment**

- 265.401 General operating requirements.
- 265.402 Waste analysis and trial tests.

It is EPA's intent to act on all interim final portions of these regulations prior to their effective date.

**III. Interim Status Standards**

Section 3005(e) of RCRA specifies that if the owner or operator of a facility which is in existence on October 21, 1976, (the date of enactment of RCRA) notifies EPA, as required by Section 3010 of RCRA, and properly applies for a permit, the facility owner or operator is to "be treated as having been issued such permit." EPA refers to such an owner or operator as one who has "interim status" (the title of subsection 3005(e)). Accordingly, for facility owners or operators who have notified EPA and applied for a permit, the interim status period extends from the date the initial Section 3001 through 3005 regulations go into effect to the date final administrative action on the individual permit application is taken.

Congress, in enacting this provision, apparently recognized that it will take a considerable period of time for EPA to act on all facility permit applications. The provision for interim status, to allow a smooth transition to full regulation under new national standards, allows owners and operators of existing facilities to continue to operate them until decisions on their permit applications are made.

The Agency expects that most of the approximately 26,000 prospective permittees will notify EPA of their hazardous waste activities (as required by Section 3010 of RCRA and explained in a notice of February 26, 1980 (45 FR 12745-54)) and will apply for a permit. Considering the potential number of applicants, the potential administrative complexity of issuing hazardous waste permits, the limited staff that EPA expects to have available to review and negotiate permit applications, and EPA's experience with the National Pollutant Discharge Elimination System (NPDES) permit program under the Clean Water Act, the Agency estimates that it will take several years to act on all permit applications. Therefore, many prospective permittees will be operating in interim status for an extended period of time. In keeping with the intent of Congress that hazardous waste management be regulated by national standards as quickly as possible, and

with the statutory structure making Section 3004 standards independent of the Section 3005 permitting process (see discussion below), EPA believes that these prospective permittees should at least comply with selected minimum requirements of Section 3004 during interim status.

The Agency believes that permit applicants with interim status should not be expected to meet all of the Phase II and Phase III Part 264 standards, because some of the specific requirements of these standards may be inappropriate for certain facilities, and different requirements may be substituted when a permit is issued using the variance provisions in the regulations. Alternatively, during permitting under the Phase II regulations, each permit will be issued on the basis of the permit writer's "best engineering judgment." In addition, some permittees may be allowed a reasonable period of time to come into compliance with certain of the general Section 3004 (i.e., Part 264) standards, as permitted by Section 3005(c) of RCRA. The Agency believes that decisions regarding certain standards and all individual compliance schedules should be made in the permit issuance process where there is full opportunity for public participation and for interaction between the Agency and the permit applicant.

On the other hand, given Congress' intent that hazardous waste management be regulated as quickly as possible, and the independent enforceability of the Section 3004 standards, EPA believes that prospective permittees should begin to meet at least those threshold requirements of Section 3004 which apply generally to all facilities and which will definitely be included in all permits. This will begin to achieve RCRA's goal of protecting human health and the environment.

The Agency has chosen a middle course between, on the one hand, having no requirements applicable during the interim status period and, on the other, making the complete set of independently enforceable standards apply:

**A. Authority**

A number of commenters supported the concept of interim status standards and agreed that authority for these requirements exists in Section 3004 of the Act. Others stated that neither Section 3005 nor Section 3010 of RCRA authorizes EPA to impose facility requirements during the interim status period. They recommended deleting the interim status standards, because EPA

has the power to deal with imminent hazards under Section 7003, and because those facilities not posing an imminent hazard can continue under existing local control until new permits are issued.

These commenters apparently misunderstood the relationship of Section 3004 to Sections 3005, 3008, and 3010 of RCRA. The Section 3004 regulations are independently enforceable national standards which apply to owners and operators of hazardous waste facilities. Section 3008 authorizes enforcement actions against persons violating *any requirement* of Subtitle C. Thus, enforcement actions against persons violating the Section 3004 requirements are authorized by Section 3008.

EPA does not believe that the "requirements of Subtitle C" referred to in Section 3008 are only those requirements incorporated in a permit pursuant to Section 3005. The requirement that facility owners and operators comply with the permit requirements of Section 3005 is one independent requirement of Section 3004 (see Section 3004(7)).

Section 3005(c) requires that EPA determine that a facility complies with the Section 3004 requirements before issuing a permit. Permit revocation under Section 3005(d) also is based on non-compliance with Section 3005 or Section 3004 requirements. Thus, under the terms of the statute, Section 3004 standards are independently enforceable and are "requirements of Subtitle C" within the meaning of that term in Section 3008. As the preambles to Parts 122 and 123 of the consolidated permit regulations discuss, EPA will, however, regard compliance with a duly issued RCRA permit as compliance with the terms of the statute except for the case of state-issued permits that fail to reflect EPA suggestions made during EPA review.

Section 3005(a) requires that EPA promulgate regulations requiring owners or operators of hazardous waste facilities to have a permit, and prohibits treating, storing, or disposing of hazardous waste without a permit after the effective date of these regulations. Section 3010(b) states that all of the Subtitle C regulations, including both Section 3004 and 3005 regulations, take effect six months after they are promulgated.

Thus, on the effective date of the Section 3004 regulations, facility owners and operators are required to comply with all of the Section 3004 standards and have a permit under Section 3005 in order to operate legally. Clearly, it is beyond the capability of facility owners

or operators to comply with all of the Section 3004 requirements, and beyond the capability of the Agency (or authorized States) to issue all permits, within the six months between the date the regulations are promulgated and their effective date.

Section 3005(e) resolves part of this problem by authorizing facility owners or operators, under certain conditions, to obtain interim status. This allows owners or operators to be treated as having been issued a permit until EPA makes a final administrative disposition of their permit application, and thus satisfies the mandates of Section 3005(a) and of Section 3004(7) which prohibit operations without a permit. Having interim status thus relieves the owner or operator of a facility of the possibility of being prosecuted for operating without a permit. It does not, however, relieve owners and operators of facilities of the necessity to comply with the Section 3004 standards when they become effective.

As discussed above, Section 3004 standards are independently enforceable requirements which apply to all treatment, storage, and disposal of hazardous waste. In addition to the automatic applicability of Section 3004 standards, however, EPA interprets the language of Section 3005(e)(3), that a person shall be treated as having been issued a permit, to mean that a person who operates with interim status must accept the responsibilities and liabilities associated with being a permittee. Thus the conditions of Section 3004 which are imposed on permit holders by operation of Section 3005 (c) and (d) are also applicable to owners or operators of facilities with interim status because they "shall be treated as having been issued such permit."

For the reasons noted above (i.e., that decisions regarding certain standards and all individual compliance schedules should be made in the permit issuance process), the Agency does not believe that permit applicants with interim status should be expected to meet all of the general Section 3004 standards immediately. Hence, the Agency decided to promulgate separate interim status standards to avoid the burden on existing facilities which could otherwise result if all of the Section 3004 standards were applied immediately.

The Administrator's general rulemaking authority under Section 2002(a)(1) of RCRA provides an additional basis for the establishment of interim status standards and the relief to permit applicants of the need for immediate compliance with all of the Part 264 Section 3004 standards, as they are promulgated. Section 2002(a) states:

"In carrying out this Act, the Administrator is authorized to:

(1) Prescribe, in consultation with Federal, State, and regional authorities, such regulations as are necessary to carry out his functions under this Act;"

The Agency believes, for the technical and policy reasons mentioned above, that the establishment of interim status standards is an appropriate use of this general rulemaking authority.

#### *B. Criteria for Interim Status Standards*

In general, EPA used the following criteria for deciding which standards should apply during interim status:

(1) The standards can be met in a straightforward manner without need for substantial interpretation by, or negotiation with, EPA. EPA's limited resources will be consumed at the outset of the program with implementing other features of this complex regulatory program, such as the notification and manifest system, enforcement, and the permitting process itself. The Agency, therefore, plans to minimize individual contact with the regulated community during the interim status period. If individual applicants are to have substantial contact with the Agency during interim status, it will be more productive for the Agency to put its resources into implementing the full standards through the permitting process which the Act envisions, rather than postponing or slowing down the implementation of the full standards so that a more complex set of interim standards can be implemented.

(2) Compliance does not require substantial capital expenditures which are properly the result of the certainty of permit conditions. Many of the technical regulations could require costly construction or retrofitting, and the designs underlying these expenditures will be the subject of discussion during the permitting process. The Agency believes it is unreasonable to require costly construction during interim status, which may then be disallowed or required to be modified during permitting.

(3) Compliance can be achieved within the six-month period between the date the regulations are promulgated and the date they become effective. Many of the Part 264 standards may entail time for equipment delivery, construction, installation, training, and shakedown which could significantly exceed the six months available. While the Agency could delay the effective date of regulations requiring an implementation period longer than six months, a multitude of different effective dates for different regulations could

complicate the implementation process, leading to confusion.

It should be emphasized that the Agency used these criteria only as guidelines in developing the interim status regulations. The Agency has included other requirements in the interim status standards which are exceptions to these guidelines when it judged that requirements were of unusual importance and that the benefits to be gained from early implementation of the requirements would substantially outweigh the disadvantages. One important exception involves the closure and post-closure care regulations. Improper facility closure and abandonment has historically been a major cause of human health impacts and environmental damage. The Agency believes that no facility should be closed during interim status without being closed properly. Therefore, permit applicants who close all or parts of their facilities during interim status will be required to meet the full closure and post-closure care requirements, including the requirement to have the plans for those activities approved by the Agency. Similarly, even though the ground-water monitoring provisions do not meet the criteria for interim status standards specified earlier, owners or operators of surface impoundments, landfills, and land treatment facilities are also required to comply with these provisions during the interim status period (although EPA has provided a 12-month delay in the date for compliance). The Agency believes it of prime importance to require owners or operators of these facilities to monitor ground water during interim status in order to know whether an existing facility may already have contaminated the ground water. The rationales for other standards which are exceptions to these guidelines are discussed below.

The Agency views the interim status standards as dynamic regulations which, for many facilities, may be in effect for a number of years before permits are issued or denied. As the need and support for additional regulations becomes clear, the Agency expects to add to this initial set of interim status standards through additional rulemaking. EPA will, of course, continue to refine both the Part 264 and Part 265 regulations as the state of technology of hazardous waste management improves.

As discussed previously, promulgation of parts of the Section 3004 standards will be phased in over time. Consequently, the Agency is specifying the interim status standards

independently of the general Section 3004 standards. This procedure will allow the initial phase of the RCRA hazardous waste control program to be implemented without further delay. It will also avoid the ambiguity and confusion which can arise when standards are extensively referenced and cross-referenced, as was the case in the December 1978 proposal.

The Agency received numerous comments from a wide cross-section of commenters concerning general issues raised by the proposed interim status standards. These comments fall into the following areas, which are discussed in turn below:

- (1) requirements to be added to interim status standards;
- (2) compliance period for some or all standards;
- (3) notes and variances; and
- (4) equity.

#### C. Added Requirements

Several commenters felt that the scope of the proposed interim status standards should be expanded to include all requirements of the general Section 3004 regulations which could be implemented immediately and that would be unlikely to require modification when a permit is issued. In general, EPA agrees.

Several of the more important suggestions for additional interim status standards are discussed below.

1. *Ground-Water and Leachate Monitoring.* The proposed interim status standards required ground-water and leachate monitoring at landfills and surface impoundments where one or both of these monitoring systems were already in place. Several commenters suggested requiring ground-water and leachate monitoring at *all* facilities during interim status, whether or not such systems were already in place. They felt that exempting some sites from conducting this monitoring would mean that local and State implementing authorities would be deprived of the warning needed to determine if sites are endangering ground water and local water supplies. Further, some of the commenters stated that ground-water monitoring systems must be installed at all facilities that receive permits. They felt that EPA should not postpone monitoring until the final permit was issued, because that could take five years or longer. Other commenters felt that monitoring data were essential to (1) identify sites which are violating the human health and environmental standards, and (2) to trigger appropriate action against those sites, even though the human health and environmental

standards were not proposed as interim status standards.

The Agency has considered these comments carefully. First of all, it should be noted that leachate monitoring in the unsaturated zone beneath existing landfills and surface impoundments will not be required in Phase II of the general Section 3004 standards for technical reasons (see the preamble discussion on Ground-Water Monitoring for details). However, the Agency has determined that leachate monitoring is technically feasible and appropriate for land treatment facilities (land farms), and, therefore, has added this requirement to the interim status standards for these facilities (see the preamble discussion on Land Treatment Facilities).

The Agency does not believe that *all* facilities require ground-water monitoring systems during the interim status period or otherwise. For example, it would be an unnecessary expense with little benefit to human health or the environment to require above-ground storage tanks or incinerators to have ground-water monitoring systems, because leakage of hazardous waste into the ground can be detected visually at these facilities. The Agency believes ground-water monitoring is appropriate primarily at facilities where hazardous waste is purposely placed onto or into the land—such as at landfills, surface impoundments, injection wells, and land treatment facilities—and where ground-water location, quantity, and usage, and other factors such as geology and climate, indicate the need for ground-water monitoring.

Another issue is whether or not all landfills, surface impoundments, and land treatment facilities should have ground-water monitoring systems during the interim status period. There are a number of factors upon which this issue turns. On the one hand, it is true that nearly all landfills, surface impoundments, and land treatment facilities will eventually be required to install ground-water monitoring systems as a permit condition. If these systems are installed during interim status, they would supply several years of monitoring data and early warning of potential ground-water contamination problems which would otherwise be unavailable. Given the recent spate of ground-water problems identified at hazardous waste disposal facilities (see Ground-Water Monitoring Background Document), there is good reason for requiring ground-water monitoring during the interim status period.

On the other hand, the planning and construction of ground-water monitoring systems takes time, and should be overseen by qualified hydrogeologists.

Also, ground-water monitoring systems may be inappropriate in some circumstances. Furthermore, the proposed ground-water sampling and analysis requirements were extensive, and contained provisions for variances in some cases.

On balance, the Agency has decided that the advantages—in terms of increased human health and environmental protection—of requiring all landfills, surface impoundments, and land treatment facilities to have ground-water monitoring systems during the interim status period outweigh the drawbacks outlined above. However, the Agency is concerned about the short time in which facilities currently operating without ground-water monitoring systems must comply, i.e., Section 3010(b) provides that Section 3004 standards take effect six months after their promulgation. Consequently, the Agency has written the final interim status standards to require that all hazardous waste landfills, surface impoundments, and land treatment facilities have ground-water monitoring systems within 18 months of the promulgation of the regulations unless the owner or operator conducts hydrogeological studies which demonstrate that such a system is unnecessary. This delayed schedule for compliance should allow enough time to properly plan and install the systems. In addition, to minimize the need for owners or operators to interact with the Agency, the ground-water sampling and analysis requirements have been simplified so that variances are no longer necessary.

While these regulations require owners and operators of surface impoundments, landfills and land treatment facilities to begin to set up ground-water monitoring programs, the Agency has yet to specify the appropriate corrective action that is to follow the discovery and initial assessment of contamination. The Agency believes that its ground-water protection strategy under Section 3004 is a critical element of the entire Subtitle C program. EPA, therefore, intends to develop that standard as part of the Phase II regulations, which better allows the Agency to integrate its ground-water protection objectives with its strategy for setting other environmental performance objectives.

The absence of a specific ground-water quality protection standard in Part 265 does not in any sense undermine the need for ground-water monitoring requirements during the interim status period. The monitoring system required here is designed to

answer two questions. Has the facility contaminated ground-water? If so, what is the degree of contamination? The answers to these questions will be essential to whatever ground-water quality protection standard (and corrective action) is included in the Phase II regulations. Moreover, a careful assessment of these issues will require an examination of background ground-water quality, for which owners and operators of surface impoundments, landfills, and land treatment facilities can and should begin to monitor.

**2. Incinerators.** The proposed regulations contained detailed requirements for the operation of hazardous waste incinerators. These included destruction efficiency, combustion levels, detailed monitoring and inspection, and trial burns. These were not made applicable during the interim status period. A comment suggested that the proposed monitoring and inspection requirements should be made applicable during the interim status period.

Full application of those standards would require major capital outlays for equipment which may not be readily available and which might need to be altered during the permitting process. On the other hand, existing damage incidents and operator requests (in comments on the proposed regulations) for emission variances during start-up and shut-down periods show that improper incineration of hazardous waste can be a serious health problem. In addition, for some facilities, the interim status period will last longer than EPA had expected at the time the regulations were first proposed.

Because of this the Agency is now issuing, on an interim final basis, a set of "threshold" requirements designed to assure a basic level of environmental and human health protection throughout the interim status period. These standards are discussed in the Subpart O analysis in this preamble and in an accompanying background document. They meet EPA's informal interim status criteria while offering protection from the most serious dangers of hazardous waste incineration.

**3. Thermal Treatment.** The proposed regulations contained no provisions specifically applicable to all types of thermal treatment of hazardous waste. Commenters feared that the proposed incineration regulations, focusing on flame combustion techniques, would unduly restrict innovative treatment of hazardous waste in other thermal treatment facilities. The Agency wishes to encourage the development of new techniques that can adequately render waste less hazardous or non-hazardous,

or more amenable to transport or store. Thus, these regulations include a new set of standards—Subpart P—regulating other forms of thermal treatment.

The risks associated with the thermal treatment of hazardous waste are similar to those posed by hazardous waste incineration. The Agency has therefore designed, for the interim status period, a set of "threshold" requirements to provide a basic level of protection for human health and the environment. They are discussed in the Subpart P analysis in this preamble and in an accompanying background document. They are being issued on an interim final basis.

**4. Closure and Post-Closure.** A number of commenters suggested adding the requirement for submitting a closure plan to EPA (as outlined in proposed § 250.43-7(c)) to the interim status standards.

Upon reviewing the comments, it is clear that some members of the public did not understand the Agency's intention regarding closure plans during the interim status period. The Agency intended that each facility owner or operator with interim status would prepare a closure plan for his facility, to include estimates of closure costs, and post-closure costs, if applicable. The owner or operator would then use this information as the basis for complying with the financial requirements (a closure trust fund, and post-closure trust fund, if applicable). However, the Agency did not believe that it was necessary for owners or operators routinely to submit these closure plans to the Agency for review during the interim status period. In EPA's opinion, the Agency staff should focus their attention on issuing permits and on enforcement matters, rather than reviewing closure plans. The Agency can ensure that closure plans are prepared when it conducts facility inspections. Further, the facility owner or operator must submit a closure plan with Part B of his permit application. No later than the time the permit is considered, the Agency will review the plan and require it to be revised, if necessary.

EPA agrees with the thrust of comments in this area, though, and should an owner or operator wish to close his facility during the interim status period (i.e., before final administrative action on the permit application) he must contact the Regional Administrator 180 days before he expects to begin closure. At that time, the Agency will review the closure plan and require it to be adjusted as necessary. These procedures have been clarified in the final rules. (See Closure

and Post-Closure Care Background Document for details.)

5. *Ignitable, Reactive, or Incompatible Wastes.* Several commenters suggested that the proposed standards which restricted the handling of ignitable, reactive, and incompatible wastes at certain facilities be included in the set of interim status standards. These standards were not, for the most part, proposed as interim status standards because the extensive and complex provisions in the Notes (i.e., variances) to these proposed standards would have required extensive interaction with the Agency. However, many commenters suggested that owners and operators should be allowed to make for themselves the judgments embodied in the Notes, without obtaining the approval of the Regional Administrator. As discussed below, the Agency decided that this could be made a workable arrangement and has made the objectives of the Notes a self-executing part of the regulations. Deletion of the requirement for approval of the Regional Administrator now allows inclusion of these regulations in the interim status regulations. They now appear in § 285.17 and are discussed in the Subpart B analysis of this preamble. The inclusion in the interim status standards of fairly extensive requirements for the analysis of waste should provide owners and operators with sufficient information to safely handle ignitable, reactive, or incompatible wastes under these regulations.

6. *Landfill Rules.* Several commenters felt that requirements for landfill diversion structures and cover material should be included in the interim status standards.

The need for landfill diversion structures arises from the potential for precipitation from outside the active portion of the facility to run onto the active portion and become contaminated. This contaminated water may then run off into surface waters creating a threat to human health and the environment. A related problem involves precipitation which falls directly on the active portion of a facility. It may also become contaminated run-off, and thereby cause similar problems.

The Agency shares the commenters' concern regarding contaminated surface water run-off, and agrees that provisions for its control should be included in the final interim status regulations. Similarly, these problems also may arise at land treatment facilities. Accordingly, during the interim status period, the final rules require that run-on must be diverted away from the active portions of a landfill or land treatment facility,

and the run-off from the active portions of a facility must be collected. These provisions are discussed in the Subpart N section of this preamble.

Landfill cover material requirements were not proposed as interim status standards because cover requirements can vary on a site-specific basis, and the proposed requirement was subject to a Note (i.e., variance). The Agency has decided not to include a landfill cover requirement in the final interim status standards, except for final cover during closure (see discussion in the Subpart N section of this preamble).

7. *Waste Analysis.* Some commenters felt that sampling and analysis of hazardous waste by facility owners or operators (proposed § 250.43(f), (g), and (h)) should be included as an interim status standard.

Waste sampling and analysis provisions were not specifically proposed as interim status standards. On the other hand, some level of waste analysis was required by the need to meet other interim status standards such as the prohibition on placing wastes in tanks or containers that previously held an incompatible material. In response to the numerous comments received on these proposed standards (see the Waste Analysis Background Document and the Subpart B section of this preamble), the Agency has modified the requirements for waste sampling and analysis. The facility owner or operator is now required to prepare and follow a waste analysis plan that is appropriate to the waste that is handled and to the type of facility. In addition to the general waste analysis standards applicable to all facilities, waste analysis requirements specific to different types of facilities (e.g., landfills and tanks) are also included in each technical section of the regulations.

The Agency believes that these sampling and analysis requirements are amenable to all waste management facilities, so that variances to the waste analysis standards are no longer necessary. Furthermore, the Agency believes that facility owners or operators need to know certain information about the wastes they handle in order to handle them safely and to comply with the reporting and technical requirements of the Phase I regulations. Consequently, both general and specific waste analysis requirements have been added to the interim status standards.

8. *Site Selection Standards.* Some commenters felt that the general site selection standards (proposed § 250.43-1) should be made a part of the interim status requirements, because omitting these standards would be "contrary to

the intent of the law and completely unacceptable."

Section 3004(4) of the Act specifies that regulations must include such requirements for the location of hazardous waste facilities as are necessary to protect human health and the environment, and the Agency proposed location standards in § 250.43-1. The Agency excluded them from the interim status requirements, however, because there would have been few options, other than closure, for existing facilities which were already located in areas restricted by the proposed site location standards. Immediate closure of such facilities during the interim status period might cause a severe shortage of hazardous waste facilities and could well lead to illegal dumping, which would only exacerbate the problems EPA is trying to control. The Agency is in the process of finalizing its site location standards for promulgation as part of the Phase II standards. EPA believes there may be circumstances where variances or waivers to site location standards will be in the best interests of protecting human health and the environment. Therefore, the Agency has continued to exclude site selection standards from the interim status requirements. EPA believes that such standards should be applied on a case-by-case basis during the permitting process.

#### D. Compliance Period

Many commenters suggested alternate schedules for compliance with the interim status requirements. The suggested schedules spanned the range from before, at, and up to a year after the effective date of the regulations. EPA does not have the authority to require owners and operators to comply with requirements *before* the effective date of the regulations. Those commenters requesting that the effective date of the interim status standards be deferred *beyond* the six-month period after promulgation of the regulations argued that these six months would be used for analyzing waste and preparing permit applications, and thus additional time would be needed to comply with the substantive interim status requirements, such as those for security and the development of contingency plans.

The Agency does not agree with those arguments. Wastes listed in the Section 3001 regulations need not be analyzed to fill out the permit application necessary for the owner or operator of a facility to obtain interim status. For nonlisted wastes, it takes a maximum of 24 hours to perform the test protocols to determine whether or not a waste

stream meets one of the hazardous waste characteristics specified in the Section 3001 regulations. In any event, these tests must be completed within 90 days (not six months) in order to comply with the notification requirements of Section 3010 of RCRA.

The comments on what period EPA should allow for compliance with the interim status standards were submitted before the permit application regulations under Section 3005 of RCRA were proposed, and therefore, commenters may have assumed that applying for a permit would be a difficult and time-consuming task. However, the permit rules specify a two-step permit application process. A facility owner or operator may satisfy Section 3005(e) of RCRA, and thereby qualify for interim status (provided Sections 3005(e)(1) and (2) are also complied with), by submitting Part A of the permit application within six months after promulgation of the Section 3005 (Part 122) regulations. The Agency believes that assembling the information required in Part A is neither difficult nor time-consuming. Consequently, the burden of preparing Part A of the permit application should be substantially less than the commenters anticipated. Most of the substantive information is not required until Part B is submitted, just before the Agency is ready to review the application. For some facilities, this may take several years.

The final security requirements have been made more flexible than they were in the proposed rules (see the preamble discussion on Subpart B). The Agency believes that facilities should be able to comply with these requirements within the six-month period following the promulgation of the regulations. The Agency also believes that a facility owner or operator should be able to prepare a contingency plan and the other plans required by the interim status standards within this same time frame.

For all of the reasons given above, the Agency does not believe that a compliance period longer than six months is justified, except to install new ground-water monitoring systems and to construct surface water run-off controls.

#### E. Notes and Variances

Many commenters suggested that the applicability, during the interim status period, of the "Notes" in the proposed rules should be clarified. Some commenters felt that the regulations should allow facility owners or operators with interim status to make good faith judgments of their own compliance with the applicable regulations, including the provisions of

the attendant "Notes," without special approval from the Agency.

In response to numerous comments concerning the "Note" system in general, the Agency has incorporated all of the alternative standards and other substantive "Notes" directly into the final rules (as discussed *infra*). Consequently, there should be no confusion as to whether or not certain alternative standards are allowed during the interim status period. The "Comments" included with these regulations are not intended to create alternatives to the requirements of the regulations.

The Agency agrees that, to a certain degree, facility owners or operators should be allowed to make good faith judgments as to whether or not certain alternative requirements apply to them during interim status. The final rules typically specify that a facility owner or operator may choose to follow alternative requirements allowed by a variance, *provided* he can demonstrate the facts and rationale supporting that judgment when requested to do so by the Regional Administrator. Thus, a self-implementing system (as requested by the commenters) applies to variances during the interim status period, but that system is subject to oversight by EPA, which can request evidence to support the variance at any time. It is likely that the Agency will review this evidence only in conjunction with making a routine facility inspection or when the Agency has reason to believe that a violation has occurred.

In any event, variances will be reviewed by EPA during the permitting process, and will be reflected in the permit conditions if a facility owner or operator can demonstrate eligibility for the variance as the regulations require.

#### F. Equity

Many commenters expressed concern that inequities are likely to develop in permitting facilities during the interim status period. Below are the three major concerns raised by the commenters on this issue.

**1. Common Permit Effective Date.** EPA estimated in the preamble to the proposed regulations that it could take up to five years to issue all of the permits. Several commenters pointed out that EPA or an authorized State may review one facility's permit application early in the period and impose a compliance schedule to meet the full set of Section 3004 standards, while a similar competing facility might be subject only to the interim status standards for several years until its permit application is reviewed.

To minimize potential inequities, several commenters urged EPA to establish a definite period during which only the interim status standards apply, regardless of when a permit is issued. In other words, all permits and permit requirements would become effective at the same time. The interim status period, according to some commenters, should be sufficiently long to ensure that essentially all of the permits would be issued. Others specifically suggested a five-year period as is prescribed by the Clean Water Act.

Unlike the Clean Water Act, which mandated a specific date by which all waste water treatment systems were to be in compliance with the BPT requirements, there is no language in RCRA which suggests that EPA should, or could use a similar approach. Further, EPA believes that the suggested approach is inconsistent with the clear Congressional mandate in RCRA to provide safer hazardous waste management practices as quickly as possible.

**2. Case-by-Case Interim Status Standards.** Some commenters suggested that interim status requirements should be imposed on existing facilities on a case-by-case basis using the past operating experience of these facilities with which State environmental agencies should be familiar. The commenters felt that these case-by-case evaluations would be more equitable than the "blanket" proposed approach.

The Agency does not agree that interim status standards should be applied on a case-by-case basis. This approach would be a *de facto* permit program. It would require the Agency to commit substantial resources to these case-by-case preliminary analyses which would be better spent in developing final permits. It is difficult to see how this approach could be considered more equitable than uniform national standards which apply to everyone, as proposed. Consequently, the Agency has not adopted a case-by-case approach for the interim status standards.

**3. No Intention To Obtain Permits.** Commenters suggested that many facility owners or operators who never intend to actually obtain a permit will take advantage of the interim status period by applying for a permit, using unrealistically low estimates for establishing closure and post-closure funds, competing in the market place with legitimate owners or operators for the several years it will take to fully review permit applications, and then close their facilities prior to permit issuance or final denial. Because EPA proposed to issue an identification

number to each facility owner or operator who meets the requirements for interim status under Section 3005(e) of RCRA, commenters suggested that ways of countering the above problem would be: (a) before issuing an identification number, inspect each facility to determine the facility owner's or operator's financial capability and his potential to comply ultimately with the requirements of RCRA, or (b) issue identification numbers only to those facility owners or operators who presently hold valid State or Federal NPDES permits to receive and dispose of specific hazardous waste compounds.

The Agency shares the concern expressed by these commenters, but disagrees with their suggested solutions. Interim status is achieved automatically by a facility owner or operator who complies with Section 3005(e) of RCRA. EPA cannot initially withhold interim status from facility owners or operators who otherwise qualify, based on the Agency's subjective judgments of financial capability, intent to ultimately comply with RCRA's requirements, or on the basis of State or Federal permits issued under other statutes. If EPA becomes aware of facilities which are not meeting the interim status standards, the Agency can bring an enforcement action against them under Section 3008 of RCRA, or can move quickly towards final disposition of the facility's permit application.

The Agency has made it clear in the regulations that facility owners or operators who choose to close their facilities while in interim status (before a permit is issued or denied) must do so in accordance with the full set of closure requirements and post-closure requirements (if they apply). Thus, these owners or operators will not escape the responsibilities (and costs) of complying with these requirements. Consequently, the potential inequities which the commenters feared should be greatly reduced, if not totally eliminated.

#### IV. General Issues

##### A. Degree of Hazard

The proposed Sections 3001 and 3004 regulations did not create a classification scheme which separated hazardous wastes into varying degrees of hazard or risk for purposes of regulation. The proposed Section 3004 regulations did, however, take into account certain types of hazardous properties or classes of hazard in imposing management requirements. For instance, certain management requirements were proposed for wastes with ignitable and reactive properties that were not proposed for other wastes.

A large number of commenters argued, for a variety of reasons, that a degree of hazard system is necessary in order to effectively implement the hazardous waste control program. Several commenters suggested that wastes should be classed into two or more levels of hazard (i.e., "extremely hazardous" or "hazardous"), depending on the intrinsic risk associated with the waste. Many commenters stated that because the intrinsic hazard presented by a waste is a function of certain chemical and physical parameters, classification by risk should be based on a quantification of these parameters. On the other hand, several commenters felt that the hazard presented by a waste is a function of its management and, therefore, wastes should be classed into hazard levels according to how they are managed. Many commenters suggested using a combination of intrinsic hazard and hazard based on management.

In support of these suggestions, a number of commenters argued that the two-part definition of "hazardous waste" given in Section 1004(5) of RCRA requires a system for classifying wastes by degree of hazard. They claimed that one class should consist of those wastes described in the first part of the definition, i.e., those wastes which "cause or significantly contribute to an increase in mortality or an increase in serious irreversible, or incapacitating reversible, illness," and that the other class should consist of those wastes described in the second part of the statutory definition of hazardous waste, i.e., those wastes which "pose a substantial present or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed."

The suggestions made by the commenters differed widely in the complexity of the suggested hierarchy or classification system for risks, and in the relationship of the resulting risk classes to the waste management standards. Many commenters supported the concept of a degree of hazard system but did not propose a specific approach for carrying it out.

The degree of hazard proposals were based primarily on concerns about the priority of implementation and the economic burdens that might be imposed if the same standards were applied both to wastes with relatively low hazard and wastes with higher hazard. Accordingly, commenters generally associated one of the following objectives with a degree of hazard system:

(1) Phasing of the regulations to address first the wastes which present

the greatest risk to human health and the environment. (This comment was frequently coupled with the issue of a perceived national shortfall of facility capacity.)

(2) Tailoring of management standards to the properties of wastes so that adequate protection of human health and the environment could be achieved without overregulating some wastes, and thus unnecessarily increasing the economic burden of the regulations.

(3) Setting quantity threshold levels below which small quantities of wastes could be exempted from some or all of the Subtitle C management requirements without significant impact on human health and the environment.

The Agency believes that the final regulations, when promulgated in full, will achieve each of these objectives, although without adoption of a degree of hazard system. EPA has made the decision not to adopt a degree of hazard system with full realization of the conceptual appeal of such a system and the recognition that all wastes do not present the same level of risk to human health and the environment. The Agency has taken this position for two reasons:

(1) The Agency does not believe that any of the degree of hazard systems suggested by commenters (or any the Agency could itself conceive) are capable of actually distinguishing different degrees of hazard among the myriad hazardous wastes and also reasonably relating management standards to these degrees in a technically and legally defensible way.

(2) The Agency believes that the final regulations already achieve the objectives of a degree of hazard system; thus, such a potentially complex and challengable system is unnecessary.

**1. Classification of Waste by Risk.**  
The central element of a degree of hazard system is a classification of hazardous wastes according to their level of hazard or risk to human health and the environment. The Agency is convinced that all of the degree of hazard classification schemes suggested by commenters and otherwise considered by the Agency are extremely judgmental and prone to arbitrariness.

Classification of wastes by intrinsic hazard would require the Agency to make determinations such as the following:

(1) Levels of hazard within a characteristic, i.e., whether one ignitable waste is more hazardous than another ignitable waste;

(2) Levels of hazard within listed wastes, i.e., whether all properties which form the basis for listing (e.g.,

carcinogenicity, bioaccumulativity) present different degrees of hazard;

(3) Relative hazard of different characteristics, i.e., whether an ignitable waste is more hazardous than a reactive waste.

Furthermore, most wastes exhibit more than one characteristic, i.e., a waste may be ignitable, toxic, and bioaccumulative, so that the difficulty of the classification task is compounded.

With the exception of a few well known wastes of extremely high hazard, such as dioxin, the Agency generally lacks the information or techniques to make these distinctions between hazardous wastes. While distinctions between *some* very high hazard wastes and other much lower hazard wastes may be possible, there is a broad middle ground where classification by degree of hazard would be extremely difficult. This is particularly true when all potentially hazardous wastes must be considered, not just those on which there is significant information available and for which hazard distinctions may be obvious.

The task of classifying wastes by degree of hazard is all the more difficult because an assessment of hazard, i.e., risk to public health, cannot be made based on intrinsic hazard alone, but must be based on the likelihood of *exposure* as well. Exposure assessments depend on many situation-specific factors that determine the pathways through which exposure may occur, e.g., the hydrogeology, proximity and use of ground water and surface water, etc. Making exposure assessments the purpose of constructing a multi-level degree of hazard system would prove enormously complicated, if not impossible.

**2. Tailoring of Management Standards.** The second element of a degree of hazard system is to establish different management standards for the different degrees of hazard. While the Agency agrees with commenters that it is desirable for the regulations to provide for flexibility to achieve tailoring of management requirements, EPA does not believe that the best approach to tailoring is to prescribe nationally applicable requirements based on the degree of hazard of a waste.

Within the universe of hazardous wastes, distinctions in technical management requirements can best be based on the actual properties of the waste, i.e., the type or *class* of hazard a waste presents, and on local site conditions, rather than on the *level* of hazard of a waste. In the final regulations the Agency has included a number of tailored waste management

requirements relating to waste classes, i.e., properties such as ignitability, reactivity, compatibility, or liquid state. EPA plans to continue to differentiate among waste classes in its Phase II and Phase III regulations. The Agency found it far easier to justify differences in regulatory requirements for these classes of waste, than to base facility performance, design, or operation on intrinsic hazard levels. For example, one can readily justify a prohibition of hazardous waste containing free liquids in landfills because they create hydraulic head, and thus promote leaching. However, different facility design requirements for dealing with, for example, an acutely toxic waste versus a less toxic waste are much less clearly defined. In such cases, differences in intrinsic hazard may be overshadowed by the *types* of constituents in a waste (i.e., do they migrate rapidly, or are they persistent), by the amount of waste, or by the site conditions (e.g., type of soil, or distance to ground water).

Distinctions in management requirements can also be made based on the local site conditions and peculiarities of the waste involved. Factors such as hydrogeology, rainfall, and soil type can be considered on a case-by-case basis as a part of the permitting process given appropriate flexibility in the regulations. Such a case-by-case consideration of site conditions and, to some extent, waste properties, is feasible and desirable, and the Agency plans to adopt such a system in its Phase II regulations.

Thus, the Agency has concluded that it does not have the necessary technical information and criteria to develop a technically supportable set of national standards which would rank wastes by degree of hazard; the Agency also has not determined that it is feasible or beneficial to relate management standards to an abstractly conceived degree of hazard, rather than to the waste's actual properties and the site conditions. Furthermore, EPA believes that its current and intended future regulations will otherwise accomplish the objectives of a degree of hazard system.

**3. Response to Degree of Hazard Objectives.** It is difficult for the Agency to demonstrate fully how its regulatory scheme under RCRA responds to all of the objectives of a degree of hazard system because the regulations are being promulgated in two major phases. The first phase includes the definition of hazardous waste in Part 261 as well as a limited set of management standards in Parts 264 and 265. The second phase will include the bulk of the technical

management requirements. The Phase II standards in particular will effectively achieve at least as much flexibility in management standards as would a degree of hazard system.

As discussed above, the commenters generally associated one or more of three objectives with a degree of hazard system: (1) Phasing of the regulations to include highest risk wastes in the system first; (2) tailoring of management standards to particular wastes to avoid over-regulation; and (3) setting quantity threshold levels below which small quantities of wastes could reasonably be exempted from some or all of the Subtitle C requirements. Although still developing the Phase II regulations, EPA can describe its basic regulatory approach and some specifics of its initial response to commenters' requests for phasing, tailoring, and threshold levels.

The Phase I regulations accomplish the objectives of phasing in several ways, although they were not designed specifically for that purpose. The listing of wastes in Part 261 includes primarily wastes of high intrinsic hazard because those are the wastes on which significant health effects information has been most readily available. The listing process itself is a phasing mechanism which brings additional waste under RCRA Subtitle C control over time. Also, the exclusion levels for small quantity generators are set initially at 1000 kg/mo, but will be phased down to 100 kg/mo over time. There is also an administrative mechanism for phasing during implementation to deal with the capacity issue. Each EPA regional office and authorized State implementing the regulations will have the flexibility to administer the permitting and enforcement process in such a way that the most severe human health and environmental problems are addressed first.

The Phase I regulations provide for tailoring of waste management standards by providing significant flexibility. In addition, some specific requirements for certain waste classes of hazard are incorporated.

The Phase I standards under Part 265 are minimum requirements which the Agency believes are appropriate for all wastes during the interim status period. Some of these standards are administrative requirements dealing with manifests, recordkeeping, and reporting that are minimums for adequate tracking of all waste. Other general technical requirements, such as waste analysis, training, and contingency plans, provide flexibility by requiring the owner or operator to

prepare a plan in which he details the requirements for his specific facility. Other more technical requirements such as ground-water monitoring and closure, also allow significant flexibility for the owner or operator to include site-specific factors in the requirements for his facility. For example, the closure standards require a plan addressing various performance factors. Specifics of how to close the facility to meet these objectives are left to the owner or operator, subject to approval by the Regional Administrator. Many other parts of the technical standards for the interim status period provide similar flexibility.

The Phase II technical standards will continue to provide a basis for tailoring standards to particular sites. The Phase II regulations are sometimes referred to in the preamble to these regulations as "best engineering judgment" regulations. The Agency envisions that these regulations will provide basic performance requirements and a set of relevant technical factors that relate to those performance standards. Specific permit requirements will then be based on the engineering judgment of the permitting officials, supplemented by technical reference manuals. This system will allow maximum flexibility for tailoring of the specific permit requirements based on waste specific and site-specific knowledge. This case-by-case approach is appropriate because the possible combinations of types of waste and types of management scenarios throughout the Nation are almost limitless.

Finally, the Agency has established thresholds for exemption of wastes from small quantity generators through the combination of a general exclusion, and specific exclusions, based on considerations of hazard. Although not based on a comprehensive degree of hazard system, the exclusion level for some wastes has been set at very low levels based on case-by-case hazard determinations.

In summary, the Agency believes that the final regulations accomplish the objectives of a degree of hazard system, while avoiding the enormous problems that would be associated with development and implementation of such a system.

#### *B. Volatile Waste*

Because most hazardous waste can volatilize into the air to some degree, EPA is concerned about the treatment, storage, or disposal of hazardous waste which could result in the emission of toxic compounds into the air.

In the proposed regulations, volatile waste was defined as any hazardous

waste mixture with a true vapor pressure greater than 78 mm Hg at 25° C. Using this definition, the proposed regulations contained a number of prohibitions and limitations on the management of volatile waste in various types of facilities.

A number of people commented on the impracticality of the limitations and prohibitions on volatile waste, and felt it was inappropriate to use the OSHA permissible exposure levels for airborne contaminants as a mechanism for allowing variances to the prohibitions (i.e., under the proposed regulations, if an owner or operator could show that his facility could manage volatile wastes so that the OSHA levels for pollutants in the air were not exceeded, then he was allowed to do so).

Although no comments directly addressed the proposed definition of volatile hazardous wastes, EPA became concerned about a number of technical difficulties associated with defining volatile waste solely in terms of the waste's vapor pressure. First, vapor pressure is only one of the several factors which influence the volatilization rate of hazardous waste. Other factors (such as solubility, temperature, molecular weight of the waste, and surface area of a landfill or impoundment) can lead to radically different volatilization rates for compounds with similar vapor pressures. Second, if the vapor pressure of a hazardous waste mixture were used to determine whether it is a volatile waste (and thus, subject to more stringent standards than non-volatile waste), owners or operators might dispose of toxic compounds with high pure vapor pressures by mixing them with compounds with low vapor pressures. Third, EPA is concerned that there is not enough information about the inhalation toxicity of individual compounds in waste to substantiate an estimate of a safe volatilization rate.

Since the regulations were proposed, the Agency has examined several alternatives for defining and controlling volatile waste. These included attempts to develop a new definition, and a new variance provision. However, because these attempts thus far have not been successful, the Agency is not defining volatile waste as a waste class at this time.

The primary or secondary purpose of some of the interim status standards, however, is to reduce airborne emissions that result from volatilization. For example, the final cover requirements for landfills, and the requirement that waste storage drums be kept closed, will reduce volatile emissions from these devices.

Nonetheless, EPA is concerned that there may be little control of volatilization for surface impoundments, open tanks, and land treatment facilities in the Phase I rules.

This is clearly an area in which there is a great need for additional information regarding how to properly define volatile waste, how to relate the quantity of volatile waste being land disposed to the toxicity of volatile compounds, and how to arrive at appropriate control measures to minimize emission of these compounds to the air. The Agency is committed to solving this problem and will continue its investigations.

The Agency solicits comment and data on this matter. As information becomes available, the Phase II and Phase III regulations will contain additional provisions to control volatile wastes and the interim status standards may be revised where appropriate.

#### *C. Performance Versus Design and Operation Standards*

In the proposed standards, the Agency relied primarily on facility design and operation standards in an effort to provide specific requirements which could be easily understood and interpreted by permit applicants and permit writers alike, and which could be easily enforced. Recognizing that these specific standards might discourage the development of new technology, or that different design and operation requirements might be necessary for particularly facilities in certain locations handling certain types of waste, the Agency attempted to incorporate flexibility into the regulations by supplementing some standards with "Notes." Each "Note" described the circumstances under which the Regional Administrator would allow deviation from the specific standard to which the "Note" applied. No deviations were allowed for those proposed standards not accompanied by "Notes."

In addition to the design and operation standards, the proposed regulations contained overriding performance standards (i.e., human health and environmental standards) for protecting ground water, surface water, and air quality. These were very elementary ambient performance standards which were to be used in unusual waste management situations where the design and operation standards were insufficient to protect human health and the environment.

Several commenters pointed out significant drawbacks to using the proposed human health and environmental standards as fail-safe mechanisms for regulating hazardous

waste management. In response to these comments, the Agency has deleted the human health and environmental standards from the Section 3004 regulations.

EPA's strategy in the proposed rules of relying primarily on design and operation standards was also criticized by many commenters. Most of their comments focused on four concerns regarding regulations based on design and operation standards: (1) design and operation standards discourage innovative technology, (2) design and operation standards eliminate flexibility for permit officials to allow for local situations, (3) some existing facilities may be unable to comply with the design and operation standards and yet may be environmentally acceptable, and (4) RCRA does not authorize the establishment of design and operation standards.

The Agency rejects this fourth point. Section 3004 of RCRA states that: "The Administrator shall promulgate regulations establishing such *performance* standards applicable to owners and operators of facilities for the treatment, storage, or disposal of hazardous waste identified or listed under this subtitle, as may be necessary to protect human health and the environment." However, it *also* states that: "Such standards shall include, but need not be limited to, requirements respecting:

(1) Treatment, storage, or disposal of all such wastes received by the facility pursuant to such *operating methods, techniques, and practices* as may be satisfactory to the Administrator; and

(2) The *location, design, and construction* of such hazardous waste treatment, storage, or disposal facilities;" (emphasis added).

Thus Section 3004 of RCRA authorizes both performance standards and specific design and operation standards.

Nonetheless, the Agency believes that some of the arguments for greater flexibility raised in the first three points have merit, and the Agency has evaluated several approaches to respond to these commenter's concerns.

One approach which the Agency considered was to accommodate the requests for greater flexibility through specific changes in the regulations. These changes include establishing a class of hazard system, and expanding and clarifying the variances. These topics are discussed elsewhere in this preamble. These changes are desirable, and they have been incorporated to a limited extent in the interim status standards. They will be more evident in the technical regulations yet to be issued under Phases II and III. However, these

changes do not fully and directly address the commenters criticism of the proposed rules, because they do not really shift the emphasis from design and operation standards.

A second approach which the agency has used to a very limited extent in these rules and is considering for the Phase II rules is to expand the use of "operation performance standards," which, for example, could place limits on emissions or specify results. Such standards are advantageous because they provide more flexibility than design and operation standards. Operation performance standards were already implicit in many of the proposed design and operation regulations. The Agency plans to make them more explicit in the Phase II rules.

The Agency believes that using operation performance standards, in conjunction with the other changes in the regulations mentioned above, should provide a much more flexible approach for designing and operating facilities than was possible under the proposed rules, while avoiding the many disadvantages of ambient performance standards. Using operation performance standards also directly responds to the majority of comments on this issue. It should be noted, however, that the Agency has retained explicit facility design and operation standards where their use is appropriate such as in the emergency preparedness and response regulations.

#### *D. Notes, Variances, and Equivalency*

As was mentioned in the discussion above, the Agency attempted to incorporate flexibility into some of the proposed design and operation standards by allowing variances from the standards. These variances were specified in "Notes" which accompanied many of the standards. In most cases, these "Notes" required that, in order to deviate from the prescribed standard, the applicant had to show that the modification to the standard would provide an *equivalent degree of protection or performance* as the prescribed standard. In reviewing the comments requesting more flexibility in the regulations, it became clear that many commenters had simply ignored the "Notes." This was obvious from the many specific complaints about the impracticality of certain standards under certain conditions without reference to the attendant "Notes," which were designed to provide the flexibility to deal with such conditions.

Other commenters felt that the permitting official would be reluctant to use the "Notes," because to do so would require him to decide whether the

substitute design or operation modification would provide equivalent performance. The commenters believed that permit writers would not want to make these types of decisions because it would place their technical and professional reputations on the line. Specific suggestions made by commenters to rectify this problem, and to incorporate additional flexibility into the regulations, included:

(1) Incorporate the "Notes" into the regulations to make the variance procedure an integral part of the permitting process;

(2) Provide variance procedures for more standards than those included in the proposed rules;

(3) Provide a general variance procedure which would apply to all standards; and

(4) Provide guidance on what is meant by "equivalent performance."

As mentioned earlier, the Agency agrees with suggestions (1) and (2), and has incorporated them into the Phase I regulations, and also will do so in the Phase II and III regulations.

EPA does not agree that variances to *all* standards should be allowed. For example, every facility needs a contingency plan. Furthermore, for most variances to be implemented with a maximum degree of specificity, they must be tailored to the individual standard. For these reasons, the Agency has chosen not to develop one general variance procedure to apply to all regulations.

The Agency has attempted to lessen the need for demonstrating "equivalent performance" by making the variance procedures more specific. By so doing, in a few cases, there may be some decreased latitude in the degree of permissible variation from the standard than was the case when variances were keyed to demonstration of "equivalent performance." The Agency believes, however, that the reduced potential for confusion and disagreement between the Agency and the regulated community associated with this change outweighs this slight loss in flexibility.

During the interim status period, allowable variances to Part 265 standards are self-implemented by the facility owner or operator, subject to EPA oversight (see discussion under "Interim Status Standards"). The Part 264 Phase I standards contain some variance provisions and the Agency expects that the Part 264 Phase II technical standards will also contain variances where appropriate. The Agency intends that permit writers make full use of the flexibility available through these variances to Part 264 standards, where allowable and

appropriate, because this is the essence of the best engineering judgment approach discussed earlier.

Data on the applicability of many variances, among other things, will be included in the Part 264 Phase II Reference Manuals (discussed later in this preamble) which will be available to permit writers and the public.

#### *E. Commercial Products Standards*

Several types of materials (process wastes, residues, etc.) which may be classified as hazardous wastes are being used to make commercial products, e.g., fuel oil, building blocks, and soil conditioners. Aside from a few radioactive special wastes, no hazardous waste standards were proposed to cover these products.

The Agency, however, addressed the issue of commercial products in the preamble to the proposed regulations and EPA indicated that it was considering developing standards for re-use of hazardous waste. One suggested approach would require a product made from hazardous waste not to pose a threat to human health or the environment greater than the threat posed by the virgin product it replaces. The Agency requested commenters to indicate other feasible regulatory approaches and to provide data which could be used to support commercial product standards.

Comment response to EPA regulation of commercial products was almost entirely negative. Several commenters questioned EPA's authority to promulgate such standards under RCRA and suggested that product regulation is more properly the purview of the Consumer Product Safety Commission and the Toxic Substances Control Act. Others pointed out that the Agency should encourage recovery, recycling, and re-use but that regulation discourages such activities.

EPA believes it has the authority under RCRA to regulate the management of materials which can be classified as hazardous wastes even when that management involves the re-use of the waste as a product. (The reader is referred to the preamble accompanying the promulgation of the Part 261 regulations of this Chapter for a discussion of the circumstances under which recycled materials may be classified as hazardous wastes.) Also, the focus of the Consumer Product Safety Commission is not on wastes and products made from them. EPA believes that waste-related matters should, in most cases, be dealt with under RCRA, although EPA also may choose to promulgate some standards dealing with

the re-use of wastes under the Toxic Substances Control Act.

On the other hand, EPA sees several problems with setting generic requirements for the processing for re-use, and re-use of hazardous wastes. First, it is difficult to determine generically how hazardous wastes can be appropriately re-used or processed for re-use. The Agency recognizes that the approach in the preamble to the proposed regulations, which would have required all products made from hazardous waste to be at least as safe as virgin products, is flawed and is not adopting it at present.

The Agency agrees with the substantial body of comment which urged the Agency not to place the hazardous waste stigma on recovered products without very good cause. Recovery or re-use is generally among the best of all possible ways to minimize the hazardous waste problem—it removes the need for disposal while conserving resources and energy and eliminating the wastes associated with making virgin products. Regulating the processing or re-use of hazardous wastes into products could decrease acceptance of these products in the marketplace.

The Agency has concluded that the best approach is case-by-case regulation of specific processing or re-uses of hazardous waste where the potential hazards of uncontrolled processing and re-use are clear. Certain of these requirements may be included in the Phase II standards.

#### *F. Storage of Recycled Waste*

In the Phase I regulations under RCRA Section 3004, the Agency has decided to regulate storage of hazardous waste which is listed in Subpart D of Part 261 prior to its use, re-use, recycling, reclamation, or treatment for these purposes. Several damage cases point to the need for a storage regulation for such wastes at this time. The Agency may include additional requirements in the Phase II or Phase III standards. On and after the effective date of these Phase I regulations, storage of such wastes in containers, tanks, piles, or surface impoundments, until it is used, re-used, recycled, reclaimed, or treated for these purposes is subject to control under these regulations. These requirements apply both to on-site and off-site facilities. Facility owners or operators who store such waste prior to its use, re-use, recycling, reclamation, or treatment for these purposes must comply with the RCRA Section 3010 notification and Section 3005 permit application requirements (see 40 CFR

Part 122) in order to qualify for interim status.

#### *G. General Standards for Storage*

The proposed § 250.44 storage standards required that storage be conducted so that no discharge of hazardous waste occurred. Because most wastes have some vapor pressure, the proposed rules specified that all hazardous waste must be stored in covered tanks or containers. Many commenters claimed that this "no discharge" performance standard for all storage was technically infeasible and inconsistent with the concept of controlled air emissions under the Clean Air Act and controlled discharges under the Clean Water Act. They also felt that the requirement to store waste only in tanks and containers was unduly burdensome; they claimed that (1) it is unnecessary to store low-volatility wastes in covered storage devices, and (2) it is impractical to store bulk-solid or semi-solid materials in enclosed tanks or containers. For these reasons, the commenters recommended that storage be allowed in devices other than storage tanks and containers, e.g., basins, surface impoundments, and piles.

EPA developed the proposed "no-discharge" standard based on its interpretation of the RCRA definition of "storage," which means ". . . containment . . . in such a manner as not to constitute disposal . . ." RCRA defines "disposal" as:

The discharge, deposit, injection, dumping, spilling, leaking, or placing of any solid waste or hazardous waste into or on any land or water so that such solid waste or hazardous waste or any constituent thereof may enter the environment or be emitted into the air or discharged into any waters, including ground waters.

EPA interpreted this statutory language as requiring "no discharge" (emission) from any hazardous waste storage facility.

Although some commenters considered this a proper interpretation of the Act, others took strong exception to it as noted above. Commenters also contended that the standard was inconsistent with the approach of Section 3004 of RCRA which in their view is to minimize adverse effects. The standards for storage, they argued, should recognize that there are environmentally responsible ways other than no discharge to store hazardous wastes, and should approach the problem by minimizing the potential for discharges, or requiring only that no significant discharges occur. On a narrower level, commenters argued that under the definition of disposal, air

emissions from materials that have not been discharged onto land or water are not "disposal"; thus, RCRA does not mandate the prohibition of air emissions from tanks or containers.

These comments suggest perhaps a more basic issue concerning storage. While RCRA defines storage as containment in such a manner as not to constitute disposal, it does permit disposal under appropriate conditions. Thus, it seems anomalous in the Section 3004 regulations to require an absolute prohibition of emissions when handling of wastes is called "storage," while permitting some level of emissions in other facilities performing "disposal." Surface impoundments, indeed, appear to fall somewhere between a clear example of storage, such as a sealed container, and a clear example of disposal, such as a landfill. An unlined impoundment, for example, may be used to accumulate hazardous wastes for a number of years, and over that time at least some of the waste will almost certainly migrate into the soil under the impoundment. Yet, if at the end of its life the residue and contaminated soil are removed, the impoundment might be rendered non-hazardous, and certainly presents a different picture from a landfill. This situation suggests that the proper focus for regulation of storage facilities is on whether the wastes will eventually be removed from the facility. This approach to storage, under interim status, is reflected primarily in appropriate standards for closure and financial responsibility (i.e., the cost estimate for closure).

The Agency believes that RCRA permits this approach. The definition of storage in RCRA refers to "containment . . . either on a temporary basis or for a period of years," which is a central factor in the current regulatory definition. RCRA apparently would permit the Agency to regulate treatment, storage, and disposal without anywhere prescribing different standards or approaches for facilities falling into different statutory categories; indeed, the statute typically, as in Section 3004, mentions "treatment, storage, and disposal" in a single phrase, indicating that the same statutory provisions apply to all three. This is to be compared with RCRA's much different treatment of generators, and of transporters. This is not to say, of course, that the Agency cannot or should not prescribe quite different standards for facilities that are storage facilities (under some regulatory definition) than for disposal facilities, but simply to say that RCRA permits the Agency to use that concept of storage

which seems most appropriate for regulatory purposes.

With these considerations in mind, and recognizing the impracticality of completely eliminating emissions from most types of facilities, the Agency has redefined "storage" to mean "the holding of hazardous waste for a temporary period, at the end of which the hazardous waste is treated, disposed of, or stored elsewhere."

A few commenters suggested that the Agency consider adding a standard which would limit the time or quantity (or both) of waste that can be stored at a hazardous waste facility. Any such standard would best be based on the type of waste to be stored, the design and construction of the containment device used to store the material, and the climatic conditions under which the storage is to take place. At present, the Agency lacks sufficient data to develop such standards, and a detailed consideration of such information can for now best be made in permitting proceedings. However, the Agency expects to examine further appropriate limitations for storage, and may propose regulations in the future.

In addition, the closure and financial responsibility requirements will set limits indirectly on the quantity of hazardous waste in storage. The Phase II financial standards are expected to require that adequate funds be placed in the closure trust (or other acceptable mechanism) to close the facility at any given time, considering the amount of waste on hand. The amount of these funds will create a definite upper limit on the amount of waste in storage at any time, and will create financial incentives for owners and operators to minimize this amount.

#### *H. Owner or Operator*

In a majority of cases, the owner and operator of a hazardous waste treatment, storage, or disposal facility are the same person or corporation. However, it is not uncommon for an operator to lease the land and perhaps structures from a landowner. In a few cases, the owner of the land, the owner of the structures, and the operator may all three be different persons or companies.

In the proposed regulations, the Agency used the term "owner/operator" when referring to any or all of these parties, and defined the term to mean "the person who owns the land on which a facility is located and/or the person who is responsible for the overall operation of the facility." Commenters complained that the definition was vague and ambiguous and that it was not clear who (the owner or operator)

was responsible or liable for what. A few commenters also pointed out that for a few of the requirements, only the owner can legally comply—a case in point being the requirement to record a note on the deed in proposed § 250.43-7(b).

The Agency's first priority is to protect human health and the environment. Thus, where there has been a default on any of the regulatory provisions, the Agency will attempt to gain compliance as quickly as possible. In so doing, the Agency may bring enforcement action against either the owner or operator or both. EPA considers the owner (or owners) and operator of a facility jointly and severally responsible to the Agency for carrying out the requirements of these regulations.

One reason for this joint responsibility is that, as the commenters pointed out, there is at least one provision of the Section 3004 regulations that only the owner can comply with—that is the requirement to record a notation on the deed to property where hazardous waste remains after closure. Second, if the owner is not bound by the regulations, EPA could have a very hard time trying to implement and enforce the closure and financial responsibility provisions of the regulations. Third, the legislative history of RCRA indicates that responsibility for complying with the regulations pertaining to hazardous waste facilities should rest equally with owners and operators where the owner is not the operator (H.R. Rep. No. 94-1491, 94th Cong., 2d Sess. 28 (1976)).

With most of the regulations, the Agency is primarily concerned with compliance, and is secondarily concerned with who ensures compliance. The Agency believes that decisions concerning who should be responsible for ensuring compliance for which requirements can properly and adequately be a matter between the owner and operator. Nonetheless, both the owner and operator ultimately remain responsible, regardless of any arrangement between them.

Some facility owners have historically been absentees, knowing and perhaps caring little about the operation of the facility on their property. The Agency believes that Congress intended that this should change and that they should know and understand that they are assuming joint responsibility for compliance with these regulations when they lease their land to a hazardous waste facility. Therefore, to ensure their knowledge, the Agency will require owners to co-sign the permit application and any final permit for the facility. Part 122 of the consolidated permit

regulations has been changed to reflect this.

The Agency agrees with those commenters who pointed out that in a few cases only the owner can legally comply with a requirement. Where this is so, the Agency has specified the "owner" in these final regulations. EPA has also changed its usage of the term "owner/operator" to "owner or operator" to indicate when EPA will be satisfied by compliance by either party (but also to indicate that the Agency may enforce against either or both).

#### *I. Inactive Facilities*

RCRA is written in the present tense and its regulatory scheme is prospective. Therefore, the Agency believes Congressional intent to be that the hazardous waste regulatory program under Subtitle C of RCRA is to control primarily hazardous waste management activities which take place after the effective date of these regulations. Thus, the proposed Subtitle C regulations did not by their terms apply to inactive (either closed or abandoned) disposal facilities.

Comments received on the subject pointed out the need to protect the public from inactive and abandoned disposal sites, stressing that because these facilities are normally very poorly designed and situated, they represent a more severe hazard than new facilities. Love Canal and other disasters were cited to support this argument.

The Agency agrees that inactive and abandoned hazardous waste sites (particularly dumps, landfills, and lagoons) may pose serious hazards to human health and the environment. RCRA already provides one tool which can be used to deal with the problem of inactive and abandoned sites—the imminent hazard provision of Section 7003. This provision—which is applicable to both inactive and active sites—can be used to obtain injunctive relief from any party who can be shown to be causing or contributing to ". . . an imminent and substantial endangerment to health or the environment . . ."

The Agency is actively using Section 7003 and other applicable laws to force responsible parties to bear the costs of cleaning up sites posing a hazard. These authorities will remain in place and continue to be actively employed even after the effective date of the Subtitle C regulations.

To provide site cleanup in those situations where the responsible parties are unknown or lack the funds to do the job, the Administration has proposed "Superfund" legislation currently pending in Congress.

While RCRA's regulatory scheme is generally prospective, certain inactive facilities, or portions of inactive facilities, because of their relationship to facilities which continue to operate, may be subject to some RCRA Subtitle C regulatory controls. Some existing landfills or other facilities are expected to close if they do not or cannot meet the Subtitle C standards. The owners or operators may then design a facility which meets the standards and apply for a permit to locate it on land immediately adjacent to the inactive portion. This is not an improper action, but, in some cases, problems associated with the inactive site (leachate, emissions, etc.) may interfere with the ability of the owner or operator to adequately monitor the "new" facility. In these cases, the Regional Administrator may require that the owner or operator of the new facility ensure that certain actions are taken on the inactive site, in order to minimize or eliminate any interference with monitoring or enforcement activities at the "new" facility.

#### *J. New Facilities and Existing Facilities*

In some regulatory programs regulated operations are subject to different requirements, depending on how old the operation is when the regulatory program begins. Often, existing operations are exempted or are subject to less stringent regulations than new operations.

The original language of RCRA did not distinguish between new and existing facilities. Consequently, EPA made the proposed Section 3004 regulations applicable to both new and existing facilities. The Agency recognized, however, that some existing facilities would have difficulty complying with some of the regulations. The Agency envisioned that the "Note" (variance) procedure, as well as the use of compliance schedules would accommodate the possible difficulties associated with retrofitting existing facilities.

The Agency received numerous comments on this general issue. The most frequent comment on the subject concerned RCRA coverage of NPDES permitted wastewater treatment impoundments. Nearly all commenters were opposed to having RCRA cover these impoundments, citing the impracticality of retrofitting existing lagoons to meet the proposed standards. Specific comments addressed:

(a) The tremendous cost associated with lining existing impoundments or building new ones,

(b) The costs of transporting wastes to off-site facilities from manufacturing

operations which may be located in areas which are unsatisfactory for waste management,

(c) The likelihood that many manufacturing plants would have to close while the impoundment was being retrofitted, and

(d) The possibility that some existing facilities may not be polluting now and may never in the future pollute the environment, even though they do not meet all of the proposed RCRA surface impoundment standards.

After substantial additional study, EPA has concluded that the proposed surface impoundment regulations can be changed to answer many of the commenters' concerns about their application to existing wastewater treatment impoundments. The Agency, in keeping with its general guideline of not imposing major capital expenditures on existing facilities during interim status will not require extensive retrofitting of existing surface impoundments in the interim status standards. Furthermore, it is anticipated that the general regulations yet to be promulgated in Phases II and III will also not require retrofitting of these facilities, if the owner or operator can demonstrate that the impoundment is not contributing statistically significant quantities of contaminants to ground water. The Phase I regulations require a ground-water monitoring program in order to determine whether an impoundment is polluting. Regulations yet to be issued in Phases II and III of this regulatory program will set forth additional technical requirements for impoundments. Most of these requirements probably will not apply to existing impoundments found not to be affecting ground water.

The Agency believes that this regulatory approach will (1) substantially reduce the number of existing NPDES facilities which might otherwise had to have been retrofitted, closed, or replaced in order to comply with the proposed Subtitle C rules, and (2) ensure that human health and the environment is protected. Further, this approach is consistent with pending Congressional amendments to RCRA.

Some commenters suggested that all existing facilities, and particularly existing landfills, should be regulated differently than new facilities. After careful consideration, the Agency has concluded, for the following reasons, that landfills do not pose the special problems or deserve the same consideration as "existing" facilities that surface impoundments do:

(1) Sections of landfills are typically filled in sequentially; i.e., one trench or part (cell) of the total landfill area is

filled and then another part is filled. This activity may or may not be done in discrete increments, but it is almost always done in progression moving away from a starting point. Thus, owners or operators can close existing portions of most landfills at virtually any time without retrofitting the facility and can design the unclosed portion in accordance with the RCRA standards. This option is not available to impoundment owners or operators because the entire base of the impoundment is normally covered with wastes from the beginning of operations.

(2) Impoundments are usually temporary structures; i.e., wastes are normally removed from such facilities when they are closed. By contrast, landfills normally constitute permanent disposal; i.e., wastes remain in landfills essentially forever.

(3) Landfills are not normally integrally connected to manufacturing operations. Therefore, any necessary retrofitting which requires diverting solid waste to storage or other facilities would not be likely to cause the manufacturing operation to shut down during the retrofit period. This is not the case with surface impoundments, which typically are integral components of manufacturing operations.

Similarly, except for some minor changes, the Agency could find no good reason for making major distinctions between new and existing incinerators, storage facilities, and other kinds of facilities in these Phase I regulations.

Commenters also pointed to the impracticality of the siting standards, which would have required closure of all existing facilities which were not located in areas which met the proposed siting requirements. No location standards are included in the Phase I regulations (see preamble discussion on "Interim Status Standards"). EPA is considering what relief consonant with RCRA's human health and environmental protection mandate might be granted to existing facilities unable to comply with the location standards. EPA expects to address these considerations in the Phase II standards.

#### *K. References to Other Acts, Regulations, and Standards*

In the proposed regulations, many references were made to legislation and regulations other than RCRA to alert owners and operators that these laws and regulations might apply to their facilities. These included references to proposed and final Federal regulations, State standards, industry standards, and Executive Orders.

Many comments were received concerning this practice. These

comments challenged the legality and the appropriateness of referencing or incorporating standards from other regulations. Several commenters stated that, by citing requirements from other legislation or regulations in RCRA regulations, EPA would be including provisions that are subject to change by the authority responsible for the referenced regulation, without regard for required public participation under the Administrative Procedure Act (5 U.S.C. § 533). Other commenters discussed the potential for duplicate civil or criminal penalties which would result from EPA references to other acts in the Section 3004 standards. Commenters stated that Congressional intent was not to make a violation under one set of regulations a violation under another. For example, in the view of commenters, a National Pollution Discharge Elimination System (NPDES) permit violation should not automatically be a RCRA permit violation.

The Agency agrees with certain of these arguments and has deleted references to other acts, regulations or laws which would constitute an unwarranted imposition of duplicate liability. However, EPA always may adopt language identical or similar to that of another statute, regulation, or code of practice, if, in EPA's judgment, the standard is pertinent and independently supportable under RCRA. For example, the requirement for setback distances for tanks containing ignitable waste is adopted directly from the National Fire Protection Association (NFPA) "Flammable Combustible Code—1977" for storage tanks; it is independently supportable for RCRA purposes, and is now effective regardless of changes made by NFPA.

#### *L. Integration With Other Acts*

**1. Underground Injection Control Program.** The final RCRA interim status standards regulate the underground injection of hazardous waste until these activities receive a permit under a State UIC program approved or promulgated under the Safe Drinking Water Act (SDWA). Thereafter, they will receive a permit by rule under RCRA. However, underground injection facilities typically have above-ground treatment and storage operations which are and will remain subject to RCRA controls as hazardous waste management facilities. Thus, most of these facilities will ultimately require both RCRA and UIC permits. To facilitate the granting of these permits, EPA has consolidated the permit and State program authorization procedures for the two programs. These consolidated procedures will allow EPA, or a State, if it has an approved

program, to process RCRA and UIC permits together, thereby avoiding overlap and inconsistencies. (See the preamble discussion on Subpart A and on Subpart R—Underground Injection for more details on the integration of RCRA and SDWA.)

**2. Ocean Disposal Program.** The disposal of hazardous waste in the ocean is regulated under the authority of the Marine Protection, Research, and Sanctuaries Act. EPA has, therefore, in Part 122 of the consolidated permit regulations, granted these facilities a permit by rule to avoid duplicative regulation. However, most ocean disposal operations involve on-shore facilities which may store or treat hazardous waste prior to ocean disposal. These storage and treatment facilities are subject to these Section 3004 regulations and will require a RCRA permit. Therefore, it will be necessary to coordinate the two EPA regulatory programs which have jurisdiction in this area. In addition, where wastes subject to RCRA control are delivered directly to a barge or other vessel which conducts ocean disposal operations, such vessels will have to comply with certain requirements of RCRA. This is necessary to complete the manifest system. Thus, the owners of such vessels must notify the Agency in accordance with Section 3010 of RCRA and comply with the manifest requirements. The permit by rule provisions of Part 122 make these obligations clear.

**3. NPDES Permitted Facilities.** Commenters raised three major issues with regard to the coverage of NPDES permitted facilities and their wastes under RCRA. These are discussed in turn below. One, commenters questioned the exclusion of POTWs from regulation under Section 3004. Proposed § 250.40(c)(3) required that POTWs that received hazardous waste by truck or rail comply only with the manifest system; other POTWs were not subject to Subtitle C at all because mixed industrial and domestic sewage waste streams were considered "domestic sewage," and thus not "solid waste." Two, commenters questioned the inclusion, as facilities subject to Section 3004 regulations, of industrial wastewater treatment train facilities with discharges permitted under Section 402 of the Clean Water Act; and three, commenters questioned the exclusion of sewage sludge from regulation as a hazardous waste, as proposed in § 250.10(d)(2)(iii). The Section 3001 preamble analyzes and responds to these comments in some detail because all three issues depend on whether

certain materials are "solid waste" and thus, if hazardous, subject to regulation under Subtitle C of RCRA.

a. *Regulation of POTWs as Section 3004 Facilities.* To summarize, domestic sewage, which is excluded from the statutory definition of solid waste in Section 1004(27) of RCRA, is defined in § 261.4 of the Section 3001 regulations as "untreated sanitary wastes that pass through a sewer system." In addition, any mixture of domestic sewage and other wastes that pass through a sewer system to a POTW for treatment are excluded from the regulatory definition of solid waste. That regulatory exclusion is based on the legislative history of the Solid Waste Disposal Act. EPA believes that such mixed waste streams properly should be subject to controls under the Clean Water Act's construction grants program and pretreatment programs. Because the treatment of sewage by privately owned treatment works is not similarly controlled by EPA, there is no exclusion in the Section 3001 regulations for mixed waste streams going to such facilities: On the other hand, publicly owned or privately owned wastewater treatment works that receive hazardous waste by truck, rail or pipe are treatment or storage facilities subject to Section 3004 regulations, although as the Purpose, Scope and Applicability (Subpart A) discussion in this preamble points out, the same expressions of Congressional intent that led EPA to treat mixed waste streams passing through sewer systems to POTWs differently than those flowing to private treatment works also have led the Agency to treat POTWs and private treatment works differently under Section 3004 and 3005 regulations.

b. *Regulation of NPDES Treatment Train Facilities Under Section 3004.* The second issue raised by commenters was that the exclusion of "solid or dissolved materials in . . . industrial discharges which are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act" from the definition of "solid waste" in Section 1004(27) of RCRA, excluded facilities that are part of treatment trains leading to such discharges from Subtitle C coverage. EPA disagrees and construes the exclusion for point sources to apply only to actual discharges into navigable waters, not to industrial wastewaters upstream from the point of discharge. The result of EPA's interpretation is that, as proposed, surface impoundments, tanks, lagoons, holding ponds and other facilities used to treat, store, or dispose of hazardous industrial wastewaters must meet applicable Section 3004 standards and must obtain

a Section 3005 permit. The standards to which existing surface impoundments will be subject are discussed in the section of this preamble entitled "New and Existing Facilities" and the section on surface impoundments (Subpart K).

c. *Regulation of Sewage Sludge Under Subtitle C.* EPA agrees with the commenters who argued that sewage sludge from POTWs should not be categorically exempted from regulation as a hazardous waste. Those sewage sludges which are hazardous now fall within the jurisdiction of Subtitle C of RCRA. The Section 3001 preamble summarizes and responds to the comments on this issue and also discusses EPA's efforts to integrate and coordinate its regulatory actions governing sewage sludge.

4. *BAT Toxics and Pretreatment Standards.* Many commenters strongly urged avoiding conflicts between these RCRA regulations and other regulatory programs, including the BAT and pretreatment programs.

The Clean Water Act provides a comprehensive scheme for the regulation of discharges to navigable waters. This scheme includes a role for EPA in the establishment of effluent limitations guidelines that set technology based effluent limitations for specific pollutants in the effluents of certain classes of industrial point sources. These standards, and other applicable requirements such as State water quality standards, are used by EPA and approved States in the establishment of specific permit conditions under the NPDES program.

The effluent limitations guidelines may be written for conventional pollutants (e.g., suspended solids, fecal coliform, biochemical oxygen demand) or toxic pollutants (a list of over 65 chemical substances and heavy metals). For conventional pollutants, dischargers must achieve effluent limits attainable by the "best conventional pollutant control technology" (BCT) by July 1, 1984. For toxic pollutants, dischargers must achieve effluent limits attainable by the "best available technology economically achievable" (BAT) by July 1, 1984.

In addition, the Clean Water Act created a pretreatment program, which provides the basis for regulating discharges to sewers served by publicly-owned treatment works. This program is designed to insure that users of public sewer systems do not discharge pollutants into the system that would (1) interfere with the operation of the treatment works, (2) cause the POTW's discharge to navigable waters to exceed the requirements that would otherwise be applicable to the user's discharge if

he had discharged directly, or (3) interfere with the POTW's ability to safely dispose of its sewage sludge. Solid waste pollution is one of the factors EPA considers when analyzing water problems and developing BAT and pretreatment regulations. While these RCRA regulations are designed primarily to address ground-water pollution from hazardous waste management, the Agency clearly has authority under RCRA to address surface water and air pollution. Thus there is overlapping jurisdiction between the CWA and RCRA.

Due to the specific exclusion of discharges permitted under Section 402 in Section 1004(27) from RCRA, and the comprehensiveness of the Clean Water Act programs, EPA has decided to rely on those programs to regulate the discharge of wastewater effluents (which may be hazardous) to navigable waters. In addition, the Agency's pretreatment program will be used to regulate such discharges to sewer systems served by POTW's.

It must be recognized, however, that this use of Clean Water Act programs to regulate hazardous wastes only extends as far as the jurisdiction and goals of those programs. Management activities and environmental objectives for hazardous waste facilities which are not addressed by the Clean Water Act, or which can be addressed more efficiently under RCRA, are and will continue to be addressed under RCRA regulations. Thus, for example, pretreatment unit operations may require a RCRA permit to operate if the feed to the facility is hazardous and the process is not integrally connected (via pipe or conveyor) to a manufacturing operation. Likewise any impoundment containing a hazardous waste is covered by these regulations, particularly with regard to their effect on air and ground water, until the hazardous waste in the impoundment comes within CWA jurisdiction.

5. *Clean Air Act.* Owner and operators of hazardous waste management facilities must comply with all applicable standards promulgated under the authority of the Clean Air Act. However, at the moment, very few hazardous emission pollutant standards or new source performance standards under the Federal Clean Air Act apply to hazardous waste facilities.

RCRA, in Section 1006(b) calls upon the Administrator to integrate these regulations with the Clean Air Act, "to the extent that it can be done in a manner consistent with the goals and policies expressed in this Act" and in the Clean Air Act. Significantly, Section 1006(a) does not include the Clean Air

Act in the list of statutes whose regulations are excluded from RCRA regulation to the extent such regulation is "inconsistent" with the other Act. This statutory structure grants considerable discretion to the Administrator in choosing which statute to rely upon for the most efficient and effective control of hazardous wastes affecting the air.

The hazardous pollutant provisions of the Clean Air Act require the use of certain procedures for each pollutant regulated. Because wastes are usually complex mixtures of many materials, hazardous waste facilities are capable of emitting thousands of different substances to the air, many of which are toxic. The procedures of the Clean Air Act would be a less efficient way to control a large number of hazardous air pollutants than RCRA, under which design, operation, or performance criteria (such as incinerator destruction efficiencies) can be set more easily for the many pollutants emitted by facilities. Therefore, the Agency has chosen RCRA as the primary vehicle for controlling air emissions from hazardous waste facilities.

In developing regulations to control air emissions from hazardous waste facilities, the Agency's greatest challenge has been in correlating waste volatility characteristics with potential air emission hazards. As stated earlier in this preamble, EPA has thus far been unable to develop a protocol for predicting hazard potential based on the volatility of a waste, but is continuing its investigations.

6. *Toxic Substances Control Act.* Final rules regarding disposal and marking requirements for polychlorinated biphenyls (PCBs) were promulgated on February 17, 1978, and May 31, 1979, under Section 6(e) of the Toxic Substances Control Act (TSCA). Those rules are intended to protect the environment from further contamination resulting from improper handling and disposal of PCBs.

Because of the potential overlap between the RCRA hazardous waste management standards and the TSCA PCB marking and disposal regulations, the Agency solicited comments in the preamble to the proposed RCRA regulations on how it should manage the TSCA PCB regulations (and by inference, other specific toxic wastes) vis-a-vis the RCRA regulations. Most commenters were equally divided between two positions:

(1) Publish the TSCA PCB and RCRA regulations independently and exempt PCBs from RCRA requirements, or

(2) Merge the PCB rules with the RCRA standards and co-promulgate them.

To minimize confusion and the burden on the regulated community, the Agency has tentatively determined that wherever possible, hazardous waste management control will be covered under RCRA. It has not been possible to complete this task to date, but the Agency expects to incorporate the TSCA PCB disposal regulations into the Phase II RCRA regulations.

Special disposal requirements for specific wastes will, in the future, normally be proposed as an amendment to these RCRA regulations but may be co-promulgated under TSCA authority.

7. *Surface Mining Control and Reclamation Act.* The Office of Surface Mining (OSM) of the Department of the Interior administers the Surface Mining Control and Reclamation Act (SMCRA). The primary purpose of SMCRA is to protect the environment from the effects of surface mining of coal, although surface disposal of underground coal mining waste is also covered. Thus there is overlapping authority with RCRA. The Agency is negotiating an agreement with OSM whereby RCRA control of coal mining wastes would be deferred to OSM. Such an agreement will be based on a determination by EPA that the SMCRA regulations provide control equivalent to that which RCRA would impose. In anticipation of such an agreement, the Agency has deferred regulation of coal mine waste under RCRA.

8. *National Environmental Policy Act.* The National Environmental Policy Act (NEPA) requires the preparation of a statement which considers environmental impacts, alternatives, and resource commitments for any "major federal action significantly affecting the quality of the human environment." At least ten appellate decisions have considered the applicability of that requirement to EPA. All ten have concluded that the Agency is exempt from the requirements of NEPA because its own processes provide for the "functional equivalent" of that Act. These analyses are concisely summarized in *State of Maryland v. Train*, 415 F. Supp. 116, 122 (D. Md., 1976):

Where federal regulatory action is circumscribed by extensive procedures, including public participation, for evaluating environmental issues and is taken by an agency with recognized environmental expertise, formal adherence to the NEPA requirements is not required unless Congress has specifically so directed.

These Subtitle C regulations have been developed through an extensive

evaluation of environmental issues. This was specifically required by the statutory mandate to consider what might "be necessary to protect human health and the environment." and by the Agency's developed environmental expertise and concern. That evaluation underlies this preamble and the Background Documents prepared to help develop specific sections of these regulations. Extensive public participation at many public meetings, following pre-proposal circulated drafts, and in hundreds of comments, helped the Agency in evaluating environmental issues raised by these regulations. Federal, State, and local agencies all participated in this process. Congress, well aware of the "functional equivalency" rule, did not alter that status in the RCRA statute. Thus the Agency is not bound by NEPA's requirements. The Agency has, however, voluntarily prepared an Environmental Impact Analysis which will be available to the public in EPA Headquarters and Regional libraries.

#### M. *Special Wastes*

The proposed regulations established a class of solid wastes for which, if hazardous, application of the full set of Subtitle C standards was deferred. These solid wastes, called "special wastes" were cement kiln dust, utility waste (ashes and sludges), phosphate rock mining and beneficiation wastes, uranium and other mining wastes, and gas and oil drilling muds and oil production brines. For hazardous portions of these solid wastes, a very limited subset of the Subtitle C standards was to be applicable pending completion of studies defining the most appropriate waste management practices.

When the proposed rules were issued, the Agency had only limited information on these wastes. However, the information the Agency did have suggested that application of the full set of proposed waste management standards would not be appropriate.

The attributes of these wastes which caused the Agency to reach this conclusion were:

(1) The total annual quantity of each of these wastes (both hazardous and non-hazardous portions) was very large, and individual disposal facilities tended to involve very large piles or ponds. Should large volumes of the wastes be hazardous, the size of the facilities could have made the application of some of the regulations technically infeasible or unpracticable.

(2) Any portions of the wastes which did fail the proposed hazardous waste characteristics were thought to be on the

margins of failure. Thus the hazardous portions of the wastes appeared to have relatively low intrinsic hazard relative to other wastes. However, the Agency's data base was very limited.

(3) The Agency did not believe that it had sufficient information to propose specific alternate waste management requirements without additional study.

The Agency's proposed approach to special wastes generated widespread and divergent protest from both the regulated community and the public. Commenters generally objected either to the concept of the special waste category or to the need for, or the sufficiency of, the limited standards proposed for that category. Many commenters identified other solid wastes which they urged also be defined as special wastes. The major comments were:

(1) EPA should not regulate these wastes at all unless it can demonstrate that the wastes, as presently managed, pose a significant threat to human health and the environment.

(2) Many of the limited standards proposed are not suitable for these wastes because of the low hazard and large volume of the wastes. The requirement for facility security was a particular target of criticism.

(3) The stigma of singling out these wastes and regulating the hazardous portions under Subtitle C will impact negatively on the potential for their re-use.

(4) The singling out of only these few hazardous wastes for special favored treatment is inequitable when there are other wastes with similar characteristics which must bear the full regulatory burden. Commenters suggested about 50 additional wastes to be added to the special waste category.

(5) If these wastes (or portions thereof) fail the 3001 characteristics, then they pose significant hazards to human health and the environment and therefore should be regulated like any other hazardous waste.

Several commenters recommended alternatives to the special waste category:

(1) The Agency should replace the special waste category with a variance procedure involving public participation.

(2) The standards for a given waste should be determined on a case-by-case basis with requirements specified in the permits for each facility and location. The thrust of many of the comments was universal disapproval of the special waste category as proposed.

In the course of its consideration of the comments, including proposed additions to the special waste category,

EPA made two significant changes in the basic structure and content of the Subtitle C regulations. These are (1) changes in the toxicity and corrosivity hazardous waste characteristics under Part 261 which narrow the category of waste which will be brought into Subtitle C by these characteristics, and (2) the incorporation of significantly more flexibility, through phasing and standard-setting, in the Parts 264 and 265 regulations. The Agency now has concluded that these changes accomplish the objectives of, and eliminate the need for, a special solid waste category.

#### 1. Changes in the Section 3001

*Characteristics.* In response to comments, the toxicity and corrosivity hazardous waste characteristics have been modified and now include more demanding conditions for defining a hazardous waste. In the proposed regulations, a waste would have been considered hazardous under the toxicity characteristic if the extract from that waste (obtained through the defined Extraction Procedure) contained any hazardous constituents in the Primary Drinking Water Standards (PDWS) at a concentration of more than 10 times the PDWS limits. In the final regulations, the characteristic concentration bringing a hazardous waste under regulation has been increased from 10 to 100 times the PDWS. Thus, waste extracts must contain a tenfold higher concentration of one of the PDWS substances than originally proposed in order for the waste now to be brought under Subtitle C control by that characteristic. The reasons for the change in this characteristic are explained in the Toxicity Characteristic Background Document.

The upper and lower limits of pH which define a hazardous waste also have been revised in response to comments so that the corrosivity characteristic now is more demanding in signaling a waste as hazardous. The basis for this change is explained in the Corrosivity Characteristic Background Document.

These changes have had two important effects on the special waste concept. One is that a much smaller portion of the proposed special solid wastes are expected to fail the characteristics and be subject to control as hazardous wastes. The data available to the Agency indicate that most of the special wastes that would have entered the control system would have done so due to toxic extracts between 10 and 100 times the PDWS. Thus, the probability that large volumes of the proposed special solid wastes will be hazardous

now appears remote. Second, those portions of the proposed special solid wastes which do fail the characteristics can no longer be labeled "low hazard" wastes. Thus the concern over the inapplicability of the proposed regulations to hazardous special wastes due to the potentially large volume and low level of hazard of these wastes is not a valid concern in the final regulations.

*2. Phasing and Increased Flexibility in Parts 264 and 265.* To the extent that special accommodation for any of the hazardous portions of these wastes may still be needed, the second major regulatory change, i.e., the incorporation of more flexibility in the hazardous waste management requirements through regulatory changes and phasing of requirements, will accomplish essentially the same result as the proposed special solid waste category. This is true for the hazardous portions of those wastes proposed as special solid wastes as well as for all of the wastes that commenters suggested should be special solid wastes.

The new three-stage regulatory process itself provides the same opportunity for phased regulation as the creation of the special waste category. Initial regulations under Phase I standards include administrative and limited technical requirements which provide a basic level of environmental protection similar to that provided in the limited standards proposed for the hazardous portions of special wastes.

The plans for Phase II of the regulations will allow hazardous waste facilities to be permitted largely on the basis of performance standards coupled with the "best engineering judgment" of the Regional Administrator. This flexibility will allow the permit writer to consider site- and waste-specific factors in determining specific design and operating permit requirements. Thus, unnecessary or overly stringent requirements should not be forced upon any hazardous wastes by the regulations. To the extent the Agency becomes aware of the inapplicability of certain requirements on a site- or waste-specific basis, it is committed to making needed regulatory changes as quickly as possible. In addition, the Agency plans to gather further information both on the proposed special solid wastes and on at least some of the wastes suggested by commenters as special solid wastes, and where needed, develop technical standards or guidance specific to these wastes in the Phase III regulations and thereafter. Additional data and information on these, as well as the other solid and hazardous wastes the

Agency is studying also will be useful in issuing best engineering judgment permits under the Phase II Section 3004 regulations.

In consideration of all of the above factors, the Agency has concluded that the special solid waste category is no longer necessary. It has been eliminated in these final Phase I regulations. Those portions of the six proposed special wastes which are determined by the characteristics to be hazardous will be subject to the applicable Part 264 and 265 regulations.

The Agency is, however, temporarily delaying imposition of the regulations for two of the wastes EPA originally proposed as special solid wastes, i.e., oil and gas drilling muds and oil production brines, and utility waste. This temporary deferral is in response to action by Congress to exempt these wastes from most Subtitle C regulation for a limited time pending completion of certain EPA studies. Congress has not yet completed action on the amendments which would mandate this deferral. However, bills have been passed both in the House and Senate, indicating strong Congressional intent to mandate a deferral of regulations for these two proposed special solid wastes.

In the absence of a regulatory deferral by EPA, the hazardous portions of these wastes would be subject to the requirements of the regulations on their effective date. In order to be in compliance by the effective date, the facilities handling these wastes would need to take certain actions soon, involving possibly significant expenditures, which could then be halted in mid-stream by final Congressional action. In EPA's view, such a situation would be inefficient and counterproductive. Therefore, Part 261 defers the effective date of the regulations for the hazardous portions of the proposed oil and gas and utility special wastes. The other proposed special solid wastes are the subject of bills which have passed either the House or the Senate, but only the oil and gas and utility waste deferrals are contained in both the House and Senate bills. EPA is not presuming the outcome of the additional proposed deferrals, but will, where necessary, amend Part 261 regulations after the currently proposed amendments to RCRA are finally acted on by Congress.

## V. Detailed Analysis of Phase I Rules

### A. Subpart A—General

Subparts A of Parts 264 and 265 contain requirements under three general headings. The first is "Purpose, Scope, and Applicability" (§§ 264.1 and

265.1). These provisions explain who is subject to the regulations in the Part, and whether there are any circumstances under which a person is excluded from coverage by the regulations or subject only to limited requirements. The second section in Part 264 (§ 264.3) explains the relationship of Part 264 requirements (which EPA has termed "general standards" or "permitting standards") to Part 265 requirements (the "interim status standards"). Section 265.1(b) is the counterpart of § 264.3. It explains that the Part 265 regulations, rather than the Part 264 regulations, are applicable to an owner or operator who has fully complied with the requirements for interim status under Section 3005(e) of RCRA, and who has not had final administrative action taken on his permit application. Sections 264.4 and 265.4 notify people who handle hazardous waste that imminent hazard actions may be brought notwithstanding any other provisions of the regulations. Each of these sections is discussed in detail below.

1. *Purpose, Scope, and Applicability.* The content of this section has changed substantially from the proposal. This preamble discussion explains the final requirements, and, in addition, contains a table showing the correlation of each of the paragraphs in proposed § 250.40 with the final regulations.

Paragraphs (a) of §§ 264.1 and 265.1 set forth the purpose of the Section 3004 regulations and are self-explanatory.

Paragraphs (b) of §§ 264.1 and 265.1 state the general applicability of the regulations, which is to all owners and operators of facilities that treat, store, or dispose of hazardous waste (TSDFs), except as specifically provided otherwise in the Parts 264, 265, or 261 regulations.

Paragraphs (c) through (g) of § 264.1 and paragraph (c) in § 265.1 delimit the general applicability of the regulations. In addition, each Subpart in Parts 264 and 265 contains an applicability section. Some of these special applicability sections now merely refer back to the requirements in §§ 264.1 and 265.1, but Subparts F through R of Part 265 contain applicability sections which limit the applicability of the requirements in those sections to certain kinds of facilities. The requirements in Subpart N of Part 265, for example, apply only to owners and operators of facilities which dispose of hazardous waste in landfills (which include waste piles used as disposal facilities).

a. *Ocean Disposal.* Paragraph (c) of § 264.1 states that the requirements of Part 264 apply to a person disposing of hazardous waste by means of ocean

disposal subject to a permit issued under the Marine Protection, Research, and Sanctuaries Act (MPRSA) only to the extent they are included in a RCRA permit by rule granted to such a person under Part 122 (i.e., the RCRA Section 3005 regulations). The preamble to the Part 122 regulations explains the basis of EPA's decision to issue such persons RCRA permits by rule. Basically, EPA has found that compliance with an ocean dumping permit issued under 40 CFR Part 220 (Ocean Dumping under MPRSA) provides the human health and environmental protection mandated by RCRA. Persons carrying out such disposal, however, must comply with certain recordkeeping and reporting requirements which are necessary for EPA to ensure that the "cradle-to-grave" management system for hazardous waste established in RCRA tracks all manifested hazardous waste.

Paragraph (c)(1) of § 265.1 excludes persons disposing of waste by ocean disposal subject to a MPRSA permit from coverage under Part 265 (interim status standards). The Part 265 requirements never apply to such people because on the effective date of RCRA regulations persons disposing of hazardous waste in accordance with MPRSA permits automatically receive RCRA permits by rule which require them to comply with selected Part 264 requirements.

Treatment or storage of hazardous waste before it is loaded onto an ocean vessel for incineration or disposal at sea is covered by the Parts 264 and 265 regulations because MPRSA offers no regulatory scheme comparable to RCRA for such facilities.

b. *Underground Injection.* Coverage under RCRA of persons disposing of hazardous waste by underground injection is complicated because, depending on the circumstances, such persons are subject to regulation (1) by RCRA Part 265 standards, (2) by RCRA Part 264 standards, (3) by State standards effective under an authorized hazardous waste program (under Section 3006 of RCRA, 40 CFR Part 123, Subparts A, B, and F), (4) by State standards effective under an approved underground injection control program (under the Safe Drinking Water Act (SDWA), 40 CFR Part 123, Subparts A and C), or (5) by Federal standards in a State with an EPA promulgated underground injection control program under SDWA. The preamble to the Part 122, Subpart C, regulations explains these various regulatory schemes and their statutory underpinnings. Because Section 3004 of RCRA requires that all owners and operators of facilities which

treat, store, or dispose of hazardous waste must have a RCRA permit, these Section 3004 (Parts 264 and 265) regulations and the Section 3005 (Parts 122 and 124) regulations so provide.

Part 265 standards (as stated in § 265.1(c)(2)) do not apply to persons disposing of hazardous waste by means of underground injection subject to a permit issued under an Underground Injection Control Program approved or promulgated under the Safe Drinking Water Act. That means that the Part 265 interim status regulations do apply to persons disposing of hazardous waste by underground injection who have met the Section 3005(e) requirements for interim status and who either (1) do not have such a SDWA UIC permit, or (2) do not have a RCRA permit and are injecting hazardous waste underground in a State without an authorized RCRA program that covers underground injection.

Part 264 requirements (see § 264.1(d)) apply to people disposing of hazardous waste with permits issued under an UIC program approved or promulgated under SDWA only to the extent that they are included in § 122.45 (Requirements for UIC permits for wells injecting hazardous wastes). The same reasoning that applies to hazardous waste disposal under an MPRSA permit applies to SDWA UIC permits. Although all of the technical requirements for waste disposal by means of underground injection have not yet been promulgated under the Safe Drinking Water Act, EPA is including this section to state its intention to issue a RCRA permit by rule to persons who meet SDWA requirements. EPA will insure that the combination of UIC technical requirements, and § 122.45, which incorporates appropriate requirements from Part 264 for underground injection of hazardous waste, meets RCRA's human health and environmental protection mandate.

The implication of § 264.1(d) is that until an underground injection facility receives a SDWA UIC permit, it is subject to RCRA interim status standards (if the owner or operator has met the requirements of Section 3005(e) of RCRA) or must have a RCRA permit. EPA intends, as part of its Phase II Section 3004 regulations to promulgate technical requirements that can be used to issue interim (two year) permits to Class I (and perhaps Class IV) underground injection wells. Until then, or until permitted by a SDWA UIC program, all hazardous waste disposal by underground injection is governed by the RCRA interim status standards. See the discussion of the Subpart R

standards in this preamble for an explanation of those requirements. EPA believes that this system will ensure that underground injection of hazardous waste is carried out in accordance with the purposes and requirements of both RCRA and SDWA, while avoiding unnecessary dual regulation. For a more detailed discussion of this issue, see the preamble to Part 122, Subpart C.

As with on-shore facilities associated with ocean disposal, above-ground treatment or storage of hazardous waste associated with an underground injection facility is covered by Parts 264 and 265 regulations. The Safe Drinking Water Act is designed to protect underground sources of drinking water and does not have authority comparable to RCRA's to ensure human health and environmental protection from all aspects of potential pollution (air, land, surface, and ground water) from above-ground facilities that treat, store, or dispose of hazardous waste.

c. *POTWs*. As discussed above in the section of this preamble on "NPDES Permitted Facilities," the regulatory definition of solid waste excludes hazardous waste that is mixed with domestic sewage and passes through a sewer system to a publicly-owned treatment works. That exclusion is based on the legislative history of the Solid Waste Disposal Act. As discussed in the Part 122 preamble, EPA believes that the reasoning which led the Agency to exempt such hazardous waste mixed with domestic sewage from the definition of solid waste, also applies to the decision of what sort of RCRA requirements to impose on POTWs which receive hazardous waste which has not lost its character as solid waste (i.e., hazardous waste which is discharged to the POTW by truck or rail, or through a pipe which carries only industrial waste).

EPA will issue POTWs which receive hazardous waste a permit by rule. The Agency's reasoning is that the wastes will be placed in a facility subject to an extensive set of Federal regulatory and subsidy provisions that should be sufficient to deal with any hazardous waste problems. In addition, this exemption for POTWs from most of the Section 3004 requirements is based on Congressional intent that EPA avoid disruption of the existing patterns of funding and operation of such facilities. Note, however, that in order for a POTW to qualify for this permit by rule, it must have and be in compliance with an NPDES permit, must comply with certain of the RCRA recordkeeping and reporting requirements, and must meet all applicable Federal, State, and local

pretreatment requirements (such requirements are applicable to truck or rail shipments of hazardous waste just as if they had come through a sewer, pipe, or similar conveyance).

Paragraph (c)(3) of § 265.1 excludes the owner and operator of a POTW that treats, stores, or disposes of hazardous waste from coverage by Part 265. Paragraph (e) of § 264.1 provides that the requirements of Part 264 apply to such owners and operators only when included in a RCRA permit by rule. This scheme is the same as that described above for ocean disposal in accordance with an MPRSA permit. The interim status standards never apply to POTWs because owners and operators of POTWs are required to comply with the Part 264 requirements which are included in their permit by rule.

d. *Authorized State RCRA programs*. Paragraph (c)(4) of § 265.1 provides that the Part 265 requirements do not apply to persons treating, storing, or disposing of hazardous waste in a State with a RCRA hazardous waste program authorized under Subparts A and B (i.e., full authorization), or Subpart F (i.e., interim authorization) of 40 CFR Part 123. This exclusion is provided in the regulations because Section 3006 of RCRA states that authorized State programs are to operate in lieu of the Federal program. Thus Federal requirements, as a general rule, do not apply in States with authorized RCRA programs. The exception to this rule is a State with Phase I, but not Phase II interim authorization as discussed below and in the preamble to Part 123, Subpart F. Pursuant to Section 3006 of RCRA and Part 123 requirements, a State program must be "substantially equivalent" to the Federal program to receive interim authorization; a State program must be "equivalent, consistent, and provide for adequate enforcement" to receive full authorization.

Paragraph (f) of § 264.1 establishes the same sort of general inapplicability of Part 264 requirements as is established for Part 265 requirements, with one exception. The one exception is that Part 264 requirements do apply in States which have only Phase I interim authorization. In such States, EPA retains the authority to issue hazardous waste permits because the State program does not yet have that authority. Such a lack of State permitting authority could last in a State for a maximum of about nine months. As noted in the Part 123 preamble discussion of this issue, EPA would rarely exercise this authority, but if the Agency failed to retain such authority,

EPA would be in effect prohibiting the permitting of any facilities in such a State during that period. Because of Section 3005 of RCRA, no new facilities could begin operations. Because newer facilities, subject to full Federal requirements, generally will be the better facilities, such a result certainly seems anomalous, particularly in light of the current shortfall of environmentally acceptable hazardous waste management facilities in the United States.

There is one additional aspect to the applicability of Parts 264 and 265 in States with authorized RCRA programs. That is the regulation of hazardous waste disposal by underground injection in such States. As mentioned briefly above, and as discussed in the Part 123 preamble, States seeking authorization to operate RCRA hazardous waste programs in lieu of the Federal program will have an option to include coverage of underground injection facilities. If a State which receives interim or full authorization chooses not to regulate underground injection under its RCRA program (prior to the opportunity to receive approval for a State UIC program under the Safe Drinking Water Act), the Parts 264 and 265 requirements will remain effective for underground injection facilities in that State. EPA realizes such a result will subject underground injection facility owners and operators to regulation by both State and Federal agencies, but sees no real alternative. EPA does not believe that it should mandate that State RCRA programs include coverage of underground injection facilities. No such requirement was proposed with the State authorization requirements, and such a decision could disrupt the progress many States have been making towards developing all of the legislative and regulatory authority necessary to receive interim or full authorization under RCRA. On the other hand, it seems fair and reasonable to give States the chance to include such facilities in their programs because if a State has sufficient authority, a facility owner or operator then need deal only with the State.

*e. Part 261 Exclusions, Including Small Quantities of Hazardous Waste, and Recycled or Re-used Hazardous Waste.* Sections 264.1 and 265.1 both provide that Parts 264 and 265 are not applicable if specifically provided otherwise in 40 CFR Part 261. Part 261 covers the identification and listing of those solid wastes which must be handled as hazardous waste according to the standards established by EPA under Sections 3002 through 3005.

Among other things, Part 261 contains regulatory definitions of solid waste and hazardous waste, a list of materials which are excluded from all or a portion of certain Subtitle C requirements, and establishes special requirements for generators of small quantities of hazardous waste. Thus EPA believes it is appropriate for the Parts 264 and 265 requirements to refer people to the Part 261 regulations which designate which wastes are within Subtitle C control, when those wastes must begin to be managed in accordance with Part 262 through 265 standards, and when a hazardous waste ceases to be a hazardous waste. The exclusions in § 261.4 (i.e., the statements of which materials are not solid wastes and which solid wastes are not hazardous wastes) are not included in the Parts 264 and 265 regulations. Owners and operators of treatment, storage, and disposal facilities should read the Part 261 regulations to determine to what extent the wastes they handle are subject to the Parts 264 and 265 regulations.

EPA has, in §§ 264.1(g)(1) and 261.1(c)(5), excluded from regulation under Parts 264 and 265 facilities permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the only hazardous waste the facility handles is excluded from regulation under the small quantity provisions of § 261.5. Section 261.5, among other things, excludes certain small quantities of hazardous waste from regulation under Parts 262 through 265, if the generator of those small quantities ensures delivery of them to a facility which has (1) interim status, (2) a RCRA permit, or (3) is permitted, licensed, or registered by a State to manage municipal or industrial solid waste. To avoid the confusion that could result if this third category of facility were not specifically excluded from regulation in Parts 264 and 265, EPA has provided an exclusion. The special regulatory requirements for hazardous waste produced by small quantity generators are discussed in the preamble to Part 261 and an accompanying background document.

EPA also has referenced in Parts 264 and 265 (see §§ 264.1(g)(2) and 265.1(c)(6)) the exclusion from most Subtitle C requirements provided in § 261.6 for hazardous waste that is used, re-used, recycled, or reclaimed. Such waste is subject to transportation and storage requirements prior to its re-use and reclamation and the provisions of § 261.6 which so provide are referenced in Parts 264 and 265. Regulation of re-

used and recycled waste is discussed in the preamble to Part 261.

*f. Generators Who Accumulate On-Site, Farmers, and Totally Enclosed Treatment Facilities.* The last three exclusions from Part 264 and 265 requirements are two activities carried on by certain generators of hazardous waste and one type of facility which EPA believes need not be subject to any RCRA Section 3004 requirements in order to ensure protection of human health and the environment.

40 CFR 262.34 exempts generators who accumulate hazardous waste on-site for 90 days or less (for subsequent shipment off-site) from the requirement to have a permit, provided they comply with certain requirements that EPA deems sufficient to protect human health and the environment during that period. These requirements are specified in § 262.34. If a farmer disposes of waste pesticides in accordance with § 262.51, those wastes are exempt from all Section 3004 requirements. This is another exemption made in the Part 262 regulations which EPA is codifying in the Part 264 and 265 regulations to avoid confusion. Both of these exemptions are discussed in the preamble to the Part 262 regulations (45 FR 12724-12732, February 26, 1980) and the supporting material for those regulations.

The third exemption is for owners and operators of "totally enclosed treatment facilities," as defined in 40 CFR 260.10. Commenters pointed out that in some production processes, wastes (particularly acid and alkaline solutions) are treated in pipes and other types of totally enclosed on-site facilities, often resulting in a non-hazardous discharge.

EPA agrees that to classify on-site "totally enclosed systems," such as pipes, as hazardous waste treatment facilities and to require them to meet Section 3004 standards and obtain a permit would not make a great deal of sense. Accordingly, for the reasons discussed below under "Supart Q—Chemical, Physical, and Biological Treatment Facilities," EPA has exempted these facilities from regulation under Parts 264 and 265 and from the requirement to obtain a permit in Part 122. Persons who handle hazardous waste in what they believe to be a "totally enclosed treatment facility" should carefully read the definition of that term in § 260.10.

*2. Relationship to Interim Status Standards.* Section 264.3 puts owners and operators of TSDFs on notice that they are required to comply with Part 265 requirements, rather than Part 264 requirements, if they have qualified for interim status under Section 3005(e) of RCRA and final administrative

disposition of their permit application has not been made. Section 265.1(b) is a parallel requirement.

3. *Imminent Hazard Action.* Sections

264.4 and 265.4 put owners and operators of TSDFs on notice that notwithstanding any of the other provisions of those parts, imminent

hazard actions may always be brought pursuant to Section 7003 of RCRA when the statutory elements of such an action are established.

Correlation of Proposed and Final Rules for Purpose, Scope, and Applicability

Subject	Proposed rule	Final rule	Explanation
Purpose of requirements	§ 250.40(a)	§§ 264.1(a) and 265.1(a)	The proposed and final rules contain the same standard.
State program requirements; EPA enforcement authority.	§ 250.40(b)	Part 123	The requirements a State program must meet to receive interim or full authorization under Section 3006 of RCRA are now set out in Part 123. EPA's independent enforcement authority is established in Section 3003 of RCRA and discussed, in the context of its use in a State with an authorized RCRA program, in the Part 123 preamble.
Compliance with permit requirements	§ 250.40(c)	§ 264.1(b), Part 122, and Part 123	The Part 264 standards are independently enforceable national standards, but the circumstances under which EPA will consider compliance with an EPA or a State RCRA permit compliance with the standards are provided in Parts 122 and 123 regulations, and discussed in the preamble to those Parts.
Special waste standards	§ 250.40(c)(1)	Deleted	See the discussion in this preamble entitled "Special Wastes."
Interim status standards	§ 250.40(c)(2)	Part 265	For ease of reference, and because EPA is phasing its Section 3004 standards, the interim status standards are now set out in a separate Part (Part 265) of Title 40 of the Code of Federal Regulations.
POTW exemption	§ 250.40(c)(3)	§§ 264.1(e) and 265.1(c)(3)	This exemption is discussed in the Section 3004 preamble in the section on Subpart A requirements.
Requirement for ID code	§ 250.40(c)(4)	§ 264.11	This requirement was properly a generally applicable facility standard rather than a scope of coverage requirement so it has been made a Subpart B (General Facility Standards) standard.
Receipt of hazardous waste only from small quantity generators.	§ 250.40(c)(5)	§§ 261.5, 264.1(g)(1), and 265.1(c)(5)	This exclusion is discussed in the preamble to Part 261.
Receipt of unmanifested hazardous waste	§ 250.40(c)(6)	§§ 264.76 and 265.76	This reporting requirement has been placed in Subpart E (Manifest System, Recordkeeping, and Reporting) of Parts 264 and 265 where it more properly belongs.
Use of requirements for:			
Assessing State programs	§ 250.40(d)(1)	Part 123	How EPA will use the Section 3004 requirements to assess State programs for interim and full authorization is more properly the subject of the Section 3006 regulations and is set out in Part 123 and discussed in the preamble to that Part.
Issuing permits	§ 250.40(d)(2)	Part 122	The use of the Part 264 standards in issuing, reissuing, or revising permits is more properly the subject of the Section 3005 (i.e., the Part 122) regulations and is set out there and discussed in that preamble. The decision to incorporate the proposed "Notes," (i.e., variances) directly into the Section 3004 standards is discussed in the Section 3004 preamble. EPA's position on reopening and modification of permits is discussed in the Part 122 preamble.
Bringing enforcement action against:			
TSDF with a State permit	§ 250.40(d)(3)(i)	Part 123	The circumstances under which EPA will enforce State requirements which are not included in State permits is discussed in the preamble to Part 123.
TSDF with no permit or pending permit application.	§ 250.40(d)(3)(ii)	§§ 264.1(b), 264.3, and 265.1(b)	Part 264 standards are independently enforceable national standards which apply of their own force to owners and operators of TSDFs who do not have interim status. Compliance with Part 264 standards does not, of course, relieve an owner or operator from the requirement to get a permit under Part 122, nor does it insulate him from an action under Section 7003 of RCRA, or an action seeking an order for compliance with certain Part 265 requirements, should those requirements be more extensive than the extant Part 264 requirements.
Requirements do not apply:			
Domestic sewage	§ 250.40(e)(1)	Part 261	§ 261.4 excludes materials that are not solid wastes for purposes of Subtitle C requirements; domestic sewage is so excluded.
Irrigation return flows	§ 250.40(e)(2)	Part 261	§ 261.4 excludes materials that are not solid wastes for purposes of Subtitle C requirements; irrigation return flows are so excluded.
CWA Section 402 discharge	§ 250.40(e)(3)	Part 261	§ 261.4 excludes materials that are not solid wastes for purposes of Subtitle C requirements; discharges permitted under Section 402 of the CWA are so excluded. This exclusion does not exclude from Subtitle C regulation industrial wastewaters while they are being collected, stored, or treated before discharge, nor does it exclude sludges that are generated by industrial wastewater treatment.
Source, special nuclear, or by-product material.	§ 250.40(e)(4)	Part 261	§ 261.4 excludes materials that are not solid wastes for purposes of Subtitle C requirements; source, special nuclear, or by-product material as defined by the Atomic Energy Act of 1954, as amended, is so excluded.
Section 111 and 112 air emissions	§ 250.40(e)(5)	Deleted	This exclusion from Subtitle C coverage didn't really "fit" with the rest of the exclusions, which are of solid or hazardous wastes. Although this exclusion has been deleted from the regulations, EPA's policy is not to promulgate any requirements under RCRA which would be inconsistent with point source air emission regulations under Sections 111 and 112 of the Clean Air Act.
Disposal of hazardous waste via underground injection.	§ 250.40(e)(6)	§§ 264.1(d) and 265.1(c)(2); Parts 122 and 123.	As discussed in the Section 3004 preamble in the section on Subpart A requirements, and in the preambles to the Parts 122 and 123 regulations, the disposal of hazardous waste via underground injection is subject to certain RCRA requirements.
Ocean disposal of hazardous waste	§ 250.40(e)(7)	§§ 264.1(c) and 265.1(c)(1); Part 122.	As discussed in the Section 3004 preamble in the section on Subpart A requirements, ocean disposal of hazardous waste subject to a MPRSA permit is subject to a RCRA (Part 122) permit by rule.

### B. Subpart B—General Facility Standards

Subpart B of both Parts 264 and 265 contains a number of discrete sets of standards, each of which applies to owners and operators of all hazardous waste facilities. The Subpart includes requirements for waste analysis, security, inspections, and training—all of which were contained in § 250.43 of the proposed rules.

1. *Identification Number.* Sections 264.11 and 265.11 of Subpart B contain a standard which requires that the owner or operator apply to EPA for an identification code. This requirement was in the Purpose, Scope, and Applicability section of the proposed rules. However, because the standard is applicable to all facilities, the Agency believes that it is more logical to include the standard in the General Facility section of the final rules.

2. *Required Notices.* Sections 264.12 and 265.12 require that the owner or operator of a facility notify the Regional Administrator at least four weeks in advance of the date of any shipments of hazardous waste from foreign sources. This requirement is a corollary to the proposed § 250.20(c)(3) standard, which required generators who ship their waste to foreign countries to inform the foreign government having jurisdiction over the facility to which the waste is to be sent. The Agency believes that this requirement is necessary in order for EPA to effectively oversee the transportation and management of hazardous waste imported to the United States.

Sections 264.12 and 265.12 also require that, before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator must notify the new owner or operator of the RCRA Section 3004 and Section 3005 requirements. The Agency has added this requirement to the final rules in order to minimize the possibility that an unsuspecting buyer may purchase a facility, not knowing that this purchase entails his having to comply with these Subtitle C regulations. However, it should be noted that if the "old" owner or operator fails to comply with this standard, the "new" owner or operator is still required to comply with all applicable RCRA regulations, including those in Part 122 establishing requirements for permits.

Section 264.12 also requires the owner or operator of an off-site facility to

inform the generator in writing that the facility has the appropriate permit(s) for, and will accept, the generator's waste. The Agency believes this provision, which was suggested in the comments, is necessary for the proper functioning of the manifest system, because Part 262 requires that generators send their hazardous waste only to a facility with appropriate permits for the waste (or to facilities whose owner or operator has interim status). A written certification by the facility owner or operator thus assures the waste generator that the requirements of Part 262 are satisfied. It also avoids the potential problem of a generator designating a facility on the manifest which has the appropriate permits for his waste, but which has not agreed to accept the waste.

The rest of this section of the preamble discusses the comments received on the proposed § 250.43 standards contained in this Subpart.

3. *General Waste Analysis.* The purpose of the proposed waste analysis standards was to ensure that owners or operators possessed sufficient information on the properties of the wastes which they managed, to be able to treat, store, or dispose of their waste in a manner which would not pose a threat to human health or the environment. The proposed standards included requirements which specified the level of analysis to be performed on wastes managed at facilities, the minimum frequency with which these analyses were to be repeated, and the properties of the waste which were to be determined to verify the identity of each truckload, shipment, or batch of hazardous waste managed at facilities.

The Agency received many comments which stated that the generator should be required to provide the owner or operator with the information needed to comply with the Section 3004 waste analysis standards, because the generator is more familiar with the properties of the waste than is the owner or operator, and it would thus be less expensive for the generator to conduct the required analysis. The Agency believes, however, that although many generators may be familiar with the properties of the waste which they generate, there are many companies which generate waste about whose properties the generators know very little. In the latter case, for those companies lacking analytical equipment, the cost of sending their waste to commercial laboratories for analysis is

comparable to the cost of analysis at facilities with on-site labs, or facilities which sub-contract their analytical work. In addition, many generators will not have the "hands on" knowledge of the information needed to treat, store, or dispose of the waste at any particular type of facility. Owners or operators will necessarily be in a better position to use that knowledge. The Agency believes that the approach taken in the proposed rules (whereby owners or operators can either conduct the analysis themselves or acquire the analysis from the generator) provides as flexible and cost effective a means as that suggested by the commenters, to ensure that owners or operators obtain the information needed to manage hazardous waste.

A number of commenters suggested that the regulations should specify that the waste analysis required under the Section 3001 regulations satisfies the requirements for waste analysis required under Section 3004. The Agency does not agree with these commenters because the information needed to characterize a waste (as required in proposed § 250.13) may overlap with, but is not identical to, the information needed to manage a waste (as required in proposed § 250.43). For example, to treat a waste, one needs to know not only the chemical composition of the waste, but also the compatibility of the waste with the techniques and chemical reagents used at the facility to treat the waste. The waste analysis required under Section 3001 may not provide the latter type of information, and thus, does not fully satisfy the requirements for waste analysis prescribed under Section 3004. However, the standard has been revised to make it clear that data developed pursuant to Section 3001 may be included in the data base that the owner or the operator compiles to comply with the Section 3004 waste analysis standards.

Several commenters felt that the nature and the scope of the required analysis should be more specific. The Agency purposely wrote objective-oriented waste analysis standards in proposed § 250.43 because the information needed to treat, store, or dispose of waste differs depending on the methods used to manage waste (e.g., the information needed to incinerate waste differs from that needed to neutralize waste). However, the Agency agrees that the regulations can be somewhat more detailed regarding the standards for waste analysis. For this

reason, in addition to the general waste analysis standards which apply to all facilities, the final rules also include, in most technical sections of the regulations, waste analysis standards specific to the management method regulated in that particular section. For example, the § 265.345 standards for incineration contain specific parameters (e.g., halogen and sulfur content and heating value) for which waste must be analyzed before it is incinerated. By including the more detailed informational requirements in the technical sections of the regulations, while leaving the more general requirements in the general facility section of the regulations, the Agency believes that the regulations are specific enough so that owners or operators will know what is expected of them, and yet are flexible enough so that an owner or operator will only be required to conduct analyses which are appropriate for the management methods used at his facility.

Several commenters objected to the minimum annual retesting requirement, stating that it was unnecessary to re-analyze waste when the owner or operator is confident that the properties of the wastes are unchanged.

The Agency believes that the properties of most waste streams vary within the course of a year, and therefore most owners or operators should re-analyze waste, at least annually, to determine if such variations will influence the effectiveness of the method used at the facility to manage waste. However, if the owner or operator correctly believes that the properties of the waste which he manages will not change, then to re-analyze the waste would be an unnecessary expense. Therefore, the minimum annual retesting requirement has been deleted from the revised rules. However, the regulations do require that, at a minimum, waste must be re-analyzed (1) when the owner or operator is notified, or has reason to believe, that the process or operation generating the waste has changed in a way that would lead him to believe that the hazardous property or characteristics of the waste would change, and (2) for off-site facilities, when the results of the verification analysis required in §§ 264.13 and 265.13 indicate that the composition or characteristics of the waste do not match the identity of the waste designated on the accompanying manifest.

Objections were also raised regarding the requirement to analyze waste for the four properties specified in proposed § 250.43(h) (i.e. physical appearance,

specific gravity, pH, and vapor pressure), because analysis for these properties is not appropriate for all categories of waste. Many commenters also felt that to require owners or operators to sample each truckload of waste for these four properties was unreasonable for multiple truckloads of waste which have uniform physical and chemical characteristics.

The Agency agrees that measuring for the four properties specified in proposed § 250.43(h) may be inappropriate for certain categories of waste and may be unnecessary for multiple truckloads of uniform waste. Therefore, the four properties have been deleted from the waste analysis standards. Instead, the final rules require that owners or operators develop and follow a waste analysis plan which specifies the tests to be used, and the frequency with which these tests will be conducted, to determine the identity of incoming waste managed at the facility. The plan must be prepared and followed during interim status. The Regional Administrator may request the plan at any time after the effective date of these regulations. The Agency also will review the content of the plan when it evaluates the facility's permit application. Where the Regional Administrator believes that the facility's waste analysis plan is inadequate, he will require that the plan be modified to include procedures which he believes are appropriate to determine the identity of incoming waste to the facility.

In addition to the procedures used to determine the identity of incoming waste, the final rules also require that the facility's waste analysis plan describe:

- (1) the parameters for which each waste will be analyzed in the detailed chemical and physical analysis required for each waste managed at the facility;
- (2) the test methods to be used to test for these parameters; and
- (3) the sampling methodology which will be used to obtain representative samples of the waste to be analyzed.

The Agency believes that the requirement for developing and maintaining a waste analysis plan will not only allow owners or operators to tailor their waste analysis procedures to the type of wastes and techniques which the facility uses to manage these wastes, but will also provide the Agency with a review mechanism which will encourage owners or operators to conduct thorough analyses of the wastes which they manage. Compliance with the self-developed waste analysis plan, as with the other plans required in these regulations, is a separate, enforceable, regulatory requirement.

EPA is promulgating waste analysis requirements in Part 265, but will accept comments on their appropriateness as interim status standards because they were not specifically proposed as interim status standards.

4. *Security.* The purpose of the proposed security standards was to prevent the unknowing or unauthorized entry of people or livestock onto the active portions of facilities. To accomplish this objective, the proposed rules included requirements which specified the height of the fence, the means to control entry at the gate, and the height of the letters on the warning sign which was to be posted at the entrance to the active portion of the facility. However, the proposed rules contained rather flexible variances from the specific requirements for fences and signs.

Most of the comments received on the security standards addressed the requirement for a six-foot fence. The majority of the commenters felt that the standard should allow means other than a six foot fence (or the alternatives specified in the "note" to the standard) to prevent entry onto a facility. Several commenters suggested that the standard be written in terms of a performance standard, and a few commenters noted that the implicit performance standard in the proposed rules, which required the *prevention* of unauthorized entry onto a facility, should be changed to require the *deterrence* of unauthorized entry onto a facility, because it is impractical to construct a non-climbable fence. In addition, a number of commenters suggested that facilities should not have to comply with the security requirements if the wastes are sufficiently benign so that people need not be kept away from the site. Furthermore, a few commenters pointed out that the active portion of a facility should not have to be surrounded by a fence if the active portion is located within a facility or plant that meets the security requirements.

In response to these comments, the security standards have been rewritten to include the general performance standard that a facility's security system must prevent the *unknowing* entry of people, and minimize the potential for the *unauthorized* entry of people or livestock onto the active portions of facilities. The final rules contain two conditions for an exemption from the performance standard: (1) if unauthorized or unknowing entry will not result in injury to people or livestock who might enter the facility, and (2) if such entry will not result in injury to the environment (e.g., as a result of

disturbing the waste or the equipment within the active portion). Because these two conditions are rarely concurrently satisfied, the Agency does not expect that many sites will be exempt from the security requirements.

To indicate how to comply with the general performance standard, a revision of the proposed fencing requirement has been provided in the final rules. The height of a fence, if used, is not specified, and alternatives to fences are allowed. In addition, the standard has been made more flexible by allowing the use of an around-the-clock surveillance system, instead of the physical barrier (i.e., a fence) specified in the proposed rules, to control entry onto a facility. The Agency believes that a continuous surveillance system can be as effective as a physical barrier to control access to the active portion because, when an unauthorized person approaches this area, facility guards or facility personnel can ensure that the person does not enter the active portion.

The Agency agrees that when access to the facility is already controlled by an adequate security system, to erect a fence or other barrier around the active portion would not provide additional protection to human health and the environment. Accordingly, EPA has clarified the regulations so that an owner or operator can demonstrate that the active portion of his facility complies with the security regulations, based upon the security system of the facility (or the manufacturing operation) within which the active portion is located.

In addition, a number of commenters pointed out that the proposed standard, which only required signs to be posted at the gates to the active portion of the facility, could result in inadequate warning to unknowing persons approaching facilities where fences are not used to control access to the facility. For this reason, several commenters suggested that the standard should require that signs be posted in sufficient numbers to be seen from any approach to the active portion of the facility.

The Agency agrees that because the security systems (including fences) used to control access to facilities will not be impenetrable, signs should be posted along the periphery of the active portion to warn unknowing people that entering onto the active portion is potentially hazardous. Therefore, EPA has taken the commenters' suggestion and has revised the requirement for the placement of the warning signs.

Although the Agency received no criticism of the four-inch lettering requirement for signs, the underlying theme of the majority of the comments was that the proposed security

standards were too specific. Because the Agency believes that the four-inch lettering requirement may have been too inflexible, a more performance-oriented provision, which requires that the warning on the sign be legible from at least 7½ meters (25 feet), has been substituted for it in the final rules. This new approach will provide more flexibility.

The Agency believes that because the "note" to the proposed standard provided a variance to the requirement for the statement: "Warning—Unauthorized Personnel Keep Out" on the sign, no comments were received on this aspect of the standard. The Agency believes that a variance to the wording requirement should be retained in the final rules for existing signs, because it would be unnecessarily expensive to replace signs at facilities which do not contain the exact wording specified in the final standard, but which nonetheless give adequate warning to unknowing people to stay away. However, to make sure that the new signs posted at hazardous waste facilities are uniform, the Agency believes that they should contain the wording specified in the standard. Therefore, in the final rules, the variance to the message on the sign only applies to existing signs.

In addition, the Agency has substituted the word "danger" for "warning" in the final rules. The reason for this change is that word "danger," more than "warning," indicates the potential for harm.

**5. General Inspection Requirements.** § 250.43-6 of the proposed regulation specified seven parts or aspects of a facility which owners or operators were required to inspect daily for specific signs of deterioration or malfunction. Owners or operators were also required to record observations noted during the inspection in the facility's operating log.

The Agency received many comments concerning the specific listing of required inspection items (i.e., dikes, fences, etc.) and the absolute requirement for *daily* inspections. Several of the commenters noted that for some of the listed items (for example, fugitive emissions), the required inspections were either not applicable to all facility types, or would be impractical to implement. Others noted that such a list could not include all of the possible items which should be inspected. As for inspection frequency, many of the comments argued that daily inspections are simply unnecessary. They pointed out that, in many cases, the rate of deterioration is so slow (in the corrosion of tanks, and the erosion of dikes, for example) that occasional

inspections are sufficient to reveal any problems long before failure occurs.

The thrust of these comments was that the specific items to be inspected and the frequency of inspection should be determined by the owner or operator on a case-by-case basis. The Agency agrees, and has revised the regulations to require the owner or operator to develop and follow his own written inspection schedule. This will be based on the facility's critical processes, equipment, and structures, and on the potential for failure and the rate of any deterioration processes (corrosion, erosion, etc.) which may lead to failure. Compliance with the plan is a separate, enforceable regulatory requirement.

During the permitting process, the Agency will review the inspection schedule for its adequacy in protecting human health and the environment, for comprehensiveness, and for consistency with inspection schedules for similar facilities. The Agency will also assist the owner or operator in optimizing the efficiency and effectiveness of the schedule based on its experience with similar facilities. During interim status, consultation and review with the Agency will not normally be required.

The Agency realizes that not all owners or operators are equally knowledgeable. Therefore, EPA has retained minimum specific inspection requirements, which include some obvious inspection points, and some minimum frequencies for inspecting them. These requirements have been incorporated into the regulations for specific facility types (tanks, surface impoundments, etc.) to clarify how they are to be applied to these facilities.

The final rules also require the owner or operator to make a record of all inspections, and to keep it on file for three years. In addition to information on the observations, this record must specify when the inspection was made, who made it, and when any repairs were made. The record can take the form of an inspection checklist; this would combine the recordkeeping with a useful inspection procedure. In any case, the record will help assure the Agency that the owner or operator is in fact conducting inspections, and is making any needed repairs. Additionally, should an environmental or human health incident actually occur, these records will help to reconstruct the events that led to it, and may also provide a valuable resource for any emergency decisions. As one incidental benefit, the record will help management audit the reliability of equipment, the efficiency of maintenance activities, and the effectiveness of the inspection schedule.

6. *Personnel Training.* The purpose of the proposed training requirements was to reduce the potential for mistakes which might threaten human health or the environment by ensuring that facility personnel acquire expertise in the areas to which they are assigned. The proposed standards included requirements which specified the time by which facility personnel must obtain the training necessary to do their jobs, the records to be maintained at the facility of the training received by its employees, and the minimum frequency with which the initial training received by the employees must be reviewed. In addition, the proposed rules required facility personnel to be familiar with the facility's contingency plan.

Many of the comments received on the proposed rules addressed the format and content of the required training programs. Some commenters suggested that the standards allow in-house training programs and on-the-job training in place of the formal classroom instruction in hazardous waste management required in the proposed rules. Several other commenters requested that the regulations specify the type, length, and intensity of the courses of instruction to be administered to facility personnel.

The Agency agrees that formal classroom instruction may not always be the best approach to training, and that supervised on-the-job training is a valid substitute for, or supplement to, formal instruction. Accordingly, the final training standards reflect the Agency's acceptance of in-house training programs and on-the-job training as a means of complying with the training requirements. However, the content, schedule, and techniques to be used in the on-the-job training program must be described in the training records maintained at the facility and will be subject to approval during the permitting process. Compliance with the program described in the training records is a separate, enforceable regulatory requirement.

Given the variability in waste types, management processes, and employee functions at hazardous waste facilities, the Agency believes that it is neither necessary nor desirable to rigidly specify training courses in regulations. However, the Agency is preparing a training manual which will provide advice on desirable types of instruction for the various jobs carried out at hazardous waste management facilities.

Several commenters were concerned that the six-month period for complying with the training requirements may be too short, because there may be a

shortage of formal training programs in hazardous waste management.

The Agency believes that its acceptance of supervised on-the-job training to achieve compliance with the training requirements will help to offset the problems caused by a possible shortage of formal training programs. Where formal programs are unavailable, a facility can use in-house training programs and supervised on-the-job training to provide the required training. Because the majority of the Phase I standards are non-technical (e.g., the manifest and recordkeeping requirements), the Agency believes that most training can be conducted in-house. When the Phase II standards are promulgated, facility personnel will have another six months from the effective date of the Phase II standards to acquire the expertise needed to comply with the additional standards. Thus, the shortage in formal courses in hazardous waste management should not cause facility personnel to miss the deadline by which compliance with the training requirements must be achieved.

Commenters suggested that the six-month "grace period" for untrained employees should not be extended to employees hired after the effective date of these regulations. Work and training schedules may make that an impractical requirement, but the Agency has decided, for safety reasons, to require that untrained employees work only in supervised positions.

A number of commenters were also concerned that the requirement for detailed written job descriptions might lead to union grievances and arbitration. For this reason, the commenters suggested that the standard be revised to allow the job descriptions to be written in a manner similar to descriptions for other similar positions in the same company location or bargaining unit.

It was not the Agency's intent to interfere in labor-management issues. EPA's only interest in the job descriptions of facility personnel is to enable the Agency to determine if each person is receiving a level training that is commensurate with the person's duties and responsibilities. Since the Agency believes that the suggested revision of the recordkeeping requirements will not diminish the Regional Administrator's ability to make this determination, the standards have been revised according to the commenters' suggestion.

Two other standards have now been placed with the training requirements. The first of these standards specifies the length of time the facility must keep training records. This requirement was

proposed in the section of the regulations dealing with Manifest, Recordkeeping, and Reporting (§ 250.43-5). However, in order to reduce the need to cross-reference within the regulations, the Agency has decided to place all of the recordkeeping standards which deal with training into the section of the regulations on training. Similarly, the elements of the facility's emergency response procedures with which facility personnel must become familiar have been incorporated into the training requirements.

7. *General Requirements for Ignitable, Reactive, or Incompatible Wastes.* As discussed earlier, the Agency has added general requirements for handling ignitable, reactive, or incompatible wastes in § 265.17 of the interim status standards. In the Phase II regulations, the Agency plans to amend Part 264 by moving § 264.36 to a new § 264.17(a), and by adopting § 265.17(b) as a new § 264.17(b). Therefore, the Agency will use any comments on § 265.17 for that purpose also.

As the present definition of incompatible wastes reveals, the problems posed by incompatible wastes fall into two general areas. The first covers wastes which are incompatible with the materials containing them because they would corrode or otherwise cause the decay of those materials. The standards in the substantive regulations were drawn from the proposed standards for storage generally, tanks, containers, treatment generally, basins, and chemical, physical, and biological treatment facilities, and now are applied to waste piles as well, because they pose similar problems. The Agency has chosen slightly different solutions to these problems for containers, tanks and treatment facilities, and waste piles. These solutions are discussed in the separate sections for these types of equipment or facilities.

The second and broadest group of problems is the potential for the creation of harmful reactions or substances during the mixing of incompatible wastes and the treatment of ignitable or reactive wastes. The proposed definition of incompatible wastes, Appendix I to Subpart D of proposed Part 250, and the Note to proposed § 250.45(c) indicated that a variety of substances and reactions were of concern. The present definition and substantive regulations have been drawn from these proposed regulations with some modifications.

The regulations and Appendix V have been coordinated, as suggested in part by one commenter. Several standards have been deleted. The part of the proposed definition concerning the

volatilization of ignitable and toxic chemicals has been partly subsumed into the parts covering production of flammable or toxic fumes and gases. As explained elsewhere, further regulation of volatile waste is being postponed. The part of the proposed definition covering shock-sensitive, friction-sensitive, and similarly unstable substances has been deleted because reactive substances are adequately covered in the sections dealing directly with them, and there are few or no damage incidents resulting from the production of such substances from non-reactive wastes. The detailed air emission formulas in the Note to proposed § 250.45(c) have been eliminated in response to comments that the OSHA standards employed there were not generally appropriate for the circumstances of waste treatment, storage, and disposal facilities.

Finally, Appendix I to Subpart D of proposed Part 250 indicated in Groups 2-A and 2-B that toxic wastes were incompatible with flammable or explosive wastes because mixtures of them would release toxic substances in fires or explosions. No comments were received on this standard, but the Agency is still considering whether and how toxic and ignitable, flammable, or reactive wastes or materials should be segregated during treatment, storage, or disposal in order to avoid the release of toxic substances in case of fire or explosion. The problem is compounded by the fact that some toxic substances are themselves ignitable, flammable, or reactive. This portion of the Appendix (now Appendix V to Part 265) has been deleted for the time being, and the Agency solicits comments on this problem.

Many commenters pointed out that incompatible wastes such as acids and bases are frequently mixed so that they will neutralize each other, and that this may be done safely so that violent reactions are avoided. Consequently, the regulations have been modified to allow mixing incompatible wastes if the general standards described below are complied with. In addition, contrary to the contention of one commenter, materials other than wastes, such as treatment reagents or non-hazardous wastes, may be incompatible with hazardous wastes and are therefore included in the incompatible waste regulations. These requirements have been extended to storage facilities as well as treatment and disposal facilities, because they can experience similar problems when incompatible wastes are mixed. If facility operators mix incompatible wastes, they must

anticipate the reactions which may occur and the substances which may be formed, and control the mixing so as to avoid or control the reactions and substances produced.

The general standards in § 265.17(b) are intended to insure that several undesirable results are avoided when ignitable or reactive wastes are handled or incompatible wastes are mixed. Extreme heat or pressure, fires or explosions, violent reactions, and damage to the structural integrity of the device or facility containing the waste are clearly undesirable because of the likelihood that they will cause or lead to injury or death of facility personnel, and the spread of toxic wastes into the environment. These standards were uncontroversial. The production of uncontrolled flammable fumes or gases in sufficient quantities to pose the risk of fire or explosion is undesirable for similar reasons. The creation of uncontrolled toxic dusts, mists, fumes, and gases in sufficient quantities to threaten human health is also prohibited, in order to protect both facility personnel and people off-site. The Agency is primarily concerned here with gases such as chlorine, hydrogen sulfide, and hydrogen cyanide, which some mixtures of wastes or waste treatment processes may produce. As explained elsewhere, the Agency need not rely on the Clean Air Act to regulate airborne emissions from hazardous waste facilities.

Finally, because the possible undesirable results from the mixing or handling of wastes may be enormously varied, the general regulations prohibit the creation of conditions like the ones mentioned above which threaten human health or the environment. This standard requires owners and operators of facilities to be aware of the possible results of treatment, storage, or disposal of ignitable or reactive wastes, and the commingling of incompatible wastes, to avoid conditions which would pose threats to human health or the environment similar to the ones specifically listed in the regulation.

The regulations on ignitable or reactive wastes are typically more restrictive than those on incompatible wastes. While incompatible wastes require attention primarily at the time they are introduced into a facility or treatment process, ignitable or reactive wastes pose a continuing danger of ignition or reaction, and require continuing protection from conditions which would cause them to ignite or react. This is sometimes practical in containers, tanks, and waste piles. However, since landfills, surface

impoundments, and land treatment facilities generally cannot be managed so that this protection is provided, ignitable or reactive wastes may be placed in such facilities only if they are treated before or immediately after placement in the facility so that they are no longer ignitable or reactive. This relaxation of the complete bar in the proposed rule responds to comments indicating that such treatment is not uncommon and should not be prohibited. The regulations require that this treatment meet the same standards applied to the mixing of incompatible wastes.

The Agency is currently considering adding another class of incompatible wastes to these regulations. It would declare incompatible those wastes which would solubilize or otherwise mobilize another hazardous waste or constituent in a landfill, land treatment facility, or surface impoundment, and thus increase the likelihood that the mobilized waste or constituent would be leached into ground water. Because the potential scope of this concept is so broad—even water could be considered incompatible with many wastes—the Agency currently believes that it would be most practical to implement such a regulation by listing only specified pairs of wastes as being incompatible. Those currently under consideration are:

- (1) PCBs and organic solvents,
- (2) Organic pesticides and organic solvents, and
- (3) Metal-containing wastes and acids.

The first material in each of these pairs can be substantially mobilized by the second, but may be relatively immobile in its absence. It therefore seems prudent to dispose of such pairs in separate landfill cells, land treatment areas, or impoundments. The Agency requests comment on this concept of incompatibility, on these and other possible pairs of wastes which might be listed as incompatible under this standard, and on circumstances under which these wastes can safely be commingled in land disposal facilities.

#### *C. Subpart C—Preparedness and Prevention and Subpart D—Contingency Plan and Emergency Procedures*

Section 250.43-3 of the proposed rules contained three general types of provisions: (1) Requirements for developing contingency plans for effective action to minimize unanticipated damage from the treatment storage, or disposal of hazardous waste; (2) requirements for preparedness and prevention measures to minimize the need for ever using contingency plans, and (3) requirements for emergency response measures to be

taken during and after situations in which a contingency plan is implemented. In the final rules, standards for preparedness and prevention have been made a separate Subpart because: (1) They contain explicit facility requirements (e.g., fire protection equipment, and aisle space) which are independent of the implementation of a facility contingency plan; (2) it is more logical to discuss preparedness and prevention aspects of facility operations before discussing planning for and response to emergencies which may or may not occur; and (3) placement of the three types of standards in the same section in the proposed rules tended to be confusing because the requirements for developing and implementing the contingency plan were interspersed with requirements for preparedness and prevention. However, preparedness and prevention, contingency plans, and emergency response are all discussed in this section of the preamble because they are closely related, and many of the comments received on these requirements addressed all of them simultaneously.

The final Part 264 and 265 Subpart C preparedness and prevention rules are intended to minimize the possibility of and effect of a release, fire, or explosion which could threaten human health or the environment. They require that facilities have, where necessary, internal communications or alarm systems, equipment capable of summoning external emergency assistance from local agencies, fire control equipment, spill control equipment, and decontamination equipment. This equipment, where required, must be routinely tested, and maintained in proper operating condition.

Subpart C also requires that employees operating the facility have immediate access to both internal and external communications systems, where these are required. In addition, where needed, aisle space must be maintained to allow the unobstructed movement of emergency equipment to any area of facility operation. Precautions to prevent accidental ignition or reaction of waste are specified. And lastly, facility owners or operators must attempt to make arrangements for local authority to provide emergency support, where this is appropriate.

The final Part 264 and 265 Subpart D contingency plan rules are intended to minimize hazards to human health and environment in the event of fires, explosions, or any unplanned sudden or

non-sudden release of hazardous waste to air, soil, or surface water. The contingency plan must include:

- A description of the planned response to emergencies at the facility,
- Any arrangements with local and State agencies to provide emergency response support, where needed,
- A list of the facility's emergency coordinators,
- A list of the facility's emergency equipment, and
- An evacuation plan, where necessary.

Rules for distributing and amending the plan are specified, as is the requirement that a facility emergency coordinator be either present, or on call, whenever the facility is in operation.

Provisions for emergency procedures specified in Subpart D of the final rules include:

- Immediate notification of employees, and local, State, and Federal authorities of any imminent or actual emergencies,
- Immediate assessment of possible hazards to the environment and human health outside the facility,
- Measures to preclude the spread of fires and explosions to other waste,
- Proper management of residues,
- Rehabilitation of emergency equipment and notification of authorities before operations are resumed, and
- Recordkeeping and reporting to EPA on the nature and consequences of any incident that requires implementing the contingency plan.

Commenters from many organizations submitted numerous comments on the proposed requirements for contingency plans, preparedness, and emergency response. Highlights of these issues are discussed below:

**1. Defer Regulations Until Permit Issued.** Some commenters suggested that the contingency plan, preparedness, and emergency response requirements should be negotiated when a permit is issued, and thus should not apply to facilities during the interim status period.

The Agency sees no reason to delay implementing these requirements until a permit is issued. Most of the requirements are explicit and straightforward, and therefore, do not require negotiation with or interpretation by the Regional Administrator before they can be implemented. Those proposed requirements which might have been interpreted as requiring negotiation with EPA, have been rewritten to eliminate the need for interaction with the Agency during the interim status period. For this reason, some of the final Part 265 rules

applicable during interim status are written differently than the corresponding Part 264 rules.

**2. Tailor Rules to Circumstances.** Many commenters felt that the proposed contingency plan, preparedness, and emergency response provisions should be restructured to allow requirements to be tailored to particular circumstances. In the same vein, other commenters complained that the proposed provisions were overly restrictive for some types of facilities (e.g., facilities which handled only "low" hazard waste, such as utility boiler fly ash or waste oil).

The Agency recognizes that there are different types of facilities handling many different kinds of wastes in widely differing circumstances with respect to climate, proximity to people, etc. In the proposed rules, the "Notes" following certain provisions provided some flexibility to account for these differences. In the final rules, these "Notes" have been incorporated into the regulations. Further, the Agency has expanded the concept of case-by-case determination of appropriate requirements with many revisions throughout the final rules to provide greater flexibility. In addition, requirements specific to particular circumstances (e.g., ignitable and reactive waste) have been clearly identified in the final rules.

**3. Protection Inside Versus Outside Facilities.** Several commenters questioned whether the proposed contingency plan and emergency response provisions were designed to deal with the potential for damage to human health and the environment both *inside* and *outside* hazardous waste facilities.

RCRA's mandate to protect human health and the environment is not limited to dangers occurring outside hazardous waste management facilities. In fact, many of the damage cases cited in the background documents involve death or injury to facility personnel, as well as threats to people outside the facility.

The Agency is concerned about the health and safety of facility personnel. The RCRA Section 3002 regulations for waste manifests and waste shipping container labeling and marking, and the Section 3004 waste analysis, training, inspection, and facility design and operation regulations, are designed, among other things, to reduce hazards to facility personnel.

In addition, the RCRA contingency and emergency response plans should include steps to respond to both internal and external threats. In designing internal plans to respond to employee health threats, however, respondents

must recognize that primary responsibility for regulating workplace health and safety rests with the Occupational Safety and Health Administration of the Department of Labor.

4. *Delete Contingency Plan.* Some commenters felt that the provision regarding the proposed contingency plan provision was unnecessary and should be deleted, because the Spill Prevention, Control, and Countermeasures (SPCC) plan required by the Clean Water Act would be sufficient to fulfill contingency planning requirements for hazardous waste management facilities.

The Agency disagrees with this comment. The universe of facilities which are currently required to have an SPCC plan is not identical to the universe of hazardous waste facilities controlled under RCRA. Further, the proposed rules for RCRA contingency plans are not identical to the SPCC plan requirements, and the SPCC plan is not an adequate substitute for RCRA contingency plan requirements. However, the two plans can be complementary. (See later discussion.)

5. *Ground-Water Contamination.* Commenters were concerned that the proposed rules seemed to address only acute emergencies, and argued that the contingency plan should include the responses to be taken if ground-water contamination were detected.

The Agency agrees that the discharge of any hazardous waste, whether sudden or non-sudden, is a potential threat to people or the environment, and therefore, is of concern to the Agency. However, the Agency has concluded that the ground-water monitoring regulations, rather than the contingency plan regulations, are the appropriate place to deal with contingency planning and response to ground-water contamination incidents. The final ground-water monitoring rules include requirements for evaluating ground-water analyses, and requirements for planning and describing the response required where a potential ground-water problem is identified.

6. *Implementation of the Contingency Plan.* Several commenters suggested that the final rules should make it clear that the provisions of the contingency plan need only be implemented in the event of a discharge or release of hazardous waste from the facility which has the potential for damaging human health or the environment.

It was not the Agency's intention to require facility owners or operators to invoke their contingency plan when insignificant amounts of hazardous waste are released (e.g., very small spills or a leaking valve). The final rules

have been reworded to better reflect the Agency's original intent.

7. *Submission of Contingency Plans.* The proposed rules required that copies of the contingency plan and any amendments be filed, as soon as they were prepared, with the Regional Administrator, and local agencies that might be called upon to provide emergency services. Also, the contingency plan was to be submitted to the Regional Administrator as part of the facility permit application. Many commenters argued that facility owners or operators should be required to maintain contingency plans on file, but not be required to submit plans and amendments to the Regional Administrator or to local emergency or health agencies. The commenters offered the following reasons to support their position:

SPCC plans are required to be available for inspection, but are not required to be submitted; RCRA plan requirements should be consistent with this.

Contingency plans are amended frequently; it is burdensome to everyone to file amended plans.

Local authorities may refuse to accept plans; therefore, the rule is unenforceable.

Plans submitted to local authorities are relegated to obscure files; therefore, the rule is useless.

Similarly, some commenters felt that contingency plans should be filed with local authorities only when a release of hazardous waste would require their response or endanger those under their protection, or when a facility handles "extremely" hazardous waste.

The Agency believes that the contingency plan requirement is an important part of the overall RCRA Section 3004 standards, and that EPA should ensure that each facility has an acceptable plan. Because the Agency accomplishes this by requiring that a contingency plan be:

Prepared by each facility,  
Amended as necessary,  
Made available to EPA inspectors during on-site reviews, or to the Regional Administrator when requested, and

Submitted to EPA as part of the permit application, the Agency agrees that contingency plans and revisions need not be submitted routinely to EPA. This approach is consistent with SPCC plan requirements, which are being revised to require that plans be submitted to EPA only upon request of the Regional Administrator.

However, the Agency disagrees with the commenter's arguments regarding the need for local authorities to have an

up-to-date facility contingency plan. The final rules require that the contingency plan must be amended in the following cases:

If there are revisions to applicable regulations (interim status);

If there are revisions to the facility permit (permitted status);

If the plan fails in an emergency;

If there are changes in the facility design, construction, operation, maintenance, or other circumstances that materially increase the potential for fires, explosions, or releases of hazardous waste or change the response necessary in an emergency;

If there are changes in the person(s) qualified to act as facility emergency coordinator;

If there are changes in the emergency equipment at the facility.

The Agency believes that all these reasons for amending the plan are important, and that local authorities, where appropriate, have a need to know about these changes. The first four cases could involve significant amendments to a facility's contingency plan, but such amendments should occur infrequently. The last two cases may occur more often, but the change and notification requirements are not burdensome.

The proposed rule required facility owners or operators to file contingency plans with local authorities. It did not require these authorities to accept them. The Agency believes that most local authorities are responsible and competent, and that they rarely will reject facility plans or relegate them to obscure files. Nevertheless, if they do refuse to accept a facility's plan, the facility owner or operator will have complied with the rule if he can document in the operating record that he submitted a contingency plan to local authorities.

The proposed rules used the phrase ". . . who may be called upon to provide emergency services." This phrase means that a contingency plan need not be filed with local authorities if the nature of the waste handled at a facility, or if the internal emergency response capabilities at the facility, are such that local authorities will not be called upon to provide services either to the facility or to people outside the facility. This provision has been retained in the final rules.

8. *Confidential Information.* Several commenters claimed that facility contingency plans frequently contain confidential information which companies would insist not be maintained in public files. Therefore, the commenters felt contingency plans should not be submitted to EPA (or by extension, to local authorities), but

rather maintained on the facility premises open to EPA inspection.

The contingency plan must be submitted to EPA with Part B of the permit application under 40 CFR Part 122, and will become a condition of any permit issued. The permit regulations state that permit-related information, asserted to be confidential at the time it is submitted, will be disclosed by EPA only in accordance with the procedures in 40 CFR Part 2. Because the contingency plan will be part of the permit, portions of contingency plans asserted to be confidential will be available to the public only in accordance with 40 CFR Part 2.

As stated earlier, the Agency believes that where appropriate to protect human health and the environment in emergencies, it is vital that local authorities have up-to-date facility contingency plans in their possession. A facility's contingency plan need not contain details of proprietary processes or operations. For this reason, the Agency does not believe that contingency plans often, if ever, need to be confidential.

**9. Insufficient Time for Plan Submission.** A few commenters stated that: "Requiring the submittal of an SPCC plan as part of a [RCRA] permit application is unreasonable since the development of an adequate and effective SPCC plan may require a significantly greater period of time than available between promulgation of the [RCRA] regulations and submissions of a [RCRA] permit application."

As described in the preamble discussion entitled "Interim Status Standards", to qualify for interim status, facilities must submit the Part A permit application to EPA within six months after promulgation of the RCRA Section 3001 regulations. They must submit Part B of the permit application upon request at a later date.

The facility contingency plan must be submitted with Part B, but is not required for Part A. Further, as noted above, the RCRA contingency plan may be merged with an existing SPCC plan, but the final rule does not require that an SPCC plan be submitted as part of a RCRA permit application. Moreover, the Agency believes that an acceptable RCRA facility contingency plan can be prepared within the six-month period between promulgation of the RCRA Section 3001 regulations and the effective date of these regulations. Consequently, each facility owner or operator is required to have a contingency plan on the effective date of these regulations, and to submit it to appropriate local authorities, even though it is not required to be submitted

to EPA until a later date, with Part B of the permit application.

**10. Emergency Coordinator.** Many commenters felt it was unnecessary and burdensome for an emergency coordinator to be present at all times when a facility is in operation, as the proposed rules required. Some commenters pointed out that "in operation" can be interpreted to include passive or automated situations, such as storage in tanks or surface impoundments, but that, the possibility that an emergency will occur during these situations is small. These commenters suggested that the proposed rule should include a variance where emergency situations are unlikely to develop, or that the rule be modified to allow an emergency coordinator to be on call, rather than present on-site.

EPA agrees that there are many situations where the facility emergency coordinator's presence on-site is not essential. However, the Agency believes an emergency coordinator should at least be available (on call) to respond immediately to emergencies at the facility, initially by giving phone instructions to local authorities and facility personnel, but also by being able to be on-the-scene within a short time. This arrangement should impose no undue burden.

Several commenters felt that no one person could be cognizant of, and responsible for, all the duties of the emergency coordinator specified in the proposed rule. They suggested the rule be modified to allow an "emergency coordination team" under the supervision of the facility's management.

The Agency recognizes that the emergency coordinator's duties are many and varied, and fully expects that many people with different disciplines will be required to assist the emergency coordinator in fulfilling these duties. However, based on analysis of past emergencies, the Agency feels strongly that there must be a single person in charge during an emergency with the responsibility and necessary authority to direct response measures. A "team" approach dilutes responsibility and authority, and can lead to divisiveness or confusion under stress. Consequently, the Agency disagrees with these last comments and has retained the proposed approach in the final rule. However, the final rule does not preclude the use of a response team, as long as one person has central responsibility over it.

**11. Resuming Operations After an Emergency.** The proposed rules required the facility's emergency coordinator to prohibit the facility from accepting any

waste which was incompatible with material released during an emergency until clean-up procedures were completed, emergency equipment was restored to pre-accident condition, and the affected area was declared safe by EPA, State, or local officials. One commenter felt that the decision that the facility could safely resume operations should be the responsibility of the facility emergency coordinator, rather than EPA or other government officials.

The Agency agrees that it would be unreasonable to require a formal declaration by government officials that a facility is safe to operate before allowing the facility to accept potentially incompatible wastes. It is quite possible that a release, fire, or explosion could occur in one part of a facility without affecting the safety of operations in other parts of the facility. Thus, it would be unnecessary to keep the whole facility from accepting a waste just because the waste may be incompatible with the material released during an emergency in one limited part of the facility.

However, EPA, State and local officials have a responsibility to ensure that human health and the environment are protected. This is particularly true where a facility has had a release, fire, or explosion of sufficient magnitude to invoke the facility's contingency plan. The Agency believes that the owner or operator should be required to notify EPA and appropriate State and local authorities that cleanup procedures following an emergency have been completed, before the part(s) of the facility affected by the emergency begin to accept potentially incompatible waste. This notification will allow EPA, State, and local authorities to be informed about the current status of facility operations.

#### **D. Subpart E—Manifest System, Recordkeeping, and Reporting**

The principal purpose of the manifest system, established in the Part 262 regulations, is to track hazardous waste from its origin with the generator, through its trip with the transporter, to its disposition at a treatment, storage, or disposal facility. The regulations in Subpart E of Parts 264 and 265 specify requirements concerning the return of the manifest from the facility owner or operator to the generator. These requirements form the last step in the information loop initiated in the Part 262 manifest requirements for generators.

Subpart E of Parts 264 and 265 also includes requirements for recordkeeping and reporting. One purpose of these requirements is to ensure that the regulated community complies with the

hazardous waste regulations, by providing the enforcement agency with sufficient information to monitor facility operations. A second purpose of the records required in Subpart E is to ensure prompt, proper, and effective response to emergencies, by providing facility owners and operators, and local authorities, with information which allows them to accurately assess any hazard posed to human health and the environment and to respond accordingly.

The Agency received numerous comments from many sources on the proposed rules for manifests, recordkeeping, and reporting. Some comments raised general issues applicable to the entire Subpart; others were specific to the requirements for either manifest, recordkeeping, or reporting. This preamble discusses the general issues first, followed by a section-by-section analysis of the comments specific to the three types (i.e., manifest, recordkeeping, or reporting) of Subpart E standards.

1. *General Issues.* a. *Burden.* Many commenters felt that the proposed manifest, recordkeeping, and reporting requirements were excessive, particularly for small firms. They stated that the requirements were unnecessary and impractical—particularly in requiring the various reports and signatures of treatment, storage, and disposal operators—and did not contribute substantially to human health and environmental protection. Other commenters were concerned that the paperwork associated with the requirements would be duplicative, and require additional personnel in government and industry to process.

The Agency does not agree that the proposed manifest, recordkeeping, and reporting requirements imposed an *unnecessary* burden on the waste management community. Numerous past documented damage cases have resulted from improper waste disposal in part because wastes were not tracked, and little liability or responsibility was assigned or accepted by the waste generators, transporters, or disposers. These requirements are designed to minimize the likelihood of incidents like these occurring again. To this end, the Agency believes that the various records, reports, and signatures of treaters, storers, and disposers are necessary to allow EPA enforcement officials to assign responsibility, and ultimately liability, in cases where problems arise.

The Agency does not agree that the resulting paperwork will be *duplicative*. The Agency has made every effort to eliminate any duplication, and has

documented these attempts in the Reports Impact Analysis, which was developed in response to the President's campaign to reduce paperwork. The total RCRA interim status administrative cost, including the cost of complying with notification, manifest, recordkeeping, and reporting requirements as well as other requirements such as inspections and preparing closure plans, is estimated at about 36 million dollars initially and 40 million dollars annually thereafter. Considering that an estimated 72,000 installations will be regulated under this program, the Agency does not believe that, for the waste management community in general, the cost of this aspect of the program will be excessive.

b. *Class of Hazard.* A few commenters supported the reporting of detailed information on "truly" hazardous wastes, but added that, for other wastes, this information is not needed and would not be of value.

The Agency agrees with the concept that information needs could vary with the class or degree of hazard of a waste. As noted earlier in this preamble, EPA is developing a class of hazard system for the technical waste management requirements under the Section 3004 regulations. The Agency believes, however, the final manifest, recordkeeping, and reporting requirements are the minimum necessary for any hazardous waste, regardless of class of hazard. The Agency anticipates the possibility of adding different recordkeeping and reporting requirements in the future for the classes of highest hazard identified in the new system.

2. *Manifest System.* The final rules require owners or operators of facilities which receive waste from off-site to sign, date, and return a copy of the manifest to the transporter immediately, and to the generator within 30 days of receiving the waste. Owners or operators must also note significant discrepancies in the type or quantity of waste received, and notify EPA if discrepancies cannot be resolved. This section of the preamble discusses the major comments received on the proposed § 250.43-5(a) manifest requirements.

a. *Manifest Copies.* The Agency proposed a 30-day period for the facility owner or operator to return the manifest to the generator in order to allow the facility owner or operator to return the manifests at the same time as he sends monthly bills to generators, thus reducing paperwork and postage costs. A number of commenters supported the proposed 30-day time period allowed for transmitting the manifest as reasonable,

and argued that it should be retained to (1) allow an orderly return of manifests, (2) greatly reduce paperwork and the chances of losing one of the manifests, and (3) allow the generator to prepare his reports based on receipt of submittals at expected times rather than on a continuous stream of manifests received at varying intervals.

A number of other commenters requested that the time period be shortened to one day, or one or two weeks, to (1) allow more effective and timely follow-up on waste shipments, (2) give generators more time to complete exception reports, and (3) avoid losing documents. However, some commenters argued against requiring owners or operators to immediately return manifests, claiming that this was unreasonable because time would be needed to check out any discrepancies, and record data from the manifest. These commenters felt a shorter return period would not provide any enforcement benefit, nor prevent illegal dumping.

Still other commenters recommended that the period be extended to allow more time for recording data from each manifest for reporting.

After careful review of these comments, the Agency has decided to retain the proposed 30-day time period allowed for returning manifests to the generator. The Agency believes that a 30-day time period is reasonable, and does not preclude returning manifests within a shorter time period should a generator insist upon it.

The final Part 262 rules require that, if the generator does not receive a properly signed manifest within 45 days of the waste's shipment to a hazardous waste facility, he must make an exception report to EPA. One commenter suggested that owners or operators should return manifests to the permitting agency, rather than to the generator, to eliminate the need for the generator to make exception reports. Another commenter argued that the regulation should be flexible enough to allow manifests to be returned to either an authorized State agency or the generator, in order to allow States to become aware of exceptions earlier. A related comment argued that States with programs that are adequate to identify missing shipments should have the authority not to require the manifest be returned to the generator. Another commenter recommended that efforts be made to reduce the number of copies of manifests that must be distributed and retained in order to minimize costs and space requirements.

The Agency strongly believes that the waste generator, rather than EPA,

should be responsible for ensuring that his hazardous waste actually arrives at the intended facility. The manifest routing system is designed to provide the generator with the feedback information necessary to make that determination. While this system may require more copies of manifests to be distributed and maintained than would be the case in other systems, it will result in more timely and effective discovery of errant shipments and allow prompt enforcement actions. The rationale for the EPA manifest system is discussed in more detail in the Section 3002 Background Document.

b. *Manifest Discrepancies.* Proposed § 250.43-5(a)(4) required that owners or operators notify the Regional Administrator immediately when there is a discrepancy between the type or quantity of waste designated on the manifest, and the type or quantity of waste actually received at the facility. Several commenters felt that the proposed rule would result in the Agency being inundated with unnecessary paperwork, resulting from facilities reporting inadvertent or unimportant errors. They suggested that the Agency specify allowable deviations which would not require submitting a discrepancy report to the Regional Administrator.

The Agency agrees that it is reasonable to set limits which would not routinely trigger discrepancy findings, but which also do not allow excessive amounts of hazardous waste to be unaccounted for.

Many factors entered into the decision regarding the limits to set on the variation in amounts of waste which would trigger a discrepancy notation and report. Because of the limits on the sensitivity and calibration of weighing scales, as well as possible variations in volume and density measurements, it would seem reasonable to allow relatively large errors for bulk shipments, such as 5 to 10 percent. Further, the Agency does not wish to be swamped with discrepancy reports as a consequence of setting the discrepancy limits too tightly.

Consequently, for the final rule, the Agency has selected an allowable discrepancy limit of 10 percent in weight of the manifested waste amount for bulk shipments. This limit, however, does not apply to batch shipments. A discrepancy of one drum in a shipment is sufficient cause for the facility owner or operator to start follow-up procedures in the final rules. The Agency decided to apply a different limit to batch shipments—even though the Agency recognizes that the amounts of waste involved can vary considerably—because such

discrepancies can be detected by a simple count.

Another kind of possible discrepancy between the waste manifest and the actual shipment is a difference in the chemical or physical nature of the waste. The Agency's intention in this respect is to have facilities flag obvious differences in waste type (such as waste solvents received instead of the waste acids listed on the manifest), as opposed to more subtle changes, such as part-per-million variations in the concentrations of heavy metals within a sludge. The Agency wishes to ensure that a facility is properly equipped to handle the wastes it receives, and is not subject to surprises in waste type introduced by mistake or on purpose by waste generators or transporters. The Subpart B requirements for waste sampling and analysis should, in most cases, ensure that facilities discover obvious differences in waste type.

The Agency believes that a distinction should be made between *discovering* a discrepancy and *reporting* the discrepancy. The Agency believes that the facility owner's or operator's logical and reasonable response, upon discovering a discrepancy in waste amount or type is for him to contact the waste generator, and the transporter if necessary, and try to resolve the discrepancy. Therefore, the final rules now specify that discrepancies should be reported to EPA only if they cannot be resolved satisfactorily. By so doing, the number of discrepancy reports can be reduced, and the reports submitted to the Agency will focus on truly significant discrepancies.

Several commenters felt that the proposed requirement for immediate discrepancy reporting was too stringent. They asked that a time limit be set to report discrepancies, because more time might be needed to determine that a discrepancy in fact exists. Some commenters suggested that a time limit of 10 working days would make the system more efficient. Other commenters suggested that a more practical requirement would be 30 days from receipt of the shipment.

The Agency agrees with the commenters that the regulations should specify a time frame for reporting discrepancies to the Regional Administrator. All discrepancies should be discovered soon after the waste arrives at the disposal facility. Discrepancies in amount should be found at the weighing station or waste receiving area before the facility owner or operator signs the incoming manifest. Discrepancies in type can be discovered by inspecting the waste, in some cases,

or by sampling and analyzing the waste, which usually takes a few hours.

The Agency expects that the facility owner or operator will attempt to reconcile most potentially reportable discrepancies through telephone conversations with the waste generator or transporter. It should be possible to check records, etc., and provide feedback in a matter of days, even including mailing time. Consequently, the Agency believes that it is possible to discover and reconcile discrepancies within 15 days of receiving the waste at the disposal facility. The final rules, therefore, specify that within 15 days after receiving the waste, unresolved significant discrepancies and attempts to reconcile them must be reported in a letter to the Regional Administrator, with a copy of the manifest at issue.

A commenter suggested that if there are discrepancies in the manifest, the hazardous waste should not be accepted until the generator or transporter reconciles the discrepancies.

The Agency agrees in principle that significant discrepancies in the manifest should be reconciled between the generator or transporter and the disposer. However, the Agency disagrees with the suggestion that the Agency require that the waste *not* be accepted by the disposer. In the Agency's view, it is more protective of human health and the environment for wastes to be accepted by a responsible disposer, and properly managed while reconciliation is attempted, rather than for the waste to be rejected with the possibility that it may then be improperly disposed elsewhere. Consequently, the suggestion has not been adopted in the final rule. However, the disposer is not obligated by these regulations to accept the shipment if there is a significant discrepancy in quantity or type.

c. *Manifest Retention.* Proposed § 250.43-5(b)(6) required the owner or operator of a facility accepting deliveries of hazardous waste from off-site sources for treatment, storage, or disposal, to retain for three years a copy of each manifest or delivery document, as certified by the generator, transporter, and owner or operator of the facility. This rule has been moved from the recordkeeping section to the manifest section of the final rules in order to consolidate all manifest-related requirements in one location within the rules.

One commenter stated that all facilities accepting waste should retain all manifests for the duration of the facility's operation, rather than for only three years. The commenter argued that problems at Love Canal surfaced 25

years after the last recorded use of the dump, and that three years is too short a period for recordkeeping, considering the longevity of many hazardous materials and their potential threat to human health and the environment.

The Agency agrees that *records* of all hazardous wastes handled at a facility should be kept until facility closure. However, the Agency does not agree that all hazardous waste *manifests* need be kept on file for that long a period.

The Agency anticipates both short-range and long-range uses for hazardous waste records. Retaining manifests for a three-year period is sufficient for the majority of enforcement cases involving generation and transportation of hazardous waste, which will likely be discovered and acted upon within that period. Thus, the Agency has specified a three-year retention period for manifests in the rules for generators (Section 3002) and transporters (Section 3003), as well as in these rules for facility owners or operators. For longer-range uses, such as responding to Love Canal-type situations, the facility recordkeeping rules require owner or operators to retain *records* (but not necessarily *manifests*) of all hazardous waste handled at the facility until facility closure. However, that requirement allows the owner or operator the flexibility to design a recordkeeping system suitable to the specific needs of his operation. Larger facilities may use automatic data processing systems. Smaller facilities may choose to retain manifests as the basis for recordkeeping.

In addition, the Agency will receive and retain reports which summarize the waste transported to each facility. These reports will contain a description of the waste, the quantity of the waste, and the numerical identifier of the generator or transporter. In this way, the Agency will be able to review and summarize the data on the annual reports for a particular facility, should any emergency or slow release problem arise at the facility after the manifests have been destroyed.

**3. Recordkeeping.** The final rules require facility owners or operators to keep records of the type and quantity of each hazardous waste received and how this waste is treated, stored, or disposed. Also, records are to be kept on the location of waste, waste analyses, inspections, personnel training, monitoring results, incidents that require implementing the facility contingency plan, and cost estimates for closure and post-closure care. This section of the preamble discusses the major comments received on the proposed § 250.43-5(b) recordkeeping requirements.

**a. Congressional Intent.** A commenter claimed that the proposed recordkeeping requirements were contrary to Congressional intent because manifests are not required for on-site disposal of hazardous waste, yet the information required to be kept by the proposed regulation was substantially identical to the information on a manifest.

The Agency disagrees that recordkeeping at on-site facilities is contrary to Congressional intent. Section 3004(l) of RCRA which mandates recordkeeping at hazardous waste facilities, makes no distinction between on-site and off-site facilities. The manifest is primarily a waste transport tracking and control document. Recordkeeping requirements for facilities are independent of the manifest and serve different purposes. The core information which appears on the manifest, e.g., origin, quantity, and type of waste, is also necessary for recordkeeping purposes.

**b. Operating Record.** A commenter suggested that the proposed term "operating log" be changed to the term "operating record" to allow the use of automatic data processing systems.

The Agency agrees that the use of an ADP system is consistent with the recordkeeping system flexibility intended by the proposed regulations. Further, the large area of some facilities, and the variety of functions performed at some facilities, make it very unlikely that all required information would be recorded in one operating log at only one location. In writing the proposed rules the Agency assumed a number of logs, or records, would be maintained at a site. All such records at a facility taken together would then constitute the facility's operating log.

The term "operating record" more accurately reflects the Agency's intentions and expected commercial practice, than does the term "operating log." The Agency has therefore changed all references in the final regulations from "log" to "record."

**c. Warrantless Inspections.** A commenter, relying on *Marshall V. Barlow's, Inc.*, 413 U.S. 266 (1978), suggested that the proposed requirement that the operating record be open to any duly designated employee or agent of the Agency authorized warrantless administrative inspections without the consent of facility's owner or operator.

EPA's information-gathering activities under RCRA Section 3007 are subject to the Fourth Amendment's protection against unreasonable searches as enunciated by the Supreme Court in *Marshall V. Barlow's, Inc.*, supra. It should be noted that the Supreme Court

in *Barlow's*, quoting *Almeida-Sanchez V. United States* (413 U.S. 266, 271), emphasized that:

A central difference between those cases [involving warrantless searches of pervasively regulated industries] and this one is that businessmen engaged in such Federally licensed and regulated enterprises accept the burdens as well as the benefits of their trade whereas the petitioner here was not engaged in any regulated or licensed business. The businessman in a regulated industry in effect consents to the restrictions placed on him.

EPA's exercise of its Section 3007 authority will be conducted in a manner consistent with the decision.

**d. Nomenclature for Waste Information.** One commenter complained that proposed § 250.43-5(b)(2)(i)(A), which required using DOT or EPA waste descriptions in the operating record, was confusing.

The Agency allowed the use of DOT, as well as EPA nomenclature, to describe waste on the proposed operating record, because the manifest, which contains much of the information needed to fill in the record, describes waste using DOT nomenclature. The Agency thought that providing the flexibility of using either the Agency's or DOT's terminology in the operating record, would be the most cost-effective and least burdensome method for recording waste management information.

In retrospect, the Agency now believes this was not the best approach. The proposed Section 3004 rules for *recordkeeping* applied to both on-site and off-site facilities, although separate rules for on-site facility *reporting* were contained in the proposed Section 3002 rules. On-site facilities do not use manifests, and thus recordkeeping based on DOT nomenclature is not appropriate for these facilities. Therefore, to simplify the rules, and to avoid confusion between on-site and off-site facility recordkeeping requirements, the Agency has decided to use EPA nomenclature for all facility recordkeeping and reporting.

**4. Reporting.** The final rules require facility owners or operators to file an annual report summarizing the type and quantity of each hazardous waste received, and how this waste is treated, stored, or disposed of at the facility. In addition, owners or operators are required to make reports to the EPA Regional Administrator within 15 days after wastes are received without a manifest; incidents such as fires, explosions, and releases; and problems detected via ground-water monitoring.

Reporting requirements for facility owners or operators that generate and

dispose of their waste at the same location (i.e., on-site disposers) were specified in the proposed Section 3002 rules. Because these rules were nearly identical to those specified in the proposed Section 3004 reporting requirements, the Agency has consolidated the reporting requirements for both on-site and off-site facilities in these final Section 3004 rules.

This section of the preamble discusses the major comments received on the proposed § 250.43-5(c) reporting requirements.

a. *Joint Filing of Reports.* Commenters suggested that firms with more than one site should be allowed to submit reports for all sites. Another commenter felt the regulations should allow for an assumption of duties contract between the generator and the facility owner or operator whereby legal responsibility for complying with the generator reporting requirements can be allocated to the owner or operator.

If a corporate headquarters maintains the records for the various facilities it controls, both the proposed and final rules allow the firm's headquarters to submit reports for each of its facilities.

The Agency cannot prohibit owners or operators from assuming responsibility for the generator's reporting if they choose to do so. Contract law provides the mechanism for owners or operators to assume these responsibilities. If, however, the generator's contracted duties are not performed, the generator will be held responsible for not complying with the RCRA reporting requirements.

b. *Submission of the Annual Report.* The proposed rules required that the facility's annual report be sent to the Regional Administrator within four weeks after the closing date of the reporting year. Some commenters felt that this turnaround time was too short because:

(a) Most large firms will require more than four weeks to prepare the annual report;

(b) The paperwork burden of the report is so great that the facility will have to stop operations in order to complete the report if the required turnaround time is only 30 days; and

(c) Four weeks does not allow sufficient time for recent manifests to be returned.

The Agency agrees that it may take more than 30 days to compile the information needed to complete the facility annual report. The owners or operators of both on-site and off-site facilities may be generators of hazardous waste sent elsewhere, as well as disposers of hazardous waste. To allow waste generators sufficient time to

collect all manifests in order to file their annual report, the final Section 3002 rules allow 60 days, rather than 30 days, from the end of the calendar year to file the annual report. In order to be consistent with the reporting requirements for waste generators, and to avoid unnecessary confusion by specifying separate deadlines for generators and facilities, the deadline for submitting the annual report for all waste management facilities has also been extended to 60 days.

c. *Certification Statement.* The proposed rules required that facility owners or operators sign on the annual report form a statement which certified that the information on the form was true, accurate, and complete. Several commenters objected to the proposed wording of the certification statement on the report form. They suggested that the phrase "to the best of my knowledge" be inserted, and the word "personal" be deleted, from the certification statement because:

(a) The person signing the certification may not have compiled the actual information reported, and thus, will not have personal knowledge of each of the many pieces of information reported, and

(b) The proposed wording of the statement places the individual who signs the report in the position of being criminally liable for errors beyond his control. In many instances, an error could be made even though there was a good faith effort to submit accurate information.

These commenters also felt that the sentence "I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment." should be deleted from the statement. They claimed that the sentence was unnecessary, because it is evident that anyone who knowingly submits a false report to the Federal government is subject to significant penalties.

The Agency agrees that the certification statement should reflect, to the extent possible, the signer's personal knowledge of the truth, accuracy, and completeness of the submission. The owner or operator or his authorized representative may not have firsthand knowledge of the truth, accuracy, and completeness of the information submitted. Accordingly, the Agency has changed the certification statement on the annual report to require the owner or operator or his authorized representative to state that "based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and

complete." This formulation, adopted from EPA's NPDES regulations, recognizes both the limits of the signer's personal knowledge and the Agency's need for accurate and complete information. It allows the owner or operator to respond on the basis of his belief, but sets forth precisely what the basis of that belief must be.

The Agency disagrees with a commenter's suggestion that EPA delete from the certification statement: "I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment." The Agency included this sentence in the statement to impress upon the signer the necessity for submitting complete and accurate information. The Agency believes that some owners or operators may not realize that the knowing submission of false information to EPA may subject the signer to significant penalties. Therefore, the sentence has been retained in the certification statement in the final rules.

d. *Unmanifested Waste Report.* The proposed rules required owners or operators to file a quarterly report to the Regional Administrator describing hazardous waste received at the facility not accompanied by a manifest, unless the waste was not required to be accompanied by a manifest because of the exclusions provided in the Section 3002 rules.

Some commenters felt the unmanifested waste reporting requirement should be deleted because it was burdensome, unnecessary, and submitted so infrequently as to make the information of little or no value to the Agency.

The Agency disagrees that the information contained in the report is useless. Because of the uncertainty associated with unmanifested hazardous waste, the Agency wants to know as much as it can about the waste, as soon as possible. Prompt submission of the details regarding unmanifested waste will enable the Agency to ensure that the facility is managing the waste (with which the facility may have limited management experience) in an appropriate manner. It will also allow the Agency to detect any suspicious patterns of unusually high incidences of unmanifested waste in particular areas.

However, the Agency does agree that the reports will be more useful for enforcement purposes if they are submitted soon after the unmanifested waste is received. Therefore, in the final rules, the report is required to be returned to the Agency within 15 days of the date the waste is received at the facility. The Agency does not believe

that requiring a 15-day turn-around time for these reports will be burdensome. This is because it is illegal to transport hazardous waste without a manifest, and thus, the incidence of unmanifested waste arriving at a facility—and the attendant need to fill out a report for these wastes—should be infrequent.

Small quantities of hazardous waste are excluded from regulation under this Part and do not require a manifest. Where a facility receives unmanifested hazardous wastes, it may be difficult for the facility owner or operator to determine whether an unmanifested waste report should be filed. In such cases, the Agency suggests that the owner or operator obtain from each generator a certification that the waste qualifies for exclusion. Otherwise, the owner or operator should file an unmanifested waste report for the hazardous waste movement.

#### *E. Subpart F—Ground-Water Monitoring*

The Agency received many comments on the ground-water and leachate monitoring portions of the proposed regulation. Based on these comments the Agency has made substantial changes in these interim status regulations. In particular the regulations have been changed to require ground-water monitoring at surface impoundments, landfills, and land treatment facilities. The proposed interim status regulation required ground-water monitoring only at those surface impoundments and landfills where a ground-water monitoring system was already in place. EPA has decided, therefore, to issue this Subpart as "interim final" to provide an opportunity for further public comment on this portion of the regulation.

The proposed regulation required leachate monitoring in addition to ground-water monitoring at landfills and surface impoundments. Such a system was to collect leachate samples in the zone of aeration between the water table and the primary liner or natural soil barrier of the disposal facility. Variances were allowed for owners or operators who could demonstrate that an alternative leachate monitoring technique would detect leaks as effectively as the prescribed system.

Many commenters raised objections to the leachate monitoring requirement, arguing that it was expensive, redundant and technically infeasible. Some commenters suggested that leachate monitoring be used in lieu of ground-water monitoring or that the Regional Administrator have the option to waive leachate monitoring for specific facility locations or designs. The most frequently mentioned comment was that

it was virtually impossible to install leachate monitoring systems at existing landfills and surface impoundments.

While EPA still believes that leachate monitoring can be an effective and useful detection device in addition to ground-water monitoring, the Agency has decided not to require leachate monitoring during the interim status period. This decision is based on the technical problems associated with such a system at landfills and surface impoundments. Monitoring of leachate in the aeration zone has not been widely used to date. EPA is aware of research investigations on the use of lysimeters and other techniques to monitor leachate, but is not aware of any applications of aeration zone monitoring beneath a full-sized disposal facility to determine whether the facility is leaking.

Available leachate monitoring technology generally involves the placement of probes (lysimeters) beneath the disposal facility. Since each probe is not generally capable of monitoring a large area, many of them would have to be placed under a facility in order to detect a localized flaw in the landfill design. It may not be possible to place such devices below an existing landfill or surface impoundment without completely removing the waste and re-designing the facility. Moreover, once such a system is in place, the probes tend to fail over time due to deterioration or plugging. It is difficult to determine when such a failure occurs and, if discovered, the damage is generally irreparable. Under these circumstances EPA does not believe that leachate monitoring should be a general requirement for landfills and surface impoundments during interim status. The Agency will continue to examine the appropriateness of leachate monitoring at new landfills and surface impoundments. Depending upon the results of these studies, the Agency may include leachate monitoring requirements in the Phase II or Phase III regulations.

At land treatment facilities, however, soil pore water monitoring (the equivalent of leachate monitoring) is feasible, even at existing facilities. Such a system can provide valuable information on the effectiveness of the land treatment processes occurring in the soil. However, it is no substitute for ground-water monitoring for determining actual contamination of ground water. This requirement is discussed in more detail in the "Land Treatment" portion of this Preamble.

EPA believes that a reliance on ground-water monitoring, instead of leachate monitoring, at landfills and

surface impoundments will adequately protect human health and the environment. As will be described later, the monitoring system required for all such facilities relies on testing for indicator parameters at the edge of the waste management area. Such a scheme should give the owner or operator, as well as EPA, a relatively prompt indication of any leakage from the facility into ground water.

The following is a discussion of the specific elements of the interim status ground-water monitoring requirements:

1. *Applicability.* The proposed regulations specified a minimum ground-water monitoring system, capable of detecting and identifying hazardous waste or its constituents if they entered an underlying aquifer in sufficient quantities to cause a "significant" change in ground-water quality.

The proposed regulation contained a variance to the effect that a ground-water monitoring system would not be required, or a lesser degree of ground-water monitoring could be used, if the owner or operator could demonstrate, at the time a permit was issued, that geologic and hydrologic conditions underlying the facility indicated no potential for discharge to ground water. Some commenters argued that the current state of knowledge about ground-water monitoring is too limited to serve as a basis for regulation. The majority of commenters discussing this section, however, focused on the variance provision, suggesting that it allow consideration of a variety of factors. These included the existing suitability of the aquifer as an underground source of drinking water, waste characteristics, expense of monitoring and facility design.

Some commenters suggested relaxing the variance by changing "no potential" to "low potential". Some thought monitoring should be required only over an underground source of drinking water. Other commenters suggested that for deep water tables, as in the West, a variance or alternative monitoring technique would be appropriate.

These final interim status regulations require owners and operators to implement a ground-water monitoring program, including the installation, operation, and maintenance of a monitoring system specified in the regulations. The program must be capable of determining the facility's impact on ground-water quality in the uppermost aquifer underlying the facility. While EPA acknowledges that ground-water monitoring is complicated and that the current state of knowledge will continue to be improved, adequate monitoring methods for detecting

contaminant migration are available. In light of the crucial role which such monitoring plays in the assessment of environmental damage, a ground-water monitoring program must be a basic element of any disposal activity. The Agency will continue to refine these regulations as the state of the technology improves.

In focusing on the uppermost aquifer, EPA does not mean to suggest that it is unconcerned about contamination of deeper aquifers. The monitoring program seeks to detect contamination of the uppermost aquifer because that will be the first ground water to be affected by a leaking disposal facility. If an owner or operator knows, or wishes to assume, that his facility is contributing hazardous waste constituents to the ground water, the regulations allow him to install and operate a ground-water monitoring system other than the indicator parameter monitoring system discussed below. In this case he must implement the ground-water quality assessment program discussed in detail later.

In these final interim status regulations, the Agency has again incorporated a variance within the ground-water monitoring requirement. As the commenters suggested, a lesser degree of ground-water monitoring will be allowed in those circumstances where an owner or operator can demonstrate to the Regional Administrator that there is a low potential for hazardous waste constituents to migrate to water supply wells or to surface water via the uppermost aquifer. (Migration via the uppermost aquifer includes migration through such an aquifer to a deeper aquifer hydraulically connected to water supply wells or surface waters.) A complete waiver of monitoring is only available when the owner or operator can demonstrate that there will be no potential for migration to water supply wells or surface water.

An owner or operator who wishes to install a lesser degree of monitoring must document the justification for such an approach. That written demonstration must be certified by a qualified geologist or geotechnical engineer, kept on the facility premises, and, during interim status, provided to the Regional Administrator upon his request. Such a demonstration to support a lesser degree of monitoring must include an evaluation of (1) a water balance of precipitation, evapotranspiration, runoff and infiltration; (2) characteristics of the saturated and unsaturated zones; and

(3) the proximity of the facility to water supplies or surface waters.

The Agency does not believe that aquifers underlying the facility that do not qualify as underground sources of drinking water should be exempted from consideration. Such aquifers may have other uses worthy of protection, or may be hydraulically connected to other water supply wells or surface waters needing protection.

RCRA's goal of protecting human health and the environment does not allow the Agency to reduce the basic monitoring requirements simply because of the cost. EPA has also rejected a consideration of the nature of the waste and the facility design as a basis for reduced monitoring requirements. EPA does not believe that the state of knowledge about hazardous wastes and facility designs is sufficiently certain to justify reductions in the basic monitoring system during interim status.

#### 2. Ground-Water Monitoring System.

The proposed regulation required the installation of at least four wells. At least one well was to be located hydraulically upgradient to yield samples of background ground-water quality. At least three were to be located hydraulically downgradient in order to detect migration from the facility. One of the three wells had to be located at the solid waste boundary. The downgradient wells were to be placed at different depths in order to detect potential migration. Owners and operators were required to case their wells and backfill the annular space in order to prevent migration of water down the well bore. The most frequent comment received on these requirements requested a more flexible approach to ground-water monitoring. Commenters were concerned that the Agency was proposing rigid requirements which would be too difficult to implement, considering the highly variable nature of subsurface conditions. They expressed concern over the required number, placement, and depth of wells and suggested various options.

Several commenters discussed the requirement for a minimum number of wells arguing that the number of wells needed will vary with conditions such as the hydrogeology of the area, the size of the facility, and the configuration of the waste management area. Some commenters believed that the proposed minimum number of wells was adequate while others suggested one, two or more than three wells.

These final regulations require that the owner or operator drill a sufficient number of wells to characterize the potential contamination of ground-water

quality caused by his hazardous waste facility. On the upgradient side of the waste management area this means that there must be enough wells (at least one) to characterize background ground-water quality in the uppermost aquifer. The owner or operator must assure that the upgradient samples represent true background conditions and are not contaminated by the facility.

There must also be a sufficient number of downgradient wells to provide representative samples capable of detecting migration of hazardous waste constituents from the facility. EPA has retained its requirement that a minimum of three wells should be drilled at the downgradient side of the waste management area. This number was recommended to the Agency by several respected groups familiar with ground-water monitoring at disposal facilities. The public comments did not present a specific rationale for any other minimum number of wells.

While the Agency has maintained in the regulations the requirement for a minimum of three wells, it expects that many facilities will have to drill more than three wells because of the size of the facility or because of the complex hydrogeology below the facility. Ultimately the burden is on the owner or operator to develop the monitoring system necessary to accurately characterize the aquifer and detect migration. It should be recognized that an owner or operator that can present a convincing case for a lower number of wells has the option of justifying and installing such lesser monitoring under the terms of § 265.90(c) of this regulation.

Some commenters suggested that EPA specify a spacing interval and maximum or minimum depths for monitoring wells. Other commenters sought more flexibility in the standards, particularly in defining well depth, to allow for consideration of site-specific factors. EPA believes that the spacing and depth of wells should depend on the particular pattern of ground-water flow below a facility, making it extremely difficult to specify national minimums or maximums in this area. Thus the Agency has decided to leave the spacing and depth of wells up to the owners and operators. They will have to be able to justify their selection of a monitoring system in light of the particular hydrogeology below their facilities.

Commenters also suggested that the placement of monitoring wells between the waste boundary and the property boundary be a matter for owner or operator discretion. Two objections were raised to placement of wells at the solid waste boundary. First, commenters

argued that such placement was redundant in light of the requirement for leachate monitoring. Second, commenters suggested that if wells were placed close to the active portion of the facility, leachate that moved laterally in the soil below the facility would enter the annular space around the monitoring well and quickly pass into the ground-water.

EPA believes that the monitoring wells should be placed as close to the waste boundary as possible in order to give a prompt indication of ground-water contamination. This is particularly important since leachate monitoring has been deleted. If significant ground-water contamination occurs before detection, the difficulties of corrective action are made all the more severe. Therefore it is appropriate to place monitoring wells at the edge of the waste management area to provide early detection.

EPA does not believe that the placement of wells required in this regulation presents a significant risk that monitoring wells will become conduits for leachate passing to ground-water. EPA expects that most of the leachate flow will be vertical rather than horizontal. In addition, the regulation calls for monitoring at the edge of the waste management area rather than under the solid waste itself. This is to eliminate any suggestion that the wells should be drilled through any natural or artificial barrier that may contain the waste. The problem of migration of leachate will be reduced by placing monitoring wells outside of any such containment barrier. Lastly, the regulations call for backfilling of the annular space around the monitoring well casing, which should reduce the risk of the "conduit" problem.

The few comments that addressed the requirements for casing wells and backfilling the annular space generally sought further clarification of the Agency's intent for the requirement. One commenter suggested that the term "casing" be clarified. Other commenters suggested design measures, such as gravel or sand packing, that would improve the well's capacity to provide representative samples. Another commenter suggested that EPA delete the requirement that backfill be "impermeable" because no backfill material is truly impermeable.

Generally EPA believes that this provision should be more performance-oriented. Thus the final Part 265 regulation specifies that the casing construction and any necessary gravel or sand packing should be directed toward the objective of collecting samples at the appropriate aquifer flow

zone and of protecting the integrity of the bore hole. An open hole would not provide such assurances and thus it is clear that some well pipe structure capable of drawing samples at selected depths is required. Likewise backfilling should be directed at assuring the samples and the ground water itself are not contaminated, rather than the question of whether particular materials are truly impermeable. The regulation, therefore, has been changed to make clear that those are the objectives of the well design provision. Finally, these regulations do not require separate monitoring systems for each component of a facility that consists of more than one landfill, impoundment, or land treatment area. The Agency's past and present intent was and is that the ground-water monitoring system would be installed at the perimeter of the waste management area. That intent is specifically stated in these regulations.

3. *Sampling and Analysis.* The proposed regulations required the owner or operator to establish the background ground-water quality of the underlying aquifer for a "comprehensive" set of over 40 contaminants. The determination of this background quality was to be based on monthly sampling for one year. Thereafter, the facility was to sample annually for the "comprehensive" list. In addition the owner or operator was to sample at shorter intervals (that depended on ground-water flow rate) for a "routine" set of contaminants. The "routine" list of parameters included specific conductivity, pH, chloride, total dissolved solids, dissolved organic carbon and the principal hazardous constituents in the waste. A "Note" allowed a reduction in the "comprehensive" list of contaminants for those substances that would not result from the treatment, storage, or disposal of a particular waste.

Commenters questioned the need for monthly sampling to determine background water quality, arguing for a more flexible approach. The Agency believes that obtaining representative background data at a reasonably frequent interval is of critical importance in establishing an accurate ground-water monitoring system. As an initial step, annual monitoring is unacceptable because it cannot reflect seasonal fluctuations. The Agency has, therefore, decided to require quarterly background monitoring which should be more sensitive to seasonal fluctuations. Owners and operators are certainly free to monitor at greater frequencies to provide a more thorough characterization of the aquifer.

Several commenters suggested that the Agency specify particular procedures for sampling, sample preservation, and methods of analysis. The Agency is not at this time specifying such procedures in the regulations; there may be several acceptable approaches. Thus the regulations require the owner or operator to develop and follow a ground-water sampling and analysis plan. The terms of the plan will be enforceable against the owner or operator. The plan must specify procedures for sample collection, sample preservation and shipment, analytical procedures, and chain of custody control. Simply to provide guidance in this area, a comment in the regulation suggests that owners and operators consider using methods contained in two EPA publications: "Procedures Manual for Ground-Water Monitoring at Solid Waste Disposal Facilities" (August 1977) and "Methods for Chemical Analysis of Water and Wastes" (March 1979).

EPA received many comments on the list of parameters to be used in the sampling program. Those who argued that the list was too extensive said that some parameters were redundant and that variances should be allowed for contaminants not expected to be in the waste. They also suggested that the "routine" set of contaminants should be short and be used to trigger the need for more extensive monitoring. Those who believed that the list was not extensive enough argued that broad parameters such as dissolved organic carbon, biochemical oxygen demand, and chemical oxygen demand were insufficiently sensitive to detect some highly toxic organics which are dangerous at low levels. In addition, they suggested that the ground-water level be recorded because such fluctuations may require modification of the sampling program to make it effective.

The final regulations drop the reference to "comprehensive" and "routine" parameters. The regulations require monitoring for three sets of parameters that each serve a different purpose.

The first set reflect the aquifer's suitability as a drinking water supply. These parameters, contained in Appendix III, are those specified in the Interim Primary Drinking Water Regulations established under the Safe Drinking Water Act. Owners and operators are to test for these parameters quarterly during the first year only and report this information to the Regional Administrator.

While the Agency is concerned about ground-water protection for a variety of

purposes, use of ground water as a drinking water source is of particular concern. These interim status regulations do not establish a specific ground-water protection standard, but the Agency has decided that the Phase II regulations will, at a minimum, be designed to protect drinking water supplies. The purpose of the initial sampling for drinking water parameters is to identify facilities that may be severely degrading present and future drinking water supplies. The fact that a particular aquifer is becoming unsuitable as a drinking water source will be useful to the Agency in establishing priorities for permits. The Agency will focus its initial attention on facilities which appear to be having the greatest effect on an aquifer's suitability as a drinking water supply. By using contaminants from the Interim Primary Drinking Water Regulations the Agency does not mean to suggest that this specifies a complete list of the parameters that define an aquifer's potential as an acceptable drinking water supply, but these contaminants will be useful to the Agency in establishing its priorities.

The second set of parameters includes chloride, iron, manganese, phenols, sodium, and sulfate. These parameters are generally recognized as useful for characterizing ground-water quality. These contaminants are ubiquitous in the environment and are often used to characterize a ground-water supply's suitability for a variety of uses. The owner or operator is to draw quarterly samples for these parameters during the first year and annually thereafter. Information on these parameters will be useful in any assessment of ground-water contamination that follows the determination that a facility is leaking. Such information will, for example, assist the Agency in determining the extent to which contamination of the aquifer may be coming from sources other than the disposal facility.

The third set of parameters consists of four indicators that will be used to determine whether a facility is leaking. As indicated earlier the Agency will be developing its ground-water protection strategy as part of the Phase II regulations. For any such standard it will be important for a facility to answer the threshold question of whether hazardous waste constituents are entering the aquifer underlying the facility. The four indicators—specific conductance, pH, total organic carbon, and total organic halogen—reflect changes in the organic and inorganic makeup of the ground-water. A statistically significant change (increase

or decrease for pH, increase only for the others) in these indicators between the initial background concentration or value and those from downgradient wells suggests that organic or inorganic substances are being introduced into the aquifer by the facility.

Increases in specific conductance indicate the presence of inorganic substances in the ground water. Likewise increases or decreases in pH suggest the presence of inorganic contamination. Total organic carbon (TOC) and total organic halogen (TOX) concentrations in ground water tend to increase as a result of organic contributions from a hazardous waste facility. The methodology to sample and analyze for these indicators is presently available. EPA believes that monitoring these indicators will be sufficient to make the threshold assessment of whether a facility is leaking. Certainly owners and operators are free to perform more extensive monitoring.

Since ground water monitoring data for the indicator parameters is to be evaluated statistically, the Agency has specified that each determination of the concentration or value of an indicator parameter in a ground water sample be based upon a minimum of four replicate measurements. This number of replicates, using generally accepted techniques, will assure a reasonable degree of accuracy, needed for the specified statistical testing, which is explained in the next section.

EPA agrees with the commenter who suggested that a determination of the ground-water elevation should be made each time a sample is taken. Such information will assist the owner or operator in determining whether the monitoring system is drawing samples from appropriately located wells. The regulation, therefore, includes a requirement that ground-water elevation be determined each time a sample is obtained.

In response to commenters EPA has specified a two-stage monitoring system. Broad indicators are used initially to determine whether a facility is leaking. If such leaking is detected, a more specific ground-water quality assessment program, described later in this Preamble, is initiated. EPA believes that the use of broad parameters as indicators is an appropriate strategy to determine whether a facility is leaking. In response to the general concern expressed by commenters on the number of parameters to be monitored, EPA has limited its requirements for indicator monitoring to four parameters which are necessary, at a minimum, to detect leaks. It is unlikely that a facility would selectively emit low levels of

highly toxic organics that would thereby miss detection.

4. *Preparation, Evaluation, and Response.* According to the proposed regulations, detection of significant changes in ground-water quality required the operator to notify the Agency, to determine the cause and the extent of contamination, and to discontinue the facility's operation. Comments received showed that the proposed language did not clearly indicate whether these actions should be taken simultaneously or sequentially. Commenters stated that discontinuing operations, based solely upon a statistically significant monitoring result, was unjustified.

The final regulations have been revised to remove ambiguities. Also, rather than requiring that facility operations cease, the final regulations specify a sequential approach. Upon detecting any suspected discharge from the facility by statistical evaluation of the ground-water monitoring data, the owner or operator is required to notify the Regional Administrator, within one week of any such detection, that his facility may be contaminating the ground water. He must also, within 15 days after this notification, develop and submit to the Regional Administrator a plan, certified by a qualified geologist or geotechnical engineer, for assessing the quality of the ground water. The regulations require that an outline of such a ground-water quality assessment program be developed and kept on-hand at the facility by the time ground-water monitoring is initiated. The plan must specify: the number, location, and depths of monitoring wells to be used for the assessment; the sampling, analysis, and evaluation procedures to be followed; and a schedule of implementation. The owner or operator must then implement this plan and determine as quickly as technically feasible the rate and extent of migration and concentration of hazardous waste and hazardous waste constituents from the facility in the ground water. Within 15 days after completion of the first determination, he must submit to the Regional Administrator a report containing the results of the ground-water quality assessment. If the owner or operator can demonstrate, using newly acquired and previously gathered ground-water monitoring data (including the general water quality data developed to satisfy § 265.92(b)(2)), that his facility is not contributing hazardous waste or hazardous waste constituents to the ground water, he must so state in the report and may reinstate his original ground-water monitoring program.

However, if his assessment shows that hazardous wastes or hazardous waste constituents from his facility are entering the ground water, he must repeat the ground water assessment at least quarterly thereafter, until final closure of the facility.

Detection of statistically significant changes in the indicator parameters in the upgradient wells does not require implementation of ground-water quality assessment program. This information may be useful at a later time, though, in demonstrating that significant changes in downgradient water quality resulted from sources other than the hazardous waste facility.

As indicated earlier, an owner or operator may install an alternate ground-water monitoring system if he feels that monitoring for indicator parameters would show that his facility was affecting the ground water. Any such alternate monitoring program must be able to provide the above described ground-water quality assessment.

The final rule specifies different requirements for the duration of ground-water monitoring depending upon the operating status of the facility and the monitoring program utilized.

Monitoring of indicator parameters is intended to detect facility leakage into the ground water. If such leakage is detected the ground-water quality assessment program is to be implemented to establish the magnitude of the problem. If the assessment demonstrates the absence of hazardous waste constituents in the ground water, the owner or operator may reinstate indicator parameter monitoring until suspected leakage into the ground water is again detected. This detection could, of course, trigger the need for another ground-water quality assessment, and so on, throughout the active life of the facility, and for disposal facilities, throughout the postclosure care period as well. If, on the other hand, the first determination under the ground-water quality assessment program demonstrates that hazardous waste constituents have indeed entered ground water, the assessments must be repeated quarterly, until final closure of the facility. Since additional hazardous wastes will be received at the facility throughout this time, additional assessments are necessary to determine any further impact from these wastes on the ground-water quality.

If the first determination of ground-water contamination, by implementation of the ground-water quality assessment plan, occurs during the post-closure care period, however, the sources of contamination are expected to be relatively stable such that repeated

assessments would only confirm the initial determination of contamination. For this reason only one ground-water quality assessment which demonstrates contamination is required during the post-closure care period. By a similar line of reasoning, those facilities which from the beginning utilize an alternate ground-water monitoring system, equivalent to a ground-water quality assessment program, are not required to make repeated assessments after final closure of the facility.

The more frequent monitoring (i.e., quarterly) under the assessment program is required to enable the Regional Administrator and the owner or operator to be fully aware of the extent of ground-water contamination. Such information will be useful, for example, in providing warning to downgradient ground-water users of any potential danger, if necessary.

The final regulations also require that any ground-water quality assessment which is initiated prior to facility closure be completed and reported to the Regional Administrator. An assessment which is underway may not, therefore, be halted merely because the facility closes.

The final rule also differs from the proposed version in the test for statistical significance. As proposed, analyses of ground-water quality were to be compared to the background quality established for each facility, using the single-tailed Student's t-test at the 95 percent confidence level. Commenters claimed that the Student's t-test at the 95 percent confidence level was too restrictive. Commenters stated that the Student's t-statistic is inappropriate because it is dependent upon a normal distribution, which cannot be assumed for ground-water data because of seasonal fluctuations. One commenter suggested establishing tolerance limits as an alternative to specifying a statistical test of significance.

After considering these comments, the Agency repropoed the statistical test on September 19, 1979 (44 FR 54323-54324) and specified the use of the Mann-Whitney U-test at the 95 percent confidence level. In specifying the Mann-Whitney U-test, which is a non-parametric test, the Agency sought to overcome the major weakness of the Student's t-test, namely, its underlying assumption of "normality." Commenters on the reproposal generally preferred the Student's t-test over the Mann-Whitney U-test, for two reasons. First, they were more familiar with the Student's t-test. Second, several commenters explained that while there is an underlying assumption of

normality for the Student's t-test, it is tolerant of considerable departures from that assumption. The Agency has therefore again specified the Student's t-test in these final regulations.

The required statistical comparison in these regulations, however, differs from that proposed in several ways as a result of concerns which commenters raised on the broader topic of statistically differing ground-water quality. Commenters suggested that there was a high probability of statistically significant increases resulting from anticipated natural fluctuations in ground-water quality and from analytical error (i.e., false significance). The Agency has incorporated several changes which, when combined, should greatly minimize the possibility of "false" significance. These include: limiting to four the number of indicator parameters to be compared; performing the t-test at the 99 percent level of significance instead of the proposed 95 percent level; and initially responding to detected statistically significant difference by taking additional ground-water check samples to confirm the significant difference.

In addition, to assure that accurate data is used by the owner or operator in the statistical comparisons, the Agency requires that four replicate measurements be made on each obtained ground-water sample for each indicator parameter. Four replicates provide 95 percent confidence that the average of the measured values will be within five percent of the actual value if generally accepted analytical procedures are followed.

In its investigations of statistical test procedures which could be useful in interpreting ground-water monitoring data, the Agency gave consideration to standard industrial quality control concepts and procedures for data evaluation. The Agency is aware that these procedures were developed for relatively well controlled and operated industrial processes. However, the conceptual basis of monitoring ground-water quality indicators is similar in the sense that the variation of the indicator measurements under typical circumstances should be predictable within limits. If no leakage from a hazardous waste facility or other hydrologic change has occurred, the ground-water quality indicator levels should remain within such limits. Excursions outside the limits would indicate that changes may have occurred that require further investigation. Quality control methods may be adaptable to such a situation.

Quality control methods also have the advantage of being generally accepted and understood. The basic approach in a ground-water monitoring program would be to use data gathered during a baseline period to establish limits that would encompass a range of typical variation in ground-water quality indicator parameters. Excursions outside these limits in subsequent monitoring samples would indicate the need for further investigation. While the Agency believes that the use in these regulations of the Student's *t*-test is appropriate, comment is requested on the use of a quality control approach in interpreting ground-water monitoring data. Such comments should identify specific procedures and concepts which appear amenable to this purpose.

5. *Recordkeeping and Reporting.* The proposed regulations required making quarterly reports of ground-water monitoring information and keeping ground-water quality data and analytical procedure records for a period of three years. The few commenters that addressed this provision made two points. First, they suggested that quarterly reporting was unnecessary. Second, one commenter suggested that the owner or operator send copies of any reports to State and local authorities.

The Agency has decided that annual reporting of the data on the indicator parameters should provide sufficient notice on general compliance with the regulations. The Agency can, of course, examine the data held by the owner or operator to comply with these regulations at any time. In the first year of monitoring, however, it is necessary to have more frequent monitoring and reporting to identify those aquifers that are in greatest jeopardy. Such information will be used to set priorities for consideration of permits. In keeping with that goal, the owner or operator must indicate in his quarterly report during the first year of monitoring which parameters exceed the contaminant limits specified in Appendix III.

These regulations require the owner or operator to retain his ground-water data for the active life of the site, and for the duration of the post-closure care period for disposal facilities, instead of the three-year period specified in the proposed regulations. The Agency believes that the actual monitoring data (i.e., all replicate measurements on all samples) may provide useful information in determining the type and extent of ground-water contamination. Since ground-water changes may occur slowly, it will be useful to have a history of the facility that is longer than three

years. Both the owner or operator and the permitting authority should have access to such information when needed.

The regulations do not require the owner operator to send the ground-water report to State or local authorities. This step is unnecessary. Those States and local authorities that are interested in examining the reports may obtain copies from EPA or the authorized State agencies responsible for receiving such information.

Slightly different reporting requirements apply depending on whether the owner or operator is following the indicator program or the ground-water quality assessment program at the facility.

#### F. Subpart G—Closure and Post-Closure

The purpose of the final Part 265 closure and post-closure standards is to ensure that all hazardous waste management facilities are closed in a manner that (1) minimizes the need for post-closure maintenance, and (2) controls, minimizes, or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of waste, leachate, contaminated rainfall, or waste decomposition products to ground or surface waters, and the atmosphere. There are two types of closure and post-closure requirements in these final rules: (1) general requirements, which are contained in Subpart G; and (2) specific technical requirements, which are included in the facility-specific regulations for landfills; land treatment facilities; surface impoundments; incinerators; tanks; and thermal, physical, chemical, and biological treatment facilities.

This section of the preamble focuses on the Subpart G general closure and post-closure requirements. The technical standards establish in more detail specific requirements and additional objectives for closure and post-closure. They also set forth factors owners and operators must consider in addressing those objectives. They are intended to give flexibility to facility owners or operators, and to reduce the possibility for over response to these requirements. The technical standards are described in later sections of this preamble.

The final interim status regulations specify what facility owners or operators must do after wastes are no longer received for treatment, storage, or disposal. (This was called "closeout" in the proposed regulation but the term has been dropped because it was frequently confused with "closure".)

Closure is the period after wastes are no longer accepted, during which the

owners or operators complete treatment, storage, and disposal operations, apply final cover to or cap landfills, and dispose of or decontaminate equipment. Post-closure is the period after closure during which owners or operators of disposal facilities must conduct certain monitoring and maintenance activities. EPA believes that if the disposal facility has been properly located, designed, operated, and closed, and no contaminant leakage problems have occurred during the operating life of the facility or during the post-closure care and maintenance period, then the probability of significant ground-water contamination is very small.

1. *Period of Post-Closure Care.* The proposed rules required that post-closure care be conducted for 20 years at disposal facilities. The Agency received numerous comments on this requirement. About half of these comments favored a period less than the 20 years proposed but the other half favored a longer period. Those supporting a longer period argued that the hazard posed by many wastes exists for an extremely long time, and that monitoring should be carried out perpetually, or for as long as the wastes are hazardous. Those favoring a shorter time argued that only a few wastes remain hazardous for more than a few years. These commenters felt that there was too much uncertainty and potential economic burden with the proposed standard, because it carried a potential for unnecessary monitoring.

As a result of the extensive comment, the Agency has considered the post-closure care issue, and has decided to extend the post-closure period from 20 to 30 years. EPA believes that eliminating leachate monitoring requirements makes it necessary to monitor ground water for a longer period of time, and that further analysis of financial requirements, as well as changes in these regulations, make it practical to do so.

Public comment persuaded EPA (see Background Document on Ground-water Monitoring) that existing leachate monitoring techniques are impractical, except at land treatment facilities. Thus, EPA has deleted the leachate monitoring requirements for landfills and surface impoundments. EPA had believed that leachate monitoring systems would act as early warning systems. Since it will take longer for contamination migration to reach ground-water monitoring points than it would have taken to reach leachate detection monitoring points, it is necessary to monitor for a longer period.

EPA is now convinced that it is reasonable to monitor and maintain

closed disposal facilities for 30 years. Because EPA no longer requires leachate and air monitoring, owners or operators need not provide the money for these activities. Furthermore, proposed changes in the financial regulations will make all financial requirements less costly. Owners or operators will be able to satisfy closure and post-closure responsibilities through a number of financial mechanisms, many of which are substantially less expensive than trust funds. (For a complete description of the proposed financial mechanisms, see the proposal section of this Federal Register and the Background Document on Financial Responsibility.) Also, in these proposed financial regulations for interim status, owners or operators may build closure trust funds during the expected site life, rather than by advancing all the money initially. This alternative will make trust funds less expensive. As a result, EPA is convinced that owners or operators can now maintain and monitor disposal sites for 30 years after closure.

However, because of the uncertainty caused by the lack of extensive experience with properly designed disposal operations, the Agency does not believe that an unalterable national rule is necessarily the best way to ensure human health and environmental protection. The permitting process will provide for case-by-case review of the period for post-closure care and the interim status standards permit EPA to shorten or lengthen the 30-year post-closure period as appropriate on a case-by-case basis. Thus, for example, if an owner or operator can demonstrate to the Regional Administrator that there is no need to monitor and maintain his closed disposal facility for the entire 30-year period, the period could be shortened. Representatives of the public, on the other hand, could also petition to have the monitoring period extended for cause.

EPA agrees with those commenters who pointed out that risks from some wastes persist for long periods of time. For organic wastes disposed of in an anaerobic environment, the decomposition to non-toxic products is very slow. Similarly, heavy metals remain toxic forever, and may be mobilized unless carefully managed. This may argue for perpetual monitoring of land disposal facilities. However, the Agency has found that it would be nearly impossible for small single facilities to finance such activities in perpetuity, after revenues cease. Thus, some form of national insurance is necessary to ensure perpetual monitoring of these facilities, because

many of them would surely default if required to conduct perpetual monitoring. EPA is considering asking Congress to enact legislation to develop such a national insurance program. In the interim, the Agency has revised these interim status regulations to allow the Regional Administrator to extend some or all of the post-closure care requirements for cause, e.g., because contamination is detected or feared imminent.

**2. Notice in Deed to Property.** A number of commenters questioned the legality of the proposed standard which required the owner or operator to record, in the deed of the property, a stipulation restricting future use of the property. In response to these comments, the Agency has reworded the requirement, so that the owner or operator of a facility in which hazardous waste will remain after closure must submit evidence that a notation has been placed on the deed to the property, or on an appropriate alternate document. The notation must warn that Federal law limits post-closure use of the property by anyone in a manner that would disturb the integrity of the final cover, the liner(s), or the monitoring systems of the facility. During interim status, the owner must place the notation on the deed or alternative document, but need not submit evidence to EPA of having done so unless specifically requested by the Agency.

**3. Amendment and Submission of Plans.** Several commenters suggested that, during the operation of the facility before closure, owners or operators should be able to amend the closure plan and the closure cost estimates that they submitted as a requirement for the facility permit. They claimed that this would help ensure that the plan is current and that the closure funds are sufficient, and it would allow for operating changes which might affect closure. The Agency agrees, and has modified the regulations accordingly. During interim status, modifications to the closure plan must be made where appropriate, but need not be approved by EPA, since closure plans must be submitted to EPA only in the event that the site closes. The owner or operator must submit his closure plan to the Regional Administrator at least 180 days before the date he expects to begin closure. All of the above considerations apply to post-closure plans for disposal facilities as well. Both closure and post-closure plans are deemed requirements of Subtitle C, and the plans themselves are enforceable by EPA.

**4. Time Allowed for Closure.** Several commenters thought the proposed 90-

day limit for completing disposal or for removing waste from facilities after wastes are no longer received, was too stringent and inflexible. The commenters argued that, at certain times of the year, weather would prevent completing waste disposal or removal at a facility, and that 90 days is not enough time to complete these activities at most facilities. EPA disagrees. Closure plans, which are developed far in advance of actual closure, can certainly be developed to ensure that wastes are disposed of or removed within 90 days of commencing closure. This should be the first activity conducted when a facility commences closure, and owners or operators should ensure that waste inventories are reduced to manageable levels before commencing closure in order to comply with the 90-day deadline.

The proposed regulations required that closure be completed within three years after the facility stopped accepting wastes. A number of commenters suggested that the time limit for closure activities was too long in most cases, and should be made more flexible. The Agency agrees, and has reworded the requirement to indicate that closure must be completed within six months. A variance procedure will allow a longer period, where it can be justified, although in no case may closure take more than three years.

**5. Post-Closure Permits.** EPA is considering a procedural mechanism somewhat different from those contained in prior proposals for dealing with the problems involved in monitoring facilities after closure and taking corrective action where necessary. As stated earlier in this preamble, EPA does not believe that Subtitle C of RCRA was intended to cover disposal sites for hazardous waste which were closed before the effective date of these regulations. However, a different situation is presented for the post-closure care of facilities which at one time had received a RCRA permit or interim status and operated under it. There can be little question that the statute intended EPA to require measures to be taken, for as long as necessary, to ensure that these facilities and the waste located there do not pose a threat to human health or the environment. One of the major purposes of the closure and financial responsibility provisions of the Part 264 and Part 265 regulations is to ensure that sites remain safe even after they cease active operation.

Under the structure of Subtitle C, the only consistent way to make sure that the necessary corrective measures can

be taken at closed sites is to make those sites subject to regulations under Section 3004. That is the only section of Subtitle C that authorizes substantive regulatory standards of the type in question.

However, Section 3004 applies only to "owners and operators of facilities for the treatment, storage, or disposal of hazardous waste," and can therefore be applied to closed sites only if the owners or operators of those sites are said to come within that definition. As noted above, policy considerations support reading the statute in this manner. In addition, the same conclusion is hard to avoid simply as a matter of textual interpretation, since land in which hazardous waste is buried is certainly either "storing" or "disposing" of those wastes within the meaning of the specific definitions of those terms given in RCRA Section 1004.

If owners or operators of inactive sites which once were covered by RCRA permit are still "storing" or "disposing" of those wastes, it follows that they must get a permit under Section 3005. Once again, that conclusion makes sense as a matter of policy as well as a strict matter of textual interpretation. For example, the provisions of the statute for EPA inspection and monitoring are best enforced as part of a permit. Though EPA believes that the terms of any post-closure RCRA permit should be strictly limited and require an absolute minimum of paperwork, there are strong policy reasons, as well as legal reasons, why a permit of this type might be essential to the overall operation of the program. For example, it might be very difficult for EPA to gain access to land to clean up a leaking site without the aid of permit terms authorizing that access.

Accordingly, in the near future EPA plans to develop proposed regulations calling for the owners or operators of closed sites that once were permitted or operated under interim status to apply for and receive a post-closure permit from EPA. EPA anticipates that the conditions of this permit will relate almost exclusively to general procedures concerning access, monitoring, and financial responsibility, and that cumbersome permit procedures will not be necessary. EPA anticipates that these will be lifetime permits.

It may be that this approach may reduce paperwork in the end, for example, by making possible the modification or elimination of the present requirement to record conditions on the facility title in State or local deed recording systems. EPA will be examining these questions further in the course of developing its proposal.

### G. Subpart H—Financial Requirements

The proposed § 250.43-9 financial standards contained three types of financial assurance requirements (1) those assuring funds to conduct closure activities in accordance with the closure plan, (2) those assuring funds to conduct post-closure activities at disposal facilities in accordance with the post-closure plan and (3) those assuring funds to cover third party damage cases.

1. *Liability.* The financial responsibility requirements covering third party damages during the post-closure care period are not covered in the Part 265 interim status standards. As stated in the preamble to the proposed regulation, the Agency has been unable to identify a viable mechanism to provide for liability coverage during the post-closure care period, and is supporting an initiative in Congress which would set up a national fund to provide for such coverage.

During the life of the site, most companies are likely to seek private insurance to cover liability claims. Through discussions with the insurance industry, the Agency has determined that non-sudden pollution coverage often would be made effective only when a facility received a permit. Because facilities do not have permits during the interim status period, they might not be able to get insurance for non-sudden occurrences. Thus, site-life liability for non-sudden occurrences is not required during the interim status period. However, the Agency is proposing a rule requiring site-life liability for sudden and accidental occurrences during the interim status period. The Agency intends to add this rule to the interim status standards, after public comment, later this year.

2. *Financial Assurance.* The proposed financial standards assuring funds for closure and post-closure care required that owners or operators first estimate the cost of closure, and post-closure care where applicable, based on the closure and post-closure care plans. Then a trust fund was to be established to assure that the necessary funds would be available. EPA received numerous comments asking that the trust fund requirement be restructured, and that financial instruments other than a trust fund be allowed. After considerable re-analysis, the Agency is convinced that other financial mechanisms can provide protection equivalent to trusts, and that the trust mechanism requirement could benefit from major restructuring. Because of the complexity of the subject matter and the magnitude of the changes, the Agency believes that the regulated community and the general

public should have an opportunity to comment on the revised regulations before they are promulgated. As a result, the Agency is repropounding the specific requirements for the various financial instruments it intends to allow.

3. *Cost Estimates.* The Agency is promulgating in Phase I the requirement that owners or operators develop cost estimates for closure, and post-closure activities where applicable. Several commenters suggested that the Agency allow for partial closure in the cost estimate requirements. This had always been the Agency's intent. The repropounded rules better reflect this intent by requiring that funds be set aside equal to the highest cost of closing the facility, either at any given point leading up to closure, or at the point of final closure. Thus, facilities which close as they go (partially close) need obtain only a fraction of the financial assurance that will be required by those closing at the end of site operations.

A few commenters suggested that the closure and post-closure cost estimates be reviewed periodically to ensure continued accuracy. EPA agrees that changes in facility design and operation, and the uncertainties inherent in inflation and interest rates, make such a review highly desirable. Thus, the final rules require that the owner or operator prepare a new closure cost estimate whenever the closure plan is modified, and, for disposal facilities, a new post-closure cost estimate whenever the post-closure plan is modified. In addition, the final rules require that these estimates be indexed to inflation on an annual basis, using the U.S. Department of Commerce Gross National Product Implicit Price Deflator.

4. *Publicly Owned Facilities.* A few commenters suggested that publicly-owned facilities should be exempted from the financial requirements, because government institutions are permanent and stable, and have as their reason for being the health and welfare of their people. Therefore, according to the commenters, publicly-owned facilities would be more likely and more able financially to carry out their closure and post-closure responsibilities.

The Agency agrees that State and Federally-owned facilities will always have adequate resources to conduct closure and post-closure care activities properly. Therefore, an exemption for these facilities has been incorporated in a new "Applicability" section. (The other provisions of the section make it clear that the closure requirements apply to all other facilities, and that the post-closure requirements apply only to disposal facilities.)

The financial strength of local entities (cities and counties), on the other hand, is not as certain. Some local governments do become insolvent, and if small enough, might not be in a financial position to fulfill their closure and post-closure responsibilities. Further, some publicly-owned facilities are established as authorities, and are supported financially very much like corporations, i.e., they are not backed by the taxing authority of the local government. Because of these potential problems, the Agency has developed a revenue test which, if met, would qualify facilities owned by local governments for an exemption. Because this test is new, the Agency is proposing this provision for public comment.

#### H. Subpart I—Containers

Drums and other containers provide an inexpensive means for generators of hazardous wastes to accumulate and store the wastes, in a form which will be easy and relatively inexpensive to carry away. All too frequently, generators and others storing hazardous waste drums have simply put them somewhere out of sight, without any further concern about what would eventually happen to the wastes. The many damage incidents described in the background document on containers detail the awful consequences of this practice. The drums eventually weather and corrode, releasing their contents. Dumps of decaying drums have seriously contaminated surface water and ground water; have emitted fumes which have killed vegetation and nauseated and sickened nearby residents, facility operators, and enforcement officials; and have burned or exploded, injuring and killing facility personnel and sending clouds of toxic smoke and fumes over adjacent heavily populated areas, disrupting the activities and threatening the health of thousands of people.

The most elementary and straightforward precautions will frequently eliminate these problems. These regulations generally require nothing more than simple good practices in the management of containers of hazardous wastes—a level of care commensurate with the hazardous nature of the wastes stored. The Agency believes that these regulations should not be difficult to implement, and that they will provide a great improvement in the problems posed by current bad practices.

The final regulations for containers are largely taken from the standards proposed for interim status for containers, for storage generally, and for a few other activities that pertain to

containers. As discussed below, requirements for ignitable, reactive, or incompatible wastes have been added, and the provisions concerning empty containers have been removed or absorbed in Part 261—Identification and Listing of Hazardous Waste.

**1. Condition of Containers.** The proposed regulation (§ 250.44-2(a)) required that wastes in leaking or damaged containers be recontainerized in containers in good condition. EPA received no comments on this requirement, and it has been retained in the final regulations. A provision has been added allowing wastes to be managed in other ways than recontainerization, so long as they meet the requirements of Part 265.

**2. Compatibility of Waste With Container.** The final regulation, requiring that containers or their liners be compatible with the wastes stored in them, is essentially identical to the proposed regulation (§ 250.44(h)) for storage generally. In contrast to the regulation for tanks, this regulation retains the standard that "the ability of the container to contain the waste [should not be] impaired" by the waste. While some corrosion by wastes may be permissible for tanks, the Agency believes that waste should not be stored in a container in which it may cause any substantial amount of corrosion. First, the concept of "useful life" does not work well with containers. Most tanks will remain under the supervision of a single owner or operator for a long period of time. However, a generator placing waste in a container will probably not know how long it will be stored, and the operator of a storage facility will probably not know just how long he can expect a container to last. Secondly, containers are generally constructed of lighter materials than tanks, and have seams which are more vulnerable to corrosion. Leakage due to corrosion is therefore more likely and less predictable for containers than for tanks.

**3. Management of Containers.** The proposed definition for containers implied that they were closable. The final definition is broader, indicating that any portable device containing hazardous waste comes under the regulations of this Part. The requirement that containers be kept closed now appears in the substantive regulations. Its purpose is, as it was originally, to minimize emissions of volatile wastes, to help protect ignitable or reactive wastes from sources of ignition or reaction, to help prevent spills, and to reduce the potential for mixing of incompatible wastes and direct contact

of facility personnel with waste. While many commenters argued and the Agency agrees that storage may properly be conducted in open tanks and surface impoundments, requiring containers to be kept closed does not unnecessarily restrict storage options. All containers have lids or some other closure device, and keeping containers closed whenever possible is simply a matter of good operating practice. It is not expected that containers of hazardous waste need be opened routinely to inspect the waste or the container or for reasons other than to add or remove waste.

The proposed regulations also required (in § 250.44-2(b)) that containers be managed so that they do not rupture or leak. EPA received no comment on this provision, and it has been retained as proposed. Its purpose is to assure that, in addition to removing waste from containers in bad condition, owners and operators manage containers so that they stay in good condition, and handle them so that they do not rupture.

**4. Inspections.** As an adjunct to the general inspection requirements, the regulations for various types of facilities and equipment include specific inspection requirements. The regulations for containers call for weekly inspection of container storage areas for leaks and deterioration of the containers. Leaks and container deterioration are the primary source of damage from container storage which can be minimized through inspection. The proposed regulations (§§ 250.43-6(a) and 250.44(c)) called for daily inspections. Commenters believed that daily inspections were unnecessary, and that less frequent inspections would be adequate. The Agency agrees that corrosion of containers and the development of leaks is usually a slow process, and that daily inspections are typically more frequent than is necessary; weekly inspections should generally be adequate.

**5. Closure.** Because these regulations apply to the storage of hazardous wastes, the definition of storage requires that all hazardous wastes and hazardous waste residues must be removed at closure from a container storage facility or from that part of the facility being closed. The closure plan required by Subpart G must address this requirement. In removing hazardous wastes or residues, the owner or operator becomes a generator of hazardous wastes and must manage them in accordance with all applicable requirements of Parts 262, 263, and 265 of these regulations.

6. *Special Requirements for Ignitable or Reactive Waste.* The proposed rules did not contain any special standards for ignitable or reactive wastes. Simply as a matter of good practice, ignitable or reactive wastes should, of course, be protected from any conditions or materials that could cause them to ignite or react, in order to guard against fires, explosions, or violent reactions.

The requirement in these regulations that containers of ignitable or reactive waste be 15 meters (50 feet) from the facility's property line is taken from the National Fire Protection Association's (NFPA) Flammable and Combustible Code of 1977. The purpose of the setback required in the Code is to protect adjacent residences, businesses, and other public places from the acute effects of explosions and fires that may be caused in facilities that store flammable materials. While the Agency believes that the Code provides an adequate basis for requiring a minimum setback of 50 feet, the Agency does not yet have enough data to determine whether an additional setback should be required where highly explosive or toxic wastes are stored. The Agency expects to monitor the effectiveness of this regulation and revise it if necessary. Since the NFPA requirement is straightforward and already applies under OSHA regulations of facilities, it is appropriate for inclusion in the interim status standards. Since this regulation was not proposed, it is being promulgated interim final.

7. *Special Requirements for Incompatible Wastes.* General requirements for incompatible wastes are discussed above in the preamble section entitled "General Requirements for Ignitable, Reactive, or Incompatible Wastes."

The proposed interim status regulations contained a provision (§ 250.44(i)) prohibiting the placement of a hazardous waste in an unwashed container which had previously held an incompatible waste. The final regulations retain this provision, with the modification that placement of a waste in such an unwashed container is allowed if it will not violate the general standards for the handling of incompatible wastes. This regulation is required because even "empty" containers typically have a certain amount of waste remaining on the bottom or the sides. The fact that the container itself may be compatible with both wastes will not prevent them from reacting with each other if they are incompatible. Compliance with this regulation will probably require owners or operators to wash empty containers

or to be able to determine the properties of the materials they last contained through records, segregated storage of empty containers, tests, or some other means.

The final regulations also provide that incompatible wastes or materials must not be placed in the same container unless the general standards for incompatible wastes will be complied with. The proposed regulations did not contain such a provision because it was thought that placement of incompatible waste in containers was not typical. While such mixing may not be common, the Agency has decided as a matter of completeness that it should be covered by the incompatible waste regulations. The need for complying with the general requirements for incompatible wastes is as clear here as it is in other cases where incompatible wastes are mixed. The requirement is straightforward and appropriate for interim status.

The proposed regulations also contained a provision (§ 250.44-2(d)) that containers holding incompatible wastes should be separated or protected from each other to prevent mixing of incompatible wastes if containers should leak or break. The final regulation clarifies the proposed regulation. It extends it to containers stored near incompatible wastes in other containers or in piles, open tanks, or surface impoundments—where the incompatible wastes are exposed on the surface. It also indicates that protection will typically be in the form of a dike, berm, or wall. "Nearby" should be interpreted to mean close enough so that wastes from broken or leaking containers might commingle with incompatible wastes before the situation would be discovered and corrected in the ordinary course of operations.

8. *Empty Non-combustible Storage Containers.* The proposed interim status regulations contained a section (§ 250.44-2(f)) requiring empty non-combustible containers to be recycled in some fashion. This section was intended partly to assure proper management of the hazardous waste residues remaining in the empty containers, and partly to implement one of the objectives of Section 1003 of RCRA—to promote the recycling and recovery of material and energy resources. The Agency has reconsidered its position, in light of comments received on this section, and has changed the focus of these regulations to the protection of human health and the environment through the appropriate management of hazardous waste. Some contaminated containers are listed as hazardous wastes under Part 261 of these regulations, and must

be managed as such or re-used. As a result, the regulations on empty non-combustible containers have been deleted from this Section.

9. *Paper Bags.* Another section of the proposed interim status regulations (§ 250.44-2(g)) required that contaminated paper bags be managed in closed secondary containers. EPA received a number of comments on this requirement arguing that the standard was unnecessary because the amount of waste which adheres to such bags is small, and that the bags can be properly managed by other means. In light of the comments, the Agency has reorganized the proposed regulations. Some bags and liners contaminated with certain toxic materials are now listed as hazardous wastes in Part 261 and must be managed like other hazardous wastes. Other contaminated bags are not declared hazardous and are no longer regulated under this Part. In either case, the proposed regulation is unnecessary and has been deleted.

#### 1. Subpart J—Tanks

1. *Definitions.* In the proposed rules, the standards for tanks were markedly different from those for basins. Tanks were regulated as covered containment devices used for *storing* hazardous waste. By contrast, basins were regulated as uncovered containment devices used for *treating* hazardous waste. (The proposed rules did not address the use of tanks for treating hazardous waste.) Both tanks and basins were assumed to be constructed primarily of artificial materials or wood, rather than earthen materials.

The Agency's re-evaluation of its conception of storage now permits storage to be conducted in uncovered as well as covered devices, such as surface impoundments. Thus basins, as they were defined in the proposed regulations, are now recognized as appropriate storage devices, and the Agency has recognized that treatment as well as storage may be conducted in tanks. These changes have made the proposed regulations' concepts of basins and storage tanks essentially identical. As a result, the Agency has combined the two concepts into one: tanks are now defined to be "stationary device(s) designed to contain an accumulation of hazardous waste and constructed primarily of non-earthen materials . . . which provide structural support." Tanks are referred to as covered or uncovered when appropriate. The term

"basin" has been eliminated from the regulations.<sup>1</sup>

The Agency has reorganized the regulations to gather the proposed standards for tanks into one Subpart (Subpart J). This Subpart includes standards from those that were proposed for storage tanks (§ 250.44-1) and basins (§ 250.45-4), for storage generally (§ 250.44), for treatment generally (§ 250.45), and for chemical, physical, and biological treatment facilities (§ 250.45-6). A number of other standards from the proposed Section 3004 standards have been incorporated into the present set of interim status standards for tanks. The following discussion is organized along the lines of the present Subpart J.

In addition, as explained under Subpart Q, the regulations for chemical, physical, and biological treatment facilities (Subpart Q) are essentially identical to the regulations for tanks. The following discussion therefore also serves to present the foundation for the Subpart Q regulations. References to tanks in the following discussion are also meant to include the waste containment components of chemical, physical, and biological treatment equipment.

The general operating requirements and the requirements for waste analysis and trial tests were proposed primarily for inclusion in the general standards and partly for inclusion in the interim status standards. They are therefore being promulgated interim final only to the extent that the Agency will consider comments on whether they are appropriate for inclusion in the interim status standards.

**2. General Operating Requirements.** The proposed interim status standards for storage (§ 250.44(h)) and the proposed general standards for basins (§ 250.45-4(b)(1), (d), and (e)) and chemical, physical, and biological treatment facilities (§ 250.45-6(a) and (b)(2)) included requirements which placed restrictions on the type of materials used to build tanks and the type of waste placed in them, to ensure that the waste was compatible with the construction material of the tank.

<sup>1</sup>The Agency also mistakenly proposed two definitions for storage tanks, in §§ 250.21 and 250.41. They were the same except that the latter provided that waste in storage tanks must be pumpable; this requirement was not intended and has been removed. In addition, basins were defined to be less than 100,000 gallons in capacity. This was included only to help distinguish basins from surface impoundments, which may be larger than 100,000 gallons. Because the 100,000 gallon limit proved confusing and because basins (now tanks) and surface impoundments are adequately distinguished by their construction materials, the 100,000 gallon limit has been deleted.

Few comments were received on these proposed standards. Some commenters suggested that the standards should be modified to reflect the fact that the construction materials of most tanks will inevitably be somewhat impaired by the chemical properties of the wastes they contain. The Agency agrees that tanks need not be designed to last forever. Therefore, the final rules have been modified to require that the ability of tanks to contain waste *during their intended life* is not impaired.

Proposed § 250.45-6(e) provided for a 2-foot freeboard for uncovered reaction vessels. Some commenters felt that the 2-foot freeboard requirement should be made more flexible by allowing owners or operators to use other methods to prevent hazardous waste from splashing over the rim of an uncovered tank. The Agency agrees that methods such as dikes, trenches, or diversion to stand-by tanks may provide a degree of protection equal to that afforded by 2 feet of freeboard. Therefore, the standard has been modified to require uncovered tanks to either have (1) 2 feet of freeboard or (2) a containment, drainage control, or diversion structure which has a capacity that equals or exceeds the volume of the top 2 feet of the tank.

In a similar vein, some commenters felt that the proposed requirement for an automatic waste feed cut-off or by-pass system (§ 250.45-6(g)) should be made more flexible by allowing owners or operators to use other types of emergency response systems in the event that their treatment process breaks down. The Agency agrees and has rewritten the standard in terms of a performance standard. The final standard requires that facilities at which hazardous waste is continuously fed into tanks be equipped with a means to prevent the inflow of waste to the tank, but it does not require that any particular method(s) be used to accomplish this objective. With the deletion of the requirement that the cut-off be automatic, the requirement is certainly appropriate for inclusion in the interim status standards because it should not require major equipment modification.

**3. Waste Analysis and Trial Tests.** As an adjunct to the inclusion of general requirements for waste analysis in the interim status standards, the Agency is including specific waste analysis standards for specific types of facilities and equipment. Those for tanks; chemical, physical, and biological treatment facilities; and surface impoundments are drawn from proposed

§ 250.45-6 (b) and (c), and combined into a single requirement for each type of facility. The purpose of these requirements is to prevent accidents and haphazard experimentation with new wastes or new treatment techniques when chemical treatment of large batches of waste is involved. Put another way, these requirements ensure that the operator knows not only the characteristics of the waste involved, but how that waste will behave in a treatment process, or how a new treatment process will affect the wastes and the facility. Haphazard experimentation or treatment of waste without trial tests may cause corrosion of containment devices, fires, explosions, and other problems associated with ignitable, reactive, or incompatible wastes. Trial tests, or documented information or similar wastes under similar treatment processes and similar operating conditions, should bring to light unanticipated problems before large batches of waste are treated.

The comments have prompted several changes to the proposed sections. The regulations have been revised to make clear the Agency's original intent that waste continuously flowing into a treatment process need not be continuously tested; tests or information are required only before the process is begun, or when the waste or treatment process changes significantly. Documented information may be used in place of tests when the information covers wastes, processes, and operating conditions similar to the ones to be undertaken. However, reliance on documented information does not relieve the owner or operator of primary responsibility for assuring that he complies with the remainder of the regulations.

**4. Inspections.** Citing the relative structural stability of tanks (and the dikes surrounding them), several commenters suggested that the proposed daily inspection schedule (§ 250.43-6 and § 250.44(c)) was unnecessary for tanks. EPA agrees that tanks and dikes need not be inspected daily, and has therefore changed the frequency for inspection of these aspects of facilities from daily to weekly. However, the daily inspection requirement has been retained for emergency response systems (e.g., waste feed cut-off or by-pass systems), the data gathered from monitoring equipment (e.g., pressure and temperature gauges) and waste level indicators at tanks.

**5. Ignitable, Reactive, or Incompatible Wastes.** Requirements for ignitable, reactive, or incompatible wastes were

proposed for interim status in standards for storage (§ 250.44(i)) and in standards for treatment (§ 250.45(c) and Note), and for the general standards under basins (§ 250.45-4 (b) and (c)). Most of the requirements in the present regulation are discussed above in the general section on ignitable, reactive, or incompatible wastes.

The Agency has added a standard to the regulations which requires facilities storing or treating ignitable or reactive waste in tanks to comply with the National Fire Protection Association's (NFPA's) buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Code—1977". The purpose of this standard is to minimize the potential for injury to the facility, facility personnel, and the neighboring public from flying debris and toxic air emissions which could result from explosions or fires involving hazardous waste. The standard applies only to ignitable or reactive waste because the potential for fires and explosions is largely confined to such wastes. The NFPA standards already apply to many tanks containing ignitable materials under OSHA regulations. Since this requirement was not proposed, it is being promulgated interim final, and the Agency will consider comments on it.

**6. Closure.** The proposed interim status standards for basins (§ 250.45-4(h)) and the proposed general standards for chemical, physical, and biological treatment facilities (§ 250.45-6(h)) required that all hazardous waste and hazardous waste residues be removed when the facility closed, and be disposed of as hazardous waste. A few commenters contended that the requirement that all residues resulting from treatment processes would have to be managed as hazardous waste was inconsistent with the statement in the preamble to the proposed Section 3001 rules, which required that waste be analyzed only when the generator has reason to believe that his waste is hazardous. The Agency believes that treatment residues will normally be hazardous. To clarify its position, the Agency has revised the Part 261 rules so that they now specify that residues from hazardous waste treatment processes are a hazardous waste unless the owner or operator can demonstrate otherwise (see the Part 261 preamble for the rationale for this change). The present regulations recite this in a comment.

#### *J. Subpart K—Surface Impoundments*

Surface impoundments, also known as pits, ponds, or lagoons, are often used to treat, store, or dispose of hazardous waste. A surface impoundment is

defined as a part of a facility which is a natural topographic depression, man-made excavation, or diked area formed primarily of earthen materials, although it may be lined with man-made materials. Impoundments are designed to hold an accumulation of liquid wastes and wastes containing free liquids. Some are lined with clay or synthetic materials to reduce or eliminate leakage to ground water. Leakage to ground water poses the most serious threat to human health and the environment from impoundments, but air emissions from volatile wastes and overtopping of the impoundment as a result of overfilling, precipitation, or wind can also be serious problems. Discharges to surface water, which may be associated with such impoundments, are subject to control under the Clean Water Act (NPDES program).

The requirements for minimum freeboard, protective cover on dikes ("Containment System"), waste analysis and trial tests, special requirements for ignitable and reactive wastes, and special requirements for incompatible wastes were all proposed for inclusion in the general standards in a form not radically different from that proposed here. Since they were not proposed for inclusion in the interim status standards, they are being promulgated interim final only to the extent that the Agency solicits comments on whether they are suitable for inclusion in the interim status standards.

The final RCRA interim status regulations for surface impoundments involve the following issues.

**1. Existing Surface Impoundments.** Many commenters stated that the proposed general regulations were infeasible for existing surface impoundments. They argued that retrofitting thousands of existing impoundments would be impractical, and suggested less stringent regulations for existing impoundments, unless they were found to be causing an environmental problem. The Agency agrees that if an owner or operator can demonstrate that an existing surface impoundment is not contributing measurable quantities of contaminants to ground water, retrofitting should not be required in the interim status regulations. (To the extent the comments addressed issues relevant only to the general regulations, those comments will be addressed when the final general regulations are issued.) This issue was discussed at length in the previous discussion of Existing Facilities.

These regulations may require retrofitting of some existing surface impoundments for maintaining freeboard and providing protective

cover for earthen dikes. However, these requirements are standard features of properly engineered surface impoundments, and should not pose a substantial burden to owners or operators of most impoundments.

**2. Minimum Freeboard.** The proposed general standards provided a minimum freeboard requirement. The Agency believes that such a freeboard requirement meets the criteria for interim status standards. It is accepted engineering practice to design surface impoundments with sufficient freeboard to protect against overtopping by waves or precipitation, and most surface impoundments already have 2 feet of freeboard. At least six states already require the 2-foot freeboard required in these regulations. As a result, an interim status freeboard requirement will not typically require large capital expenditures by owners or operators, nor will it require interaction with the Regional Administrator. For those facilities which do not meet the minimum freeboard requirements, the minimum freeboard can be established in a short period of time by such means as reducing the quantity of waste or adding additional height to the dikes.

The proposed regulation required that the freeboard in a surface impoundment be capable of containing rainfall from a 24-hour, 25-year storm, but not be less than 2 feet. The objective was to prevent spillover of hazardous waste from waves or rainfall, and to reduce the risk of overfilling. Comments varied from suggestions that there be no requirements for freeboard to suggestions for more stringent requirements.

The Agency has re-evaluated the effect of a 24-hour, 25-year storm, and has found that it would necessitate a smaller freeboard requirement than the specified minimum of 2 feet. It is thus unnecessary. The same is true of all other suggested storm standards, including the 24-hour, 100-year storm.

No comments focused on the specific measure of 2 feet for minimum freeboard. Engineering handbooks, textbooks, design manuals, and State regulations specify the need for a minimum 2-foot freeboard to prevent overtopping by waves or rainfall. Therefore, the Agency is retaining a 2-foot minimum freeboard requirement.

Some commenters suggested that level controls (coupled with NPDES discharge permits) should be allowed instead of a minimum freeboard. The Agency disagrees. Any level controls must still provide for a minimum freeboard to protect against overflows resulting from breakdowns in level control equipment, operator errors, waves, and significant

rainfall. In addition, since the Agency has deleted the phrase "average maximum" from the proposed definition of freeboard, the regulation now requires 2 feet of freeboard at all times during normal operation.

3. *Containment System.* The proposed general regulations required all earthen dikes to have an outside protective cover to minimize wind and water erosion. This requirement has been added to the interim status standards. Protective cover for earthen dikes is considered to be standard engineering practice, and many impoundments already have such a cover. Therefore, the Agency does not believe that a substantial capital cost, or any interaction with the Regional Administrator, will be necessitated by this requirement. The sole comment on this section stated that the purpose of protective cover, the preservation of the structural integrity of the impoundment, should be noted in the regulation. EPA agrees and has done so.

4. *Waste Analysis and Recordkeeping.* Waste analysis requirements were not included in the proposed interim status standards but were proposed as requirements in the general standards which applied to all facilities. However, the final interim status standards contain general waste analysis requirements in Subpart B, and in addition, include specific requirements for waste analysis in the standards for surface impoundments. Since these standards are essentially identical to those for tanks and chemical, physical, and biological treatment facilities, they are discussed in the section on tanks (Subpart J).

The proposed interim status standards required that the owner or operator keep records of the contents and location of each surface impoundment. This information will reduce the probability of accidental mixing of incompatible wastes, aid in resolving damage incidents, and assist in determining proper closure procedures. Because all hazardous waste facilities must keep records on the types and placement of wastes, the recordkeeping requirements for surface impoundments are included in the general recordkeeping requirements for all facilities under Subpart E.

5. *Inspections.* The proposed interim status standards required that surface impoundment dikes be inspected daily in order to detect and correct any deterioration of the dikes. This rule was intended to minimize the possibility of dike failure.

Comments supported the need for inspections, but recommended that they be conducted less frequently.

Commenters argued that dike failure is a long-term event that can be detected with less frequent inspections, and that daily inspections would most likely be performed in a cursory manner. Most of the commenters recommended weekly, bi-weekly, or monthly inspections.

The Agency agrees that inspections on a weekly basis are generally sufficient to detect cracks, erosion, and other deterioration in a dike well in advance of dike failure. They should also not impose a large burden on the owner or operator. Additional inspection may be prudent during or after an unusual rainfall, and should be considered by the owner or operator in the inspection schedule required by § 265.15. On a routine basis, however, weekly inspections of the surface impoundment, particularly for cracks or leaks in dikes, represents the best balance between need and practicality.

The proposed regulations also required a daily inspection of any existing system used for detecting the failure of a liner system or natural soil barrier. This would ensure the timely detection of a failure of the impoundment liner system. This requirement has been subsumed in the general inspection requirements in § 265.15(b); the requirement for daily inspection has been replaced by a requirement that the owner or operator develop his own schedule.

The Agency believes that when surface impoundments are in operation, there may be significant daily fluctuations in the level of the wastes. This potential daily fluctuation could substantially reduce the amount of appropriate freeboard needed to prevent overtopping, and less-than-daily inspection would not be safe in some instances. Moreover, this inspection is usually quite simple. Consequently, daily inspection of freeboard is required.

6. *Closure and Post-Closure.* The proposed interim status regulations required that upon closure, all hazardous waste and residues were to be removed from a surface impoundment and disposed of as a hazardous waste, unless the impoundment met the proposed § 250.45-2 requirements for landfills and closed according to the landfill closure requirements. The proposed regulation was read by many commenters to allow existing surface impoundments to close as landfills under interim status only if they met the proposed general standards for design and construction of landfills as well as the standards for closure. Understandably, this drew strong objections. Such a requirement was not applied to landfills closing under interim status, and it was not intended to be

extended to surface impoundments. Although it was not well reflected in the text of the proposed regulation, the Agency's intent was to require surface impoundments closing under interim status as landfills to meet only the interim status requirements for closure of landfills, that is, the closure and post-closure care requirements for landfills. The present regulations have been restructured along these lines.

In response to comments, the present regulations also allow more flexibility than the proposed interim status standards. If the owner or operator elects to avoid closing as a landfill, all hazardous wastes and hazardous residues must be removed from the surface impoundment, including (unless he can show that they are non-hazardous) the impoundment liner (if any) and underlying and surrounding contaminated soil. The choice whether to remove these materials or to close as a landfill is up to the owner or operator (subject to the approval of the Regional Administrator under Subpart G). In addition, the owner or operator may choose to remove only part of the hazardous materials and then close as a landfill. As a comment to the regulation points out, the detailed requirements for landfill closure may then be substantially reduced, because they depend on the amount and nature of the hazardous materials remaining, along with several other factors. The Regional Administrator may also adjust the post-closure care requirements as appropriate for the particular facility. The purpose of this approach is to provide the owner or operator with a wide choice of alternatives, while still assuring adequate protection of human health and the environment from any hazardous wastes remaining in the impoundment after closure.

The owner or operator's choice of closure plans may depend, in substantial part, on just how much material will have to be removed from the impoundment. The determination of the amount of material to be removed will be a function of the amount and mobility of the remaining hazardous wastes, judgments as to the precise nature of the cover needed, and the post-closure care required. The determinations for closure are ultimately subject to the approval of the Regional Administrator. In making this judgment, the Regional Administrator may require tests of residues or contaminated soil to be made by the owner or operator. For these reasons, it may benefit the owner or operator of a surface impoundment to submit a closure plan to the Regional Administrator substantially more than

180 days before the target date for the initiation of closure activities. In addition, owners and operators are discouraged from penetrating surface impoundment liners in order to sample and analyze underlying soil for contamination, unless prior discussions with the Regional Administrator confirm the desirability of this step. Liner penetration could greatly increase leakage of hazardous waste into the underlying soil.

A major requirement for an impoundment to be closed as a landfill is that the waste which remains in the impoundment must be capable of supporting the final cover. This may be accomplished by a combination of removing wastes (e.g., the liquid portion) and treating the residues (e.g., further dewatering, evaporation, or chemically stabilizing or solidifying the residues).

EPA believes that these regulations satisfy many of the concerns raised in the comments to the proposed interim status standards. Those comments stated that the surface impoundment closure requirements were improperly restrictive, that it might in some instances be preferable to leave the waste in place than to move it, and that the requirement for inert fill was unnecessary. These regulations provide flexibility for closure requirements and allow the wastes to be left in place. The requirement specifying the use of inert material for fill has been deleted. Comments on the general standards will be dealt with when those standards are promulgated.

Because the landfill closure requirements, on which the surface impoundment closure requirements are based, have been substantially modified and because there was some confusion surrounding the surface impoundment closure requirements proposed for interim status, this regulation is being promulgated interim final, and the Agency is soliciting comments on it. The Agency is especially interested in receiving comments on (1) whether the present landfill closure and post-closure care requirements need to be modified as they apply to surface impoundments, and (2) the number, size, and other characteristics of surface impoundments from which operators might opt to remove some or all of the hazardous wastes, residues and other contaminated materials during closure.

**7. Ignitable, Reactive, or Incompatible Wastes.** This topic was previously discussed in the general section of the same title which supplies the rationale for the regulation of these wastes in surface impoundments.

The issue of volatility has been deferred until more data is gathered (see

discussion of "Volatility"). In the meantime, it must be emphasized that EPA does not condone the addition of volatile hazardous waste constituents to surface impoundments.

Several commenters requested that during emergencies they be permitted to place ignitable wastes, such as petroleum products, in surface impoundments used solely for emergencies. The regulation now permits this, and a similar provision has been made in the tank regulations. Furthermore, the section on ignitable or reactive wastes is not intended to cover stormwater collection and treatment ponds such as those at petroleum refineries, when they receive incidental amounts of oily material in otherwise non-contaminated run-off.

#### *K. Subpart L—Piles*

There were no regulations concerning the storage of hazardous waste in piles in the proposed regulations because the proposed rules required that wastes be stored in covered containers or tanks. The waste piles, the Agency was aware of were generally used for disposal and were large enough to be properly managed as landfills. The final regulations still require that hazardous waste disposed of in piles be managed as a landfill. However, at public hearings during the comment period on the proposed regulations, the Agency became aware that hazardous wastes are occasionally stored in piles for which the landfill regulations are inappropriate. Comments at the hearings indicated that such piles are generally small, frequently less than 3 meters high. Many are in buildings or maintained outside on concrete or other pads. They are frequently used to accumulate waste before shipment, treatment, or disposal, and are typically composed of a single dry material.

The regulations in this Subpart are drawn partly from the landfill regulations (Subpart N) and partly from analogy to the storage regulations for tanks. Since none of the written comments gave details on how storage piles should be regulated, these regulations are founded largely on the descriptions of storage piles given at public hearings. Because none of these regulations were proposed as they relate to storage piles, they are being promulgated interim final, and the Agency especially solicits comment on them.

**1. Protection From Wind.** Because many piles are composed of dry, finely-divided materials, they are likely to be subject to wind dispersal. Wind-blown hazardous waste poses the obvious threat of pollution of nearby land and

water, and the possibility of human health effects from inhalation or ingestion. The Agency is aware of one instance where material blowing from a very large pile of asbestos waste posed a health risk from inhalation. The interim status regulations therefore require that wastes piles containing a hazardous waste subject to wind dispersal be covered or otherwise managed so that wind dispersal is controlled. Piles inside buildings are already adequately managed for this purpose. In other cases, the Agency believes that owners and operators are in the best position to develop cost-effective measures to control wind dispersal of hazardous wastes.

**2. Waste Analysis.** The requirements in this section are intended as a refinement of the general requirements for waste analysis in § 285.13. As the regulation for waste piles and the comment to the regulation indicates, the basic purpose of waste analysis is to assure that incompatible wastes are not mixed, and that ignitable or reactive wastes are protected from sources of ignition or reaction. Facilities which receive only one or a few wastes which are stored in piles typically need not conduct a very sophisticated analysis of incoming wastes; the owner or operator can decide, for example, whether visual observation of the color and texture of the waste will meet the standard in the regulation.

**3. Containment.** Besides the requirements for closure, the major difference in the requirements between disposal piles and storage piles is that the former must have ground-water monitoring to detect contamination. If leachate or run-off from a pile is a hazardous waste, then owners and operators of the latter must either prevent the formation of leachate and run-off or control hazardous leachate and run-off.

If the owner or operator chooses to prevent the formation of leachate and run-off, he must protect the pile from precipitation and run-on, and must not place any liquids or wastes containing free liquids on the pile. (See the preamble section on landfills for a discussion of free liquids.) Piles kept in buildings will typically meet this requirement.

Alternatively, in order to control leachate and run-off, the pile must be placed on an impermeable base so that leachate and run-off can be collected, and run-on must be diverted away from the pile. The collected leachate and run-off must be managed as a hazardous waste, and an NPDES permit will be required if the leachate and run-off is

discharged through a point source to waters of the United States.

The purpose of this requirement is to protect against contamination of ground water, surface water, and surrounding land by leachate and run-off from hazardous waste piles.

4. *Closure.* Because these regulations apply to the storage of hazardous wastes, the definition of storage requires that all hazardous wastes and hazardous residues must be removed when the pile is closed. The definition of storage and the regulations in Subpart G also require that hazardous wastes and residues be removed from the pile base or the containment structure or other area on which the pile sat, and from any equipment or facility used to manage hazardous leachate or run-off from the pile. The closure plan required by Subpart G must address these requirements. In removing hazardous wastes or residues, the owner or operator becomes a generator of hazardous wastes and must manage them in accordance with all the requirements of Parts 262, 263, and 265 of these regulations.

5. *Special Requirements for Ignitable or Reactive Waste.* The problems posed by ignitable or reactive wastes are discussed above in the preamble section entitled "General Requirements for Ignitable, Reactive, or Incompatible Waste."

The first alternative for managing ignitable or reactive waste in piles—available when piling the waste renders the waste no longer ignitable or reactive—is the same alternative available for most other forms of storage or disposal and is straightforward. The second alternative—protecting the waste from any materials or conditions which may cause it to ignite or react—is analogous to the approach used for tanks. It may be practical for piles kept in buildings and in some other circumstances.

6. *Special Requirements for Incompatible Wastes.* These requirements are similar to the analogous requirements for containers. Because piles provide little containment of the piled waste, there is a possibility that piled wastes may commingle with other wastes stored nearby, or that adjacent piles may grow until they overlap. Commingling of incompatible wastes must be prevented by separation or by means of a dike, wall, or berm. In addition, if hazardous wastes are piled in the same place that incompatible wastes were previously piled, a reaction between the new waste and residues from the previous pile may occur. Thus the area must be decontaminated so that the proscribed reactions do not occur.

#### L. Subpart M—Land Treatment (Landfarms)

The Agency is now using the term "land treatment facility" in place of "landfarm" in order to employ a term which more accurately describes the purpose of this particular waste management practice. The terms "landfarm" and "landfarming" misleadingly imply a connection between hazardous waste disposal and crop production or soil beneficiation. The term "land treatment," in contrast, implies that the land or soil is used as a medium to treat hazardous waste. This meaning, which is reflected in the regulations, is consistent with the Agency's philosophy that applying hazardous waste to the soil is a waste management practice reserved for those waste streams that can be treated in a soil system. The limitations of this waste management practice are explained in more detail later. This practice simultaneously constitutes treatment and disposal of hazardous waste.

The proposed regulations included only the closure portion of the landfarming regulations in the interim status standards. The Agency has decided to include other portions of the regulation in the interim status regulations because they serve important environmental objectives, and generally meet the criteria for inclusion in interim status. It is important to regulate certain aspects of land treatment during the interim status period because this is a disposal option that presents high potential risks in the absence of certain operational controls. These risks arise from the fact that land treatment involves the direct application of hazardous wastes to the land surface. Typically this occurs in the absence of the type of liner systems associated with landfills or surface impoundments. Unless the practice is carefully defined and regulated, irresponsible parties may try to characterize indiscriminate dumping of waste as land treatment. In addition, land treatment facilities may be used to grow food-chain crops. The Agency is concerned about the potential for hazardous waste constituents to enter the human food chain as a result of this practice. Since under certain conditions crops may be grown on such sites during interim status, it is important to address this concern during the interim status period.

Monitoring requirements have also been included in the interim status standards because the Agency believes monitoring is such an essential first step in the regulation of hazardous waste disposal. Such monitoring will also be a

part of any final Phase regulations. Owners and operators and treatment facilities, however, must begin to install unsaturated zone monitoring systems and begin to establish background levels of various parameters now so that they will be in a position to meet the treatment, ground-water, and food-chain crop protection standards.

1. *Purpose of Treatment.* In § 260.10 of the regulations issued today a land treatment facility is defined as "that part of a facility at which hazardous waste is applied onto or incorporated into the soil surface." Operators of land treatment facilities generally apply the waste in thin layers and use common farm practices such as tilling, contouring, and erosion control techniques. They may also add nitrogen and phosphorus fertilizers to enhance microbial degradation of the waste. The general objective of land treatment is the microbial degradation of organic waste constituents. Compared to the more conventional methods of disposing of waste in landfills and surface impoundments this practice is relatively new. It is used primarily to treat oily wastes, but may be feasible for other types of wastes.

While EPA does not wish to rule out the legitimate use of this waste management option, there are certain inherent risks with this practice which make careful regulation necessary. One of the key elements in these regulations that will minimize such risks is a clear specification of the purpose of land treatment. In doing this, the Agency hopes to prevent the situation where irresponsible parties may claim that their indiscriminate dumping of waste is land treatment. EPA believes that the only legitimate purpose for the land treatment of hazardous wastes is to treat the waste to reduce its hazardous properties. This reduction occurs through biological degradation or chemical reactions in the soil that alter the chemical state of the waste.

The Agency acknowledges that soil has the capacity to effectively filter and dilute waste. However, these physical mechanisms provide little or no net reduction in hazard if they do not alter the chemical state of the waste. Consequently, the use of the soil solely as a filtration or dilution medium is not considered appropriate for land treatment. In addition, any benefit derived from land treating hazardous waste, beyond that of the treatment itself, is considered to be incidental, and not an appropriate justification for permitting the practice. Consequently, land treatment of hazardous waste merely for the purpose of providing

nutrients to crops is not considered an acceptable practice under these regulations.

Based on the Agency's interpretation of the purpose of land treatment, the regulation specifies that hazardous wastes must not be placed in or on land treatment facilities unless the owner or operator can demonstrate that biological degradation or chemical reactions in the soil will make the waste less hazardous or non-hazardous. The monitoring requirements specified in the regulation will assist the owner or operator in confirming that determination. The owner or operator must be able to demonstrate that the treatment requirement is being met at the facility. Continued land treatment without the ability to make that demonstration is a violation of these regulations.

**2. Surface Water Run-On and Contaminated Run-Off.** The Agency has decided that the term "run-off", as used in the proposed regulation concerning the construction of "diversion structures to divert all surface water run-off from the active portions of a facility," was confusing. Therefore the term "run-on" has replaced the term "run-off" in these situations. That is, as used in these regulations, run-on is water which runs onto the active portions of a land treatment facility or landfill from other portions of the facility or from outside of the facility. Run-off is now defined as rainwater, leachate, or other liquid which flows from the active portions of a disposal facility.

Requirements for control of surface water run-off and run-on were not included in the proposed interim status standards for land treatment facilities. However, those requirements were specified in the proposed general standards in § 250.43(b) and (c). Those regulations required the owner or operator to construct diversion structures capable of preventing run-on from entering a land treatment facility. A variance to this requirement was allowed where an owner or operator could demonstrate to the Regional Administrator that run-on would not enter the site and come in contact with the hazardous waste. The proposed regulations also required the owner or operator to collect and confine run-off from active portions of the facility to a point source before discharge or treatment.

In these interim status regulations land treatment facilities will be subject to the same requirements as landfills regarding surface run-on and run-off. Run-on must be diverted away from the active portions of the land treatment facility. Run-off from the active portions must be collected. If the collected run-

off is a hazardous waste it must be managed as a hazardous waste. If it is not a hazardous waste it may still need to be analyzed, treated, or otherwise managed to comply with Subtitle D of RCRA or the Clean Water Act. For a more specific description of these requirements see the "Landfill" portion of this Preamble.

The Agency acknowledges that the surface area of the active portions of a land treatment facility will generally be larger than the surface area of the active portions of a landfill. This will necessitate more extensive run-on diversion structures and run-off collection systems for land treatment facilities. EPA believes, however, that such controls are necessary at land treatment facilities because this disposal option involves the placement of hazardous waste on, or barely under, the surface of the land. Such a technique presents a substantial risk that hazardous waste or hazardous waste constituents will be carried off the site by surface water run-off. A 12 month delay for run-on and run-off control compliance is allowed in these regulations. See further discussion under "Landfills."

**3. Recordkeeping.** Under the interim status regulations owners and operators of land treatment facilities must ensure that the application dates, the application rates, the quantities, the results of waste analyses, and the location of each hazardous waste placed in the facility is in the operating record required under § 265.73. Such recordkeeping is needed to allow the owner or operator and the Regional Administrator to evaluate the facility's compliance with the other requirements of this Subpart. For example, the waste analyses, the application rates, and quantities of hazardous wastes placed in the facility will assist, through the use of a mass-balance analysis, in determining whether the treatment objective of the facility is being met. Information on application dates and locations will assist in determining whether the unsaturated zone monitoring system is properly designed to detect migration of hazardous waste and hazardous waste constituents.

**4. Waste Analysis.** The proposed regulations contained general waste analysis requirements which applied to all facilities. The general waste analysis regulations in these final interim status regulations require waste analysis as is necessary to comply with the regulations, including the land treatment standards. Owners or operators of land treatment facilities must further analyze waste for the hazardous waste

constituents which caused the waste to be listed, if it is listed, and the constituents which exceed the levels specified in Table 1 of § 261.24 of this Chapter. Such information will be essential to a demonstration that the waste is being made less hazardous at the facility and will be relevant to both the ground-water and food-chain-crop protection goals of this Subpart.

If food-chain crops are grown, the waste must be analyzed for arsenic, cadmium, lead, and mercury. The owner or operator need not test for each of these elements if he has written information to indicate that the constituent is not in the waste.

**5. Monitoring.** The proposed regulation required semi-annual soil monitoring of the treated area of a land treatment facility. This was to be accomplished by taking one soil core per acre to a depth of three times the zone of incorporation (i.e., three times the depth to which the waste was tilled into the soil). If migration was detected, as indicated by an increase in waste constituents over background levels in the bottom one-third of the core, the owner or operator was to notify the Regional Administrator and cease operation in the affected area until corrective actions could be taken. In contrast with landfills and surface impoundments, the proposed regulations did not specify ground-water monitoring for land treatment facilities. The environmental performance of a land treatment facility was to be evaluated solely on the basis of soil monitoring. Because of this difference, the Agency solicited information on the desirability of ground-water monitoring at land treatment facilities. The Agency suggested that soil monitoring would detect migration of waste constituents long before ground-water monitoring would.

EPA received several comments suggesting that ground-water monitoring in addition to soil monitoring was unnecessary. Other commenters, however, expressed the opinion that ground-water monitoring was also necessary. These commenters claimed that soil monitoring has certain limitations such as its lack of reliability for detecting highly mobile contaminants. They argued that soil monitoring "should not be solely relied upon to provide protection of our ground-water resources."

Commenters also were specifically concerned about the sampling procedures, the standard for when the treatment system had failed, and the corrective action that was to follow detection of a failure. The requirement to analyze each soil core for those

constituents in the waste which made it hazardous was considered extreme and impractical. Commenters suggested that indicator substances be analyzed instead. Commenters also challenged the "three-times the zone of incorporation" test for determining whether the treatment system was successful, arguing that such a distance did not relate to the ground-water contamination threat; rather, other factors, such as thickness and permeability of the unsaturated zone, determine the potential for contaminating ground water. Using a similar argument, commenters argued that corrective action should not be triggered simply by the appearance of contamination at a depth of three times the zone of incorporation.

After examining these comments EPA had decided to focus the interim status regulations on the establishment of the basic monitoring systems needed to accurately determine whether the complex processes involved in land treatment are, in fact, occurring, and whether contaminants are migrating to ground water. The development of the standard by which success or failure is judged will be part of the Phase II regulations. Regardless of what that standard is, the facility will be required to install a system of unsaturated zone and ground-water monitoring to determine the success of the treatment process and impacts on ground water. Unsaturated zone monitoring includes both soil-pore water and soil core monitoring.

While unsaturated zone monitoring is useful in assessing the likelihood of ground-water contamination at new facilities and in indicating any migration occurring with each new waste application at existing facilities, ground-water monitoring is the only mechanism that can accurately detect the presence and degree of ground-water contamination. Therefore, ground-water monitoring is required at land treatment facilities. Owners and operators of existing land treatment facilities must be able to determine the actual effect of their facilities on ground water in order to comply with the Phase II requirements.

In addition, the environmentally sensitive nature of land treatment requires the owner or operator to have an accurate picture of the treatment process at work in the soil. EPA has decided that such an objective requires installation of both soil core monitoring and soil-pore water monitoring. Soil core monitoring is useful in determining the extent to which the hazardous wastes are being attenuated and broken

down in the soil. Soil-pore water monitoring is a necessary complementary or back-up system to assure that the absence of a hazardous waste constituent in the soil core sample indicates a breakdown of the waste rather than merely the rapid migration of the waste material through the soil matrix. Several comments and the results of an EPA-sponsored study indicate that the latter phenomenon can occur for some organic compounds found in hazardous wastes. A combination of soil core and soil-pore water monitoring provides the basis for a mass balance analysis of the unsaturated zone to determine whether the treatment process is meeting the treatment objective. Using the monitoring data as feedback on the performance of a site, an owner or operator can more effectively manipulate operating variables in order to optimize the performance of the site (e.g., waste application rates and pH controls).

Careful analysis of the upper soil layers is also needed because of another change that has been made in the regulation. The Agency has decided that growth of food-chain crops need not be banned at hazardous waste land treatment facilities but rather should be carefully regulated. Information about the presence of contaminants in the upper layers of the soil is, therefore, necessary to assess the risk of significant plant uptake of toxic constituents.

Soil-pore water monitoring is more easily achieved at land treatment sites than at landfills or surface impoundments. Lysimeters or similar devices which measure soil-pore water contamination can be installed at land treatment facilities in the area where waste has been applied. The relatively shallow depth of waste application at land treatment facilities allows lysimeters to be replaced, at both existing and new facilities, when they become clogged or otherwise nonfunctional. Furthermore, land treatment facilities typically do not have liners which would interfere with the placement of lysimeters.

In response to the specific comments on soil monitoring, the Agency has decided not to specify particular procedures or protocols for conducting unsaturated zone monitoring during interim status. Owners and operators will be given the flexibility to develop reasonable monitoring plans that meet the general objectives specified for such plans. Once established, these plans must be followed, and an owner or operator's failure to follow his own plan

constitutes a separate violation of these regulations.

In considering the constituents to be monitored and analyzed for in the unsaturated zone, EPA considered the use of indicators. That approach was rejected, however, because the Agency has not yet been able to devise a set of indicators that reflect the success of waste treatment in the soil. EPA is requiring that the owner or operator monitor and analyze for those hazardous waste constituents contained in the wastes applied at the facility that caused those wastes to be listed as hazardous, if they were listed, and those that exceed the maximum contaminant limits in Table 1 of § 261.24 of this Chapter. These constituents, at a minimum, are the ones which have the potential to create environmental hazards if these wastes are mismanaged. Such constituents must, therefore, be included in any monitoring system designed to determine the effectiveness of a land treatment system in reducing the hazardousness of the waste. The Agency believes that the constituents to be monitored are sufficiently few as not to cause an undue burden.

In response to the challenge to the "three-times the zone of incorporation" test to determine success of treatment, the Agency is exploring whether other simpler tests can be developed. Until the time that such a test is developed, owners and operators will have to provide waste-specific, constituent-specific, and site-specific evidence that the treatment objective is being met.

The final interim status regulations require owners and operators of land treatment facilities to develop and implement unsaturated zone monitoring plans. These plans must be designed to determine the concentrations and migrations of hazardous waste constituents in the soil. The plan must also describe how the owner or operator will establish background concentrations of those constituents through testing of similar untreated soil. The monitoring program for the unsaturated zone must include soil core and soil-pore water monitoring (ground-water monitoring is required separately under Subpart F of these regulations). The unsaturated zone monitoring plan must specify the owner's or operator's rationale for such key elements as the depth of monitoring, the number of samples, the frequency of sampling, and the timing of sampling. These decisions must reflect a consideration of the variability of the waste and the waste/soil mixture, proximity to ground water,

the manner of waste application, and soil permeability.

6. *Food-Chain Crops.* The proposed regulation prohibited growing food-chain crops on active portions (treated areas) of hazardous waste treatment facilities. The purpose of this regulation was to protect humans from consuming toxic materials that might be present in or on crops grown on land to which hazardous waste has been applied. At the time, the Agency considered a ban as the only means of achieving this objective.

Commenters objected to this ban, suggesting that some crops could be grown on treated soil without endangering human health. Instead of a ban, commenters suggested alternatives such as specifying "safe" application rates to the soil, and monitoring crops for their uptake of hazardous constituents. The Agency also received comments suggesting that the ban was inconsistent with the regulatory approach taken to protect food-chain crops under Subtitle D of RCRA. Those regulations were finalized as the "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (The Criteria, 40 CFR 257) on September 13, 1979. The Criteria prescribed annual application rates and limits on cumulative loadings for cadmium based on the specific health risk, and treatment requirements for wastes containing PCB's or pathogens. Commenters argued that the application of some hazardous wastes to food-chain crops presents no greater risk than such practice with some nonhazardous waste.

It is the Agency's firm belief that growth of food-chain crops on land to which hazardous waste has been applied is an issue which should be dealt with cautiously, and should be allowed only where there is convincing evidence that the practice is safe. EPA believes there is little real need to grow food-chain crops at land treatment facilities. The small amount of land used for land treatment represents a negligible portion of the total productive land available for crop growth in this country. Furthermore, there are other productive uses of the land, such as for ornamental horticulture and growth of fiber crops or other non-food crops.

On the other hand, the Agency feels that where there is convincing evidence that such crop growth is safe, it would be unjustified to prohibit it. It is conceivable that constituents in a particular hazardous waste may not be taken up by certain food-chain crops, or after a period of treatment, the constituents may have degraded into products non-hazardous to humans.

The Agency carefully examined the suggestion made by commenters of specifying "safe" application rates. At this time, however, the existing data base on rates of crop uptake of hazardous substances are not comprehensive enough to permit the Agency to specify safe application rates. Regulation by crop monitoring is limited by the fact that safe levels of most hazardous substances in crops have not been determined by the Food and Drug Administration, the Department of Agriculture, or the Environmental Protection Agency.

The Agency also examined the approach used in the Criteria and concluded that the limits developed in those regulations for cadmium should be incorporated into this regulation. Thus the cadmium limits present in that regulation will be applicable to hazardous waste land treatment facilities.

The Criteria include two approaches for the land application of wastes containing cadmium. The first approach incorporates four site management controls: of the pH of the waste and soil mixture; annual cadmium application limits that are reduced over time; cumulative cadmium application limits based on soil cation exchange capacity (CEC) (specified in units of milliequivalents of exchangeable cations in soil per gram of soil); and a restriction of the cadmium concentration in waste applied to facilities where tobacco, leafy vegetables and root crops are grown.

The second approach allows unlimited application of cadmium provided four specific control measures are taken. First, the crop grown can only be used as animal feed. Second, the pH of the soil must be maintained at 6.5 or above for as long as food-chain crops are grown. Third, a facility operating plan must describe how the animal feed will be distributed to prevent human ingestion. Fourth, future owners are provided notice (through provisions in land records or property deed) that there are high levels of cadmium in the soil and that food-chain crops should not be grown.

The Agency does not believe, however, that the Criteria sufficiently address the broad range of constituents present in hazardous waste. Therefore, EPA has decided to set additional requirements that relate to hazardous constituents in waste applied as well as other substances of concern (i.e., arsenic, lead, and mercury) because of their effect on food-chain crops. These additional substances have been identified because of their relatively high toxicity to humans and evidence that they can be taken up by crops.

Mercury can enter plants through the roots and be readily translocated throughout the plant. Arsenic tends to accumulate in the roots of most crops, which is a concern when root crops such as radishes, carrots, etc., are grown. When in high concentrations in the soil, lead has been shown to translocate to crops.

The Agency is concerned that there are other hazardous substances in the waste, including toxic organics, that may be taken up by plants. Because most plant up-take studies have addressed only inorganics, there is a paucity of data on the up-take of toxic organics by crops. The Agency is aware, however, that data may exist that could identify other hazardous substances of concern. Therefore, EPA is seeking information on other hazardous substances that could be taken up by crops.

Where the Agency does not yet have a clear specification of the "safe" level of contaminants in food crops, it will assume that the level of such contaminants presently in food crops not grown on waste-amended soils is acceptable. As further research refines the Agency's thinking, it may be that health tolerances in food crops should be higher or lower than the average levels otherwise present in such crops.

Based on that assumption, EPA has devised a two-part test to determine whether food-chain crop growth on land treatment facilities is acceptable. Prior to having a crop for market on soils that have received hazardous wastes, the owner or operator must document that the hazardous waste constituents in the waste, as well as any arsenic, lead, and mercury, will not (1) be transferred to the edible portion of the crop by plant up-take or direct contact, or be transferred to food-chain animals; or if it does, that it will not (2) occur in greater concentrations in the crop than in crops grown in the same region on similar soils which have not had wastes applied.

An owner or operator must use actual field studies of the crop for comparative purposes. Also, the conditions under which the comparable crops are grown must be similar to the conditions found at the facility. For example, soil type, soil moisture, soil pH, and soil nutrients, must be similar at both the facility and the control sites. The owner or operator must also document the sample selection criteria, sample size determination, analytical methods, and statistical procedures used to make the demonstration. In order to determine compliance prior to waste application the owner or operator must pre-test a sample crop using the type of waste and

application rate that will be used at the facility.

Finally, EPA has added a provision to these regulations that requires owners or operators of land treatment facilities on which food-chain crops have been grown, or are being grown, to notify the Regional Administrator within 60 days after the effective date of these regulations if they intend to again grow food-chain crops during the interim status period. In addition, a comment in the regulation apprises an owner or operator, who has not accordingly notified the Regional Administrator and who proposes to grow food-chain crops during the interim status period, that this is a change in process and he must notify the Administrator under Section 122.23(c)(3) of the consolidated permit regulations. These notification procedures are designed to give the Regional Administrator notice of those facilities that are engaging in the environmentally sensitive activity of growing food-chain crops at land treatment facilities. This will assist the Regional Administrator in the establishment of priorities for permitting.

**7. Closure.** The proposed regulations provided two basic options for closure of a land treatment facility. One option was to return the soil in the treated area to its pre-existing condition, as determined by background soil analysis or analysis of similar local soils. The other option was to remove the contaminated soil from the facility if that soil met the characteristics of a hazardous waste. (If it did not have any of the characteristics of a hazardous waste, no further action was required.) However, a variance to the second option allowed closure of a facility as a landfill if the owner or operator could demonstrate that the design or location of the site provided long term integrity and environmental protection equivalent to a landfill, as specified in the proposed regulations.

Many commenters argued that the requirement to return the soil to its pre-existing condition was impractical and would make land treatment infeasible. They also objected to the provision which required that the soil be removed at closure. On the other hand, the EPA extraction procedure (EP) was criticized as being an inappropriate mechanism for determining whether the soil in the treated area was hazardous. The EP was said to be too limited in applicability, because it does not address most organics and some metals. Some commenters suggested alternative closure procedures which allow tailoring the closure procedures to the site.

After examining these comments, the Agency has concluded that greater flexibility should be given in the regulation to allow the owner or operator to develop a plan that considers certain key factors and that meets general human health and environmental objectives. Under the final interim status regulations the owner or operator of a land treatment facility must develop and implement a facility closure plan. The terms of that plan are enforceable against the owner or operator.

The plan must address four objectives: (1) Controlling the migration of hazardous waste and hazardous waste constituents into ground water; (2) controlling the release of contaminated run-off to surface water; (3) controlling the release of airborne particulate contaminants; and (4) compliance with the standards established for food-chain crops. The owner or operator must consider a range of factors affecting the facility's ability to meet the objectives. These factors include the waste, the climate, the site location, the soil, and the depth of contaminant migration. The owner or operator must also consider the applicability of various closure methods including removal of the soil, run-off collection and treatment, use of cover materials, diversion structures, and additional monitoring.

The owner or operator must also develop a post-closure care plan. The terms of this plan are also enforceable against the owner or operator. Under these interim status regulations the post-closure care plan must provide for maintenance of monitoring systems, restriction of access as appropriate for post-closure use, and control of the growth of food-chain crops to the same degree as required for an active facility.

The requirements for the closure and post-closure plans for land treatment facilities and landfills are similar in terms of objectives but differ slightly in the mechanisms by which these objectives are to be achieved. The landfill post-closure plan requires the owner or operator to address the following: (1) Maintenance and monitoring of leachate collection systems (if present), (2) Maintenance and monitoring of gas control systems (if present), and (3) Final cover. For land treatment facilities, however, the first two items are not required because the Agency is not aware of any leachate collection systems and these facilities are rarely plagued by gas problems. This results because cover material is not laid down after the waste is applied so that gases are not confined, and

decomposition of the waste occurs predominantly in an aerobic state so that methane, carbon monoxide, and hydrogen sulfide are not produced. Although final cover is addressed in both the land treatment and landfill closure requirements, it is mandatory only for landfills. Final cover must be considered, but is not mandatory, for a land treatment facility where the waste has been rendered non-hazardous. Where wastes have been rendered less hazardous, the determination of whether final cover is needed, in part, will be dependent on the degree of risk to human health and the environment presented by the hazardous waste constituents remaining in the soil.

**8. Ignitable, Reactive, or Incompatible Wastes.** The proposed regulations prohibited placing ignitable, reactive, volatile, or incompatible wastes in a land treatment facility, but allowed a variance if the owner or operator could demonstrate that airborne contaminants would not exceed a specified concentration, and that the attenuation capacity of the soil would not be adversely affected through heat generation, fires, or explosions.

The primary criticism of the proposed regulation, other than the restriction on airborne contaminants, was that the prohibition was inappropriate because many wastes classified as ignitable, reactive, or incompatible might lose these properties when land treated. The Agency agrees and has modified the regulation. The final standard requires the owner or operator to incorporate ignitable or reactive wastes into the soil in such a manner that the resulting waste, mixture, or dissolution of material no longer exhibits ignitable or reactive characteristics, and complies with § 265.17(b). Ignitable or reactive wastes may also be placed in a land treatment facility if they are rendered non-ignitable or non-reactive before land treatment. Incompatible wastes may not be placed in the same land treatment area unless the land treatment process complies with § 265.17(b). For a description of the general requirements applicable to the disposal of ignitable, reactive, or incompatible wastes see the "General Facility Standards" portion of this Preamble.

#### *M. Subpart N—Landfills*

Landfilling has historically been the preferred means of disposing of hazardous waste. Until the last decade, some people acted as though, once buried, hazardous wastes would cause no more difficulties. Past practices often focused only on burying the waste to get it out of sight and on control of surface problems such as blowing litter or

vectors. Recent experiences at Love Canal in New York and other burial operations have demonstrated the potential for severe human health and environmental impacts from improper landfilling.

Many argue that, since many of these wastes remain hazardous for very long periods, they should not be landfilled. EPA agrees in principle that it is better to destroy or recycle hazardous wastes than to landfill them, but the fact remains that, for the foreseeable future, land disposal will be necessary because it is technically infeasible at present to recycle, treat, or destroy all hazardous waste.

Over the past decade, research and investigations of good and bad practices, including documented damage cases, have advanced the state-of-the-art of landfilling significantly. Landfilling is much more than just burial of wastes, particularly for hazardous wastes. Landfills must provide long-term protection of ground water, surface water, air, and human health. Although the state-of-the-art is still developing, a number of techniques are now available for effectively reducing the adverse health and environmental effects from landfills.

The problems which hazardous waste landfills have presented can be divided into two broad classes, which these regulations attempt to address. The first class includes fires, explosions, production of toxic fumes, and similar problems resulting from the improper management of ignitable, reactive, and incompatible wastes. The Agency believes that methods for dealing with these problems are generally available today, and that they can begin to be implemented in these interim status standards without substantial capital expenditures, the need for case-by-case determinations by EPA permitting officials, or substantial lead times. These methods include the analysis of wastes to provide enough information for their proper management; the controlled mixing of incompatible wastes or their segregation in separate landfill cells; and the landfilling of ignitable and reactive wastes only when they are rendered not ignitable or reactive.

The second class of problems, contamination of surface and ground waters, presents substantially more difficulty. Several approaches to environmental protection, including proper siting, lining, and leachate collection, do not meet EPA's general internal guidelines for those standards it will impose during interim status. Such standards might involve too great a permit investment, or might be so site-

or waste-specific that they would require case-by-case determinations by the Regional Administrator. Such standards could also require automatic closure or relocation of some facilities, or substantial retrofitting. Other measures, however, are available which will help reduce the formation of leachate in currently operating landfills. The measures incorporated in these interim status regulations are diversion of "run-on" (water flowing over the ground onto active portions of the facility) away from the active face of the landfill; treatment of any liquid wastes or semi-solid wastes so that they do not contain free liquids; proper closure (including a cover) and post-closure care to control erosion and the infiltration of rainfall; and crushing or shredding most landfilled containers so that they cannot later collapse and lead to subsidence and cracking of the cover. In addition, these regulations require ground-water monitoring to detect contamination of ground water, and collection of rainwater and other run-off from the active face of the landfill to control surface water pollution. As discussed previously under "General Requirements for Ignitable, Reactive, or Incompatible Wastes," the Agency is also considering requiring the segregation of wastes, such as acids, which would mobilize, solubilize, or dissolve other wastes or waste constituents, such as heavy metals. These regulations represent an important step toward safer disposal of hazardous wastes in landfills.

Regulations similar to those appearing in the present sections on "General Operating Requirements" and "Special Requirements for Ignitable or Reactive Wastes" were proposed for inclusion in the general standards. They are being promulgated here interim final only to the extent that the Agency will accept comments on whether they are appropriate for inclusion in the interim status standards. Regulations on closure and post-closure, special requirements for liquid waste, and special requirements for containers are being promulgated interim final and are further discussed below.

**1. Landfill Cells.** These regulations incorporate the concept of landfill cells. Such cells can be used to separate incompatible wastes.

As suggested by the comments, the proposed definition of a cell as "a portion of a waste in a landfill" has been replaced by "a discrete volume of a hazardous waste landfill which uses a liner to provide isolation of wastes from adjacent cells or wastes." This makes the cell a discrete part of the disposal

facility rather than a portion of waste as in the proposed definition. This arrangement, together with the flexibility of closure regulations, and the concept of partial closure, permits different cells to have different closure requirements and may permit different financial arrangements in appropriate circumstances. Cells may be physically separate areas of a landfill, or trenches or parts of trenches, or separate pits. The determining condition is that the cell be a discrete volume separated by a liner or cover from adjacent cells or other wastes in the facility.

**2. Surface Water Run-on.** A requirement for control of surface water run-on was not included in the proposed interim status standards. This requirement was specified, however, in the proposed general standards in §§ 250.43(b) and 250.45-2(b)(7). The purpose of this standard was to minimize the amount of surface water entering the landfill facility. Run-on controls prevent (1) erosion, which may damage the physical structure of the landfill, (2) the surface discharge of wastes in solution or suspension, and (3) the downward percolation of run-on through wastes, creating leachate. Control is accomplished by constructing diversion structures to prevent surface water run-on from entering the active portion of the landfill facility. A note in the proposed regulation provided that no diversion structures were required where it could be demonstrated to the Regional Administrator that local topography would prevent surface water run-on from entering the facility.

Comment was received that the proposed regulation implied that all run-on would have to be diverted from the landfill, and that the regulations should specify the capacity of the diversion structure in terms of the useful life of the landfill.

The Agency believes that the main area of concern for protection of human health and the environment is the active portion of the landfill, not the landfill facility as a whole (as may have been suggested by the language of the proposed regulation). It is at active portions that run-on is most likely (1) to seep into the exposed waste, contributing to the formation of leachate, or (2) to erode wastes, or constituents of them, and carry them away in run-off. The Agency requires in these regulations that all surface water run-on be diverted from active portions. Diversion of run-on may be accomplished by locating the active portion in areas where the topography naturally prevents run-on, by sloping or contouring the land, or by constructing

ditches, culverts, or dikes. The capacity of diversion structures should be determined by the owner or operator considering site topography, size of drainage area, and size of the active portions.

Comments were received suggesting that the proposed standards be modified to allow the owner or operator the flexibility to either divert surface water run-on or collect and treat all of the surface run-off, as long as Clean Water Act effluent limitations were complied with. The Agency disagrees. EPA believes that such a standard allows the unnecessary infiltration of water into the landfill.

The Agency has determined that diversion of run-on is appropriate for inclusion in the interim status standards. Run-on control is for active portions only. The Agency expects that run-on diversion structures, where needed because of topography, will most likely be earthen dikes or berms, or ditches, which can be erected with earth moving equipment commonly found at landfills. These structures can be temporary, and can move with the active portions as material is added to the landfill. Such structures can be designed and maintained adequately during interim status without case-by-case review by permitting officials.

A 12 month delay is allowed for compliance with this requirement so that operators will have adequate time to make any necessary topographic and hydrologic determinations and complete construction.

**3. Contaminated Surface Water Run-Off.** Requirements for collecting and managing contaminated surface water run-off were not included in the proposed interim status standards, but were proposed in the general standards in §§ 250.43(c) and 250.45-2(b)(8). Their objective was to reduce the potential for off-site migration of contaminated run-off to land or to waters of the United States. There have been a number of damage incidents caused by mismanaged or uncontrolled contaminated run-off from landfills. Ten of these incidents are briefly described and referenced in the landfill background document. These damage cases demonstrate that run-off from active portions of hazardous waste landfills can cause serious adverse impacts to land and surface waters. In contaminating streams, run-off from landfills frequently results in fishkills and destruction of other aquatic life. During the period 1963-1974, forty-seven separate fishkills caused by run-off from waste disposal were recorded by EPA. Based on this evidence, EPA believes that it is imperative that run-off from

active portions of hazardous waste landfills be controlled during the interim status period.

Furthermore, control of run-off from active portions of hazardous waste landfills is presently a widely accepted and relatively simple practice. As of January 1979, all but two States specifically require in their solid or hazardous waste regulations control of run-off from at least the active portions of all off-site landfills.

Run-off control is accomplished by (1) minimizing run-off and (2) collecting and managing run-off from active portions. Run-off is minimized by (1) preventing run-on, (2) minimizing the size of the active portion, and (3) preventing disposal of liquid wastes in the landfill.

There are two basic types of landfill operations: trench method and area fill method. By design, almost all trenches, and area fills using depressions or pits, control most run-off because of surface contours (i.e., liquids that come into contact with the waste generally infiltrate rather than run-off). Area fills which do not use depressions can be operated by building a berm or dike on the low elevation side to contain any run-off. However, when landfills using either the trench or area methods become large and substantially above grade, both run-off and leachate seeps, which often occur on the outer slopes of the fill, need to be collected. Run-off which does emerge from active portions may be collected by ditches, berms, dikes, and culverts which direct it (sometimes by sump pump) to surface impoundments, basins, tanks, or treatment facilities. These collection devices may consist of temporary structures around active portions. Since run-off usually has been in contact with waste or leachate seeps from active portions, and since run-off sometimes if collected via a leachate collection system, it is usually contaminated. Thus, it is usually impossible to differentiate between rainwater run-off and leachate run-off at the active portion of a landfill. Because of this, the proposed definition of "run-off", which was "that portion of precipitation that drains over land . . .", has been revised to "any rainwater, leachate, or other liquid that drains over land . . .". This change indicates that more than just precipitation must be collected.

Once collected, a number of options exist for treating and disposing of run-off. These are the same options which exist for managing liquid wastes and leachate and include deep well injection, land treatment, treatment in surface impoundments (evaporation, aeration, chemical treatment, etc.), dewatering or mixing with an absorbent

material and disposal in the landfill, percolation through a filtering or attenuation medium (e.g., charcoal, clay, soil, sand), or discharge to a sewer or other treatment facility.

The proposed landfill standards required that if surface water came into contact with the active portions of a facility, it was to be collected and managed as a hazardous waste unless it was analyzed and found not to be hazardous.

The Agency received essentially no objections to the proposed requirement that landfill run-off be collected and treated in some fashion. Most of the comments on the proposed standards concerned the capacity of the treatment systems or the final disposition of the run-off. These comments are discussed in the background document. The current regulation does not limit the method of treatment of run-off.

The regulation requires run-off from active portions to be collected. The collected run-off is a solid waste from an industrial activity (the operation of the landfill) and the owner or operator must determine whether it is a hazardous waste in accordance with Section 262.11 of this Chapter. If the collected run-off is a hazardous waste it must be managed as a hazardous waste. Even if it is not a hazardous waste, good management practices may still require some degree of treatment or use of other techniques as previously discussed, although such practices are not required by these regulations. A 12 month delay for compliance with these regulations is given so that existing facilities may construct new run-off control systems or upgrade existing systems, including those for run-off treatment and disposal. If collected run-off is discharged to waters of the United States, owners or operators of facilities must have or apply for an NPDES permit under the Clean Water Act.

**4. Wind Dispersal.** Dispersal of landfilled hazardous wastes by wind is not often a problem. The Agency's major concern in requiring the control of wind dispersal is large waste piles which constitute disposal and thus come under the landfill regulations. The Agency is aware of at least one case in which wind dispersal from a pile of asbestos wastes created a health risk. It therefore seems prudent to require that, where landfilled hazardous waste is subject to wind dispersal, the landfill be managed so that wind dispersal is controlled. Appropriate methods may vary from waste to waste, and the Agency believes that the owner or operator of the facility is best able to develop an adequate, cost-effective technique to meet this requirement.

This requirement was not proposed for inclusion in either the interim or general standards. Comments and meetings following publication of the proposed regulations brought to light the fact that piles are sometimes used for storing and disposing of wastes, some of which may be hazardous. Subpart L (Waste Piles) grew out of these comments, and also includes a requirement for controlling wind dispersal. The Agency believes that this requirement should typically not require major capital expenditures, does not require case-by-case determinations by the Regional Administrator, and can be accomplished within six months. It is therefore appropriate for inclusion in the interim status standards. Since it was not proposed, it is being promulgated interim final, and the Agency solicits comments on it.

**5. Surveying and Recordkeeping.** Recording the location of each hazardous waste type within a landfill cell will help ensure that this information is available for proper landfill operation, closure, and damage assessment, when necessary. For example, this information is useful in managing potentially incompatible wastes and materials, and will help deal with emergencies, such as fires and help in locating sources of contamination. Methods of correction and potential for further damage may also be more readily identified.

The major issue raised in the comments was an objection to the proposed requirement that exact locations of waste within each cell be recorded. The Agency agrees that this requirement may have been overly restrictive as applied to all wastes. The regulation now only requires recording the waste's approximate location within a cell. However, the owner or operator must record the location of each waste type with sufficient accuracy to enable proper management of incompatible wastes, and later treatment, excavation, or other remedial action, if necessary. For example, with an extremely mobile waste this may mean recording its exact location; for a landfill or landfill cell which receives only a few types of wastes, it may mean merely recording the approximate location of the demarcations between wastes. EPA suggests the use of a three-dimensional grid system, referencing waste type location on a map which is keyed to permanently surveyed benchmarks. The size of the units in the grid should be a function of the number of waste types, their amounts and the number of locations of each type.

**6. Landfill Closure.** At least 180 days before landfill closure during the interim status period, the owner or operator must submit to the Regional Administrator, for his approval, modification, or disapproval, a detailed plan describing the manner in which the landfill will be closed and maintained during the post-closure period. (See the previous preamble discussion on Closure and Post-Closure Care).

A final cover must be placed over the landfill at closure. The closure plan must address the functions and specify the design of the final cover. It is necessary to place appropriate cover on a landfill in order to control the infiltration of moisture that could increase leaching, and to prevent erosion or escape of wastes, waste constituents, or contaminated soil.

The proposed standards included specific requirements regarding the type, depth, permeability, and number of soil layers required for the final cover. They also included specific quantitative limits on grade (slope) and terracing of the cover to prevent erosion.

EPA received numerous comments objecting to these specific requirements. Commenters suggested that different combinations of cover materials, thicknesses, and permeabilities could achieve equivalent results, and that greater flexibility was needed to address site-specific situations. Numerous commenters suggested that the proposed 6-inch clay cover was inadequate. Similar objections were raised regarding the final grade and terracing requirements.

The proposed regulation included a variance that allowed alternate cover designs to be substituted as long as they provided equivalent performance, and thus there was some flexibility. However, the proposed variances would not have addressed concerns over the basic level of control specified, for example, a 6-inch clay cover.

The Agency believes that the commenters have made valid points. The specific limits proposed are not appropriate for all situations. The conditions at each site should weigh more heavily than perhaps the proposed regulation would allow in determining an appropriate cover requirement. The final regulations provide this flexibility by requiring that certain objectives be addressed in developing a closure plan and designing a final cover. The specified objectives are: (1) control of pollutant migration from the facility via ground water, surface water, and air, (2) control of surface water infiltration, including prevention of pooling, and (3) prevention of erosion.

The regulation also lists a minimum set of technical factors which the owner or operator must consider in addressing the control objectives. With regard to cover design characteristics, these factors include cover materials, final surface contours, porosity and permeability, thickness, slope and length of run of slope, and type of vegetation. The cover design should take into account the number of layers, and the indigenous vegetation. It should avoid or make allowances for deep-rooted vegetation, and prevent water from pooling. The design will depend on the availability and characteristics of on-site or nearby soils, and a number of other site-specific factors. The final cover design could simply be the placement, compaction, grading, sloping, and vegetation of on-site soils, or could be a complex design such as a combination of compacted clay or membrane liner placed over a graded and sloped base and covered by topsoil and vegetation.

The final regulation requires (in Subpart G) the approval, disapproval or modification of the closure plan by the Regional Administrator, after opportunity for public comment. This process is necessary to assure that closure plans will achieve the objectives specified with an adequate degree of confidence.

Because it has been modified substantially, the regulation on landfill closure is being promulgated interim final and the Agency will consider additional comments on it. Many comments on the proposed regulation severely criticized it for being too inflexible. The Agency believes that the present regulation responds to these comments by creating an extremely flexible system under which all pertinent characteristics of an individual facility can be considered in determining how it should be closed. Since the system leaves so much latitude for the creation of individual closure plans, those plans will need to be reviewed on a case-by-case basis by Regional Administrator to assure that the objectives of the regulations are achieved.

The Agency believes that the importance of proper closure justifies this interaction with the Regional Administrator during the interim status period. The closure and post-closure requirements are essential for protection of human health and the environment in the long-term (after post-closure care period). Unless certain precautions, such as a stable and properly designed cover and future site use controls, are taken, there is a high likelihood of future

ground water, surface water, or air contamination or direct exposure of the public to hazardous waste. Operating existing leachate collection systems, gas control systems and ground-water monitoring systems throughout the post-closure care period are essential to eliminating future environmental problems and determining when post-closure care can be terminated.

**7. Post-Closure Care.** In order for the final cover to satisfy the specified objectives, it must be properly maintained following closure. This is also true of certain monitoring and control measures, such as ground-water monitoring systems.

EPA received few comments on the proposed post-closure care requirements. Nonetheless, some modifications have been made to accommodate changes made in other sections of the regulations. Post-closure maintenance of a leachate monitoring system (unsaturated zone monitoring) is not required for all facilities because such monitoring systems are no longer required. (See the discussion on Subpart G requirements.) A requirement that existing leachate collection and removal systems be maintained, however, has been substituted. Hazardous leachate may continue to be generated within the landfill long after the site is closed, even with a relatively impermeable cover. The Agency believes that, in order for an installed leachate collection system to achieve its purpose, leachate must be removed as it is generated, even after closure.

The one post-closure requirement which did generate a number of comments was the restriction against constructing buildings on closed landfills where radioactive wastes were disposed of. The Agency agrees with commenters to the extent that concern about radiation (uranium and phosphate wastes) was the basis for this regulation and that such building restrictions should be placed in regulations dealing specifically with those wastes. EPA expects to promulgate requirements for such wastes in its Phase II regulations.

Other commenters suggested that all construction or other activities which would damage the final cover should be prohibited. The Agency concurs, in general, and has added a requirement in § 265.117(c) that activities which could disturb the integrity of the final cover or any liners or the function of the monitoring systems, are not allowed without the Regional Administrator's approval under specified criteria.

While the post-closure care regulation has not changed radically from the proposed regulation, it is being promulgated interim final along with the

closure regulation because the two form an integrated package. Comments will be considered on the post-closure care regulation along with the closure requirements.

**8. Ignitable or Reactive Waste.** The proposed regulations prohibited disposing of ignitable or reactive waste in a hazardous waste landfill unless certain conditions were met: airborne contaminants could not exceed a specified concentration and there could be no damage to the structural integrity of the facility.

Several commenters claimed that this provision "banned" landfilling of ignitable or reactive waste. The commenters suggested that these wastes can be placed in a landfill in a way, such as by blending with soil or other materials, that eliminates or minimizes the danger of fires or explosions.

The final regulation now requires that ignitable or reactive wastes be treated or mixed before or immediately after being landfilled so that they are no longer ignitable or reactive. Mixing the waste with soil or other material before, during, or immediately after the waste is placed in the landfill is allowed if the resulting mixture is neither ignitable nor reactive. This treatment must meet the general requirements for handling ignitable, reactive, or incompatible wastes in § 265.17(b). As explained previously, the provision in the proposed regulation concerning volatility has been deferred.

**9. Incompatible Wastes.** Incompatible wastes or materials can react when they come in contact with each other, resulting in the substances or reactions listed in Appendix V, such as fires, explosions, or formation of toxic gas. Such contact can be prevented by placing incompatible wastes in separate landfill cells, as proposed in the landfill regulations.

Commenters supported this concept: some suggested specific degrees of separation, e.g., certain soil thickness, or separation based on waste properties. The Agency found no basis for any specific waste separation requirement because so many site-specific variables are pertinent, such as characteristics of the liner or separation material, (e.g., permeability and thickness), special relationship of cells (e.g., above or on the side of the other), cover material, and waste characteristics. Therefore, no specific separation requirement is included in the final regulation.

Comments received on other sections of the proposed regulations indicated that potentially incompatible wastes can be premixed or treated before or during disposal so that they are no longer incompatible. Therefore, the final

regulation has been revised to allow the placement of incompatible wastes in the same cell, if they will meet the general requirements for incompatible wastes in § 265.17(b).

**10. Bulk Liquid Waste.** The disposal of liquid hazardous waste, both bulk and containerized, was the most controversial area of the proposed landfill regulations. The proposed regulation specified that bulk liquid, semi-solid, and sludge wastes must not be disposed of in a landfill, unless they were pretreated or treated in the landfill "so that a non-flowing consistency is achieved to eliminate the presence of free liquids prior to final disposal in a landfill." The purpose of this proposed regulation was to reduce the presence of liquid wastes and free liquids in a landfill.

Liquid wastes and free liquids can migrate through a landfill, dissolving or mobilizing toxic substances in the process. In other words, liquid in a landfill usually becomes a transport and leaching medium. The resultant leachate produces a hydraulic head greater than that resulting from precipitation alone. The additional liquids, leaching, and head can increase the amount and rate of movement of hazardous contaminants from the landfill to ground water.

Comments on the proposed regulation ranged from suggestions that liquid wastes should be categorically banned from landfills to suggestions that there should be no restrictions placed on landfilling of liquid wastes. There were also comments that the regulations should allow absorption of liquid wastes by municipal refuse and allow in-situ absorption via a well or pit in the landfill.

The Agency believes that there are controlled conditions under which liquids in landfills can be tolerated. For example, with a secure liner (chemically and physically resistant to the liquids and of low permeability) and a leachate collection and removal system, leachate can be removed from above the liner continuously to prevent build-up of a hydraulic head. The low permeability of the liner should result in no migration or a very slow rate of migration through it. The collected leachate can then be either treated and disposed of in the facility, or otherwise disposed of. Thus, if a landfill has a leachate collection system, in-situ absorption can be environmentally acceptable. The final regulation therefore allows in-situ absorption of bulk liquid wastes provided the landfill has a chemically and physically resistant liner and a functioning leachate removal system, and provided the capacity to remove the hydraulic head is not exceeded.

Where a landfill does not have a leachate collection and removal system, however, liquids in the landfill will eventually migrate and will usually carry pollutants out of the landfill and into ground water. The many incidents of ground-water contamination from poorly operated hazardous waste landfills testify that this is a common problem. In addition, when liquid wastes are disposed of directly into a landfill without assuring absorption, there is no way of knowing whether they are largely being absorbed and held by solids in the landfill, or are passing through relatively quickly. Liquid migration can, however, be greatly reduced if liquid wastes and wastes containing free liquids are treated before being landfilled, as by mixing with absorbent materials, so that free liquids are no longer present. The regulations require such treatment in landfills that do not have appropriate leachate collection and removal systems. Treating the liquid waste before it is landfilled gives visual control of the liquid to absorbent ratio, allows testing to confirm absorbent capacity, and assures slow release; these are not possible when in-situ absorption is practiced. Examples of absorbent materials which may be acceptable include soil, fly ash, and cement kiln dust. EPA discourages the use of biodegradable municipal waste as an absorbent until studies prove its long-term effectiveness.

A number of commenters asked for definitions of the terms "non-flowing", "semi-solid", "sludge", or "free liquids", which were used to describe hazardous wastes in the proposed regulations. A number of suggestions were given as to how or how not to define these terms. After review of these comments, EPA has decided to use the term "free liquids", defined as "liquids which readily separate from the solid portion of a waste under ambient temperature and pressure." This term and meaning best reflect the use to which this term is put, which is to distinguish when a waste contains liquids which will readily flow from the waste in a landfill to produce leachate. For sludges or semi-solids which are not obviously liquids, the following test may be used to determine if they contain "free liquids." Place a one to five kilogram (2.2 to 11.0 lbs) sample of waste on a level or slightly sloping plate of glass or other similarly flat and smooth solid material for at least five minutes. If a liquid phase separation is observed, the waste contains "free liquids." EPA feels this test provides a practical way to test sludges and semi-solids and helps

clarify the meaning of free liquids until a more rigorous test is devised.

The test is intended to simulate, in a simple way, the behavior of semi-solid wastes placed on the surface of a landfill. If liquids can be observed as a separate phase draining over an impermeable substrate from the base of a small sample of the waste, such liquids can also be expected to drain from the waste itself when it is placed on the surface of the landfill, and will be free to migrate into the landfill much as liquid wastes would. The fact that liquids cannot be observed to migrate from a small sample after a few minutes does not, of course, assure that they will not migrate from a larger sample, or after a longer period of time, or when the waste is compressed by wastes placed over it. This test thus represents a rough minimum for the containment of free liquids. The Agency expects to study the problem of free liquids further and to attempt to devise tests which more accurately reflect the conditions of waste within a landfill. The Agency specifically solicits further comments on (1) difficulties that may be expected in applying the test, and (2) suggestions for other tests or improvements to this test which will better test for the presence of liquids which can relatively easily migrate from wastes.

Alternatives to direct disposal of liquid wastes in landfills include mixing the wastes with an absorbent material prior to landfilling, as described previously, chemically fixing or solidifying the wastes before landfilling, dewatering before landfilling, treating the wastes to render them non-hazardous, well injection, incineration, resource recovery, and storage in containers, tanks, and surface impoundments. These options may be impossible for some wastes. Taken separately, facility capacities for these options may be limited in the region of waste generation, or may require a long lead time to develop; nationally, no single option can handle all the hazardous liquid and semi-solid wastes. Taken together, however, EPA believes these options can provide the required storage, treatment, and disposal capacity to offset the amounts of liquid wastes currently disposed of by practices prohibited by this regulation. Indeed, this kind of prohibition is already being implemented in some States. At least 19 States already prohibit or restrict the disposal of bulk liquid wastes in landfills:

Although these provisions for bulk liquid wastes were included in the proposed general standards, they were not included in the interim status

standards. The Agency believes that while treating liquid wastes will increase operating costs, it will not entail great capital expenditures for equipment or facilities. In addition, methods implemented during the interim status period to comply with the regulation will not require case-by-case determinations by Agency officials. However, the Agency believes that generators, and owners and operators of facilities may need more than six months to identify and develop alternatives to landfilling bulk liquid wastes. The Agency has, therefore, delayed the date for compliance with this regulation for 12 months past the effective date of the regulations.

While this regulation has not changed substantially from the one proposed for the general standards for landfills, it is being promulgated interim final primarily because it generated so much comment but so little data when proposed. Some of the comments requested clarification of the terms "semi-solid," "non-flowing," "sludge," and "free liquids." The Agency believes that its definition and test for free liquids adequately respond to these comments.

Other comments fell in a spectrum from contentions that liquids should be banned from landfills to contentions that liquids in landfills should not be restricted at all. Few of these comments, however, provided any data or much argument explaining why they adopted a particular position. The Agency solicits comments on the regulation and is particularly interested in comments on (1) what data, if any, is available to show that landfilled liquids can confidently be expected to be absorbed and immobilized by other waste in the landfill; (2) the nature and extent of treatment that commenters would expect to conduct at landfills in compliance with the regulation; (3) alternatives to landfilling liquids and wastes containing free liquids that commenters would expect to pursue as a result of the regulation; and (4) the nature of the additional hazards, if any, that commenters expect to be created by this regulation, and how they may compare to the ground water pollution hazards that the regulation attempts to alleviate.

**11. Containerized Liquid Waste.** The proposed regulation required that each container of liquid hazardous waste be surrounded by a sufficient amount of inert sorbent material to absorb all the liquid contents of the container. Since containers are known to eventually decay in a landfill environment, this requirement was intended to prevent

migration of liquid waste by providing an absorbent medium.

Commenters expressed diverse opinions on the proposed regulation, ranging from suggestions that containerized liquid wastes be banned totally, to suggestions that their placement in landfills not be restricted at all. Alternatives schemes were suggested for providing absorption capacity within a landfill, such as placing absorbent material inside a container, or surrounding a group of containers (rather than single containers) with absorbent material. The requirement that the absorbent be "inert" was also challenged.

Based on further Agency analysis, the final regulation generally prohibits disposal of containerized liquid wastes or wastes containing free liquid in landfills. Drums eventually degrade, allowing liquids to escape. When drums collapse and create voids, they can cause slumping and subsidence of the cover. This may increase the infiltration of precipitation and can also result in the escape of wastes through cracks or fissures in the final cover. Furthermore, there is no assurance that the liquid waste will be fully absorbed in surrounding material. It is difficult to predict the absorbent capacity of a material buried in a landfill. For example, the absorbent material itself may have decayed by the time a drummed liquid is released or may have already been saturated with moisture from another source (such as infiltration or moisture from the decay of organic wastes). Liquid wastes released from a drum also will most likely form channels from the point of leakage rather than be evenly absorbed. In addition, it is impossible to predict when drums will fail in a landfill environment. This is a particularly critical uncertainty in that failure could occur after the post-closure care period when facility maintenance and ground-water monitoring are no longer performed. Conversely, it would be impossible to establish a rational termination of the post-closure care and financial responsibility period if the stability of the cover and liquid waste release were so uncertain. In contrast, if drummed liquids are mixed with absorbent materials, as bulk liquid wastes must be, a history of trouble-free operation and post-closure monitoring is a much surer indicator that the landfill will continue to be free from ground-water contamination after post-closure care and monitoring cease.

For these reasons, EPA believes that a prohibition on placing containerized liquid waste, or waste containing free liquids in landfills will provide more

effective control than the proposed operating restrictions. At least 11 States already prohibit or restrict disposal of containerized liquid wastes at landfills.

The alternatives to landfilling containerized liquid wastes are essentially the same as those for bulk liquid wastes, except that storage of the containers probably will be simpler than finding storage for bulk liquid wastes. Thus, the same reasons exist for providing a 12 month delay in the date for compliance with this regulation.

The Agency believes that some containerized liquid wastes will be emptied and treated before being placed in a landfill. Removing liquid wastes from drums may increase the likelihood of waste spills and will most likely result in increased air emissions from volatile waste. Although these interim status regulations do not currently address volatile waste, the Agency expects to do so in the Phase II and Phase III regulations as information becomes available, and may amend these interim status regulations where appropriate. Additionally, the Agency believes that until the problem of volatile emissions can be dealt with in a more satisfactory manner, volatile hazardous waste should generally not be placed in any disposal facility. Opening drums containing liquid hazardous waste, particularly volatile waste, requires special safety precautions, such as ventilation or use of respiratory equipment. However, adequate handling methods are currently used at some facilities to safely dispose of bulk liquid wastes, and to empty containers holding waste with free liquids. These methods can generally be employed at other landfills as well.

The prohibition on landfilling containers (empty or full) applies to 55-gallon drums and other similar containers, but does not apply to devices which function as a container for hazardous waste during their useful life, such as batteries or capacitors or to very small containers such as ampules. These types of containers are not likely to contribute substantial volumes of liquid to most landfills, and the difficulty of opening and emptying them appears to outweigh the small benefit gained.

Since this regulation has been modified substantially from the one proposed for interim status, it is being promulgated interim final. Comments are solicited on the regulation and especially on the four points listed previously under "Bulk Liquid Wastes."

**12. Empty Containers.** The Agency also is concerned that empty containers buried in a landfill can collapse and disrupt the final cover. Therefore, the

landfilling of empty containers is also prohibited. Each empty container must be crushed flat, shredded, or in some other manner reduced in volume, before being incorporated into the landfill. EPA assumes that most empty containers will be crushed by landfill equipment prior to or during disposal in the landfill. Current procedures in at least six States already call for empty drums to be crushed before disposal in a landfill.

Since the proposed regulations did not contain a requirement for the disposal of empty containers, the Agency is promulgating this regulation interim final. The Agency solicits comments on this regulation, especially (1) on the nature and extent of activities which commenters expect to conduct in compliance with the regulations, and (2) how these activities relate to the management of emissions during the disposal of volatile hazardous waste.

#### *N. Subpart O—Incinerators*

Incineration is a relatively well-developed and well-understood technology. Properly executed, it can accomplish safe destruction of primarily organic hazardous waste, permanently reducing large volumes of waste materials to non-toxic gaseous emissions and small amounts of ash and other residues. Incineration can often provide an optimum, permanent solution to hazardous waste management with minimal long-term ecological burden.

The proposed § 250.45-1 technical performance and design requirements for incineration cannot be implemented during interim status. The time and costs of upgrading most existing facilities to comply with these standards would be considerable, and the designs would require EPA approval during the permitting process. As a result, the Agency has developed a few general operation requirements for incineration which can be implemented during the interim status period. These standards will improve operating procedures by eliminating some practices which have resulted in problems in the past.

Technical criteria for issuing permits will be promulgated during Phase II of the RCRA regulatory program. These will be accompanied by a design and operation guidance manual which will assist permitting officials and the regulated community in evaluating the adequacy of specific incinerators. Most of the specific, quantitative design, operation, and performance requirements will be issued when adequate technical support for these standards can be firmly established.

The Phase I regulations apply to incinerators which burn hazardous waste regardless of their size, capacity,

physical or mechanical type, or geographical location. The incineration of gaseous, liquid, semi-solid, and solid hazardous waste, and blends thereof, is subject to these regulations. The incineration of combustible wastes of varying heating values, as well as aqueous and other wastes which may require co-incineration with auxiliary fuels, is also subject to the Subpart O standards. Boilers which burn waste primarily to recover energy are not now covered by Subtitle C of RCRA.

These standards were not proposed to be effective during the interim status period. However, as comments suggested, the Agency believes that several of the proposed "good operating practice" regulations can beneficially be instituted during interim status to reduce hazards associated with poor operating procedures. The incineration standards for the interim status period are being promulgated interim final, and the Agency will accept comments on them. To some extent, these standards are derived from parts of the proposed regulations. An analysis of the major comments received on these parts of the proposed § 250.45-1 standards follows.

Several commenters felt that RCRA was not intended to regulate incineration, contending instead that the Clean Air Act is the appropriate vehicle for regulating incinerators. To support their argument, these commenters claimed that Section 1004(3) of RCRA (which defines "disposal") spoke in terms of land disposal situations involving primarily water and soils, and was not relevant to incineration.

The Agency disagrees with this argument. Incineration is in fact a treatment process. It meets the definition of "treatment" in Section 1004(34) of RCRA:

\* \* \* any method, technique, or process, including neutralization designed to change the physical, chemical, or biological character or composition of any hazardous waste so as to neutralize such waste or so as to render such waste non-hazardous, safer for transport, amenable for recovery, amenable for storage, or reduced in volume \* \* \*

The objective of incinerating hazardous waste is normally to change the physical form or chemical composition of the waste so as to render it less hazardous. Incineration may also render the waste "safer for transport, amenable for recovery, amenable for storage, or reduced in volume." Therefore, incineration is a treatment process within the meaning of RCRA, and the Agency has a mandate to produce operation, location, design, and construction regulations for the incineration of hazardous waste adequate to protect human health and

the environment. The interaction of RCRA and the Clean Air Act is discussed above.

1. *General Operating Requirements.* Some commenters requested that a specific period of time during start-up and shutdown be designated, during which the proposed performance standards (for combustion and destruction efficiency) would not apply. These commenters claimed that during these periods, temperature and other combustion conditions are subject to wide fluctuations, and thus, obtaining the required destruction efficiencies during these times would be difficult. The Agency agrees that these fluctuations can occur during start-up periods, and believes that this undoubtedly results in hazardous emissions. To counter this problem, the final rules require that incinerators achieve normal steady state combustion conditions, using auxiliary fuel, before wastes are introduced.

2. *Monitoring and Inspections.* A number of comments were received on the proposed monitoring and facility inspection requirements. Commenters raised questions about the expense and reliability of the required gaseous monitoring equipment, the frequency of inspection, and the specification of monitoring points. Detailed monitoring requirements and the comments on these requirements will be addressed in the Phase II and Phase III regulations. In these Phase I rules, the Agency has specified a minimum schedule for monitoring and inspecting the operation of incinerators. Combustion and emission control equipment must be monitored, and operating corrections made when necessary, at least every 15 minutes, to ensure that critical conditions are not allowed to vary in an uncontrolled manner. In addition, inspection points, such as visible stack emissions and critical pumps, are also required to be inspected in accordance with both the minimum frequencies specified in the Subpart O standards, and in the facility inspection Schedule (see preamble discussion on "Inspections").

3. *Waste Analysis.* The requirements for waste analysis were contained in the General Facility Standards section of the proposed regulations. As explained earlier in the preamble discussion entitled "Waste Analysis", each technical section of the final rules contains waste analysis requirements specific to the management method regulated in that section. Accordingly, the final Subpart O standards include waste analysis requirements which specify the parameters and constituents

for which each type of waste must be analyzed. This analysis will enable the operator to determine the type of pollutants which might be emitted from the incinerator and to estimate the necessary combustion conditions. In addition, the final general waste analysis rules require that each shipment be inspected and, if necessary, analyzed to verify that the waste actually received at the facility is the same as that which was expected. The waste analysis standards specified in Subpart O are minimum procedures necessary to adequately operate an incinerator. Most reputable hazardous waste incineration operators currently obtain considerably more detailed information on a new waste before incinerating it than these standards require. All testing required in Subpart O is to be included in the waste analysis plan discussed above.

4. *Energy Recovery.* Some commenters claimed that many waste oils and solvents are usable as fuels and are hazardous only because of their ignitability, and that too great an economic burden would result from subjecting these relatively easily combusted materials to the detailed combustion, monitoring, and other requirements specified in the proposed rules. The Agency has decided that the burning of hazardous waste for energy recovery will not now be covered under the hazardous waste provisions of RCRA. (However, storage or transportation of listed hazardous waste prior to energy recovery is covered by these regulations.) Accordingly, if waste oils and solvents are burned as a fuel in a boiler primarily to produce steam or usable energy, this action is not now covered by these regulations.

Facilities in which hazardous wastes are burned, and in which energy recovery is only incidental or minimal, are subject to the Subpart O incinerator standards. Examples of activities covered by these regulations include (1) coincinerating wastes with high thermal value to help offset the lack of thermal value in other waste, and (2) destroying wastes in an incinerator to which a waste heat recovery boiler has been added. The decision as to whether a facility is subject to the Subpart O standards depends on the primary purpose of the unit in which the waste is destroyed. If the primary purpose is to provide steam, such as in a power boiler, the operation is not covered. If the primary purpose is to treat wastes, then the unit is subject to the Subpart O standards.

5. *Closure.* At closure, all hazardous waste and hazardous waste residues

(including ash, scrubber waters, and scrubber sludges) must be removed from the incinerator.

Commenters noted that the proposed rules did not specifically address residues from incinerators. Pursuant to § 261.3(e), residues removed from hazardous waste incinerators are considered to be hazardous wastes, and they must be managed as hazardous wastes in accordance with all applicable requirements of Parts 262, 263, and 265, unless the owner or operator can demonstrate that the residue is not a hazardous waste. The incinerator operator is a "generator" with regard to such wastes, unless they are exempted. A comment to this effect has been added to the final rules.

#### *O. Subpart P—Thermal Treatment*

Because incineration is the most prevalent method currently used to thermally treat hazardous waste, both the proposed and final rules contain a separate section specific to this waste management technique. However, incineration is only one type of management process that can be used to thermally treat hazardous waste. There are several less conventional methods that are being developed as an alternative to classic incineration. For example, an EPA research and development program is exploring the performance characteristics of a microwave discharge system for destruction of toxic compounds in gaseous, liquid, and solid forms. Currently, the system has been found successful, with some inherent limitations, for treating certain toxic organic compounds.

Several commenters were concerned that, because the proposed rules contained no requirements applicable to methods other than incineration to thermally degrade hazardous waste, the proposed rules might discourage the development and utilization of alternative thermal treatment processes.

The Agency intends to encourage the development and use of these emerging technologies. Therefore, the final rules contain a separate Subpart specific to thermal treatment processes other than incineration. In addition, a definition of "thermal treatment" has been added to the final rules to more explicitly define the relationship between incinerators and other thermal treatment devices. Thermal treatment is defined as:

"the treatment of hazardous waste in a device which uses elevated temperatures as the primary means to change the chemical, physical, or biological character or composition of the hazardous waste. Examples of thermal treatment processes are incinerators, molten salt pyrolysis,

calcination, wet air oxidation, and microwave discharge."

Incinerators are a subset of the thermal treatment class; thus, most of the Phase I Subpart P standards for thermal treatment facilities are similar to the Phase I Subpart O incinerator standards. This section of the preamble only discusses those aspects which differ.

The interim status standards require that thermal treatment processes achieve steady state (normal) conditions of operation before introducing hazardous waste. The rationale for this requirement is the same as for incinerators. The steady state requirement for thermal treatment has been modified because some acceptable thermal treatment processes may not operate in a steady state manner (e.g., batch-wise or non-continuous processes in which waste is introduced to the treatment chamber prior to the application of heat).

Although not proposed as an interim status standard, a ban on open burning of hazardous wastes was contained in the General Facility Standards section of the proposed regulations. This requirement has been incorporated into the interim status standards for thermal treatment because the potential human health hazards associated with the practice dictate that open burning be ended now. Comments received on the proposed standard centered around the military's need to dispose of explosives in the open. The Agency agrees that open burning and open detonation are currently the only alternatives for disposal of most munitions, and thus a modified and more detailed version of the proposed variance for waste explosives has been retained in the final rules.

Waste explosives and bulk propellants are inherently dangerous to cut or disassemble to make them amenable to present thermal treatment technologies. This hazard is demonstrated by the number of damage incidents that have occurred during cutting and handling processes at explosives manufacturing facilities. Open burning and open detonation of known types and amounts of bulk propellants and explosives can be conducted safely without harm to human health and the environment.

The Agency has decided to allow open burning and open detonation of waste explosives during the interim status period, provided that it is conducted at minimum distances from the property of others. These minimum separation distances were developed and published by the Department of

Defense. The interim status standards for open burning allow small amounts of explosives (up to 100 pounds) to be open burned or open detonated at a minimum of 204 meters (670 feet) from locations where there may be persons in the open (e.g., the property of others), and succeeding greater distances for greater amounts of explosives. These limits were developed by DOD as minimum safe distances for the protection of persons in the open from fragmentation, flying debris, or the effects of overpressure. Since DOD does not provide safe distances for protection from fragmentation for amounts of explosive waste larger than 30,000 pounds, the Agency has limited the amount of explosive waste that can be open burned at any one time to 30,000 pounds.

Technical performance and design requirements for thermal treatment processes are being developed. These technical criteria will be addressed during Phases II and III of the RCRA regulatory program. These standards will be accompanied by a design and operation guidance manual, which will assist permitting officials, the regulated community, and the public in evaluating the adequacy of specific types of thermal treatment processes.

#### *P. Subpart Q—Chemical, Physical, and Biological Treatment*

The proposed regulations covered the treatment of hazardous waste primarily by setting standards for treatment in basins (now tanks), surface impoundments, land treatment facilities, and incinerators. While these are the primary kinds of equipment or facilities used to treat hazardous waste, chemical, physical, and biological treatment of hazardous waste can also be conducted in other types of equipment by processes such as distillation, centrifugation, reverse osmosis, ion exchange, and filtration. The proposed regulations contained a section designed to regulate such chemical, physical, and biological treatment. Because there are many different types of possible processes, and because the processes are frequently waste-specific, EPA has not attempted to develop detailed regulations for any particular type of process or equipment.

The Agency's primary concerns in developing these regulations has been, as it has been for other types of facilities and equipment, the safe containment of hazardous waste, hazardous waste constituents, and treatment byproducts through waste analysis, inspections, special attention to the handling of ignitable, reactive, or incompatible wastes, and proper closure. In these

respects, most chemical, physical, and biological treatment operations present essentially the same problems and require essentially the same solutions as the treatment of hazardous wastes in tanks. The equipment is typically stationary and fairly large, and the materials used and the problems encountered in that part of the equipment which contains the waste are not dissimilar from the materials used and the problems encountered in constructing tanks.

In addition, as discussed above in Subpart J, the Agency has reoriented its tank regulations to cover treatment in tanks as well as storage, and many of the current tank regulations have been drawn from the proposed regulations for chemical, physical, and biological treatment. For these reasons, the present regulations for chemical, physical, and biological treatment and for tanks have both been derived from a merging of the proposed regulations for these types of equipment, for basins (which are now treated as tanks), and for storage and treatment generally. The tank regulations and the chemical, physical, and biological treatment regulations are now essentially identical, and the rationale for the regulations on chemical, physical, and biological treatment is therefore presented above with the rationale for the regulations on tanks.

The Agency expects to develop somewhat more specific standards for chemical, physical, and biological treatment facilities in the Phase II and Phase III regulations, and for this reason these regulations have been incorporated in a separate Subpart.

The regulations for chemical, physical, and biological treatment (Subpart Q) differ from those for tanks (in Subpart J) in one respect. Subpart Q contains no requirement for maintaining a freeboard or inspecting to ensure that the freeboard is maintained because, to the Agency's knowledge, the treatment processes regulated under Subpart Q are conducted in covered containment devices, and a freeboard is unnecessary.

EPA received a number of comments on its proposed Section 3004 regulations requesting the Agency to clarify whether pipes and other types of totally enclosed facilities in which hazardous waste may be treated would be considered hazardous waste treatment facilities and would be required to meet Section 3004 standards and obtain a permit. Commenters pointed out that in some production processes, wastes (particularly acid and alkaline solutions) are treated in-pipe, often resulting in a non-hazardous discharge.

EPA agrees that to classify "totally enclosed treatment systems," such as pipes, as hazardous waste treatment facilities and to require them to meet Section 3004 standards and obtain a permit would not make a great deal of sense. These facilities by definition do not release wastes or waste constituents into the environment, and therefore stringent controls are not "necessary to protect human health and the environment." Such controls might also discourage the use of such facilities, which in many ways represent the optimum in good waste management practices. It may also be very difficult as a practical matter to permit or otherwise regulate these types of facilities—many are indoors, are part of complicated plumbing systems which do not fall within RCRA's jurisdiction, and do not have clearly defined starting and end points. Accordingly, EPA has excluded these facilities from regulation under this Part.

Persons who handle hazardous waste in what they believe to be a "totally enclosed treatment facility" should carefully read the definition of that term in § 260.10 of this Chapter. The key characteristic of such a facility is that it does not release any hazardous waste or constituent of hazardous waste into the environment during treatment. Thus, if a facility leaks, spills, or discharges waste or waste constituents, or emits wastes or waste constituents into the air during treatment, it is not a "totally enclosed treatment facility" within the meaning of these regulations.

Another important characteristic of a totally enclosed treatment facility is that it must be directly connected to an industrial production process. Thus, such a facility located at an off-site hazardous waste management facility does not qualify for exclusion from these regulations.

After treatment in a totally enclosed treatment facility, the resulting discharge, treatment residue, etc., may be a hazardous waste and subject to regulation under this Part. Owners and operators of such facilities should consult § 261.3 of this Chapter to determine whether that is the case.

#### *Q. Subpart R—Underground Injection*

Under § 250.40(e)(6) of the proposed regulation, the disposal of hazardous wastes via underground injection, pursuant to the Safe Drinking Water Act (SDWA) regulations, was not subject to regulation under the RCRA Subtitle C program. That exclusion was based on Section 1006 of RCRA which requires the Administrator to integrate RCRA regulations with programs under the Agency's other statutory authorities,

including the Safe Drinking Water Act. Commenters were generally supportive of EPA's efforts to coordinate its programs, but some expressed concern that exclusive reliance on the Underground Injection Control program under the SDWA in addressing the environmental problems presented by underground injection of hazardous wastes would not fully satisfy the key health and environmental concerns embodied in RCRA.

Based on a review of the comments and further analysis of this issue, EPA has concluded that underground injection of hazardous wastes must be regulated under RCRA during the interim status period. Thus the Agency has developed Subpart R in Part 265 which specifies the particular standards applicable to disposal of hazardous waste by underground injection. In addition, owners and operators of hazardous waste injection wells will be subject to the general requirements (other than Subparts G and H) applicable to all hazardous waste treatment, storage, and disposal facilities. The Agency recognizes that some of these general requirements may not apply directly to all underground injection of hazardous waste, in the same sense that some may not apply directly to all other types of hazardous waste facilities. The requirements, however, are written with sufficient flexibility and variances to accommodate the differences among facilities, including the somewhat different aspects of underground injection.

Underground injection of hazardous waste constitutes "disposal" as that term is defined in Section 1004(3) of RCRA. The definition specifically includes "injection . . . of any solid waste or hazardous waste into or on any land or water." Moreover there is no specific language in the Act indicating that injection activities that may be subject to the SDWA are necessarily beyond RCRA jurisdiction. RCRA was enacted after the SDWA. The Congress, therefore, had an opportunity to impose any specific limits on RCRA jurisdiction that it deemed appropriate. It is significant that the Congress did place limits on RCRA jurisdiction to coordinate RCRA programs with the Clean Water Act. For example, the definition of "solid waste" under RCRA excludes "solid or dissolved materials in . . . industrial discharges which are point sources subject to permits under Section 402 of the Federal Water Pollution Control Act." No such statutory exclusion exists for

underground injection of hazardous wastes.

Section 1006 does require the Administrator to integrate the provisions of RCRA with appropriate provisions of various statutes (including the SDWA) which EPA administers. Such integration is only required, however, "to the extent that it can be done in a manner consistent with the goals and policies expressed" in RCRA and the other statutes.

When EPA's statutory authorities provide overlapping jurisdiction over certain activities it is within the discretion of the Administrator to decide which program will be used to regulate the activity. In order to implement the goals and policies of each law, the Administrator will incorporate the key elements of each statute into its regulatory program. Section 1006 of RCRA provides statutory recognition that such coordinated regulatory programs are appropriate.

In evaluating the proposed regulation, EPA decided that complete reliance on the UIC program to handle underground injection of hazardous waste during the interim status period could not adequately address three key RCRA concerns. First, RCRA is aimed at protection of a broad range of environmental media, including groundwater, surface water, air, and land. The UIC program is directed at the protection of underground sources of drinking water. Second, Section 3004 of RCRA requires the Administrator to establish standards "to protect human health and the environment." This language indicates that RCRA regulations were to address a broader range of environmental problems than the UIC program. Third, the UIC program does not have the equivalent of an interim status period when owners or operators who dispose of hazardous waste by underground injection are subject to Federally enforceable standards. Enforcement of environmental controls under the UIC program must await: the identification of States needing a program; the development of State programs for primary enforcement responsibility; the approval or disapproval of those programs by EPA; and the development of UIC programs by EPA in States which fail to develop and implement adequate programs for primary enforcement responsibility. EPA does not believe that UIC primary enforcement programs will be in place in all States on the effective date of these interim status regulations. Therefore, in order to provide control over underground injection of hazardous waste during the interim status period,

as contemplated by RCRA, it is necessary to regulate underground injection under these regulations.

Section 1006 directs the Administrator, in the coordination of EPA's other statutes with RCRA, to avoid duplication and to structure RCRA regulations so that they will not be inconsistent with the requirements of other statutes (such as the SDWA). EPA is mindful of that requirement and intends to coordinate the later stages of the RCRA and UIC programs so that the key elements of the statutory scheme in the SDWA will be preserved. EPA does not believe, however, that the regulation of underground injection of hazardous wastes in these interim status regulations is inconsistent with the SDWA. As mentioned earlier the UIC program does not have the equivalent of an interim status period. Thus there can be no conflict with SDWA provisions.

The regulation of underground injection during interim status was not a part of the proposed regulation, but the decision to do so was partially based on factors raised in public comments. Moreover, the Agency does not expect that the application of some of the general requirements, otherwise required at all facilities, to underground injection raises substantially different issues than those raised and addressed in the development of the interim status regulations. Therefore, the inclusion of underground injection in these regulations and the application of certain general requirements to injection wells are being issued as "interim final." This approach provides for prompt implementation of regulations concerning these practices, in keeping with RCRA goals and policies, while allowing an opportunity of public comment to reveal any unique problems that may arise in applying the general requirements of the interim status regulations to underground injection.

Underground injection will not, however, be subject to Subpart G and H of the interim status regulations which address closure and post-closure care as well as the financial requirements necessary to ensure implementation of closure and post-closure care requirements. Requirements for closure and post-closure care need to be coordinated with the more specific technical requirements applicable to underground injection. EPA has decided, therefore, to address closure and post-closure as part of the proposed regulation described below.

Subpart R of these regulations indicates those parts of the regulation which are not applicable to underground injection. In addition it should be recognized that the ground-water

monitoring requirements of Subpart F have not been applied to underground injection at this time. Subpart R also indicates that it applies to Class I and Class IV wells as those term are defined under § 122.32 of the consolidated permitting regulations.

This provision is designed to show that these regulations cover, at a minimum, those underground injection facilities that will be subject to control under the UIC program.

The Agency is proposing regulations that provide more specific requirements to deal with the particular environmental problems presented by underground injection. These proposed regulations will amend Subpart R and will address issues relating to direct injection of hazardous waste, general operating requirements, waste analysis, monitoring, closure and post-closure care, recordkeeping and reporting, and special requirements for ignitable, reactive or incompatible wastes.

#### VI. OMB Review

The sections of the regulations issued under Section 3004 of RCRA pertaining to recordkeeping and reporting have been submitted to the Office of Management and Budget for review in light of the requirements of the Federal Reports Act, 44 U.S.C. § 3501 *et seq.* Time has not permitted completion of this review.

#### VII. Supporting Documents

The Agency has developed or will prepare two sets of documents in conjunction with the Section 3004 rules. This section of the preamble describes these documents.

##### A. Background Documents

Eighteen background documents have been developed to explain and respond to comments on the Phase I rules. Additional documents will accompany the Phase II and Phase III regulations as they are published. These background documents basically correspond to each Section or Subpart of the final rules. Each contains an explanation of the data and reasoning which led the Agency to propose each regulation, an in-depth review of the comments received on the regulation, an analysis of the comments, and the Agency's rationale for accepting or rejecting these comments.

Copies of these documents will be available for review in the EPA regional office libraries and at the EPA headquarters library, Room 2404, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460. EPA will publish a notice in the Federal Register when these documents have all been

reproduced and distributed to these libraries. They will be available from Solid Waste Information, U.S. Environmental Protection Agency, 26 West St. Clair Street, Cincinnati, Ohio 45268, within six months after these regulations are promulgated.

A list of these background documents is as follows:

1. Purpose, Scope, and Applicability (including general issues concerning Interim Status Standards)
2. General Waste Analysis Requirements
3. Security
4. General Inspection Requirements
5. Personnel Training
6. Preparedness and Prevention, Contingency Plans, and Emergency Procedures
7. Manifest System, Recordkeeping, and Reporting
8. Interim Status Standards for Ground-Water Monitoring
9. Interim Status Standards for Closure and Post-Closure Care
10. Interim Status Financial Requirements
11. Interim Status Standards for Containers and Piles
12. Interim Status Standards for Tanks
13. Interim Status Standards for Surface Impoundments
14. Interim Status Standards for Land Treatment
15. Interim Status Standards for Landfills
16. Interim Status Standards for Incinerators
17. Interim Status Standards for Thermal Treatment
18. Interim Status Standards for Chemical, Physical, and Biological Treatment.

**B. Reference Manuals**

These regulations, and those yet to be promulgated in Phases II and III, will constitute the full set of requirements for managing hazardous waste. However, their reliance on performance standards and the incorporation of variance procedures provide considerable flexibility to accommodate new technologies, special needs of specific locations, and variations in waste characteristics.

To assist both owners and operators of facilities and regulatory officials, EPA will prepare a series of design and operation manuals. These will not have the effect of regulations, but will provide guidance on how facilities may be designed and operated to meet the standards. The manuals will also provide guidance on what modifications and variations are likely to be effective under the variance procedures. They will be organized to correspond closely

to the regulations and will be based on the collective knowledge of the Agency, the literature, and experts throughout the world: Manuals will also be prepared for testing, training, and monitoring.

EPA expects to prepare the following manuals:

1. Training
2. Ground-Water Monitoring
3. Air Monitoring
4. Financial Responsibility
5. Containers
6. Tanks
7. Surface Impoundments
8. Waste Piles
9. Land Treatment
10. Landfilling
11. Incineration
12. Thermal Treatment
13. Chemical, Physical, and Biological Treatment

The Agency expects to issue these manuals before the effective date (i.e., six months after promulgation) of the Phase II technical regulations. They will be revised from time to time as more information becomes available, and as the final Phase III regulations are developed. The documents will be available for review in the EPA regional office libraries and the EPA headquarters library, Room 2404, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460. Later the Agency will publish the documents for distribution through Solid Waste Information, U.S. Environmental Protection Agency, 26 West St. Clair Street, Cincinnati, Ohio 45268.

Dated: May 2, 1980.

Douglas Costle,  
Administrator.

Title 40 is amended by adding new Parts 264 and 265 as set forth below.

The following sections are being promulgated on an interim final basis (See Preamble Section IIB3 for discussion):

**PART 264**

- Sec.  
264.12 Required Notices.

**PART 265**

**Subpart B—General Facility Standards**

- 265.12 Required notices.  
265.17 General requirements for ignitable, reactive, or incompatible wastes.

**Subpart F—Ground-Water Monitoring**

- 265.90 Applicability.  
265.91 Ground-water monitoring system.  
265.92 Sampling and analysis.  
265.93 Preparation, evaluation, and response.  
265.94 Recordkeeping and reporting.

**Subpart G—Closure and Post-closure**

- Sec.  
265.111 Closure performance standard.  
265.112 Closure plan; amendment of plan.  
265.113 Time allowed for closure.  
265.117 Post-closure care and use of property; period of care.  
265.118 Post-closure plan; amendment of plan.

**Subpart I—Use and Management of Containers**

- 265.176 Special requirements for ignitable or reactive waste.

**Subpart J—Tanks**

- 265.198 Special requirements for ignitable or reactive waste.

**Subpart K—Surface Impoundments**

- 265.228 Closure and post-closure.

**Subpart L—Waste Piles**

- 265.251 Protection from wind.  
265.252 Waste analysis.  
265.253 Containment.  
265.256 Special requirements for ignitable or reactive waste.  
265.257 Special requirements for incompatible wastes.

**Subpart M—Land Treatment**

- 265.272 General operating requirements.  
265.273 Waste analysis.  
265.276 Food chain crops.  
265.278 Unsaturated zone (zone of aeration) monitoring.  
265.280 Closure and post-closure.

**Subpart N—Landfills**

- 265.310 Closure and post-closure.  
265.314 Special requirements for liquid waste.  
265.315 Special requirements for containers.

**Subpart O—Incinerators**

- 265.343 General operating requirements.  
265.345 Waste analysis.  
265.347 Monitoring and inspections.  
265.351 Closure.

**Subpart P—Thermal Treatment**

- 265.373 General operating requirements.  
265.375 Waste analysis.  
265.377 Monitoring and inspections.  
265.381 Closure.  
265.382 Open burning; waste explosives.

**Subpart Q—Chemical, Physical, and Biological Treatment**

- 265.405 Special requirements for ignitable or reactive waste.

**Subpart R—Underground Injection**

- 265.430 Applicability

EPA will also accept comments on the propriety of including the following sections as interim status standards (See Preamble Section IIB3 for discussion):

**PART 265**

**Subpart B—General Facility Standards**

- Sec.  
265.13 General waste analysis.

**Subpart J—Tanks**

- Sec.  
265.192 General operating requirements.  
265.193 Waste analysis and trial tests.

**Subpart K—Surface Impoundments**

- 265.222 General operating requirements.  
265.223 Containment system.  
265.225 Waste analysis and trial tests.  
265.229 Special requirements for ignitable or reactive waste.  
265.230 Special requirements for incompatible wastes.

**Subpart M—Land Treatment**

- 265.281 Special requirements for ignitable or reactive waste.  
265.282 Special requirements for incompatible wastes.

**Subpart N—Landfills**

- 265.302 General operating requirements.  
265.312 Special requirements for ignitable or reactive waste.

**Subpart Q—Chemical, Physical, and Biological Treatment**

- 265.401 General operating requirements.  
265.402 Waste analysis and trial tests.

Comments should be forwarded to: RCRA Docket Clerk, Room 2711, Waterside Mall, 401 M Street, S.W., Washington, D.C. 20460.

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

**Subpart A—General**

- Sec.  
264.1 Purpose, scope and applicability.  
264.2 [Reserved]  
264.3 Relationship to interim status standards.  
264.4 Imminent hazard action.  
264.5-264.9 [Reserved]

**Subpart B—General Facility Standards**

- 264.10 Applicability.  
264.11 Identification number.  
264.12 Required notices.  
264.13 General waste analysis.  
264.14 Security.  
264.15 General inspection requirements.  
264.16 Personnel training.  
264.17-264.29 [Reserved]

**Subpart C—Preparedness and Prevention**

- 264.30 Applicability.  
264.31 Design and operation of facility.  
264.32 Required equipment.  
264.33 Testing and maintenance of equipment.  
264.34 Access to communications or alarm system.  
264.35 Required aisle space.  
264.36 Special handling for ignitable or reactive waste.  
264.37 Arrangements with local authorities.  
264.38-264.49 [Reserved]

**Subpart D—Contingency Plan and Emergency Procedures**

- 264.50 Applicability.

**Sec.**

- 264.51 Purpose and implementation of contingency plan.  
264.52 Content of contingency plan.  
264.53 Copies of contingency plan.  
264.54 Amendment of contingency plan.  
264.55 Emergency coordinator.  
264.56 Emergency procedures.  
264.57-264.69 [Reserved]

**Subpart E—Manifest System, Recordkeeping, and Reporting**

- 264.70 Applicability.  
264.71 Use of manifest system.  
264.72 Manifest discrepancies  
264.73 Operating record.  
264.74 Availability, retention, and disposition of records.  
264.75 Annual report.  
264.76 Unmanifested waste report.  
264.77 Additional reports.  
264.78-264.999 [Reserved]  
Appendix I—Recordkeeping instructions.  
Appendix II—EPA report form and instructions.

Authority: Secs. 1006, 2002(a), and 3004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), and 6924).

**Subpart A—General****§ 264.1 Purpose, scope and applicability.**

(a) The purpose of this Part is to establish minimum national standards which define the acceptable management of hazardous waste.

(b) The standards in this Part apply to owners and operators of all facilities which treat, store, or dispose of hazardous waste, except as specifically provided otherwise in this Part or Part 261 of this Chapter.

(c) The requirements of this Part apply to a person disposing of hazardous waste by means of ocean disposal subject to a permit issued under the Marine Protection, Research, and Sanctuaries Act only to the extent they are included in a RCRA permit by rule granted to such a person under Part 122 of this Chapter.

[Comment: These Part 264 regulations do apply to the treatment or storage of hazardous waste before it is loaded onto an ocean vessel for incineration or disposal at sea.]

(d) The requirements of this Part apply to a person disposing of hazardous waste by means of underground injection subject to a permit issued under an Underground Injection Control (UIC) program approved or promulgated under the Safe Drinking Water Act only to the extent they are required by § 122.45 of this Chapter.

[Comment: These Part 264 regulations do apply to the above-ground treatment or storage of hazardous waste before it is injected underground.]

(e) The requirements of this Part apply to the owner or operator of a POTW which treats, stores, or disposes of hazardous waste only to the extent they are included in a RCRA permit by rule granted to such a person under Part 122 of this Chapter.

(f) The requirements of this Part do not apply to a person who treats, stores, or disposes of hazardous waste in a State with a RCRA hazardous waste program authorized under Subparts A and B of Part 123 of this Chapter or with a RCRA Phase II hazardous waste program authorized under Subpart F of Part 123 of this Chapter, except that the requirements of this Part will continue to apply as stated in paragraph (d) of this Section, if the authorized State RCRA program does not cover disposal of hazardous waste by means of underground injection.

(g) The requirements of this Part do not apply to:

(1) The owner or operator of a facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under this Part by § 261.5 of this Chapter;

(2) The owner or operator of a facility which treats or stores hazardous waste, which treatment or storage meets the criteria in § 261.6(a) of this Chapter, except to the extent that § 261.6(b) of this Chapter provides otherwise;

(3) A generator accumulating waste on-site in compliance with § 262.34 of this Chapter;

(4) A farmer disposing of waste pesticides from his own use in compliance with § 262.51 of this Chapter; or

(5) The owner or operator of a totally enclosed treatment facility, as defined in § 260.10.

**§ 264.2 [Reserved]****§ 264.3 Relationship to interim status standards.**

A facility owner or operator who has fully complied with the requirements for interim status—as defined in Section 3005(e) of RCRA and regulations under § 122.23 of this Chapter—must comply with the regulations specified in Part 265 of this Chapter in lieu of the regulations in this Part, until final administrative disposition of his permit application is made.

[Comment: As stated in Section 3005(a) of RCRA, after the effective date of regulations under that Section, i.e., Parts 122 and 124 of this Chapter, the treatment, storage, or disposal of hazardous waste is prohibited except in accordance with a permit. Section

3005(e) of RCRA provides for the continued operation of an existing facility which meets certain conditions until final administrative disposition of the owner's or operator's permit application is made.]

#### § 264.4 Imminent hazard action.

Notwithstanding any other provisions of these regulations, enforcement actions may be brought pursuant to Section 7003 of RCRA.

#### §§ 264.5-264.9 [Reserved]

### Subpart B—General Facility Standards

#### § 264.10 Applicability.

The regulations in this Subpart apply to owners and operators of all hazardous waste facilities, except as § 264.1 provides otherwise.

#### § 264.11 Identification number.

Every facility owner or operator must apply to EPA for an EPA identification number in accordance with the EPA notification procedures (45 FR 12748).

#### § 264.12 Required notices.

(a) The owner or operator of a facility that has arranged to receive hazardous waste from a foreign source must notify the Regional Administrator in writing at least four weeks in advance of the date the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required.

(b) The owner or operator of a facility that receives hazardous waste from an off-site source (except where the owner or operator is also the generator) must inform the generator in writing that he has the appropriate permit(s) for, and will accept, the waste the generator is shipping. The owner or operator must keep a copy of this written notice as part of the operating record.

(c) Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator must notify the new owner or operator in writing of the requirements of this Part and Part 122 of this Chapter.

[*Comment:* An owner's or operator's failure to notify the new owner or operator of the requirements of this Part in no way relieves the new owner or operator of his obligation to comply with all applicable requirements.]

#### § 264.13 General waste analysis.

(a) (1) Before an owner or operator treats, stores, or disposes of any hazardous waste, he must obtain a detailed chemical and physical analysis of a representative sample of the waste.

At a minimum, this analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with the requirements of this Part or with the conditions of a permit issued under Part 122, Subparts A and B, and Part 124 of this Chapter.

(2) The analysis may include data developed under Part 261 of this Chapter, and existing published or documented data on the hazardous waste or on hazardous waste generated from similar processes.

[*Comment:* For example, the facility's records of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this Section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the information required by paragraph (a)(1) of this Section. If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the information required to comply with this Section.]

(3) The analysis must be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis must be repeated:

(i) When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

(ii) For off-site facilities, when the results of the inspection required in paragraph (a)(4) of this Section indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

(4) The owner or operator of an off-site facility must inspect and, if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

(b) The owner or operator must develop and follow a written waste analysis plan which describes the procedures which he will carry out to comply with paragraph (a) of this Section. He must keep this plan at the facility. At a minimum, the plan must specify:

(1) The parameters for which each hazardous waste will be analyzed and

the rationale for the selection of these parameters (i.e., how analysis for those parameters will provide sufficient information on the waste's properties to comply with paragraph (a) of this Section);

(2) The test methods which will be used to test for these parameters;

(3) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

(i) One of the sampling methods described in Appendix I of Part 261 of this Chapter; or

(ii) An equivalent sampling method.

[*Comment:* See § 261.20(c) of this Chapter for related discussion.]

(4) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date; and

(5) For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply.

(c) For off-site facilities, the waste analysis plan required in paragraph (b) of this Section must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe:

(1) The procedures which will be used to determine the identity of each movement of waste managed at the facility; and

(2) The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

[*Comment:* Part 122, Subpart B, of this Chapter requires that the waste analysis plan be submitted with Part B of the permit application.]

#### § 264.14 Security.

(a) The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility, *unless* he can demonstrate to the Regional Administrator that:

(1) Physical contact with the waste, structures, or equipment within the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility; and

(2) Disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or

livestock onto the active portion of a facility, will not cause a violation of the requirements of this Part.

[*Comment:* Part 122, Subpart B, of this Chapter requires that an owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.]

(b) Unless the owner or operator has made a successful demonstration under paragraphs (a)(1) and (a)(2) of this Section, a facility must have:

(1) A 24-hour surveillance system (e.g., television monitoring or surveillance by guards or facility personnel) which continuously monitors and controls entry onto the active portion of the facility; or

(2) (i) An artificial or natural barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portion of the facility; and

(ii) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

[*Comment:* The requirements of paragraph (b) of this Section are satisfied if the facility or plant within which the active portion is located itself has a surveillance system, or a barrier and a means to control entry, which complies with the requirements of paragraph (b)(1) or (b)(2) of this Section.]

(c) Unless the owner or operator has made a successful demonstration under paragraphs (a)(1) and (a)(2) of this Section, a sign with the legend, "Danger—Unauthorized Personnel Keep Out", must be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be written in English and in any other language predominant in the area surrounding the facility (e.g., facilities in counties bordering the Canadian province of Quebec must post signs in French; facilities in counties bordering Mexico must post signs in Spanish), and must be legible from a distance of at least 25 feet. Existing signs with a legend other than "Danger—Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

#### § 264.15 General inspection requirements.

(a) The owner or operator must inspect his facility for malfunctions and

deterioration, operator errors, and discharges which may be causing—or may lead to—(1) release of hazardous waste constituents to the environment or (2) a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(b)(1) The owner or operator must develop and follow a written schedule for inspecting monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

(2) He must keep this schedule at the facility.

(3) The schedule must identify the types of problems (e.g., malfunctions or deterioration) which are to be looked for during the inspection (e.g., inoperative sump pump, leaking fitting, eroding dike, etc.).

(4) The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading areas, must be inspected daily when in use.

[*Comment:* Part 122, Subpart B, of this Chapter requires the inspection schedule to be submitted with Part B of the permit application. EPA will evaluate the schedule along with the rest of the application to ensure that it adequately protects human health and the environment. As part of this review, EPA may modify or amend the schedule as may be necessary.]

(c) The owner or operator must remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.

(d) The owner or operator must record inspections in an inspection log or summary. He must keep these records for at least three years from the date of inspection. At a minimum, these records must include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

#### § 264.16 Personnel training.

(a)(1) Facility personnel must successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this Part. The owner or operator must ensure that this program includes all the elements described in the document required under paragraph (d)(3) of this Section.

(2) This program must be directed by a person trained in hazardous waste management procedures, and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

(3) At a minimum, the training program must be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including, where applicable:

(i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;

(ii) Key parameters for automatic waste feed cut-off systems;

(iii) Communications or alarm systems;

(iv) Response to fires or explosions;

(v) Response to ground-water contamination incidents; and

(vi) Shutdown of operations.

(b) Facility personnel must successfully complete the program required in paragraph (a) of this Section within six months after the effective date of these regulations or six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the training requirements of paragraph (a) of this Section.

(c) Facility personnel must take part in an annual review of the initial training required in paragraph (a) of this Section.

(d) The owner or operator must maintain the following documents and records at the facility:

(1) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

(2) A written job description for each position listed under paragraph (d)(1) of this Section. This description may be consistent in its degree of specificity with descriptions for other similar

positions in the same company location or bargaining unit, but must include the requisite skill, education, or other qualifications, and duties of employees assigned to each position; (3) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under paragraph (d)(1) of this Section;

(4) Records that document that the training or job experience required under paragraphs (a), (b), and (c) of this Section has been given to, and completed by, facility personnel.

(e) Training records on current personnel must be kept until closure of the facility; training records on former employees must be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

#### §§ 264.17—264.29 [Reserved]

### Subpart C—Preparedness and Prevention

#### § 264.30 Applicability.

The regulations in this Subpart apply to owners and operators of all hazardous waste facilities, except as § 264.1 provides otherwise.

#### § 264.31 Design and operation of facility.

Facilities must be designed, constructed, maintained, and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

#### § 264.32 Required equipment.

All facilities must be equipped with the following, *unless* it can be demonstrated to the Regional Administrator that none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

(a) An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;

(b) A device, such as a telephone (immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;

(c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals),

spill control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

[*Comment:* Part 122, Subpart B, of this Chapter requires that an owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.]

#### § 264.33 Testing and maintenance of equipment.

All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

#### § 264.34 Access to communications or alarm system.

(a) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, *unless* the Regional Administrator has ruled that such a device is not required under § 264.32.

(b) If there is ever just one employee on the premises while the facility is operating, he must have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning external emergency assistance, *unless* the Regional Administrator has ruled that such a device is not required under § 264.32.

#### § 264.35 Required aisle space.

The owner or operator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, *unless* it can be demonstrated to the Regional Administrator that aisle space is not needed for any of these purposes.

[*Comment:* Part 122, Subpart B, of this Chapter requires that an owner or operator who wishes to make the demonstration referred to above must do so with Part B of the permit application.]

#### § 264.36 Special handling for ignitable or reactive waste.

The owner or operator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. While ignitable or reactive waste is being handled, the owner or operator must confine smoking and open flame to specially designated locations. "No Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

#### § 264.37 Arrangements with local authorities.

(a) The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations:

(1) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to and roads inside the facility, and possible evacuation routes;

(2) Where more than one police and fire department might respond to an emergency, agreements designating primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(3) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(b) Where State or local authorities decline to enter into such arrangements, the owner or operator must document the refusal in the operating record.

#### §§ 264.38—264.49 [Reserved]

### Subpart D—Contingency Plan and Emergency Procedures

#### § 264.50 Applicability.

The regulations in this Subpart apply to owners and operators of all

hazardous waste facilities, except as § 264.1 provides otherwise.

**§ 264.51 Purpose and implementation of contingency plan.**

(a) Each owner or operator must have a contingency plan for his facility. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

(b) The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

**§ 264.52 Content of contingency plan.**

(a) The contingency plan must describe the actions facility personnel must take to comply with §§ 264.51 and 264.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

(b) If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with Part 112 or Part 151 of this Chapter, or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part.

(c) The plan must describe arrangements agreed to by local police departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to § 264.37.

(d) The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see § 264.55), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates. *For new facilities*, this information must be supplied to the Regional Administrator at the time of certification, rather than at the time of permit application.

(e) The plan must include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan

must include the location and a physical description of each item on the list, and a brief outline of its capabilities.

(f) The plan must include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires).

**§ 264.53 Copies of contingency plan.**

A copy of the contingency plan and all revisions to the plan must be:

- (a) Maintained at the facility; and
- (b) Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

[*Comment:* The contingency plan must be submitted to the Regional Administrator with Part B of the permit application under Part 122, Subparts A and B, of this Chapter and, after modification or approval, will become a condition of any permit issued.]

**§ 264.54 Amendment of contingency plan.**

The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

- (a) The facility permit is revised;
- (b) The plan fails in an emergency;
- (c) The facility changes—in its design, construction, operation, maintenance, or other circumstances—in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;
- (d) The list of emergency coordinators changes; or
- (e) The list of emergency equipment changes.

[*Comment:* A change in the lists of facility emergency coordinators or equipment in the contingency plan constitutes a minor modification to the facility permit to which the plan is a condition.]

**§ 264.55 Emergency coordinator.**

At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility,

the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

[*Comment:* The emergency coordinator's responsibilities are more fully spelled out in § 264.56. Applicable responsibilities for the emergency coordinator vary, depending on factors such as type and variety of waste(s) handled by the facility, and type and complexity of the facility.]

**§ 264.56 Emergency Procedures.**

(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

(1) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

(2) Notify appropriate State or local agencies with designated response roles if their help is needed.

(b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and areal extent of any released materials. He may do this by observation or review of facility records or manifests, and, if necessary, by chemical analysis.

(c) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-off from water or chemical agents used to control fire and heat-induced explosions).

(d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:

(1) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(2) He must immediately notify either the government official designated as the on-scene coordinator for that geographical area, (in the applicable regional contingency plan under Part 1510 of this Title) or the National

Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

- (i) Name and telephone number of reporter;
  - (ii) Name and address of facility;
  - (iii) Time and type of incident (e.g., release, fire);
  - (iv) Name and quantity of material(s) involved, to the extent known;
  - (v) The extent of injuries, if any; and
  - (vi) The possible hazards to human health, or the environment, outside the facility.
- (e) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing release waste, and removing or isolating containers.

(f) If the facility stops operations in response to a fire, explosion, or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

*[Comment: Unless the owner or operator can demonstrate, in accordance with § 261.3(c) or (d) of this Chapter, that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 264 of this Chapter.]*

(h) The emergency coordinator must ensure that, in the affected area(s) of the facility:

- (1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and
- (2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The owner or operator must notify the Regional Administrator, and appropriate State and local authorities, that the facility is in compliance with paragraph (h) of this Section before operations are resumed in the affected area(s) of the facility.

(j) The owner or operator must note in the operating record the time, date, and

details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Regional Administrator. The report must include:

- (1) Name, address, and telephone number of the owner or operator;
- (2) Name, address, and telephone number of the facility;
- (3) Date, time, and type of incident (e.g., fire, explosion);
- (4) Name and quantity of material(s) involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident.

#### § 264.57-264.69 [Reserved]

#### Subpart E—Manifest System, Recordkeeping, and Reporting

##### § 264.70 Applicability.

The regulations in this Subpart apply to owners and operators of both on-site and off-site facilities, except as § 264.1 provides otherwise. Sections 264.71, 264.72, and 264.76 do not apply to owners and operators of on-site facilities that do not receive any hazardous waste from off-site sources.

##### § 264.71 Use of manifest system.

(a) If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, must:

- (1) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;

(2) Note any significant discrepancies in the manifest (as defined in § 264.72(a)) on each copy of the manifest;

*[Comment: The Agency does not intend that the owner or operator of a facility whose procedures under § 264.13(c) include waste analysis must perform that analysis before signing the manifest and giving it to the transporter. Section 264.72(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.]*

(3) Immediately give the transporter at least one copy of the signed manifest;

(4) Within 30 days after the delivery, send a copy of the manifest to the generator; and

(5) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

(b) If a facility receives, from a rail or water (bulk shipment) transporter,

hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest (excluding the EPA identification numbers, generator's certification, and signatures), the owner or operator, or his agent, must:

(1) Sign and date each copy of the shipping paper to certify that the hazardous waste covered by the shipping paper was received;

(2) Note any significant discrepancies in the shipping paper (as defined in § 264.72(a)) on each copy of the shipping paper;

*[Comment: The Agency does not intend that the owner or operator of a facility whose procedures under § 264.13(c) include waste analysis must perform that analysis before signing the shipping paper and giving it to the transporter. Section 264.72(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.]*

(3) Immediately give the rail or water (bulk shipment) transporter at least one copy of the shipping paper;

(4) Within 30 days after the delivery, send a copy of the shipping paper to the generator; however, if the manifest is received within 30 days after the delivery, the owner or operator, or his agent, must sign and date the manifest and return it to the generator in lieu of the shipping paper; and

*[Comment: Section 262.23(c) of this chapter requires the generator to send three copies of the manifest to the facility when hazardous waste is sent by rail or water (bulk shipment).]*

(5) Retain at the facility a copy of each shipping paper and manifest for at least three years from the date of delivery.

##### § 264.72 Manifest discrepancies.

(a) Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste a facility actually receives. Significant discrepancies in quantity are: (1) For bulk waste, variations greater than 10 percent in weight, and (2) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper.

(b) Upon discovering a significant discrepancy, the owner or operator must attempt to reconcile the discrepancy with the waste generator or transporter

(e.g., with telephone conversations). If the discrepancy is not resolved within 15 days after receiving the waste, the owner or operator must immediately submit to the Regional Administrator a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

#### § 264.73 Operating record.

(a) The owner or operator must keep a written operating record at his facility.

(b) The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(1) A description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility as required by Appendix I;

(2) The location of each hazardous waste within the facility and the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste must be recorded on a map or diagram of each cell or disposal area. For all facilities, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

(3) Records and results of waste analyses performed as specified in § 264.13;

(4) Summary reports and details of all incidents that require implementing the contingency plan as specified in § 264.56(j);

(5) Records and results of inspections as required by § 264.15(d) (except these data need be kept only three years); and

(6) For off-site facilities, notices to generators as specified in § 264.12(b).

#### § 264.74 Availability, retention, and disposition of records.

(a) All records, including plans, required under this Part must be furnished upon request, and made available at all reasonable times for inspection, by any officer, employee, or representative of EPA who is duly designated by the Administrator.

(b) The retention period for all records required under this Part is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the Administrator.

(c) A copy of records of waste disposal locations and quantities under § 264.73(b)(2) must be submitted to the Regional Administrator and local land authority upon closure of the facility.

#### § 264.75 Annual report.

The owner or operator must prepare and submit a single copy of an annual

report to the Regional Administrator by March 1 of each year. The report form and instructions in Appendix II must be used for this report. The annual report must cover facility activities during the previous calendar year and must include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) For off-site facilities, the EPA identification number of each hazardous waste generator from which the facility received a hazardous waste during the year; for imported shipments, the report must give the name and address of the foreign generator;

(d) A description and the quantity of each hazardous waste the facility received during the year. For off-site facilities, this information must be listed by EPA identification number of each generator;

(e) The method of treatment, storage, or disposal for each hazardous waste; and

(f) The certification signed by the owner or operator of the facility or his authorized representative.

#### § 264.76 Unmanifested waste report.

If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, or without an accompanying shipping paper as described in § 263.20(e)(2) of this Chapter, and if the waste is not excluded from the manifest requirement by § 261.5 of this Chapter, then the owner or operator must prepare and submit a single copy of a report to the Regional Administrator within 15 days after receiving the waste. The report form and instructions in Appendix II must be used for this report. The report must include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The date the facility received the waste;

(c) The EPA identification number, name, and address of the generator and the transporter, if available;

(d) A description and the quantity of each unmanifested hazardous waste and facility received;

(e) The method of treatment, storage, or disposal for each hazardous waste;

(f) The certification signed by the owner or operator of the facility or his authorized representative; and

(g) A brief explanation of why the waste was unmanifested, if known.

[Comment: Small quantities of hazardous waste are excluded from

regulation under this Part and do not require a manifest. Where a facility receives unmanifested hazardous wastes, the Agency suggests that the owner or operator obtain from each generator a certification that the waste qualifies for exclusion. Otherwise, the Agency suggests that the owner or operator file an unmanifested waste report for the hazardous waste movement.]

#### § 264.77 Additional reports.

In addition to submitting the annual report and unmanifested waste reports described in §§ 264.75 and 264.76, the owner or operator must also report to the Regional Administrator releases, fires, and explosions as specified in § 264.56(j).

#### §§ 264.78-264.999 [Reserved].

#### Appendix I.—Recordkeeping Instructions

The recordkeeping provisions of § 264.73 specify that an owner or operator must keep a written operating record at his facility. This appendix provides additional instructions for keeping portions of the operating record. See § 264.73(b) for additional recordkeeping requirements.

The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility in the following manner:

Records of each hazardous waste received, treated, stored, or disposed of at the facility which include the following:

(1) A description by its common name and the EPA Hazardous Waste Number(s) from Part 261 of this Chapter which apply to the waste. The waste description also must include the waste's physical form, i.e., liquid, sludge, solid, or contained gas. If the waste is not listed in Part 261, Subpart D, of this Chapter, the description also must include the process that produced it (for example, solid filter cake from production of —, EPA Hazardous Waste Number W051).

Each hazardous waste listed in Part 261, Subpart D, of this Chapter, and each hazardous waste characteristic defined in Part 261, Subpart C, of this Chapter, has a four-digit EPA Hazardous Waste Number assigned to it. This number must be used for recordkeeping and reporting purposes. Where a hazardous waste contains more than one listed hazardous waste, or where more than one hazardous waste characteristic applies to the waste, the waste description must include all applicable EPA Hazardous Waste Numbers.

(2) The estimated or manifest-reported weight, or volume and density, where applicable, in one of the units of measure specified in Table 1;

(3) The method(s) (by handling code(s) as specified in Table 2) and date(s) of treatment, storage, or disposal.

**Table 1**

Unit of measure	Symbol <sup>1</sup>	Density
Pounds	P	
Short tons (2000 lbs)	T	
Gallons (U.S.)	G	P/G
Cubic yards	Y	T/Y
Kilograms	K	
Tonnes (1000 kg)	M	
Liters	L	K/L
Cubic meters	C	M/C

<sup>1</sup>Single digit symbols are used here for data processing purposes.

**Table 2.—Handling Codes for Treatment, Storage, and Disposal Methods**

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store, or dispose of each quantity of hazardous waste received.

**1. Storage**

- S01 Container (barrel, drum, etc.)
- S02 Tank
- S03 Waste pile
- S04 Surface impoundment
- S05 Other (specify)

**2. Treatment**

(a) Thermal Treatment

- T06 Liquid injection incinerator
- T07 Rotary kiln incinerator
- T08 Fluidized bed incinerator
- T09 Multiple hearth incinerator
- T10 Infrared furnace incinerator
- T11 Molten salt destructor
- T12 Pyrolysis
- T13 Wet Air oxidation
- T14 Calcination
- T15 Microwave discharge
- T16 Cement kiln
- T17 Lime kiln
- T18 Other (specify)

(b) Chemical Treatment

- T19 Absorption mound
- T20 Absorption field
- T21 Chemical fixation
- T22 Chemical oxidation
- T23 Chemical precipitation
- T24 Chemical reduction
- T25 Chlorination
- T26 Chlorinolysis
- T27 Cyanide destruction
- T28 Degradation
- T29 Detoxification
- T30 Ion exchange
- T31 Neutralization
- T32 Ozonation
- T33 Photolysis
- T34 Other (specify)

(c) Physical Treatment

(1) Separation of components

- T35 Centrifugation
- T36 Clarification
- T37 Coagulation
- T38 Decanting
- T39 Encapsulation
- T40 Filtration
- T41 Flocculation
- T42 Flotation
- T43 Foaming
- T44 Sedimentation
- T45 Thickening
- T46 Ultrafiltration
- T47 Other (specify)

(2) Removal of Specific Components

- T48 Absorption-molecular sieve
- T49 Activated carbon
- T50 Blending

- T51 Catalysis
  - T52 Crystallization
  - T53 Dialysis
  - T54 Distillation
  - T55 Electrodialysis
  - T56 Electrolysis
  - T57 Evaporation
  - T58 High gradient magnetic separation
  - T59 Leaching
  - T60 Liquid ion exchange
  - T61 Liquid-liquid extraction
  - T62 Reverse osmosis
  - T63 Solvent recovery
  - T64 Stripping
  - T65 Sand filter
  - T66 Other (specify)
- (d) Biological Treatment
- T67 Activated sludge
  - T68 Aerobic lagoon
  - T69 Aerobic tank
  - T70 Anaerobic lagoon
  - T71 Composting
  - T72 Septic tank
  - T73 Spray irrigation
  - T74 Thickening filter
  - T75 Trickling filter
  - T76 Waste stabilization pond
  - T77 Other (specify)
  - T78-79 [Reserved]

**3. Disposal**

- D80 Underground injection
- D81 Landfill
- D82 Land treatment
- D83 Ocean disposal
- D84 Surface impoundment (to be closed as a landfill)
- D85 Other (specify)

**Appendix II.—EPA Report Form and Instructions**

BILLING CODE 6560-01-M



GSA No. 12345-XX  
Form Approved OMB No. 158-R00XX

Please print or type with ELITE type (12 characters/inch).

<b>U.S. ENVIRONMENTAL PROTECTION AGENCY</b> <b>FACILITY REPORT - PARTS B &amp; C</b> <i>(Collected under the authority of Section 3004 of RCRA.)</i>					
FOR OFFICIAL USE ONLY (Items 1 & 2) 1. DATE RECEIVED: 11 19 2. RECEIVED BY:	XVI. TYPE OF REPORT (enter an "X") <input type="checkbox"/> PART B <input type="checkbox"/> PART C XVII. FACILITY'S EPA I.D. NO.				
XVIII. GENERATOR'S EPA I.D. NO.	XX. GENERATOR ADDRESS (street or P.O. box, city, state, & zip code) XIX. GENERATOR NAME (specify)				
<b>XXI. WASTE IDENTIFICATION</b>					
LINE NUMBER	A. DESCRIPTION OF WASTE	B. EPA HAZARDOUS WASTE NUMBER (see instructions)	C. HANDLING METHOD (enter code)	D. AMOUNT OF WASTE	UNIT OF MEASURE (enter code)
1		30 - 31 32 - 33			
2		34 - 35 36 - 37			
3					
4					
5					
6					
7					
8					
9					
10					
11					
12		38 - 39 40 - 41			
<b>XXII. COMMENTS (enter information by line number - see instructions)</b>					

**General Instructions Hazardous Waste Report (EPA Form 8700-13)**

**Important:** Read all instructions before completing this form.

**Section I.—Type of Hazardous Waste Report**

**Part A—Generator Annual Report**

For generators who ship their waste off-site to facilities which they do not own or operate; fill in the reporting year for this report (e.g., 1982).

**Note.**—Generators who ship hazardous waste off-site to a facility which they own or operate must complete the facility (Part B) report instead of the Part A report.

**Part B—Facility Annual Report**

For owners or operators of on-site or off-site facilities that treat, store, or dispose of hazardous waste; fill in the reporting year for this report (e.g., 1982).

**Part C—Unmanifested Waste Report**

For facility owners or operators who accept for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest; fill in the date the waste was received at the facility (e.g. 04-12-1982).

**Section II thru Section IV.—Installation I.D. Number, Name of Installation, and Installation Mailing Address**

If you received a preprinted label from EPA, attach it in the space provided and leave Sections II through IV blank. If there is an error or omission on the label, cross out the incorrect information and fill in the appropriate item(s). If you did not receive a preprinted label, complete Section II through Section IV.

**Section V.—Location of Installation**

If your installation location address is different than the mailing address, enter the location address of your installation.

**Section VI.—Installation Contact**

Enter the name (last and first) and telephone number of the person whom may be contacted regarding information contained in this report.

**Section VII.—Transportation Services Used (For Part A reports ONLY)**

List the EPA Identification Number for each transporter whose services you used during the reporting year.

**Section VIII.—Cost Estimates for Facilities (For Part B reports ONLY)**

A. Enter the most recent cost estimate for facility closure in dollars. See subpart H of 40 CFR part 264 or 265 for more detail.

B. For disposal facilities only, enter the most recent cost estimate for post closure monitoring and maintenance. See Subpart H of 40 CFR Part 264 or 265 for more detail.

**Section IX.—Certification**

The generator or his authorized representative (Part A reports) or the owner

or operator of the facility or his authorized representative (Parts B and C reports) must sign and date the certification where indicated. The printed or typed name of the person signing the report must also be included where indicated.

**Note.**—Since more than one page is required for each report, enter the page number of each sheet in the lower right corner as well as the total number of pages.

**Facility Annual Report Part B Instructions (EPA Form 8700-13B)**

Facility Annual Report for owners or operators of on-site or off-site facilities that treat, store, or dispose of hazardous waste.

**Note.**—Generators who ship hazardous waste off-site to a facility they own or operate must complete this Part B report instead of the Generator (Part A) Annual Report.

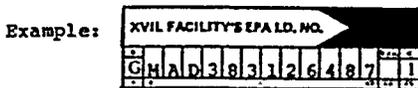
**Important: Read All Instructions Before Completing This Form**

**Section XVI.—Type of Report**

Put an "X" in the box marked Part B.

**Section XVII.—Facility's EPA Identification Number**

Enter the EPA identification number for your facility.



**Section XVIII.—Generator's EPA Identification Number**

Enter the EPA Identification number of the generator of the waste described under Section XXI which was received by your facility during the reporting year. A separate

Example:

XXI WASTE IDENTIFICATION												
LINE NUMBER	A. DESCRIPTION OF WASTE	B. EPA HAZARDOUS WASTE NUMBER (SEE INSTRUCTIONS)				C. HANDLING METHOD (USE CODE)		D. AMOUNT OF WASTE			UNIT OF MEASURE	
		1	2	3	4	1	2	1	2	3		
1	Steel Finishing Sludge	X	0	6	0	K	0	2	5	0	0	T
2	Steel Finishing Sludge	X	0	6	0	T	2	1	5	7	2	5

**Section XXI-A.—Description of Waste**

For hazardous wastes that are listed under 40 CFR Part 261, Subpart D, enter the EPA listed name, abbreviated if necessary. Where mixtures of listed wastes were received, enter the description which you believe best describes the waste.

For unlisted hazardous waste identified under 40 CFR Part 261, Subpart C, enter the description which you believe best describes the waste. Include the specific manufacturing or other process generating the waste (e.g., green sludge from widget manufacturing) and

sheet must be used for each generator. If the waste came from a foreign generator, enter the EPA identification number of the importer in this section and enter the name and address of the foreign generator in Section XXII, Comments. If the waste was generated and treated, stored, or disposed of at the same installation, leave this section blank.

**Section XIX.—Generator's Name**

Enter the name of the generator corresponding to the generator's EPA identification number in Section XVIII.

If the waste was generated and treated, stored, or disposed of at the same installation, enter "ON-SITE".

If the waste came from a foreign generator, enter the name of the importer corresponding to the EPA identification number in Section XVIII.

**Section XX.—Generator's Address**

Enter the address of the generator corresponding to the generator's EPA identification number in Section XVIII. If the waste was generated and treated, stored, or disposed of at the same installation, leave this section blank. If the waste came from a foreign generator, enter the address of the importer corresponding to the EPA identification number in Section XVIII.

**Section XXI.—Waste Identification**

All information in this section must be entered by line number. A separate line entry is required for each different waste or mixture of wastes that your facility received during the reporting year. The handling code applicable to that waste at the end of the reporting year should be reported. If a different handling code applies to portions of the same waste, (e.g., part of the waste is stored while the remainder was "chemically fixed" during the year), use a separate line entry for each portion.

if known, the chemical or generic chemical name of the waste.

**Section XXI-B.—EPA Hazardous Waste Number**

For listed waste, enter the four digit EPA Hazardous Waste Number from 40 CFR Part 261, Subpart D, which identifies the waste.

For a mixture of more than one listed waste, enter each of the applicable EPA Hazardous Waste Numbers.

Four spaces are provided. If more space is needed, continue on the next line(s) and leave all other information on that line blank.

Example:

XXI. WASTE IDENTIFICATION																				
LINE NUMBER	A. DESCRIPTION OF WASTE	B. EPA HAZARDOUS WASTE NUMBER (see instructions)				C. HANDLING METHOD (see code)		D. AMOUNT OF WASTE					UNIT OF MEASURE							
		1	2	3	4	1	2	1	2	3	4	5								
1	Steel Finishing Sludge	K	0	6	0	K	0	6	1	T	2	1	2	9	1	7	4	5	5	T
		K	0	6	2	K	0	6	3											
2		K	0	6	4															

For unlisted hazardous wastes, enter the EPA Hazardous Waste Numbers from 40 CFR Part 261, Subpart C, applicable to the waste. If more than four spaces are required, follow the procedure described above.

**Section XXI-C.—Handling Code**

Enter one EPA handling code for each waste line entry. Where several handling steps have occurred during the year, report only the handling code representing the waste's status at the end of the reporting year or its final disposition. EPA handling codes are given in Appendix I of this Part.

**Section XXI-D.—Amount of Waste**

Enter the total amount of waste described on this line which you received during this reporting year.

**Section XXI-E.—Unit of Measure**

Enter the unit of measure code for the quantity of waste described on this line. Units of measure which must be used in this report and the appropriate codes are:

Units of measure	Code
Pounds.....	P
Short tons (2000 lbs).....	T
Kilograms.....	K
Tonnes (1000 kg).....	M

Units of volume may not be used for reporting but must be converted into one of the above units of weight, taking into account the appropriate density or specific gravity of the waste.

**Section XXII.—Comments**

This space may be used to explain or clarify any entry. If used, enter a cross-reference to the appropriate Section number.

Note.—Since more than one page is required for each report, enter the page number of each sheet in the lower right hand corner as well as the total number of pages.

Where required by 40 CFR 264 or 265, subparts F or R, attach ground-water monitoring data to this report.

**Unmanifested Waste Report Part C Instructions (EPA Form 8700-13B)**

Unmanifested Waste Report for facility owners or operators who accept for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest.

**Important: Read All Instructions Before Completing This Form**

For the Unmanifested Waste Report, EPA Forms 8700-13 and 8700-13B must be filled out according to the directions for the Part-B Facility Annual Report except that: (1) blocks

for which information is not available to the owner or operator of the reporting facility may be marked "UNKNOWN," and (2) the following special instructions apply:

**Section VIII.—Cost Estimates for Facilities**

Do not enter closure or post-closure cost estimates.

**Section XVI.—Type of Report**

Put an "X" in the box marked Part C.

**Section XXI-A.—Description of Waste**

Use as many line numbers as are needed to describe the waste.

**Section XXI-C.—Handling Code**

Enter the handling code which describes the status of the waste on the date the report is filed.

**Section XXI-D.—Amount of Waste**

Enter the amount of waste received, rather than a total annual aggregate.

**Section XXII.—Comments**

a. Enter the EPA Identification number, name, and address of the transporter, if known. If the transporter is not known to you, enter the name and chauffeur license number of the driver and the State and license number of the transporting vehicle which presented the waste to your facility, if known.

b. Enter an explanation of how the waste movement was presented to your facility; why you believe the waste is hazardous; and how your facility plans to manage the wastes. Continue on a separate blank sheet of paper if additional space is needed.

**Monitoring Data**

Do not attach monitoring data.

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

**Subpart A—General**

- Sec.
- 265.1 Purpose, scope, and applicability.
- 265.2-265.3 [Reserved]
- 265.4 Imminent hazard action.
- 265.5-265.9 [Reserved]

**Subpart B—General Facility Standards**

- 265.10 Applicability.
- 265.11 Identification number.
- 265.12 Required notices.
- 265.13 General waste analysis.
- 265.14 Security.

**Sec.**

- 265.15 General inspection requirements.
- 265.16 Personnel training.
- 265.17 General requirements for ignitable, reactive, or incompatible wastes.
- 265.18-265.29 [Reserved]

**Subpart C—Preparedness and Prevention**

- 265.30 Applicability.
- 265.31 Maintenance and operation of facility.
- 265.32 Required equipment.
- 265.33 Testing and maintenance of equipment.
- 265.34 Access to communications or alarm system.
- 265.35 Required aisle space.
- 265.36 [Reserved]
- 265.37 Arrangements with local authorities.
- 265.38-265.49 [Reserved]

**Subpart D—Contingency Plan and Emergency Procedures**

- 265.50 Applicability.
- 265.51 Purpose and implementation of contingency plan.
- 265.52 Content of contingency plan.
- 265.53 Copies of contingency plan.
- 265.54 Amendment of contingency plan.
- 265.55 Emergency coordinator.
- 265.56 Emergency procedures.
- 265.57-265.69 [Reserved]

**Subpart E—Manifest System, Recordkeeping, and Reporting**

- 265.70 Applicability.
- 265.71 Use of manifest system.
- 265.72 Manifest discrepancies.
- 265.73 Operating record.
- 265.74 Availability, retention, and disposition of records.
- 265.75 Annual report.
- 265.76 Unmanifested waste report.
- 265.77 Additional reports.
- 265.78-265.89 [Reserved]

**Subpart F—Ground-Water Monitoring**

- 265.90 Applicability.
- 265.91 Ground-water monitoring system.
- 265.92 Sampling and analysis.
- 265.93 Preparation, evaluation, and response.
- 265.94 Recordkeeping and reporting.
- 265.95-265.109 [Reserved]

**Subpart G—Closure and Post-Closure**

- 265.110 Applicability.
- 265.111 Closure performance standard.
- 265.112 Closure plan; amendment of plan.
- 265.113 Time allowed for closure.
- 265.114 Disposal or decontamination of equipment.
- 265.115 Certification of closure.
- 265.116 [Reserved]
- 265.117 Post-closure care and use of property; period of care.
- 265.118 Post-closure plan; amendment of plan.
- 265.119 Notice to local land authority.
- 265.120 Notice in deed to property.
- 265.121-265.139 [Reserved]

**Subpart H—Financial Requirements**

- Sec.  
 265.140 Applicability.  
 265.141 [Reserved]  
 265.142 Cost estimate for facility closure.  
 265.143 [Reserved]  
 265.144 Cost estimate for post-closure monitoring and maintenance.  
 265.145–265.169 [Reserved]

**Subpart I—Use and Management of Containers**

- 265.170 Applicability.  
 265.171 Condition of containers.  
 265.172 Compatibility of waste with container.  
 265.173 Management of containers.  
 265.174 Inspections.  
 265.175 [Reserved]  
 265.176 Special requirements for ignitable or reactive waste.  
 265.177 Special requirements for incompatible wastes.  
 265.178–265.189 [Reserved]

**Subpart J—Tanks**

- 265.190 Applicability.  
 265.191 [Reserved]  
 265.192 General operating requirements.  
 265.193 Waste analysis and trial tests.  
 265.194 Inspections.  
 265.195–265.196 [Reserved]  
 265.197 Closure.  
 265.198 Special requirements for ignitable or reactive waste.  
 265.199 Special requirements for incompatible wastes.  
 265.200–265.219 [Reserved]

**Subpart K—Surface Impoundments**

- 265.220 Applicability.  
 265.221 [Reserved]  
 265.222 General operating requirements.  
 265.223 Containment system.  
 265.224 [Reserved]  
 265.225 Waste analysis and trial tests.  
 265.226 Inspections.  
 265.227 [Reserved]  
 265.228 Closure and post-closure.  
 265.229 Special requirements for ignitable or reactive waste.  
 265.230 Special requirements for incompatible wastes.  
 265.231–265.249 [Reserved]

**Subpart L—Waste Piles**

- 265.250 Applicability.  
 265.251 Protection from wind.  
 265.252 Waste analysis.  
 265.253 Containment.  
 265.254–265.255 [Reserved]  
 265.256 Special requirements for ignitable or reactive waste.  
 265.257 Special requirements for incompatible wastes.  
 265.258–265.269 [Reserved]

**Subpart M—Land Treatment**

- 265.270 Applicability.  
 265.271 [Reserved]  
 265.272 General operating requirements.  
 265.273 Waste analysis.  
 265.274–265.275 [Reserved]  
 265.276 Food chain crops.  
 265.277 [Reserved]  
 265.278 Unsaturated zone (zone of aeration) monitoring.

**Sec.**

- 265.279 Recordkeeping.  
 265.280 Closure and post-closure.  
 265.281 Special requirements for ignitable or reactive waste.  
 265.282 Special requirements for incompatible wastes.  
 265.283–265.299 [Reserved]

**Subpart N—Landfills**

- 265.300 Applicability.  
 265.301 [Reserved]  
 265.302 General operating requirements.  
 265.303–265.308 [Reserved]  
 265.309 Surveying and recordkeeping.  
 265.310 Closure and post-closure.  
 265.311 [Reserved]  
 265.312 Special requirements for ignitable or reactive waste.  
 265.313 Special requirements for incompatible wastes.  
 265.314 Special requirements for liquid waste.  
 265.315 Special requirements for containers.  
 265.316–265.399 [Reserved]

**Subpart O—Incinerators**

- 265.340 Applicability.  
 265.341–265.342 [Reserved]  
 265.343 General operating requirements.  
 265.344 [Reserved]  
 265.345 Waste analysis.  
 265.346 [Reserved]  
 265.347 Monitoring and inspections.  
 265.348–265.350 [Reserved]  
 265.351 Closure.  
 265.352–265.369 [Reserved]

**Subpart P—Thermal Treatment**

- 265.370 Applicability.  
 265.371–265.372 [Reserved]  
 265.373 General operating requirements.  
 265.374 [Reserved]  
 265.375 Waste analysis.  
 265.376 [Reserved]  
 265.377 Monitoring and inspections.  
 265.378–265.380 [Reserved]  
 265.381 Closure.  
 265.382 Open burning; waste explosives.  
 265.383–265.399 [Reserved]

**Subpart Q—Chemical, Physical, and Biological Treatment**

- 265.400 Applicability.  
 265.401 General operating requirements.  
 265.402 Waste analysis and trial tests.  
 265.403 Inspections.  
 265.404 Closure.  
 265.405 Special requirements for ignitable or reactive waste.  
 265.406 Special requirements for incompatible wastes.  
 265.407–265.429 [Reserved]

**Subpart R—Underground Injection**

- 265.430 Applicability.  
 265.431–265.999 [Reserved]  
 Appendix I—Recordkeeping instructions.  
 Appendix II—EPA report form and instructions.  
 Appendix III—EPA interim primary drinking water standards.  
 Appendix IV—Tests for significance.  
 Appendix V—Examples of potentially incompatible waste.

Authority: Secs. 1006, 2002(a), and 3004 of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act

of 1976, as amended (42 U.S.C. 6905, 6912(a), and 6924).

**Subpart A—General****§ 265.1 Purpose, scope, and applicability.**

(a) The purpose of this Part is to establish minimum national standards which define the acceptable management of hazardous waste during the period of interim status.

(b) The standards in this Part apply to owners and operators of facilities which treat, store, or dispose of hazardous waste who have fully complied with the requirements for interim status under Section 3005(e) of RCRA and § 122.22 of this Chapter, until final administrative disposition of their permit application is made. These standards apply to all treatment, storage, or disposal of hazardous waste at these facilities after the effective date of these regulations, except as specifically provided otherwise in this Part or Part 261 of this Chapter.

[Comment: As stated in Section 3005(a) of RCRA, after the effective date of regulations under that Section, i.e., Parts 122 and 124 of this Chapter, the treatment, storage, or disposal of hazardous waste is prohibited except in accordance with a permit. Section 3005(e) of RCRA provides for the continued operation of an existing facility which meets certain conditions until final administrative disposition of the owner's and operator's permit application is made.]

(c) The requirements of this Part do not apply to:

(1) A person disposing of hazardous waste by means of ocean disposal subject to a permit issued under the Marine Protection, Research, and Sanctuaries Act;

[Comment: These Part 265 regulations do apply to the treatment or storage of hazardous waste before it is loaded onto an ocean vessel for incineration or disposal at sea, as provided in paragraph (b) of this Section.]

(2) A person disposing of hazardous waste by means of underground injection subject to a permit issued under an Underground Injection Control (UIC) program approved or promulgated under the Safe Drinking Water Act;

[Comment: These Part 265 regulations do apply to the aboveground treatment or storage of hazardous waste before it is injected underground. These Part 265 regulations also apply to the disposal of hazardous waste by means of underground injection, as provided in paragraph (b) of this Section, until final administrative disposition of a person's permit application is made under RCRA

or under an approved or promulgated UIC program.]

(3) The owner or operator of a POTW which treats, stores, or disposes of hazardous waste;

[*Comment:* The owner or operator of a facility under paragraphs (c)(1) through (c)(3) of this Section is subject to the requirements of Part 264 of this Chapter to the extent they are included in a permit by rule granted to such a person under Part 122 of this Chapter, or are required by § 122.45 of this Chapter.]

(4) A person who treats, stores, or disposes of hazardous waste in a State with a RCRA hazardous waste program authorized under Subparts A and B, or Subpart F, of Part 123 of this Chapter, except that the requirements of this Part will continue to apply as stated in paragraph (c)(2) of this Section, if the authorized State RCRA program does not cover disposal of hazardous waste by means of underground injection;

(5) The owner or operator of a facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the only hazardous waste the facility treats, stores, or disposes of is excluded from regulation under this Part by § 261.5 of this Chapter;

(6) The owner or operator of a facility which treats or stores hazardous waste, which treatment or storage meets the criteria in § 261.6(a) of this Chapter, except to the extent that § 261.6(b) of this Chapter provides otherwise;

(7) A generator accumulating waste on-site in compliance with § 262.34 of this Chapter, except to the extent the requirements are included in § 262.34 of this Chapter;

(8) A farmer disposing of waste pesticides from his own use in compliance with § 262.51 of this Chapter; or

(9) The owner or operator of a totally enclosed treatment facility, as defined in § 260.10.

#### §§ 265.2-265.3 [Reserved]

#### § 265.4 Imminent hazard action.

Notwithstanding any other provisions of these regulations, enforcement actions may be brought pursuant to Section 7003 of RCRA.

#### §§ 265.5-265.9 [Reserved]

### Subpart B—General Facility Standards

#### § 265.10 Applicability

The regulations in this Subpart apply to owners and operators of all hazardous waste facilities, except as § 265.1 provides otherwise.

#### § 265.11 Identification number.

Every facility owner or operator must apply to EPA for an EPA identification number in accordance with the EPA notification procedures (45 FR 12746).

#### § 265.12 Required notices.

(a) The owner or operator of a facility that has arranged to receive hazardous waste from a foreign source must notify the Regional Administrator in writing at least four weeks in advance of the date of the waste is expected to arrive at the facility. Notice of subsequent shipments of the same waste from the same foreign source is not required.

(b) Before transferring ownership or operation of a facility during its operating life, or of a disposal facility during the post-closure care period, the owner or operator must notify the new owner or operator in writing of the requirements of this Part and Part 122 of this Chapter. (Also see § 122.23(c) of this Chapter.)

[*Comment:* An owner's or operator's failure to notify the new owner or operator of the requirements of this Part in no way relieves the new owner or operator of his obligation to comply with all applicable requirements.]

#### § 265.13 General waste analysis.

(a)(1) Before an owner or operator treats, stores, or disposes of any hazardous waste, he must obtain a detailed chemical and physical analysis of a representative sample of the waste. At a minimum, this analysis must contain all the information which must be known to treat, store, or dispose of the waste in accordance with the requirements of this Part.

(2) The analysis may include data developed under Part 261 of this Chapter, and existing published or documented data on the hazardous waste or on waste generated from similar processes.

[*Comment:* For example, the facility's record of analyses performed on the waste before the effective date of these regulations, or studies conducted on hazardous waste generated from processes similar to that which generated the waste to be managed at the facility, may be included in the data base required to comply with paragraph (a)(1) of this Section. The owner or operator of an off-site facility may arrange for the generator of the hazardous waste to supply part or all of the information required by paragraph (a)(1) of this Section. If the generator does not supply the information, and the owner or operator chooses to accept a hazardous waste, the owner or operator is responsible for obtaining the

information required to comply with this Section.]

(3) The analysis must be repeated as necessary to ensure that it is accurate and up to date. At a minimum, the analysis must be repeated:

(i) When the owner or operator is notified, or has reason to believe, that the process or operation generating the hazardous waste has changed; and

(ii) For off-site facilities, when the results of the inspection required in paragraph (a)(4) of this Section indicate that the hazardous waste received at the facility does not match the waste designated on the accompanying manifest or shipping paper.

(4) The owner or operator of an off-site facility must inspect and, if necessary, analyze each hazardous waste movement received at the facility to determine whether it matches the identity of the waste specified on the accompanying manifest or shipping paper.

(b) The owner or operator must develop and follow a written waste analysis plan which describes the procedures which he will carry out to comply with paragraph (a) of this Section. He must keep this plan at the facility. At a minimum, the plan must specify:

(1) The parameters for which each hazardous waste will be analyzed and the rationale for the selection of these parameters (i.e., how analysis for these parameters will provide sufficient information on the waste's properties to comply with paragraph (a) of this Section);

(2) The test methods which will be used to test for these parameters;

(3) The sampling method which will be used to obtain a representative sample of the waste to be analyzed. A representative sample may be obtained using either:

(i) One of the sampling methods described in Appendix I of Part 261 of this Chapter; or

(ii) An equivalent sampling method. [*Comment:* See § 260.20(c) of this Chapter for related discussion.]

(4) The frequency with which the initial analysis of the waste will be reviewed or repeated to ensure that the analysis is accurate and up to date;

(5) For off-site facilities, the waste analyses that hazardous waste generators have agreed to supply; and

(6) Where applicable, the methods which will be used to meet the additional waste analysis requirements for specific waste management methods as specified in §§ 265.193, 265.225, 265.252, 265.273, 265.345, 265.375, and 265.402.

(c) For off-site facilities, the waste analysis plan required in paragraph (b) of this Section must also specify the procedures which will be used to inspect and, if necessary, analyze each movement of hazardous waste received at the facility to ensure that it matches the identity of the waste designated on the accompanying manifest or shipping paper. At a minimum, the plan must describe:

(1) The procedures which will be used to determine the identity of each movement of waste managed at the facility; and

(2) The sampling method which will be used to obtain a representative sample of the waste to be identified, if the identification method includes sampling.

#### § 265.14 Security.

(a) The owner or operator must prevent the unknowing entry, and minimize the possibility for the unauthorized entry, of persons or livestock onto the active portion of his facility, *unless*:

(1) Physical contact with the waste, structures, or equipment with the active portion of the facility will not injure unknowing or unauthorized persons or livestock which may enter the active portion of a facility, and

(2) Disturbance of the waste or equipment, by the unknowing or unauthorized entry of persons or livestock onto the active portion of a facility, will not cause a violation of the requirements of this Part.

(b) Unless exempt under paragraphs (a)(1) and (a)(2) of this Section, a facility must have:

(1) A 24-hour surveillance system (e.g., television monitoring or surveillance by guards of facility personnel) which continuously monitors and controls entry onto the active portion of the facility; or

(2)(i) An artificial or natural barrier (e.g., a fence in good repair or a fence combined with a cliff), which completely surrounds the active portion of the facility; and

(ii) A means to control entry, at all times, through the gates or other entrances to the active portion of the facility (e.g., an attendant, television monitors, locked entrance, or controlled roadway access to the facility).

*[Comment: The requirements of paragraph (b) of this Section are satisfied if the facility or plant within which the active portion is located itself has a surveillance system, or a barrier and a means to control entry, which complies with the requirements of paragraph (b)(1) or (b)(2) of this Section.]*

(c) Unless exempt under paragraphs (a)(1) and (a)(2) of this Section, a sign with the legend, "Danger—Unauthorized Personnel Keep Out," must be posted at each entrance to the active portion of a facility, and at other locations, in sufficient numbers to be seen from any approach to this active portion. The legend must be written in English and in any other language predominant in the area surrounding the facility (e.g., facilities in counties bordering the Canadian province of Quebec must post signs in French; facilities in counties bordering Mexico must post signs in Spanish), and must be legible from a distance of at least 25 feet. Existing signs with a legend other than "Danger—Unauthorized Personnel Keep Out" may be used if the legend on the sign indicates that only authorized personnel are allowed to enter the active portion, and that entry onto the active portion can be dangerous.

*[Comment: See § 265.117(b) for discussion of security requirements at disposal facilities during the post-closure care period.]*

#### § 265.15 General inspection requirements.

(a) The owner or operator must inspect his facility for malfunctions and deterioration, operator errors, and discharges which may be causing—or may lead to—(1) release of hazardous waste constituents to the environment or (2) a threat to human health. The owner or operator must conduct these inspections often enough to identify problems in time to correct them before they harm human health or the environment.

(b)(1) The owner or operator must develop and follow a written schedule for inspecting all monitoring equipment, safety and emergency equipment, security devices, and operating and structural equipment (such as dikes and sump pumps) that are important to preventing, detecting, or responding to environmental or human health hazards.

(2) He must keep this schedule at the facility.

(3) The schedule must identify the types of problems (e.g., malfunctions or deterioration) which are to be looked for during the inspection (e.g., inoperative sump pump, leaking fitting, eroding dike, etc.).

(4) The frequency of inspection may vary for the items on the schedule. However, it should be based on the rate of possible deterioration of the equipment and the probability of an environmental or human health incident if the deterioration or malfunction or any operator error goes undetected between inspections. Areas subject to spills, such as loading and unloading

areas, must be inspected daily when in use. At a minimum, the inspection schedule must include the items and frequencies called for in §§ 265.174, 265.194, 265.226, 265.347, 265.377, and 265.403.

(c) The owner or operator must remedy any deterioration or malfunction of equipment or structures which the inspection reveals on a schedule which ensures that the problem does not lead to an environmental or human health hazard. Where a hazard is imminent or has already occurred, remedial action must be taken immediately.

(d) The owner or operator must record inspections in an inspection log or summary. He must keep these records for at least three years from the date of inspection. At a minimum, these records must include the date and time of the inspection, the name of the inspector, a notation of the observations made, and the date and nature of any repairs or other remedial actions.

#### § 265.16 Personnel training.

(a)(1) Facility personnel must successfully complete a program of classroom instruction or on-the-job training that teaches them to perform their duties in a way that ensures the facility's compliance with the requirements of this Part. The owner or operator must ensure that this program includes all the elements described in the document required under paragraph (d)(3) of this Section.

(2) This program must be directed by a person trained in hazardous waste management procedures, and must include instruction which teaches facility personnel hazardous waste management procedures (including contingency plan implementation) relevant to the positions in which they are employed.

(3) At a minimum, the training program must be designed to ensure that facility personnel are able to respond effectively to emergencies by familiarizing them with emergency procedures, emergency equipment, and emergency systems, including where applicable:

- (i) Procedures for using, inspecting, repairing, and replacing facility emergency and monitoring equipment;
- (ii) Key parameters for automatic waste feed cut-off systems;
- (iii) Communications or alarm systems;
- (iv) Response to fires or explosions;
- (v) Response to ground-water contamination incidents; and
- (vi) Shutdown of operations.

(b) Facility personnel must successfully complete the program required in paragraph (a) of this Section

within six months after the effective date of these regulations or six months after the date of their employment or assignment to a facility, or to a new position at a facility, whichever is later. Employees hired after the effective date of these regulations must not work in unsupervised positions until they have completed the training requirements of paragraph (a) of this Section.

(c) Facility personnel must take part in an annual review of the initial training required in paragraph (a) of this Section.

(d) The owner or operator must maintain the following documents and records at the facility:

(1) The job title for each position at the facility related to hazardous waste management, and the name of the employee filling each job;

(2) A written job description for each position listed under paragraph (d)(1) of this Section. This description may be consistent in its degree of specificity with descriptions for other similar positions in the same company location or bargaining unit, but must include the requisite skill, education, or other qualifications, and duties of facility personnel assigned to each position;

(3) A written description of the type and amount of both introductory and continuing training that will be given to each person filling a position listed under paragraph (d)(1) of this Section;

(4) Records that document that the training or job experience required under paragraphs (a), (b), and (c) of this Section has been given to, and completed by, facility personnel.

(e) Training records on current personnel must be kept until closure of the facility. Training records on former employees must be kept for at least three years from the date the employee last worked at the facility. Personnel training records may accompany personnel transferred within the same company.

#### § 265.17 General requirements for ignitable, reactive, or incompatible wastes.

(a) The owner or operator must take precautions to prevent accidental ignition or reaction of ignitable or reactive waste. This waste must be separated and protected from sources of ignition or reaction including but not limited to: open flames, smoking, cutting and welding, hot surfaces, frictional heat, sparks (static, electrical, or mechanical), spontaneous ignition (e.g., from heat-producing chemical reactions), and radiant heat. While ignitable or reactive waste is being handled, the owner or operator must confine smoking and open flame to specially designated locations. "No

Smoking" signs must be conspicuously placed wherever there is a hazard from ignitable or reactive waste.

(b) Where specifically required by other Sections of this Part, the treatment, storage, or disposal of ignitable or reactive waste, and the mixture or commingling of incompatible wastes, or incompatible wastes and materials, must be conducted so that it does not:

(1) Generate extreme heat or pressure, fire or explosion, or violent reaction;

(2) Produce uncontrolled toxic mists, fumes, dusts, or gases in sufficient quantities to threaten human health;

(3) Produce uncontrolled flammable fumes or gases in sufficient quantities to pose a risk of fire or explosions;

(4) Damage the structural integrity of the device or facility containing the waste; or

(5) Through other like means threaten human health or the environment.

#### §§ 265.18-265.29 [Reserved]

### Subpart C—Preparedness and Prevention

#### § 265.30 Applicability.

The regulations in this Subpart apply to owners and operators of all hazardous waste facilities, except as § 265.1 provides otherwise.

#### § 265.31 Maintenance and operation of facility.

Facilities must be maintained and operated to minimize the possibility of a fire, explosion, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water which could threaten human health or the environment.

#### § 265.32 Required equipment.

All facilities must be equipped with the following, *unless* none of the hazards posed by waste handled at the facility could require a particular kind of equipment specified below:

(a) An internal communications or alarm system capable of providing immediate emergency instruction (voice or signal) to facility personnel;

(b) A device, such as a telephone (immediately available at the scene of operations) or a hand-held two-way radio, capable of summoning emergency assistance from local police departments, fire departments, or State or local emergency response teams;

(c) Portable fire extinguishers, fire control equipment (including special extinguishing equipment, such as that using foam, inert gas, or dry chemicals), spill control equipment, and decontamination equipment; and

(d) Water at adequate volume and pressure to supply water hose streams, or foam producing equipment, or automatic sprinklers, or water spray systems.

#### § 265.33 Testing and maintenance of equipment.

All facility communications or alarm systems, fire protection equipment, spill control equipment, and decontamination equipment, where required, must be tested and maintained as necessary to assure its proper operation in time of emergency.

#### § 265.34 Access to communications or alarm system.

(a) Whenever hazardous waste is being poured, mixed, spread, or otherwise handled, all personnel involved in the operation must have immediate access to an internal alarm or emergency communication device, either directly or through visual or voice contact with another employee, *unless* such a device is not required under § 265.32.

(b) If there is ever just one employee on the premises while the facility is operating, he must have immediate access to a device, such as a telephone (immediately available at the scene of operation) or a hand-held two-way radio, capable of summoning external emergency assistance, *unless* such a device is not required under § 265.32.

#### § 265.35 Required aisle space.

The owner or operator must maintain aisle space to allow the unobstructed movement of personnel, fire protection equipment, spill control equipment, and decontamination equipment to any area of facility operation in an emergency, *unless* aisle space is not needed for any of these purposes.

#### § 265.36 [Reserved]

#### § 265.37 Arrangements with local authorities.

(a) The owner or operator must attempt to make the following arrangements, as appropriate for the type of waste handled at his facility and the potential need for the services of these organizations:

(1) Arrangements to familiarize police, fire departments, and emergency response teams with the layout of the facility, properties of hazardous waste handled at the facility and associated hazards, places where facility personnel would normally be working, entrances to roads inside the facility, and possible evacuation routes;

(2) Where more than one police and fire department might respond to an emergency, agreements designating

primary emergency authority to a specific police and a specific fire department, and agreements with any others to provide support to the primary emergency authority;

(3) Agreements with State emergency response teams, emergency response contractors, and equipment suppliers; and

(4) Arrangements to familiarize local hospitals with the properties of hazardous waste handled at the facility and the types of injuries or illnesses which could result from fires, explosions, or releases at the facility.

(b) Where State or local authorities decline to enter into such arrangements, the owner or operator must document the refusal in the operating record.

#### § 265.38-265.49 [Reserved]

### Subpart D—Contingency Plan and Emergency Procedures

#### § 265.50 Applicability.

The regulations in this Subpart apply to owners and operators of all hazardous waste facilities, except as § 265.1 provides otherwise.

#### § 265.51 Purpose and implementation of contingency plan.

(a) Each owner or operator must have a contingency plan for his facility. The contingency plan must be designed to minimize hazards to human health or the environment from fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water.

(b) The provisions of the plan must be carried out immediately whenever there is a fire, explosion, or release of hazardous waste or hazardous waste constituents which could threaten human health or the environment.

#### § 265.52 Content of contingency plan.

(a) The contingency plan must describe the actions facility personnel must take to comply with §§ 265.51 and 265.56 in response to fires, explosions, or any unplanned sudden or non-sudden release of hazardous waste or hazardous waste constituents to air, soil, or surface water at the facility.

(b) If the owner or operator has already prepared a Spill Prevention, Control, and Countermeasures (SPCC) Plan in accordance with Part 112 or Part 151 of this Chapter, or some other emergency or contingency plan, he need only amend that plan to incorporate hazardous waste management provisions that are sufficient to comply with the requirements of this Part.

(c) The plan must describe arrangements agreed to by local police

departments, fire departments, hospitals, contractors, and State and local emergency response teams to coordinate emergency services, pursuant to § 265.37.

(d) The plan must list names, addresses, and phone numbers (office and home) of all persons qualified to act as emergency coordinator (see § 265.55), and this list must be kept up to date. Where more than one person is listed, one must be named as primary emergency coordinator and others must be listed in the order in which they will assume responsibility as alternates.

(e) The plan must include a list of all emergency equipment at the facility (such as fire extinguishing systems, spill control equipment, communications and alarm systems (internal and external), and decontamination equipment), where this equipment is required. This list must be kept up to date. In addition, the plan must include the location and a physical description of each item on the list, and a brief outline of its capabilities.

(f) The plan must include an evacuation plan for facility personnel where there is a possibility that evacuation could be necessary. This plan must describe signal(s) to be used to begin evacuation, evacuation routes, and alternate evacuation routes (in cases where the primary routes could be blocked by releases of hazardous waste or fires).

#### § 265.53 Copies of contingency plan.

A copy of the contingency plan and all revisions to the plan must be:

- (a) Maintained at the facility; and
- (b) Submitted to all local police departments, fire departments, hospitals, and State and local emergency response teams that may be called upon to provide emergency services.

#### § 265.54 Amendment of contingency plan.

The contingency plan must be reviewed, and immediately amended, if necessary, whenever:

- (a) Applicable regulations are revised;
- (b) The plan fails in an emergency;
- (c) The facility changes—in its design, construction, operation, maintenance, or other circumstances—in a way that materially increases the potential for fires, explosions, or releases of hazardous waste or hazardous waste constituents, or changes the response necessary in an emergency;

(d) The list of emergency coordinators changes; or

(e) The list of emergency equipment changes.

#### § 265.55 Emergency coordinator.

At all times, there must be at least one employee either on the facility premises or on call (i.e., available to respond to an emergency by reaching the facility within a short period of time) with the responsibility for coordinating all emergency response measures. This emergency coordinator must be thoroughly familiar with all aspects of the facility's contingency plan, all operations and activities at the facility, the location and characteristics of waste handled, the location of all records within the facility, and the facility layout. In addition, this person must have the authority to commit the resources needed to carry out the contingency plan.

*[Comment: The emergency coordinator's responsibilities are more fully spelled out in § 265.56. Applicable responsibilities for the emergency coordinator vary, depending on factors such as type and variety of waste(s) handled by the facility, and type and complexity of the facility.]*

#### § 265.56 Emergency procedures.

(a) Whenever there is an imminent or actual emergency situation, the emergency coordinator (or his designee when the emergency coordinator is on call) must immediately:

(1) Activate internal facility alarms or communication systems, where applicable, to notify all facility personnel; and

(2) Notify appropriate State or local agencies with designated response roles if their help is needed.

(b) Whenever there is a release, fire, or explosion, the emergency coordinator must immediately identify the character, exact source, amount, and a real extent of any released materials. He may do this by observation or review of facility records or manifests and, if necessary, by chemical analysis.

(c) Concurrently, the emergency coordinator must assess possible hazards to human health or the environment that may result from the release, fire, or explosion. This assessment must consider both direct and indirect effects of the release, fire, or explosion (e.g., the effects of any toxic, irritating, or asphyxiating gases that are generated, or the effects of any hazardous surface water run-offs from water or chemical agents used to control fire and heat-induced explosions).

(d) If the emergency coordinator determines that the facility has had a release, fire, or explosion which could threaten human health, or the environment, outside the facility, he must report his findings as follows:

(1) If his assessment indicates that evacuation of local areas may be advisable, he must immediately notify appropriate local authorities. He must be available to help appropriate officials decide whether local areas should be evacuated; and

(2) He must immediately notify either the government official designated as the on-scene coordinator for that geographical area (in the applicable regional contingency plan under Part 1510 of this Title), or the National Response Center (using their 24-hour toll free number 800/424-8802). The report must include:

- (i) Name and telephone number of reporter;
- (ii) Name and address of facility;
- (iii) Time and type of incident (e.g., release, fire);
- (iv) Name and quantity of material(s) involved, to the extent known;
- (v) The extent of injuries, if any; and
- (vi) The possible hazards to human health, or the environment, outside the facility.

(e) During an emergency, the emergency coordinator must take all reasonable measures necessary to ensure that fires, explosions, and releases do not occur, recur, or spread to other hazardous waste at the facility. These measures must include, where applicable, stopping processes and operations, collecting and containing released waste, and removing or isolating containers.

(f) If the facility stops operations in response to a fire, explosion or release, the emergency coordinator must monitor for leaks, pressure buildup, gas generation, or ruptures in valves, pipes, or other equipment, wherever this is appropriate.

(g) Immediately after an emergency, the emergency coordinator must provide for treating, storing, or disposing of recovered waste, contaminated soil or surface water, or any other material that results from a release, fire, or explosion at the facility.

[Comment: Unless the owner or operator can demonstrate, in accordance with § 261.3(c) or (d) of this Chapter, that the recovered material is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter.]

(h) The emergency coordinator must ensure that, in the affected area(s) of the facility:

(1) No waste that may be incompatible with the released material is treated, stored, or disposed of until cleanup procedures are completed; and

(2) All emergency equipment listed in the contingency plan is cleaned and fit for its intended use before operations are resumed.

(i) The owner or operator must notify the Regional Administrator, and appropriate State and local authorities, that the facility is in compliance with paragraph (h) of this Section before operations are resumed in the affected area(s) of the facility.

(j) The owner or operator must note in the operating record the time, date, and details of any incident that requires implementing the contingency plan. Within 15 days after the incident, he must submit a written report on the incident to the Regional Administrator. The report must include:

- (1) Name, address, and telephone number of the owner or operator;
- (2) Name, address, and telephone number of the facility;
- (3) Date, time, and type of incident (e.g., fire, explosion);
- (4) Name and quantity of material(s) involved;
- (5) The extent of injuries, if any;
- (6) An assessment of actual or potential hazards to human health or the environment, where this is applicable; and
- (7) Estimated quantity and disposition of recovered material that resulted from the incident.

§§ 265.57-265.69 [Reserved]

**Subpart E—Manifest System, Recordkeeping, and Reporting**

**§ 265.70 Applicability.**

The regulations in this Subpart apply to owners and operators of both on-site and off-site facilities, except as § 265.1 provides otherwise. Sections 265.71, 265.72, and 265.76 do not apply to owners and operators of on-site facilities that do not receive any hazardous waste from off-site sources.

**§ 265.71 Use of manifest system.**

(a) If a facility receives hazardous waste accompanied by a manifest, the owner or operator, or his agent, must:

- (1) Sign and date each copy of the manifest to certify that the hazardous waste covered by the manifest was received;
- (2) Note any significant discrepancies in the manifest (as defined in § 265.72(a)) on each copy of the manifest;

[Comment: The Agency does not intend that the owner or operator of a facility whose procedures under § 265.13(c) include waste analysis must perform that analysis before signing the manifest and giving it to the transporter. Section

265.72(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.]

(3) Immediately give the transporter at least one copy of the signed manifest;

(4) Within 30 days after the delivery, send a copy of the manifest to the generator; and

(5) Retain at the facility a copy of each manifest for at least three years from the date of delivery.

(b) If a facility receives, from a rail or water (bulk shipment) transporter, hazardous waste which is accompanied by a shipping paper containing all the information required on the manifest (excluding the EPA identification numbers, generator's certification, and signatures), the owner or operator, or his agent, must:

- (1) Sign and date each copy of the shipping paper to certify that the hazardous waste covered by the shipping paper was received;
- (2) Note any significant discrepancies in the shipping paper (as defined in § 265.72(a)) on each copy of the shipping paper;

[Comment: The Agency does not intend that the owner or operator of a facility whose procedures under § 265.13(c) include waste analysis must perform that analysis before signing the shipping paper and giving it to the transporter. Section 265.72(b), however, requires reporting an unreconciled discrepancy discovered during later analysis.]

(3) Immediately give the rail or water (bulk shipment) transporter at least one copy of the shipping paper;

(4) Within 30 days after the delivery, send a copy of the shipping paper to the generator; however, if the manifest is received within 30 days after the delivery, the owner or operator, or his agent, must sign and date the manifest and return it to the generator in lieu of the shipping paper; and

[Comment: Section 262.23(c) of this Chapter requires the generator to send three copies of the manifest to the facility when hazardous waste is sent by rail or water (bulk shipment).]

(5) Retain at the facility a copy of each shipping paper and manifest for at least three years from the date of delivery.

**§ 265.72 Manifest discrepancies.**

(a) Manifest discrepancies are differences between the quantity or type of hazardous waste designated on the manifest or shipping paper, and the quantity or type of hazardous waste a facility actually receives. Significant discrepancies in quantity are: (1) for bulk waste; variations greater than 10

percent in weight, and (2) for batch waste, any variation in piece count, such as a discrepancy of one drum in a truckload. Significant discrepancies in type are obvious differences which can be discovered by inspection or waste analysis, such as waste solvent substituted for waste acid, or toxic constituents not reported on the manifest or shipping paper.

(b) Upon discovering a significant discrepancy, the owner or operator must attempt to reconcile the discrepancy with the waste generator or transporter (e.g., with telephone conversations). If the discrepancy is not resolved within 15 days after receiving the waste, the owner or operator must immediately submit to the Regional Administrator a letter describing the discrepancy and attempts to reconcile it, and a copy of the manifest or shipping paper at issue.

#### § 265.73 Operating record.

(a) The owner or operator must keep a written operating record at his facility.

(b) The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility:

(1) A description and the quantity of each hazardous waste received, and the method(s) and date(s) of its treatment, storage, or disposal at the facility as required by Appendix I;

(2) The location of each hazardous waste within the facility and the quantity at each location. For disposal facilities, the location and quantity of each hazardous waste must be recorded on a map or diagram of each cell or disposal area. For all facilities, this information must include cross-references to specific manifest document numbers, if the waste was accompanied by a manifest;

[*Comment:* See §§ 265.119, 265.279, and 265.309 for related requirements.]

(3) Records and results of waste analyses and trial tests performed as specified in §§ 265.13, 265.193, 265.225, 265.252, 265.273, 265.345, 265.375, and 265.402;

(4) Summary reports and details of all incidents that require implementing the contingency plan as specified in § 265.56(j);

(5) Records and results of inspections as required by § 265.15(d) (except these data need be kept only three years);

(6) Monitoring, testing, or analytical data where required by §§ 265.90, 265.94, 265.276, 265.278, 265.280(d)(1), 265.347, and 265.377; and,

[*Comment:* As required by § 265.94, monitoring data at disposal facilities must be kept throughout the post-closure period.]

(7) All closure cost estimates under § 265.142 and, for disposal facilities, all post-closure cost estimates under § 265.144.

#### § 265.74 Availability, retention, and disposition of records.

(a) All records, including plans, required under this Part must be furnished upon request, and made available at all reasonable times for inspection, by any officer, employee, or representative of EPA who is duly designated by the Administrator.

(b) The retention period for all records required under this Part is extended automatically during the course of any unresolved enforcement action regarding the facility or as requested by the Administrator.

(c) A copy of records of waste disposal locations and quantities under § 265.73(b)(2) must be submitted to the Regional Administrator and local land authority upon closure of the facility (see § 265.119).

#### § 265.75 Annual report.

The owner or operator must prepare and submit a single copy of an annual report to the Regional Administrator by March 1 of each year. The report form and instructions in Appendix II must be used for this report. The annual report must cover facility activities during the previous calendar year and must include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The calendar year covered by the report;

(c) For off-site facilities, the EPA identification number of each hazardous waste generator from which the facility received a hazardous waste during the year; for imported shipments, the report must give the name and address of the foreign generator;

(d) A description and the quantity of each hazardous waste the facility received during the year. For off-site facilities, this information must be listed by EPA identification number of each generator;

(e) The method of treatment, storage, or disposal for each hazardous waste;

(f) Monitoring data under § 265.94(a)(2)(ii) and (iii), and (b)(2), where required;

(g) The most recent closure cost estimate under § 265.142, and, for disposal facilities, the most recent post-closure cost estimate under § 265.144; and

(h) The certification signed by the owner or operator of the facility or his authorized representative.

#### § 265.76 Unmanifested waste report.

If a facility accepts for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest, or without an accompanying shipping paper as described in § 263.20(e)(2) of this Chapter, and if the waste is not excluded from the manifest requirement by § 261.5 of this Chapter, then the owner or operator must prepare and submit a single copy of a report to the Regional Administrator within 15 days after receiving the waste. The report form and instructions in Appendix II must be used for this report. The report must include the following information:

(a) The EPA identification number, name, and address of the facility;

(b) The date the facility received the waste;

(c) The EPA identification number, name, and address of the generator and the transporter, if available;

(d) A description and the quantity of each unmanifested hazardous waste the facility received;

(e) The method of treatment, storage, or disposal for each hazardous waste;

(f) The certification signed by the owner or operator of the facility or his authorized representative; and

(g) A brief explanation of why the waste was unmanifested, if known.

[*Comment:* Small quantities of hazardous waste are excluded from regulation under this Part and do not require a manifest. Where a facility receives unmanifested hazardous wastes, the Agency suggests that the owner or operator obtain from each generator a certification that the waste qualifies for exclusion. Otherwise, the Agency suggests that the owner or operator file an unmanifested waste report for the hazardous waste movement.]

#### § 265.77 Additional reports.

In addition to submitting the annual report and unmanifested waste reports described in §§ 265.75 and 265.76, the owner or operator must also report to the Regional Administrator:

(a) Releases, fires, and explosions as specified in § 265.56(j);

(b) Ground-water contamination and monitoring data as specified in §§ 265.93 and 265.94; and

(c) Facility closure as specified in § 265.115.

#### §§ 265.78-265.89 [Reserved]

#### Subpart F—Ground-Water Monitoring

##### § 265.90 Applicability.

(a) Within one year after the effective date of these regulations, the owner or

operator of a surface impoundment, landfill, or land treatment facility which is used to manage hazardous waste must implement a ground-water monitoring program capable of determining the facility's impact on the quality of ground water in the uppermost aquifer underlying the facility, except as § 265.1 and paragraph (c) of this Section provide otherwise.

(b) Except as paragraphs (c) and (d) of this Section provide otherwise, the owner or operator must install, operate, and maintain a ground-water monitoring system which meets the requirements of § 265.91, and must comply with §§ 265.92-265.94. This ground-water monitoring program must be carried out during the active life of the facility, and for disposal facilities, during the post-closure care period as well.

(c) All or part of the ground-water monitoring requirements of this Subpart may be waived if the owner or operator can demonstrate that there is a low potential for migration of hazardous waste or hazardous waste constituents from the facility via the uppermost aquifer to water supply wells (domestic, industrial, or agricultural) or to surface water. This demonstration must be in writing, and must be kept at the facility. This demonstration must be certified by a qualified geologist or geotechnical engineer and must establish the following:

(1) The potential for migration of hazardous waste or hazardous waste constituents from the facility to the uppermost aquifer, by an evaluation of:

(i) A water balance of precipitation, evapotranspiration, runoff, and infiltration; and

(ii) Unsaturated zone characteristics (i.e., geologic materials, physical properties, and depth to ground water); and

(2) The potential for hazardous waste or hazardous waste constituents which enter the uppermost aquifer to migrate to a water supply well or surface water, by an evaluation of:

(i) Saturated zone characteristics (i.e., geologic materials, physical properties, and rate of ground-water flow); and

(ii) The proximity of the facility to water supply wells or surface water.

(d) If an owner or operator assumes (or knows) that ground-water monitoring of indicator parameters in accordance with §§ 265.91 and 265.92 would show statistically significant increases (or decreases in the case of pH) when evaluated under § 265.93(b), he may, install, operate, and maintain an alternate ground-water monitoring system (other than the one described in §§ 265.91 and 265.92). If the owner or operator decides to use an alternate

ground-water monitoring system he must:

(1) Within one year after the effective date of these regulations, submit to the Regional Administrator a specific plan, certified by a qualified geologist or geotechnical engineer, which satisfies the requirements of § 265.93(d)(3), for an alternate ground-water monitoring system;

(2) Not later than one year after the effective date of these regulations, initiate the determinations specified in § 265.93(d)(4);

(3) Prepare and submit a written report in accordance with § 265.93(d)(5);

(4) Continue to make the determinations specified in § 265.93(d)(4) on a quarterly basis until final closure of the facility; and

(5) Comply with the recordkeeping and reporting requirements in § 265.94(b).

#### § 265.91 Ground-water monitoring system.

(a) A ground-water monitoring system must be capable of yielding ground-water samples for analysis and must consist of:

(1) Monitoring wells (at least one) installed hydraulically upgradient (i.e., in the direction of increasing static head) from the limit of the waste management area. Their number, locations, and depths must be sufficient to yield ground-water samples that are:

(i) Representative of background ground-water quality in the uppermost aquifer near the facility; and

(ii) Not affected by the facility; and

(2) Monitoring wells (at least three) installed hydraulically downgradient (i.e., in the direction of decreasing static head) at the limit of the waste management area. Their number, locations, and depths must ensure that they immediately detect any statistically significant amounts of hazardous waste or hazardous waste constituents that migrate from the waste management area to the uppermost aquifer.

(b) Separate monitoring systems for each waste management component of a facility are not required provided that provisions for sampling upgradient and downgradient water quality will detect any discharge from the waste management area.

(1) In the case of a facility consisting of only one surface impoundment, landfill, or land treatment area, the waste management area is described by the waste boundary (perimeter).

(2) In the case of a facility consisting of more than one surface impoundment, landfill, or land treatment area, the waste management area is described by an imaginary boundary line which

circumscribes the several waste management components.

(c) All monitoring wells must be cased in a manner that maintains the integrity of the monitoring well bore hole. This casing must be screened or perforated, and packed with gravel or sand where necessary, to enable sample collection at depths where appropriate aquifer flow zones exist. The annular space (i.e., the space between the bore hole and well casing) above the sampling depth must be sealed with a suitable material (e.g., cement grout or bentonite slurry) to prevent contamination of samples and the ground water.

#### § 265.92 Sampling and analysis.

(a) The owner or operator must obtain and analyze samples from the installed ground-water monitoring system. The owner or operator must develop and follow a ground-water sampling and analysis plan. He must keep this plan at the facility. The plan must include procedures and techniques for:

- (1) Sample collection;
- (2) Sample preservation and shipment;
- (3) Analytical procedures; and
- (4) Chain of custody control.

[Comment: See "Procedures Manual For Ground-water Monitoring At Solid Waste Disposal Facilities," EPA-530/SW-611, August 1977 and "Methods for Chemical Analysis of Water and Wastes," EPA-600/4-79-020, March 1979 for discussions of sampling and analysis procedures.]

(b) The owner or operator must determine the concentration or value of the following parameters in ground-water samples in accordance with paragraphs (c) and (d) of this section:

(1) Parameters characterizing the suitability of the ground water as a drinking water supply, as specified in Appendix III.

(2) Parameters establishing ground-water quality:

- (i) Chloride
- (ii) Iron
- (iii) Manganese
- (iv) Phenols
- (v) Sodium
- (vi) Sulfate

[Comment: These parameters are to be used as a basis for comparison in the event a ground-water quality assessment is required under § 265.93(d).]

(3) Parameters used as indicators of ground-water contamination:

- (i) pH
- (ii) Specific Conductance
- (iii) Total Organic Carbon
- (iv) Total Organic Halogen

(c)(1) For all monitoring wells, the owner or operator must establish initial

background concentrations or values of all parameters specified in paragraph (b) of this Section. He must do this quarterly for one year.

(2) For each of the indicator parameters specified in paragraph (b)(3) of this Section, at least four replicate measurements must be obtained for each sample and the initial background arithmetic mean and variance must be determined by pooling the replicate measurements for the respective parameter concentrations or values in samples obtained from upgradient wells during the first year.

(d) After the first year, all monitoring wells must be sampled and the samples analyzed with the following frequencies:

(1) Samples collected to establish ground-water quality must be obtained and analyzed for the parameters specified in paragraph (b)(2) of this Section at least annually.

(2) Samples collected to indicate ground-water contamination must be obtained and analyzed for the parameters specified in paragraph (b)(3) of this Section at least semi-annually.

(e) Elevation of the ground-water surface at each monitoring well must be determined each time a sample is obtained.

#### § 265.93 Preparation, evaluation, and response.

(a) Within one year after the effective date of these regulations, the owner or operator must prepare an *outline* of a ground-water quality assessment program. The outline must describe a more comprehensive ground-water monitoring program (than that described in §§ 265.91 and 265.92) capable of determining:

(1) Whether hazardous waste or hazardous waste constituents have entered the ground water;

(2) The rate and extent of migration of hazardous waste or hazardous waste constituents in the ground water; and

(3) The concentrations of hazardous waste or hazardous waste constituents in the ground water.

(b) For each indicator parameter specified in § 265.92(b)(3), the owner or operator must calculate the arithmetic mean and variance, based on at least four replicate measurements on each sample, for each well monitored in accordance with § 265.92(d)(2), and compare these results with its initial background arithmetic mean. The comparison must consider individually each of the wells in the monitoring system, and must use the Student's t-test at the 0.01 level of significance (see Appendix IV) to determine statistically significant increases (and decreases, in the case of pH) over initial background.

(c)(1) If the comparisons for the *upgradient* wells made under paragraph (b) of this Section show a significant increase (or pH decrease), the owner or operator must submit this information in accordance with § 265.94(a)(2)(ii).

(2) If the comparisons for *downgradient* wells made under paragraph (b) of this Section show a significant increase (or pH decrease), the owner or operator must then immediately obtain additional ground-water samples from those downgradient wells where a significant difference was detected, split the samples in two, and obtain analyses of all additional samples to determine whether the significant difference was a result of laboratory error.

(d)(1) If the analyses performed under paragraph (c)(2) of this Section confirm the significant increase (or pH decrease), the owner or operator must provide written notice to the Regional Administrator—within seven days of the date of such confirmation—that the facility may be affecting ground-water quality.

(2) Within 15 days after the notification under paragraph (d)(1) of this Section, the owner or operator must develop and submit to the Regional Administrator a specific plan, based on the outline required under paragraph (a) of this Section and certified by a qualified geologist or geotechnical engineer, for a ground-water quality assessment program at the facility.

(3) The plan to be submitted under § 265.90(d)(1) or paragraph (d)(2) of this Section must specify:

(i) The number, location, and depth of wells;

(ii) Sampling and analytical methods for those hazardous wastes or hazardous waste constituents in the facility;

(iii) Evaluation procedures, including any use of previously-gathered ground-water quality information; and

(iv) A schedule of implementation.

(4) The owner or operator must implement the ground-water quality assessment plan which satisfies the requirements of paragraph (d)(3) of this Section, and, at a minimum, determine:

(i) The rate and extent of migration of the hazardous waste or hazardous waste constituents in the ground water; and

(ii) The concentrations of the hazardous waste or hazardous waste constituents in the ground water.

(5) The owner or operator must make his first determination under paragraph (d)(4) of this Section as soon as technically feasible, and, within 15 days after that determination, submit to the Regional Administrator a written report

containing an assessment of the ground-water quality.

(8) If the owners or operator determines, based on the results of the first determination under paragraph (d)(4) of this Section, that no hazardous waste or hazardous waste constituents from the facility have entered the ground water, then he may reinstate the indicator evaluation program described in § 265.92 and paragraph (b) of this Section. If the owner or operator reinstates the indicator evaluation program, he must so notify the Regional Administrator in the report submitted under paragraph (d)(5) of this Section.

(7) If the owner or operator determines, based on the first determination under paragraph (d)(4) of this Section, that hazardous waste or hazardous waste constituents from the facility have entered the ground water, then he:

(i) Must continue to make the determinations required under paragraph (d)(4) of this Section on a quarterly basis until final closure of the facility, if the ground-water quality assessment plan was implemented prior to final closure of the facility; or

(ii) May cease to make the determinations required under paragraph (d)(4) of this Section, if the ground-water quality assessment plan was implemented during the post-closure care period.

(e) Notwithstanding any other provision of this Subpart, any ground-water quality assessment to satisfy the requirements of § 265.93(d)(4) which is initiated prior to final closure of the facility must be completed and reported in accordance with § 265.93(d)(5).

(f) Unless the ground water is monitored to satisfy the requirements of § 265.93(d)(4), at least annually the owner or operator must evaluate the data on ground-water surface elevations obtained under § 265.92(e) to determine whether the requirements under § 265.91(a) for locating the monitoring wells continues to be satisfied. If the evaluation shows that § 265.91(a) is no longer satisfied, the owner or operator must immediately modify the number, location, or depth of the monitoring wells to bring the ground-water monitoring system into compliance with this requirement.

#### § 265.94 Recordkeeping and reporting.

(a) Unless the ground water is monitored to satisfy the requirements of § 265.93(d)(4), the owner or operator must:

(1) Keep records of the analyses required in § 265.92(c) and (d), the associated ground-water surface elevations required in § 265.92(e), and

the evaluations required in § 265.93(b) throughout the active life of the facility, and for disposal facilities, throughout the post-closure care period as well; and

(2) Report the following ground-water monitoring information to the Regional Administrator:

(i) During the first year when initial background concentrations are being established for the facility: concentrations or values of the parameters listed in § 265.92(b)(1) for each ground-water monitoring well within 15 days after completing each quarterly analysis. The owner or operator must separately identify for each monitoring well any parameters whose concentration or value has been found to exceed the maximum contaminant levels listed in Appendix III.

(ii) Annually: concentrations or values of the parameters listed in § 265.92(b)(3) for each ground-water monitoring well, along with the required evaluations for these parameters under § 265.93(b). The owner or operator must separately identify any significant differences from initial background found in the upgradient wells, in accordance with § 265.93(c)(1). During the active life of the facility, this information must be submitted as part of the annual report required under § 265.75.

(iii) As a part of the annual report required under § 265.75: results of the evaluation of ground-water surface elevations under § 265.93(f), and a description of the response to that evaluation, where applicable.

(b) If the ground water is monitored to satisfy the requirements of § 265.93(d)(4), the owner or operator must:

(1) Keep records of the analyses and evaluations specified in the plan, which satisfies the requirements of § 265.93(d)(3), throughout the active life of the facility, and, for disposal facilities, throughout the post-closure care period as well; and

(2) Annually, until final closure of the facility, submit to the Regional Administrator a report containing the results of his ground-water quality assessment program which includes, but is not limited to, the calculated (or measured) rate of migration of hazardous waste or hazardous waste constituents in the ground water during the reporting period. This report must be submitted as part of the annual report required under § 265.75.

#### §§ 265.95-265.109 [Reserved]

#### Subpart G—Closure and Post-Closure

##### § 265.110 Applicability.

Except as § 265.1 provides otherwise:

(a) Sections 265.111-265.115 (which concern closure) apply to the owners and operators of all hazardous waste facilities; and

(b) Sections 265.117-265.120 (which concern post-closure care) apply to the owners and operators of all disposal facilities.

##### § 265.111 Closure performance standard.

The owner or operator must close his facility in a manner that: (a) minimizes the need for further maintenance, and (b) controls, minimizes or eliminates, to the extent necessary to protect human health and the environment, post-closure escape of hazardous waste, hazardous waste constituents, leachate, contaminated rainfall, or waste-decomposition products to the ground water, or surface waters, or to the atmosphere.

##### § 265.112 Closure plan; amendment of plan.

(a) On the effective date of these regulations, the owner or operator must have a written closure plan. He must keep this plan at the facility. This plan must identify the steps necessary to completely close the facility at any point during its intended life and at the end of its intended life. The closure plan must include, at least:

(1) A description of how and when the facility will be partially closed, if applicable, and ultimately closed. The description must identify the maximum extent of the operation which will be unclosed during the life of the facility, and how the requirements of § 265.111 and the applicable closure requirements of §§ 265.197, 265.228, 265.280, 265.310, 265.351, 265.381, and 265.404 will be met;

(2) An estimate of the maximum inventory of wastes in storage or in treatment at any given time during the life of the facility;

(3) A description of the steps needed to decontaminate facility equipment during closure; and

(4) A schedule for final closure which must include, as a minimum, the anticipated date when wastes will no longer be received, the date when completion of final closure is anticipated, and intervening milestone dates which will allow tracking of the progress of closure. (For example, the expected date for completing treatment or disposal of waste inventory must be included, as must the planned date for removing any residual wastes from

storage facilities and treatment processes.)

(b) The owner or operator may amend his closure plan at any time during the active life of the facility. (The active life of the facility is that period during which wastes are periodically received.) The owner or operator must amend his plan any time changes in operating plans or facility design affect the closure plan.

(c) The owner or operator must submit his closure plan to the Regional Administrator at least 180 days before the date he expects to begin closure. The Regional Administrator will modify, approve, or disapprove the plan within 90 days of receipt and after providing the owner or operator and the affected public (through a newspaper notice) the opportunity to submit written comments. If an owner or operator plans to begin closure within 180 days after the effective date of these regulations, he must submit the necessary plans on the effective date of these regulations.

##### § 265.113 Time allowed for closure.

(a) Within 90 days after receiving the final volume of hazardous wastes, the owner or operator must treat all hazardous wastes in storage or in treatment, or remove them from the site, or dispose of them on-site, in accordance with the approved closure plan.

(b) The owner or operator must complete closure activities in accordance with the approved closure plan and within six months after receiving the final volume of wastes. The Regional Administrator may approve a longer closure period under § 265.112(c) if the owner or operator can demonstrate that: (1) the required or planned closure activities will, of necessity, take him longer than six months to complete, and (2) that he has taken all steps to eliminate any significant threat to human health and the environment from the unclosed but inactive facility.

##### § 265.114 Disposal or decontamination of equipment.

When closure is completed, all facility equipment and structures must have been properly disposed of, or decontaminated by removing all hazardous waste and residues.

##### § 265.115 Certification of closure.

When closure is completed, the owner or operator must submit to the Regional Administrator certification both by the owner or operator and by an independent registered professional engineer that the facility has been closed in accordance with the

specifications in the approved closure plan.

**§ 265.116 [Reserved]**

**§ 265.117 Post-closure care and use of property; period of care.**

(a) Post-closure care must consist of at least:

(1) Ground-water monitoring and reporting in accordance with the requirements of Subpart F; and

(2) Maintenance of monitoring and waste containment systems as specified in §§ 265.91, 265.223, 265.228, 265.280, and 265.310, where applicable.

(b) The Regional Administrator may require maintenance of any or all of the security requirements of § 265.14 during the post-closure period, when:

(1) Wastes may remain exposed after completion of closure; or

(2) Short term, incidental access by the public or domestic livestock may pose a hazard to human health.

(c) Post-closure use of property on or in which hazardous waste remains after closure must never be allowed to disturb the integrity of the final cover, liner(s), or any other components of any containment system, or the function of the facility's monitoring systems, unless the owner or operator can demonstrate to the Regional Administrator, either in the post-closure plan or by petition, that the disturbance:

(1) Is necessary to the proposed use of the property, and will not increase the potential hazard to human health or the environment; or

(2) Is necessary to reduce a threat to human health or the environment.

(d) The owner or operator of a disposal facility must provide post-closure care in accordance with the approved post-closure plan for at least 30 years after the date of completing closure. *However*, the owner or operator may petition the Regional Administrator to allow some or all of the requirements for post-closure care to be discontinued or altered before the end of the 30-year period. The petition must include evidence demonstrating the secure nature of the facility that makes continuing the specified post-closure requirement(s) unnecessary—e.g., no detected leaks and none likely to occur, characteristics of the waste, application of advanced technology, or alternative disposal, treatment, or re-use techniques. Alternately, the Regional Administrator may require the owner or operator to continue one or more of the post-closure care and maintenance requirements contained in the facility's post-closure plan for a specified period of time. The Regional Administrator may do this if he finds there has been

noncompliance with any applicable standards or requirements, or that such continuation is necessary to protect human health or the environment. At the end of the specified period of time, the Regional Administrator will determine whether to continue or terminate post-closure care and maintenance at the facility. Anyone (a member of the public as well as the owner or operator) may petition the Regional Administrator for an extension or reduction of the post-closure care period based on cause. These petitions will be considered by the Regional Administrator at the time the post-closure plan is submitted and at five-year intervals after the completion of closure.

**§ 265.118 Post-closure plan; amendment of plan.**

(a) On the effective date of these regulations, the owner or operator of a disposal facility must have a written post-closure plan. He must keep this plan at the facility. This plan must identify the activities which will be carried on after final closure and the frequency of those activities. The post-closure plan must include at least:

(1) Ground-water monitoring activities and frequencies as specified in Subpart F for the post-closure period; and

(2) Maintenance activities and frequencies to ensure: (1) the integrity of the cap and final cover or other containment structures as specified in §§ 265.223, 265.228, 265.280, and 265.310, where applicable, and (2) the function of the facility's monitoring equipment as specified in § 265.91.

(b) The owner or operator may amend his post-closure plan at any time during the active life of the disposal facility or during the post-closure care period. The owner or operator must amend his plan any time changes in operating plans or facilities design affect his post-closure plan.

(c) The owner or operator of a disposal facility must submit his post-closure plan to the Regional Administrator at least 180 days before the date he expects to begin closure. The Regional Administrator will modify or approve the plan within 90 days of receipt and after providing the owner or operator and the affected public (through a newspaper notice) the opportunity to submit written comments. The plan may be modified to include security equipment maintenance under § 265.117(b). If an owner or operator of a disposal facility plans to begin closure within 180 days after the effective date of these regulations, he must submit the necessary plans on the effective date of these regulations. Any amendments to the plan under paragraph (b) of this

Section which occur after approval of the plan must also be approved by the Regional Administrator before they may be implemented.

**§ 265.119 Notice to local land authority.**

Within 90 days after closure is completed, the owner or operator of a disposal facility must submit to the local land authority and to the Regional Administrator a survey plat indicating the location and dimensions of landfill cells or other disposal areas with respect to permanently surveyed benchmarks. This plat must be prepared and certified by a professional land surveyor. The plat filed with the local land authority must contain a note, prominently displayed, which states the owner's or operator's obligation to restrict disturbance of the site as specified in § 265.117(c). In addition, the owner or operator must submit to the Regional Administrator and to the local land authority a record of the type, location, and quantity of hazardous wastes disposed of within each cell or area of the facility. For wastes disposed of before these regulations were promulgated, the owner or operator must identify the type, location, and quantity of the wastes to the best of his knowledge and in accordance with any records he has kept.

**§ 265.120 Notice in deed to property.**

The owner of the property on which a disposal facility is located must record, in accordance with State law, a notation on the deed to the facility property—or on some other instrument which is normally examined during title search—that will in perpetuity notify any potential purchaser of the property that: (1) the land has been used to manage hazardous waste, and (2) its use is restricted under § 265.117(c).

**§§ 265.121-265.139 [Reserved]**

**Subpart H—Financial Requirements**

**§ 265.140 Applicability.**

(a) Section 265.142 applies to owners and operators of all hazardous waste facilities, except as this Section or § 265.1 provide otherwise.

(b) Section 265.144 applies only to owners and operators of disposal facilities.

(c) States and the Federal government are exempt from the requirements of this Subpart.

**§ 265.141 [Reserved]**

**§ 265.142 Cost estimate for facility closure.**

(a) On the effective date of these regulations, each facility owner or

operator must have a written estimate of the cost of closing the facility in accordance with the requirements in §§ 265.111-265.115 and applicable closure requirements in §§ 265.197, 265.228, 265.280, 265.310, 265.351, 265.381, and 265.404. The owner or operator must keep this estimate, and all subsequent estimates required in this Section, at the facility. The estimate must equal the cost of closure at the point in the facility's operating life when the extent and manner of its operation would make closure the most expensive, as indicated by its closure plan (see § 265.112(a)).

[*Comment:* For example, the closure cost estimate for a particular landfill may be for the cost of closure when its active disposal operations extend over 20 acres, if at all other times these operations extend over less than 20 acres. The estimate would not include costs of partial closures that the closure plan schedules before or after the time of maximum closure cost.]

(b) The owner or operator must prepare a new closure cost estimate whenever a change in the closure plan affects the cost of closure.

(c) On each anniversary of the effective date of these regulations, the owner or operator must adjust the latest closure cost estimate using an inflation factor derived from the annual Implicit Price Deflator for Gross National Product as published by the U.S. Department of Commerce in its *Survey of Current Business*. The inflation factor must be calculated by dividing the latest published annual Deflator by the Deflator for the previous year. The result is the inflation factor. The adjusted closure cost estimate must equal the latest closure cost estimate (see paragraph (b) of this Section) times the inflation factor.

[*Comment:* The following is a sample calculation of the adjusted closure cost estimate: Assume that the latest closure cost estimate for a facility is \$50,000, the latest published annual Deflator is 152.05, and the annual Deflator for the previous year is 141.70. The Deflators may be rounded to the nearest whole number. Dividing 152 by 142 gives the inflation factor, 1.07. Multiply \$50,000 by 1.07 for a product of \$53,500—the adjusted closure cost estimate.]

#### § 265.143 [Reserved]

#### § 265.144 Cost estimate for post-closure monitoring and maintenance.

(a) On the effective date of these regulations, the owner or operator of a disposal facility must have a written estimate of the annual cost of post-closure monitoring and maintenance of the facility in accordance with the

applicable post-closure regulations in §§ 265.117-265.120, 265.228, 265.280, and 265.310. The owner or operator must keep this estimate, and all subsequent estimates required in this Section, at the facility.

(b) The owner or operator must prepare a new annual post-closure cost estimate whenever a change in the post-closure plan affects the cost of post-closure care (see § 265.118(b)). The latest post-closure cost estimate is calculated by multiplying the latest annual post-closure cost estimate by 30.

(c) On each anniversary of the effective date of these regulations, during the operating life of the facility, the owner or operator must adjust the latest post-closure cost estimate using the inflation factor calculated in accordance with § 265.142(c). The adjusted post-closure cost estimate must equal the latest post-closure cost estimate (see paragraph (b) of this Section) times the inflation factor.

#### §§ 265.145-265.169 [Reserved]

### Subpart I—Use and Management of Containers

#### § 265.170 Applicability.

The regulations in this Subpart apply to owners and operators of all hazardous waste facilities that store containers of hazardous waste, except as § 265.1 provides otherwise.

#### § 265.171 Condition of containers.

If a container holding hazardous waste is not in good condition, or if it begins to leak, the owner or operator must transfer the hazardous waste from this container to a container that is in good condition, or manage the waste in some other way that complies with the requirements of this Part.

#### § 265.172 Compatibility of waste with container.

The owner or operator must use a container made of or lined with materials which will not react with, and are otherwise compatible with, the hazardous waste to be stored, so that the ability of the container to contain the waste is not impaired.

#### § 265.173 Management of containers.

(a) A container holding hazardous waste must always be closed during storage, except when it is necessary to add or remove waste.

(b) A container holding hazardous waste must not be opened, handled, or stored in a manner which may rupture the container or cause it to leak.

[*Comment:* A container that is a hazardous waste listed in § 261.33 of this Chapter must be managed in

compliance with the regulations of this Part. Re-use of containers in transportation is governed by U.S. Department of Transportation regulations, including those set forth in 49 CFR 173.28.]

#### § 265.174 Inspections.

The owner or operator must inspect areas where containers are stored, at least weekly, looking for leaks and for deterioration caused by corrosion or other factors.

[*Comment:* See § 265.171 for remedial action required if deterioration or leaks are detected.]

#### § 265.175 [Reserved]

#### § 265.176 Special requirements for ignitable or reactive waste.

Containers holding ignitable or reactive waste must be located at least 15 meters (50 feet) from the facility's property line.

[*Comment:* See § 265.17(a) for additional requirements.]

#### § 265.177 Special requirements for incompatible wastes.

(a) Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same container, unless § 265.17(b) is complied with.

(b) Hazardous waste must not be placed in an unwashed container that previously held an incompatible waste or material (see Appendix V for examples), unless § 265.17(b) is complied with.

(c) A storage container holding a hazardous waste that is incompatible with any waste or other materials stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials or protected from them by means of a dike, berm, wall, or other device.

[*Comment:* The purpose of this is to prevent fires, explosions, gaseous emissions, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the mixing of incompatible wastes or materials if containers break or leak.]

#### § 265.178-265.189 [Reserved]

### Subpart J—Tanks

#### § 265.190 Applicability.

The regulations in this Subpart apply to owners and operators of facilities that use tanks to treat or store hazardous waste, except as § 265.1 provides otherwise.

**§ 265.191 [Reserved]****§ 265.192 General operating requirements.**

(a) Treatment or storage of hazardous waste in tanks must comply with § 265.17(b).

(b) Hazardous wastes or treatment reagents must not be placed in a tank if they could cause the tank or its inner liner to rupture, leak, corrode, or otherwise fail before the end of its intended life.

(c) Uncovered tanks must be operated to ensure at least 60 centimeters (2 feet) of freeboard, *unless* the tank is equipped with a containment structure (e.g., dike or trench), a drainage control system, or a diversion structure (e.g., standby tank) with a capacity that equals or exceeds the volume of the top 60 centimeters (2 feet) of the tank.

(d) Where hazardous waste is continuously fed into a tank, the tank must be equipped with a means to stop this inflow (e.g., a waste feed cutoff system or by-pass system to a stand-by tank).

[*Comment:* These systems are intended to be used in the event of a leak or overflow from the tank due to a system failure (e.g., a malfunction in the treatment process, a crack in the tank, etc.).]

**§ 265.193 Waste analysis and trial tests.**

(a) In addition to the waste analysis required by § 265.13, whenever a tank is to be used to:

(1) Chemically treat or store a hazardous waste which is substantially different from waste previously treated or stored in that tank; or

(2) Chemically treat hazardous waste with a substantially different process than any previously used in that tank; the owner or operator must, before treating or storing the different waste or using the different process:

(i) Conduct waste analyses and trial treatment or storage tests (e.g., bench scale or pilot plant scale tests); or  
(ii) Obtain written, documented information on similar storage or treatment of similar waste under similar operating conditions;

to show that this proposed treatment or storage will meet all applicable requirements of § 265.192(a) and (b).

[*Comment:* As required by § 265.13, the waste analysis plan must include analyses needed to comply with §§ 265.198 and 265.199. As required by § 265.73, the owner or operator must place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.]

**§ 265.194 Inspections.**

(a) The owner or operator of a tank must inspect, where present:

(1) Discharge control equipment (e.g., waste feed cut-off systems, by-pass systems, and drainage systems), at least once each operating day, to ensure that it is in good working order;

(2) Data gathered from monitoring equipment (e.g., pressure and temperature gauges), at least once each operating day, to ensure that the tank is being operated according to its design;

(3) The level of waste in the tank, at least once each operating day, to ensure compliance with § 265.192(c);

(4) The construction materials of the tank, at least weekly, to detect corrosion or leaking of fixtures or seams; and

(5) The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes), at least weekly, to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

[*Comment:* As required by § 265.15(c), the owner or operator must remedy any deterioration or malfunction he finds.]

**§§ 265.195-265.196 [Reserved]****§ 265.197 Closure.**

At closure, all hazardous waste and hazardous waste residues must be removed from tanks, discharge control equipment, and discharge confinement structures.

[*Comment:* At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with § 261.3(c) or (d) of this Chapter, that any solid waste removed from his tank is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter.]

**§ 265.198 Special requirements for ignitable or reactive waste.**

(a) Ignitable or reactive waste must not be placed in a tank, unless:

(1) The waste is treated, rendered, or mixed before or immediately after placement in the tank so that (i) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under §§ 261.21 or 261.23 of this Chapter, and (ii) § 265.17(b) is complied with; or

(2) The waste is stored or treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react; or

(3) The tank is used solely for emergencies.

(b) The owner or operator of a facility which treats or stores ignitable or reactive waste in covered tanks must comply with the National Fire Protection Association's (NFPA's) buffer zone requirements for tanks, contained in Tables 2-1 through 2-6 of the "Flammable and Combustible Code—1977".

[*Comment:* See § 265.17(a) for additional requirements.]

**§ 265.199 Special requirements for incompatible wastes.**

(a) Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same tank, unless § 265.17(b) is complied with.

(b) Hazardous waste must not be placed in an unwashed tank which previously held an incompatible waste or material, unless § 265.17(b) is complied with.

**§§ 265.200-265.219 [Reserved]****Subpart K—Surface Impoundments****§ 265.220 Applicability.**

The regulations in this Subpart apply to owners and operators of facilities that use surface impoundments to treat, store, or dispose of hazardous waste, except as § 265.1 provides otherwise.

**§ 265.221 [Reserved]****§ 265.222 General operating requirements.**

A surface impoundment must maintain enough freeboard to prevent any overtopping of the dike by overflowing, wave action, or a storm. There must be at least 60 centimeters (2 feet) of freeboard.

[*Comment:* Any point source discharge from a surface impoundment to waters of the United States is subject to the requirements of Section 402 of the Clean Water Act, as amended. Spills may be subject to Section 311 of that Act.]

**§ 265.223 Containment system.**

All earthen dikes must have a protective cover, such as grass, shale, or rock, to minimize wind and water erosion and to preserve their structural integrity.

**§ 265.224 [Reserved]****§ 265.225 Waste analysis and trial tests.**

(a) In addition to the waste analyses required by § 265.13, whenever a surface impoundment is to be used to:

(1) Chemically treat a hazardous waste which is substantially different from waste previously treated in that impoundment; or

(2) Chemically treat hazardous waste with a substantially different process than any previously used in that impoundment; the owner or operator must, before treating the different waste or using the different process:

(i) Conduct waste analyses and trial treatment tests (e.g., bench scale or pilot plant scale tests); or

(ii) Obtain written, documented information on similar treatment of similar waste under similar operating conditions; to show that this treatment will comply with § 265.17(b).

[Comment: As required by § 265.13, the waste analysis plan must include analyses needed to comply with §§ 265.229 and 265.230. As required by § 265.73, the owner or operator must place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.]

#### § 265.226 Inspections.

(a) The owner or operator must inspect:

(1) The freeboard level at least once each operating day to ensure compliance with § 265.222, and

(2) The surface impoundment, including dikes and vegetation surrounding the dike, at least once a week to detect any leaks, deterioration, or failures in the impoundment.

[Comment: As required by § 265.15(c), the owner or operator must remedy any deterioration or malfunction he finds.]

#### § 265.227 [Reserved]

#### § 265.228 Closure and post-closure.

(a) At closure, the owner or operator may elect to remove from the impoundment:

- (1) Standing liquids;
- (2) Waste and waste residues;
- (3) The liner, if any; and
- (4) Underlying and surrounding contaminated soil.

(b) If the owner or operator removes all the impoundment materials in paragraph (a) of this Section, or can demonstrate under § 261.3(c) and (d) of this Chapter that none of the materials listed in paragraph (a) of this Section remaining at any stage of removal are hazardous wastes, the impoundment is not further subject to the requirements of this Part.

[Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with § 261.3 (c) or (d) of this Chapter, that any solid waste removed from the surface impoundment is not a hazardous waste, he becomes a generator of hazardous waste and must manage it in accordance with all

applicable requirements of Parts 262, 263, and 265 of this Chapter. The surface impoundment may be subject to Part 257 of this Chapter even if it is not subject to this Part.]

(c) If the owner or operator does not remove all the impoundment materials in paragraph (a) of this Section, or does not make the demonstration in paragraph (b) of this Section, he must close the impoundment and provide post-closure care as for a landfill under Subpart G and § 265.310. If necessary to support the final cover specified in the approved closure plan, the owner or operator must treat remaining liquids, residues, and soils by removal of liquids, drying, or other means.

[Comment: The closure requirements under § 265.310 will vary with the amount and nature of the residue remaining, if any, and the degree of contamination of the underlying and surrounding soil. Section 265.117(d) allows the Regional Administrator to vary post-closure care requirements.]

#### § 265.229 Special requirements for ignitable or reactive waste.

(a) Ignitable or reactive waste must not be placed in a surface impoundment, unless:

(1) The waste is treated, rendered, or mixed before or immediately after placement in the impoundment so that (i) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under §§ 261.21 or 261.23 of this Chapter, and (ii) § 265.17(b) is complied with; or

(2) The surface impoundment is used solely for emergencies.

#### § 265.230 Special requirements for incompatible wastes.

Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same surface impoundment, unless § 265.17(b) is complied with.

#### §§ 265.231-265.249 [Reserved]

### Subpart L—Waste Piles

#### § 265.250 Applicability.

The regulations in this Subpart apply to owners and operators of facilities that treat or store hazardous waste in piles, except as § 265.1 provides otherwise. Alternatively, a pile of hazardous waste may be managed as a landfill under Subpart N.

#### § 265.251 Protection from wind.

The owner or operator of a pile containing hazardous waste which could be subject to dispersal by wind must

cover or otherwise manage the pile so that wind dispersal is controlled.

#### § 265.252 Waste analysis.

In addition to the waste analyses required by § 265.13, the owner or operator must analyze a representative sample of waste from each incoming movement before adding the waste to any existing pile, *unless* (1) the only wastes the facility receives which are amenable to piling are compatible with each other, or (2) the waste received is compatible with the waste in the pile to which it is to be added. The analysis conducted must be capable of differentiating between the types of hazardous waste the owner or operator places in piles, so that mixing of incompatible waste does not inadvertently occur. The analysis must include a visual comparison of color and texture.

[Comment: As required by § 265.13, the waste analysis plan must include analyses needed to comply with §§ 265.256 and 265.257. As required by § 265.73, the owner or operator must place the results of this analysis in the operating record of the facility.]

#### § 265.253 Containment.

If leachate or run-off from a pile is a hazardous waste, then either:

(a) The pile must be placed on an impermeable base that is compatible with the waste under the conditions of treatment or storage, run-on must be diverted away from the pile, and any leachate and run-off from the pile must be collected and managed as a hazardous waste; or

(b)(1) The pile must be protected from precipitation and run-on by some other means; and

(2) No liquids or wastes containing free liquids may be placed in the pile.

[Comment: If collected leachate or run-off is discharged through a point source to waters of the United States, it is subject to the requirements of Section 402 of the Clean Water Act, as amended.]

(c) The date for compliance with paragraphs (a) and (b)(1) of this Section is 12 months after the effective date of this Part.

#### §§ 265.254-265.255 [Reserved]

#### § 265.256 Special requirements for ignitable or reactive waste.

(a) Ignitable or reactive wastes must not be placed in a pile, *unless*:

(1) Addition of the waste to an existing pile (i) results in the waste or mixture no longer meeting the definition of ignitable or reactive waste under

§§ 261.21 or 261.23 of this Chapter, and (ii) complies with § 265.17(b); or

(2) The waste is managed in such a way that it is protected from any material or conditions which may cause it to ignite or react.

**§ 265.257 Special requirements for incompatible wastes.**

(a) Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same pile, unless § 265.17(b) is complied with.

(b) A pile of hazardous waste that is incompatible with any waste or other material stored nearby in other containers, piles, open tanks, or surface impoundments must be separated from the other materials, or protected from them by means of a dike, berm, wall, or other device.

[*Comment:* The purpose of this is to prevent fires, explosions, gaseous emissions, leaching, or other discharge of hazardous waste or hazardous waste constituents which could result from the contact or mixing of incompatible wastes or materials.]

(c) Hazardous waste must not be piled on the same area where incompatible wastes or materials were previously piled, unless that area has been decontaminated sufficiently to ensure compliance with § 265.17(b).

**§§ 265.258-265.269 [Reserved]**

**Subpart M—Land Treatment**

**§ 265.270 Applicability.**

The regulations in this Subpart apply to owners and operators of hazardous waste land treatment facilities, except as § 265.1 provides otherwise.

**§ 265.271 [Reserved]**

**§ 265.272 General operating requirements.**

(a) Hazardous waste must not be placed in or on a land treatment facility unless the waste can be made less hazardous or non-hazardous by biological degradation or chemical reactions occurring in or on the soil.

(b) Run-on must be diverted away from the active portions of a land treatment facility.

(c) Run-off from active portions of a land treatment facility must be collected.

[*Comment:* If the collected run-off is a hazardous waste under Part 261 of this Chapter, it must be managed as a hazardous waste in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter. If the collected run-off is discharged through a point source to waters of the United

States, it is subject to the requirements of Section 402 of the Clean Water Act, as amended.]

(d) The date for compliance with paragraphs (b) and (c) of this Section is 12 months after the effective date of this Part.

**§ 265.273 Waste analysis.**

In addition to the waste analyses required by § 265.13, before placing a hazardous waste in or on a land treatment facility, the owner or operator must:

(a) Determine the concentrations in the waste of any substances which exceed the maximum concentrations contained in Table I of § 261.24 of this Chapter that cause a waste to exhibit the EP toxicity characteristic;

(b) For any waste listed in Part 261, Subpart D, of this Chapter, determine the concentrations of any substances which caused the waste to be listed as a hazardous waste; and

(c) If food chain crops are grown, determine the concentrations in the waste of each of the following constituents: arsenic, cadmium, lead, and mercury, *unless* the owner or operator has written, documented data that show that the constituent is not present.

[*Comment:* Part 261 of this Chapter specifies the substances for which a waste is listed as a hazardous waste. As required by § 265.13, the waste analysis plan must include analyses needed to comply with §§ 265.281 and 265.282. As required by § 265.73, the owner or operator must place the results from each waste analysis, or the documented information, in the operating record of the facility.]

**§§ 265.274-265.275 [Reserved]**

**§ 265.276 Food chain crops.**

(a) An owner or operator of a hazardous waste land treatment facility on which food chain crops are being grown, or have been grown and will be grown in the future, must notify the Regional Administrator within 60 days after the effective date of this Part.

[*Comment:* The growth of food chain crops at a facility which has never before been used for this purpose is a significant change in process under § 122.23(c)(8) of this Chapter. Owners or operators of such land treatment facilities who propose to grow food chain crops after the effective date of this Part must comply with § 122.23(c)(3) of this Chapter.]

(b)(1) Food chain crops must not be grown on the treated area of a hazardous waste land treatment facility unless the owner or operator can

demonstrate, based on field testing, that any arsenic, lead, mercury, or other constituents identified under § 265.273(b):

(i) Will not be transferred to the food portion of the crop by plant uptake or direct contact, and will not otherwise be ingested by food chain animals (e.g., by grazing); or

(ii) Will not occur in greater concentrations in the crops grown on the land treatment facility than in the same crops grown on untreated soils under similar conditions in the same region.

(2) The information necessary to make the demonstration required by paragraph (b)(1) of this Section must be kept at the facility and must, at a minimum:

(i) Be based on tests for the specific waste and application rates being used at the facility; and

(ii) Include descriptions of crop and soil characteristics, sample selection criteria, sample size determination, analytical methods, and statistical procedures.

(c) Food chain crops must not be grown on a land treatment facility receiving waste that contains cadmium unless all requirements of paragraph (c)(1)(i) through (iii) of this Section or all requirements of paragraph (c)(2)(i) through (iv) of this Section are met.

(1) (i) The pH of the waste and soil mixture is 6.5 or greater at the time of each waste application, except for waste containing cadmium at concentrations of 2 mg/kg (dry weight) or less;

(ii) The annual application of cadmium from waste does not exceed 0.5 kilograms per hectare (kg/ha) on land used for production of tobacco, leafy vegetables, or root crops grown for human consumption. For other food chain crops, the annual cadmium application rate does not exceed:

Time period	Annual Cd application rate (kg/ha)
Present to June 30, 1984	2.0
July 1, 1984 to Dec. 31, 1986	1.25
Beginning Jan. 1, 1987	0.5

(iii) The cumulative application of cadmium from waste does not exceed the levels in either paragraph (c)(1)(iii)(A) of this Section or paragraph (c)(1)(iii)(B) of this Section.

(A)

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)	
	Background soil pH less than 6.5	Background soil pH greater than 6.5
Less than 5.....	5	5
5-15.....	5	10
Greater than 15.....	5	20

(B) For soils with a background pH of less than 6.5, the cumulative cadmium application rate does not exceed the levels below: *Provided*, that the pH of the waste and soil mixture is adjusted to and maintained at 6.5 or greater whenever food chain crops are grown.

Soil cation exchange capacity (meq/100g)	Maximum cumulative application (kg/ha)
Less than 5.....	5
5-15.....	10
Greater than 15.....	20

(2)(i) The only food chain crop produced is animal feed.

(ii) The pH of the waste and soil mixture is 6.5 or greater at the time of waste application or at the time the crop is planted, whichever occurs later, and this pH level is maintained whenever food chain crops are grown.

(iii) There is a facility operating plan which demonstrates how the animal feed will be distributed to preclude ingestion by humans. The facility operating plan describes the measures to be taken to safeguard against possible health hazards from cadmium entering the food chain, which may result from alternative land uses.

(iv) Future property owners are notified by a stipulation in the land record or property deed which states that the property has received waste at high cadmium application rates and that food chain crops should not be grown, due to a possible health hazard.

*[Comment: As required by § 265.73, if an owner or operator grows food chain crops on his land treatment facility, he must place the information developed in this Section in the operating record of the facility.]*

**§ 265.277 [Reserved]**

**§ 265.278 Unsaturated zone (zone of aeration) monitoring.**

(a) The owner or operator must have in writing, and must implement, an unsaturated zone monitoring plan which is designed to:

- (1) Detect the vertical migration of hazardous waste and hazardous waste constituents under the active portion of the land treatment facility, and
- (2) Provide information on the background concentrations of the

hazardous waste and hazardous waste constituents in similar but untreated soils nearby; this background monitoring must be conducted before or in conjunction with the monitoring required under paragraph (a)(1) of this Section.

(b) The unsaturated zone monitoring plan must include, at a minimum:

(1) Soil monitoring using soil cores, and

(2) Soil-pore water monitoring using devices such as lysimeters.

(c) To comply with paragraph (a)(1) of this Section, the owner or operator must demonstrate in his unsaturated zone monitoring plan that:

(1) The depth at which soil and soil-pore water samples are to be taken is below the depth to which the waste is incorporated into the soil;

(2) The number of soil and soil-pore water samples to be taken is based on the variability of:

(i) The hazardous waste constituents (as identified in § 265.273(a) and (b)) in the waste and in the soil; and

(ii) The soil type(s); and

(3) The frequency and timing of soil and soil-pore water sampling is based on the frequency, time, and rate of waste application, proximity to ground water, and soil permeability.

(d) The owner or operator must keep at the facility his unsaturated zone monitoring plan, and the rationale used in developing this plan.

(e) The owner or operator must analyze the soil and soil-pore water samples for the hazardous waste constituents that were found in the waste during the waste analysis under § 265.273 (a) and (b).

*[Comment: As required by § 265.73, all data and information developed by the owner or operator under this Section must be placed in the operating record of the facility.]*

**§ 265.279 Recordkeeping.**

The owner or operator of a land treatment facility must keep records of the application dates, application rates, quantities, and location of each hazardous waste placed in the facility, in the operating record required in § 265.73.

**§ 265.280 Closure and post-closure.**

(a) In the closure plan under § 265.112 and the post-closure plan under § 265.118, the owner or operator must address the following objectives and indicate how they will be achieved:

(1) Control of the migration of hazardous waste and hazardous waste constituents from the treated area into the ground water;

(2) Control of the release of contaminated run-off from the facility into surface water;

(3) Control of the release of airborne particulate contaminants caused by wind erosion; and

(4) Compliance with § 265.276 concerning the growth of food-chain crops.

(b) The owner or operator must consider at least the following factors in addressing the closure and post-closure care objectives of paragraph (a) of this Section:

(1) Type and amount of hazardous waste and hazardous waste constituents applied to the land treatment facility;

(2) The mobility and the expected rate of migration of the hazardous waste and hazardous waste constituents;

(3) Site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration (e.g., proximity to ground water, surface water and drinking water sources);

(4) Climate, including amount, frequency, and pH of precipitation;

(5) Geological and soil profiles and surface and subsurface hydrology of the site, and soil characteristics, including cation exchange capacity, total organic carbon, and pH;

(6) Unsaturated zone monitoring information obtained under § 265.278; and

(7) Type, concentration, and depth of migration of hazardous waste constituents in the soil as compared to their background concentrations.

(c) The owner or operator must consider at least the following methods in addressing the closure and post-closure care objectives of paragraph (a) of this Section:

(1) Removal of contaminated soils;

(2) Placement of a final cover, considering: (i) Functions of the cover (e.g., infiltration control, erosion and run-off control, and wind erosion control), and (ii) Characteristics of the cover, including material, final surface contours, thickness, porosity and permeability, slope, length of run of slope, and type of vegetation on the cover;

(3) Collection and treatment of run-off;

(4) Diversion structures to prevent surface water run-on from entering the treated area; and

(5) Monitoring of soil, soil-pore water, and ground water.

(d) In addition to the requirements of § 265.117, during the post-closure care period, the owner or operator of a land treatment facility must:

(1) Maintain any unsaturated zone monitoring system, and collect and analyze samples from this system in a

manner and frequency specified in the post-closure plan;

(2) Restrict access to the facility as appropriate for its post-closure use; and

(3) Assure that growth of food chain crops complies with § 265.276.

**§ 265.281 Special requirements for ignitable or reactive waste.**

Ignitable or reactive wastes must not be land treated, unless the waste is immediately incorporated into the soil so that (1) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under §§ 261.21 or 261.23 of this Chapter, and (2) § 265.17(b) is complied with.

**§ 265.282 Special requirements for incompatible wastes.**

Incompatible wastes, or incompatible wastes and materials (see Appendix V for examples), must not be placed in the same land treatment area, unless § 265.17(b) is complied with.

**§§ 265.283-265.299 [Reserved]**

**Subpart N—Landfills**

**§ 265.300 Applicability.**

The regulations in this Subpart apply to owners and operators of facilities that dispose of hazardous waste in landfills, except as § 265.1 provides otherwise. A waste pile used as a disposal facility is a landfill and is governed by this Subpart.

**§ 265.301 [Reserved]**

**§ 265.302 General operating requirements.**

(a) Run-on must be diverted away from the active portions of a landfill.

(b) Run-off from active portions of a landfill must be collected.

[*Comment:* If the collected run-off is a hazardous waste under Part 261 of this Chapter, it must be managed as a hazardous waste in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter. If the collected run-off is discharged through a point source to waters of the United States, it is subject to the requirements of Section 402 of the Clean Water Act, as amended.]

(c) The date for compliance with paragraphs (a) and (b) of this Section is 12 months after the effective date of this Part.

(d) The owner or operator of a landfill containing hazardous waste which is subject to dispersal by wind must cover or otherwise manage the landfill so that wind dispersal of the hazardous waste is controlled.

[*Comment:* As required by § 265.13, the waste analysis plan must include analyses needed to comply with §§ 265.312 and 265.313. As required by § 265.73, the owner or operator must place the results of these analyses in the operating record of the facility.]

**§§ 265.303-265.308 [Reserved]**

**§ 265.309 Surveying and recordkeeping.**

The owner or operator of a landfill must maintain the following items in the operating record required in § 265.73:

(a) On a map, the exact location and dimensions, including depth, of each cell with respect to permanently surveyed benchmarks; and

(b) The contents of each cell and the approximate location of each hazardous waste type within each cell.

**§ 265.310 Closure and post-closure.**

(a) The owner or operator must place a final cover over the landfill, and the closure plan under § 265.112 must specify the function and design of the cover. In the post-closure plan under § 265.118, the owner or operator must include the post-closure care requirements of paragraph (d) of this Section.

(b) In the closure and post-closure plans, the owner or operator must address the following objectives and indicate how they will be achieved:

(1) Control of pollutant migration from the facility via ground water, surface water, and air;

(2) Control of surface water infiltration, including prevention of pooling; and

(3) Prevention of erosion.

(c) The owner or operator must consider at least the following factors in addressing the closure and post-closure care objectives of paragraph (b) of this Section:

(1) Type and amount of hazardous waste and hazardous waste constituents in the landfill;

(2) The mobility and the expected rate of migration of the hazardous waste and hazardous waste constituents;

(3) Site location, topography, and surrounding land use, with respect to the potential effects of pollutant migration (e.g., proximity to ground water, surface water, and drinking water sources);

(4) Climate, including amount, frequency, and pH of precipitation;

(5) Characteristics of the cover including material, final surface contours, thickness, porosity and permeability, slope, length of run of slope, and type of vegetation on the cover; and

(6) Geological and soil profiles and surface and subsurface hydrology of the site.

(b) In addition to the requirements of § 265.117, during the post-closure care period, the owner or operator of a hazardous waste landfill must:

(1) Maintain the function and integrity of the final cover as specified in the approved closure plan;

(2) Maintain and monitor the leachate collection, removal, and treatment system (if there is one present in the landfill) to prevent excess accumulation of leachate in the system;

[*Comment:* If the collected leachate is a hazardous waste under Part 261 of this Chapter, it must be managed as a hazardous waste in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter. If the collected leachate is discharged through a point source to waters of the United States, it is subject to the requirements of Section 402 of the Clean Water Act, as amended.]

(3) Maintain and monitor the gas collection and control system (if there is one present in the landfill) to control the vertical and horizontal escape of gases;

(4) Protect and maintain surveyed benchmarks; and

(5) Restrict access to the landfill as appropriate for its post-closure use.

**§ 265.311 [Reserved]**

**§ 265.312 Special requirements for ignitable or reactive waste.**

Ignitable or reactive waste must not be placed in a landfill, unless the waste is treated, rendered, or mixed before or immediately after placement in the landfill so that (1) the resulting waste, mixture, or dissolution of material no longer meets the definition of ignitable or reactive waste under §§ 261.21 or 261.23 of this Chapter, and (2) § 265.17(b) is complied with.

**§ 265.313 Special requirements for incompatible wastes.**

Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same landfill cell, unless § 265.17(b) is complied with.

**§ 265.314 Special requirements for liquid waste.**

(a) Bulk or non-containerized liquid waste or waste containing free liquids must not be placed in a landfill, unless:

(1) The landfill has a liner which is chemically and physically resistant to the added liquid, and a functioning leachate collection and removal system with a capacity sufficient to remove all leachate produced; or

(2) Before disposal, the liquid waste or waste containing free liquids is treated or stabilized, chemically or physically (e.g., by mixing with an absorbent solid),

so that free liquids are no longer present.

(b) A container holding liquid waste or waste containing free liquids must not be placed in a landfill, unless:

(1) The container is designed to hold liquids or free liquids for a use other than storage, such as a battery or capacitor; or

(2) The container is very small, such as an ampule.

(c) The date for compliance with this Section is 12 months after the effective date of this Part.

#### § 265.315 Special requirements for containers.

(a) An empty container must be crushed flat, shredded, or similarly reduced in volume before it is buried beneath the surface of a landfill.

(b) The date for compliance with this Section is 12 months after the effective date of this Part.

#### §§ 265.316-265.339 [Reserved]

### Subpart O—Incinerators

#### § 265.340 Applicability.

The regulations in this Subpart apply to owners and operators of facilities that treat hazardous waste in incinerators, except as § 265.1 provides otherwise.

#### §§ 265.341-265.342 [Reserved]

#### § 265.343 General operating requirements.

Before adding hazardous waste, the owner or operator must bring his incinerator to steady state (normal) conditions of operation—including steady state operating temperature and air flow—using auxiliary fuel or other means.

#### § 265.344 [Reserved]

#### § 265.345 Waste analysis.

In addition to the waste analyses required by § 265.13, the owner or operator must sufficiently analyze any waste which he has not previously burned in his incinerator to enable him to establish steady state (normal) operating conditions (including waste and auxiliary fuel feed and air flow) and to determine the type of pollutants which might be emitted. At a minimum, the analysis must determine:

(a) Heating value of the waste;  
(b) Halogen content and sulfur content in the waste; and

(c) Concentrations in the waste of lead and mercury, *unless* the owner or operator has written, documented data that show that the element is not present.

[*Comment:* As required by § 265.73, the owner or operator must place the results

from each waste analysis, or the documented information, in the operating record of the facility.]

#### § 265.346 [Reserved]

#### § 265.347 Monitoring and inspections.

(a) The owner or operator must conduct, as a minimum, the following monitoring and inspections when incinerating hazardous wastes:

(1) Existing instruments which relate to combustion and emission control must be monitored at least every 15 minutes. Appropriate corrections to maintain steady state combustion conditions must be made immediately either automatically or by the operator. Instruments which relate to combustion and emission control would normally include those measuring waste feed, auxiliary fuel feed, air flow, incinerator temperature, scrubber flow, scrubber pH, and relevant level controls.

(2) The stack plume (emissions) must be observed visually at least hourly for normal appearance (color and opacity). The operator must immediately make any indicated operating corrections necessary to return visible emissions to their normal appearance.

(3) The complete incinerator and associated equipment (pumps, valves, conveyors, pipes, etc.) must be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms must be checked to assure proper operation.

#### §§ 265.348-265.350 [Reserved]

#### § 265.351 Closure.

At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including but not limited to ash, scrubber waters, and scrubber sludges) from the incinerator.

[*Comment:* At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with § 261.3(c) or (d) of this Chapter, that any solid waste removed from his incinerator is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter.]

#### §§ 265.352-265.369 [Reserved]

### Subpart P—Thermal Treatment

#### § 265.370 Applicability.

The regulations in this Subpart apply to owners and operators of facilities that thermally treat hazardous waste in devices other than incinerators, except as § 265.1 provides otherwise. Thermal

treatment in incinerators is subject to the requirements of Subpart O.

#### §§ 265.371-265.372 [Reserved]

#### § 265.373 General operating requirements.

Before adding hazardous waste, the owner or operator must bring his thermal treatment process to steady state (normal) conditions of operation—including steady state operating temperature—using auxiliary fuel or other means, unless the process is a non-continuous (batch) thermal treatment process which requires a complete thermal cycle to treat a discrete quantity of hazardous waste.

#### § 265.374 [Reserved]

#### § 265.375 Waste analysis.

In addition to the waste analyses required by § 265.13, the owner or operator must sufficiently analyze any waste which he has not previously treated in his thermal process to enable him to establish steady state (normal) or other appropriate (for a non-continuous process) operating conditions (including waste and auxiliary fuel feed) and to determine the type of pollutants which might be emitted. At a minimum, the analysis must determine:

(a) Heating value of the waste;  
(b) Halogen content and sulfur content in the waste; and

(c) Concentrations in the waste of lead and mercury, *unless* the owner or operator has written, documented data that show that the element is not present.

[*Comment:* As required by § 265.73, the owner or operator must place the results from each waste analysis, or the documented information, in the operating record of the facility.]

#### § 265.376 [Reserved]

#### § 265.377 Monitoring and inspections.

(a) The owner or operator must conduct, as a minimum, the following monitoring and inspections when thermally treating hazardous waste:

(1) Existing instruments which relate to temperature and emission control (if an emission control device is present) must be monitored at least every 15 minutes. Appropriate corrections to maintain steady state or other appropriate thermal treatment conditions must be made immediately either automatically or by the operator. Instruments which relate to temperature and emission control would normally include those measuring waste feed, auxiliary fuel feed, treatment process temperature, and relevant process flow and level controls.

(2) The stack plume (emissions), where present, must be observed visually at least hourly for normal appearance (color and opacity). The operator must immediately make any indicated operating corrections necessary to return any visible emissions to their normal appearance.

(3) The complete thermal treatment process and associated equipment (pumps, valves, conveyors, pipes, etc.) must be inspected at least daily for leaks, spills, and fugitive emissions, and all emergency shutdown controls and system alarms must be checked to assure proper operation.

§§ 265.378-265.380 [Reserved]

§ 265.381 Closure.

At closure, the owner or operator must remove all hazardous waste and hazardous waste residues (including, but not limited to, ash) from the thermal treatment process or equipment.

*[Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with § 261.3(c) or (d) of this Chapter, that any solid waste removed from his thermal treatment process or equipment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter.]*

§ 265.382 Open burning; waste explosives.

Open burning of hazardous waste is prohibited except for the open burning and detonation of waste explosives. Waste explosives include waste which has the potential to detonate and bulk military propellants which cannot safely be disposed of through other modes of treatment. Detonation is an explosion in which chemical transformation passes through the material faster than the speed of sound (0.33 kilometers/second at sea level). Owners or operators choosing to open burn or detonate waste explosives must do so in accordance with the following table and in a manner that does not threaten human health or the environment.

Pounds of waste explosives or propellants	Minimum distance from open burning or detonation to the property of others
0 to 100.....	204 meters (670 feet).
101 to 1,000.....	380 meters (1,250 feet).
1,001 to 10,000.....	530 meters (1,730 feet).
10,001 to 30,000.....	690 meters (2,260 feet).

§§ 265.383-265.399 [Reserved]

Subpart Q—Chemical, Physical, and Biological Treatment

§ 265.400 Applicability.

The regulations in this Subpart apply to owners and operators of facilities which treat hazardous wastes by chemical, physical, or biological methods in other than tanks, surface impoundments, and land treatment facilities, except as § 265.1 provides otherwise. Chemical, physical, and biological treatment of hazardous waste in tanks, surface impoundments, and land treatment facilities must be conducted in accordance with Subparts J, K, and M, respectively.

§ 265.401 General operating requirements.

(a) Chemical, physical, or biological treatment of hazardous waste must comply with § 265.17(b).

(b) Hazardous wastes or treatment reagents must not be placed in the treatment process or equipment if they could cause the treatment process or equipment to rupture, leak, corrode, or otherwise fail before the end of its intended life.

(c) Where hazardous waste is continuously fed into a treatment process or equipment, the process or equipment must be equipped with a means to stop this inflow (e.g., a waste feed cut-off system or by-pass system to a standby containment device).

*[Comment: These systems are intended to be used in the event of a malfunction in the treatment process or equipment.]*

§ 265.402 Waste analysis and trial tests.

(a) In addition to the waste analysis required by § 265.13, whenever:

(1) A hazardous waste which is substantially different from waste previously treated in a treatment process or equipment at the facility is to be treated in that process or equipment, or

(2) A substantially different process than any previously used at the facility is to be used to chemically treat hazardous waste;

the owner or operator must, before treating the different waste or using the different process or equipment:

(i) Conduct waste analyses and trial treatment tests (e.g., bench scale or pilot plant scale tests); or

(ii) Obtain written, documented information on similar treatment of similar waste under similar operating conditions;

to show that this proposed treatment will meet all applicable requirements of § 265.401 (a) and (b).

*[Comment: As required by § 265.13, the waste analysis plan must include analyses needed to comply with §§ 265.405 and 265.406. As required by § 265.73, the owner or operator must place the results from each waste analysis and trial test, or the documented information, in the operating record of the facility.]*

§ 265.403 Inspections.

(a) The owner or operator of a treatment facility must inspect, where present:

(1) Discharge control and safety equipment (e.g., waste feed cut-off systems, by-pass systems, drainage systems, and pressure relief systems) at least once each operating day, to ensure that it is in good working order;

(2) Data gathered from monitoring equipment (e.g., pressure and temperature gauges), at least once each operating day, to ensure that the treatment process or equipment is being operated according to its design;

(3) The construction materials of the treatment process or equipment, at least weekly, to detect corrosion or leaking of fixtures or seams; and

(4) The construction materials of, and the area immediately surrounding, discharge confinement structures (e.g., dikes), at least weekly, to detect erosion or obvious signs of leakage (e.g., wet spots or dead vegetation).

*[Comment: As required by § 265.15(c), the owner or operator must remedy any deterioration or malfunction he finds.]*

§ 265.404 Closure.

At closure, all hazardous waste and hazardous waste residues must be removed from treatment processes or equipment, discharge control equipment, and discharge confinement structures.

*[Comment: At closure, as throughout the operating period, unless the owner or operator can demonstrate, in accordance with § 261.3 (c) or (d) of this Chapter, that any solid waste removed from his treatment process or equipment is not a hazardous waste, the owner or operator becomes a generator of hazardous waste and must manage it in accordance with all applicable requirements of Parts 262, 263, and 265 of this Chapter.]*

§ 265.405 Special requirements for ignitable or reactive waste.

(a) Ignitable or reactive waste must not be placed in a treatment process or equipment unless:

(1) The waste is treated, rendered, or mixed before or immediately after placement in the treatment process or equipment so that (i) the resulting waste, mixture, or dissolution of material no

longer meets the definition of ignitable or reactive waste under § 261.21 or 261.23 or this Chapter, and (ii) § 265.17(b) is complied with; or (2) The waste is treated in such a way that it is protected from any material or conditions which may cause the waste to ignite or react.

**§ 265.406 Special requirements for incompatible wastes.**

(a) Incompatible wastes, or incompatible wastes and materials, (see Appendix V for examples) must not be placed in the same treatment process or equipment, unless § 265.17(b) is complied with.

(b) Hazardous waste must not be placed in unwashed treatment equipment which previously held an incompatible waste or material, unless § 265.17(b) is complied with.

**§§ 265.407-265.429 [Reserved]**

**Subpart R—Underground Injection**

**§ 265.430 Applicability.**

Except as § 265.1 provides otherwise:

(a) The owner or operator of a facility which disposes of hazardous waste by underground injection is excluded from the requirements of Subparts G and H of this Part.

(b) The requirements of this Subpart apply to owners and operators of wells used to dispose of hazardous waste which are classified as Class F under § 122.32(a) of this Chapter and which are classified as Class IV under § 122.32(d) of this Chapter.

[Comment: In addition to the requirements of Subparts A through E of this Part, the owner or operator of a facility which disposes of hazardous waste by underground injection ultimately must comply with the requirements of §§ 265.431-265.437. These Sections are reserved at this time. The Agency will propose regulations that would establish those requirements.]

**§ 265.431-265.999 [Reserved]**

**Appendix I—Recordkeeping Instructions**

The recordkeeping provisions of § 265.73 specify that an owner or operator must keep a written operating record at his facility. This appendix provides additional instructions for keeping portions of the operating record. See § 265.73(b) for additional recordkeeping requirements.

The following information must be recorded, as it becomes available, and maintained in the operating record until closure of the facility in the following manner:

Records of each hazardous waste received, treated, stored, or disposed of at the facility which include the following:

(1) A description by its common name and the EPA Hazardous Waste Number(s) from Part 261 of this Chapter which apply to the waste. The waste description also must include the waste's physical form, i.e., liquid, sludge, solid, or contained gas. If the waste is not listed in Part 261, Subpart D, of this Chapter, the description also must include the process that produced it (for example, solid filter cake from production of \_\_\_\_\_, EPA Hazardous Waste Number W051).

Each hazardous waste listed in Part 261, Subpart D, of this Chapter, and each hazardous waste characteristic defined in Part 261, Subpart C, of this Chapter, has a four-digit EPA Hazardous Waste Number assigned to it. This number must be used for recordkeeping and reporting purposes. Where a hazardous waste contains more than one listed hazardous waste, or where more than one hazardous waste characteristic applies to the waste, the waste description must include all applicable EPA Hazardous Waste Numbers.

(2) The estimated or manifest-reported weight, or volume and density, where applicable, in one of the units of measure specified in Table 1; and

(3) The method(s); (by handling code(s); as specified in Table 2); and date(s) of treatment, storage, or disposal.

Table 1

Unit of measure	Symbol <sup>1</sup>	Density
Pounds	P	
Short tons (2000 lbs)	T	
Gallons (U.S.)	G	P/G
Cubic yards	Y	T/Y
Kilograms	K	
Tonnes (1000 kg)	M	
Liters	L	K/L
Cubic meters	C	M/C

<sup>1</sup>Single digit symbols are used here for data processing purposes.

**Table 2—Handling Codes for Treatment, Storage, and Disposal Methods**

Enter the handling code(s) listed below that most closely represents the technique(s) used at the facility to treat, store, or dispose of each quantity of hazardous waste received.

**1. Storage**

- S01 Container (barrel, drum, etc.)
- S02 Tank
- S03 Waste pile
- S04 Surface impoundment
- S05 Other (specify)

**2. Treatment**

**(a) Thermal Treatment**

- T06 Liquid injection incinerator
- T07 Rotary kiln incinerator
- T08 Fluidized bed incinerator
- T09 Multiple hearth incinerator
- T10 Infrared furnace incinerator
- T11 Molten salt destructor
- T12 Pyrolysis
- T13 Wet air oxidation
- T14 Calcination
- T15 Microwave discharge
- T16 Cement kiln

- T17 Lime kiln
- T18 Other (specify)

**(b) Chemical Treatment**

- T19 Absorption mound
- T20 Absorption field
- T21 Chemical fixation
- T22 Chemical oxidation
- T23 Chemical precipitation
- T24 Chemical reduction
- T25 Chlorination
- T26 Chlorinolysis
- T27 Cyanide destruction
- T28 Degradation
- T29 Detoxification
- T30 Ion exchange
- T31 Neutralization
- T32 Ozonation
- T33 Photolysis
- T34 Other (specify)

**(c) Physical Treatment:**

**(1) Separation of components**

- T35 Centrifugation
- T36 Clarification
- T37 Coagulation
- T38 Decanting
- T39 Encapsulation
- T40 Filtration
- T41 Flocculation
- T42 Flotation
- T43 Foaming
- T44 Sedimentation
- T45 Thickening
- T46 Ultrafiltration
- T47 Other (specify)

**(2) Removal of Specific Components**

- T48 Absorption-molecular sieve
- T49 Activated carbon
- T50 Blending
- T51 Catalysis
- T52 Crystallization
- T53 Dialysis
- T54 Distillation
- T55 Electrolysis
- T56 Electrolysis
- T57 Evaporation
- T58 High gradient magnetic separation

- T59 Leaching
- T60 Liquid ion exchange
- T61 Liquid-liquid extraction
- T62 Reverse osmosis
- T63 Solvent recovery
- T64 Stripping
- T65 Sand filter
- T66 Other (specify)

**(d) Biological Treatment**

- T67 Activated sludge
- T68 Aerobic lagoon
- T69 Aerobic tank
- T70 Anaerobic lagoon
- T71 Composting
- T72 Septic tank
- T73 Spray irrigation
- T74 Thickening filter
- T75 Trickling filter
- T76 Waste stabilization pond
- T77 Other (specify)
- T78-79 [Reserved]

**3. Disposal**

- D80 Underground injection
- D81 Landfill
- D82 Land treatment
- D83 Ocean disposal
- D84 Surface impoundment (to be closed as a landfill)
- D85 Other (specify)

**APPENDIX II—EPA REPORT FORM AND INSTRUCTIONS**

**BILLING CODE 6560-01-M**

GSA No. 12345-XX  
Form Approved OMB No. 158-R00XX

Please print or type with ELITE type (12 characters per inch).

<b>U.S. ENVIRONMENTAL PROTECTION AGENCY HAZARDOUS WASTE REPORT</b>	<b>I. TYPE OF HAZARDOUS WASTE REPORT</b> <b>PART A: GENERATOR ANNUAL REPORT</b> THIS REPORT IS FOR THE YEAR ENDING DEC. 31, 1980
PLEASE PLACE LABEL IN THIS SPACE	<b>PART B: FACILITY ANNUAL REPORT</b> THIS REPORT FOR YEAR ENDING DEC. 31, 1980
	<b>PART C: UNMANIFESTED WASTE REPORT</b> THIS REPORT IS FOR A WASTE RECEIVED (day, mo., & yr.) 1980
<b>INSTRUCTIONS:</b> You may have received a preprinted label attached to the front of this pamphlet; affix it in the designated space above-left. If any of the information on the label is incorrect, draw a line through it and supply the correct information in the appropriate section below. If the label is complete and correct, leave Sections II, III, and IV below blank. If you did not receive a preprinted label, complete all sections. "Installation" means a single site where hazardous waste is generated, treated, stored, or disposed of. Please refer to the specific instructions for generators or facilities before completing this form. The information requested herein is required by law (Section 3002/3004 of the Resource Conservation and Recovery Act).	
<b>II. INSTALLATION'S EPA I.D. NUMBER</b> F 1	
<b>III. NAME OF INSTALLATION</b>	
<b>IV. INSTALLATION MAILING ADDRESS</b> STREET OR P.O. BOX. CITY OR TOWN ST. ZIP CODE	
<b>V. LOCATION OF INSTALLATION</b> STREET OR ROUTE NUMBER CITY OR TOWN ST. ZIP CODE	
<b>VI. INSTALLATION CONTACT</b> NAME (last and first) PHONE NO. (area code & no.)	
<b>VII. TRANSPORTATION SERVICES USED (for Part A reports only)</b> List the EPA Identification Numbers for those transporters whose services were used during the reporting year represented by this report.	
<b>VIII. COST ESTIMATES FOR FACILITIES (for Part B reports only)</b> A. COST ESTIMATE FOR FACILITY CLOSURE      B. COST ESTIMATE FOR POST CLOSURE MONITORING AND MAINTENANCE (disposal facilities only)	
\$	
<b>IX. CERTIFICATION</b> I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.	
A. PRINT OR TYPE NAME	B. SIGNATURE
C. DATE SIGNED	



**GENERAL INSTRUCTIONS; HAZARDOUS WASTE REPORT (EPA FORM 8700-13)**

*Important:* Read all instructions before completing this form.

**Section I—Type of Hazardous Waste Report**

**Part A: Generator Annual Report**

For generators who ship their waste off-site to facilities which they do not own or operate; fill in the reporting year for this report (e.g., 1982).

*Note.*—Generators who ship hazardous waste off-site to a facility which they own or operate must complete the facility (Part B) report instead of the Part A report.

**Part B: Facility Annual Report**

For owners or operators of on-site or off-site facilities that treat, store, or dispose of hazardous waste; fill in the reporting year for this report (e.g., 1982).

**Part C: Unmanifested Waste Report**

For facility owners or operators who accept for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest; fill in the date the waste was received at the facility (e.g., April 12, 1982).

**Section II Through Section IV—Installation I.D. Number, Name of Installation, and Installation Mailing Address**

If you received a preprinted label from EPA, attach it in the space provided and leave Sections II through IV blank. If there is an error or omission on the label, cross out the incorrect information and fill in the appropriate item(s). If you did not receive a preprinted label, complete Section II through Section IV.

**Section V—Location of Installation**

If your installation location address is different than the mailing address, enter the location address of your installation.

**Section VI—Installation Contact**

Enter the name (last and first) and telephone number of the person whom may be contacted regarding information contained in this report.

**Section VII—Transportation Services Used (for Part A Reports Only)**

List the EPA Identification Number for each transporter whose services you used during the reporting year.

**Section VIII—Cost Estimates for Facilities (for Part B Reports Only)**

A. Enter the most recent cost estimate for facility closure in dollars. See Subpart H of 40 CFR parts 264 or 265 for more detail.

B. For disposal facilities only, enter the most recent cost estimate for post closure monitoring and maintenance. See Subpart H of 40 CFR Parts 264 or 265 for more detail.

**Section IX—Certification**

The generator or his authorized representative (Part A reports) or the owner or operator of the facility or his authorized representative (Parts B and C reports) must sign and date the certification where indicated. The printed or typed name of the

person signing the report must also be included where indicated.

*Note.*—Since more than one page is required for each report, enter the page number of each sheet in the lower right corner as well as the total number of pages.

**Facility Annual Report—Part B Instructions (EPA Form 8700-13B)**

Facility Annual Report for owners or operators of on-site or off-site facilities that treat, store, or dispose of hazardous waste.

*Note.*—Generators who ship hazardous waste off-site to a facility they own or operate must complete this Part B report instead of the Generator (Part A) Annual Report.

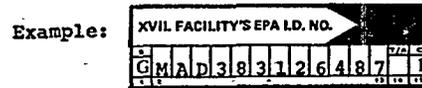
*Important:* Read all instructions before completing this form.

**Section XVI—Type of Report**

Put an "X" in the box marked Part B.

**Section XVII—Facility's EPA Identification Number**

Enter the EPA identification number for your facility.



GENERATOR'S EPA IDENTIFICATION NUMBER

**Section XVIII—Generator's EPA Identification Number**

Enter the EPA identification number of the generator of the waste described under Section XXI which was received by your facility during the reporting year. A separate sheet must be used for each generator. If the waste came from a foreign generator, enter

Examples:

XXI. WASTE IDENTIFICATION															
LINE NUMBER	A. DESCRIPTION OF WASTE	B. EPA HAZARDOUS WASTE NUMBER (see instructions)				C. HANDLING METHOD (enter code)	D. AMOUNT OF WASTE				UNIT OF MEASURE (see instructions)				
		1	2	3	4		5	6	7	8					
1	Steel Finishing Sludge	K	0	6	0	S	0	2		2	5	0	0	T	
2	Steel Finishing Sludge	K	0	6	0	T	2	1		1	5	7	2	4	5

**Section XXI-A—Description of Waste**

For hazardous wastes that are listed under 40 CFR Part 261, Subpart D, enter the EPA listed name, abbreviated if necessary. Where mixtures of listed wastes were received, enter the description which you believe best describes the waste.

For unlisted hazardous waste identified under 40 CFR Part 261, Subpart C, enter the description which you believe best describes the waste. Include the specific manufacturing or other process generating the waste (e.g., green sludge from widget manufacturing) and

the EPA identification number of the importer in this section and enter the name and address of the foreign generator in Section XXII, Comments. If the waste was generated and treated, stored, or disposed of at the same installation, leave this section blank.

**Section XIX—Generator's Name**

Enter the name of the generator corresponding to the generator's EPA identification number in Section XVIII.

If the waste was generated and treated, stored, or disposed of at the same installation, enter "ON-SITE".

If the waste came from a foreign generator, enter the name of the importer corresponding to the EPA identification number in Section XVIII.

**Section XX—Generator's Address**

Enter the address of the generator corresponding to the generator's EPA identification number in Section XVIII. If the waste was generated and treated, stored, or disposed of at the same installation, leave this section blank. If the waste came from a foreign generator, enter the address of the importer corresponding to the EPA identification number in Section XVIII.

**Section XXI—Waste Identification**

All information in this section must be entered by line number. A separate line entry is required for each different waste or mixture of wastes that your facility received during the reporting year. The handling code applicable to that waste at the end of the reporting year should be reported. If a different handling code applies to portions of the same waste, (e.g., part of the waste is stored while the remainder was "chemically fixed" during the year), use a separate line entry for each portion.

if known, the chemical or generic chemical name of the waste.

**Section XXI-B—EPA Hazardous Waste Number**

For listed waste, enter the four digit EPA Hazardous Waste Number from 40 CFR Part 261, Subpart D, which identifies the waste.

For a mixture of more than one listed waste, enter each of the applicable EPA Hazardous Waste Numbers.

Four spaces are provided. If more space is needed, continue on the next line(s) and leave all other information on that line blank.

Example:

XXI. WASTE IDENTIFICATION											
LINE NUMBER	A. DESCRIPTION OF WASTE	B. EPA HAZARDOUS WASTE NUMBER (see number below)		C. HANDLING METHOD (see code)	D. AMOUNT OF WASTE					E. UNIT OF MEASURE (see Part C)	
1	Steel Finishing Sludge	K 0 6 0	K 0 6 1	T 2 1	2	9	1	7	4	5	T
2		K 0 6 4									

For unlisted hazardous wastes, enter the EPA Hazardous Waste Numbers from 40 CFR Part 261, Subpart C, applicable to the waste. If more than four spaces are required, follow the procedure described above.

**Section XXI-C—Handling Code**

Enter one EPA handling code for each waste line entry. Where several handling steps have occurred during the year, report only the handling code representing the waste's status at the end of the reporting year or its final disposition. EPA handling codes are given in Appendix I of this Part.

**Section XXI-D—Amount of Waste**

Enter the total amount of waste described on this line which you received during this reporting year.

**Section XXI-E—Unit of Measure**

Enter the unit of measure code for the quantity of waste described on this line. Units of measure which must be used in this report and the appropriate codes are:

Units of measure	Code
Pounds.....	P
Short tons (2,000 lbs).....	T
Kilograms.....	K
Tonnes (1,000 kg).....	M

Units of volume may not be used for reporting but must be converted into one of the above units of weight, taking into account the appropriate density or specify gravity of the waste.

**Section XXII—Comments**

This space may be used to explain or clarify any entry. If used, enter a cross-reference to the appropriate Section number.

Note.—Since more than one page is required for each report, enter the page number of each sheet in the lower right hand corner as well as the total number of pages.

Where required by 40 CFR 264 or 265, Subparts F or R, attach ground-water monitoring data to this report.

**Unmanifested Waste Report—Part C Instructions (EPA Form 8700-13B)**

Unmanifested Waste Report for facility owners or operators who accept for treatment, storage, or disposal any hazardous waste from an off-site source without an accompanying manifest.

Important: Read all instructions before completing this form.

For the Unmanifested Waste Report, EPA Forms 8700-13 and 8700-13B must be filled out according to the directions for the Part B Facility Annual Report except that: (1) blocks for which information is not available to the owner or operator of the reporting facility may be marked "UNKNOWN," and (2) the following special instructions apply:

**Section VIII—Cost Estimates for Facilities**

Do not enter closure or post-closure cost estimates.

**Section XVI—Type of Report**

Put an "X" in the box marked Part C.

**Section XXI-A—Description of Waste**

Use as many line numbers as are needed to describe the waste.

**Section XXI-C—Handling Code**

Enter the handling code which describes the status of the waste on the date the report is filed.

**Section XXI-D—Amount of Waste**

Enter the amount of waste received, rather than a total annual aggregate.

**Section XXII—Comments**

a. Enter the EPA Identification number, name, and address of the transporter, if known. If the transporter is not known to you, enter the name and chauffeur license number of the driver and the State and license number of the transporting vehicle which presented the waste to your facility, if known.

b. Enter an explanation of how the waste movement was presented to your facility; why you believe the waste is hazardous; and how your facility plans to manage the waste. Continue on a separate blank sheet of paper if additional space is needed.

**Monitoring data**

Do not attach monitoring data.

**Appendix III.—EPA interim primary drinking water standards**

Parameter	Maximum level (mg/1)
Arsenic.....	0.05
Barium.....	1.0
Cadmium.....	0.01
Chromium.....	0.05
Fluoride.....	1.4-2.4
Lead.....	0.05
Mercury.....	0.002
Nitrate (as N).....	10
Selenium.....	0.01
Silver.....	0.05
Endrin.....	0.0002
Lindane.....	0.004
Methoxychlor.....	0.1
Toxaphene.....	0.005
2,4-D.....	0.1
2,4,5-TP Silver.....	0.01
Radium.....	5 pCi/l
Gross Alpha.....	15 pCi/l
Gross Beta.....	4 millicrem/yr
Turbidity.....	1/TU
Coliform Bacteria.....	1/100 ml

[Comment: Turbidity is applicable only to surface water supplies.]

**Appendix IV—Tests for Significance**

As required in § 265.93(b) the owner or operator must use the Student's t-test to determine statistically significant changes in the concentration or value of an indicator parameter in periodic ground-water samples when compared to the initial background concentration or value of that indicator parameter. The comparison must consider individually each of the wells in the monitoring system. For three of the indicator parameters (specific conductance, total organic carbon, and total organic halogen) a single-tailed Student's t-test must be used to test at the 0.01 level of significance for significant increases over background. The difference test for pH must be a two-tailed Student's t-test at the overall 0.01 level of significance.

The student's t-test involves calculation of the value of a t-statistic for each comparison of the mean (average) concentration or value (based on a minimum of four replicate measurements) of an indicator parameter with its initial background concentration or value. The calculated value of the t-statistic must then be compared to the value of the t-statistic found in a table for t-test of significance at the specified level of significance. A calculated value of t which exceeds the value of t found in the table indicates a statistically significant change in the concentration or value of the indicator parameter.

Formulae for calculation of the t-statistic and tables for t-test of significance can be found in most introductory statistics texts.

**Appendix V—Examples of Potentially Incompatible Wastes**

Many hazardous wastes, when mixed with other waste or materials at a hazardous waste facility, can produce effects which are harmful to human health and the environment, such as (1) heat or pressure, (2) fire or explosion, (3) violent reaction, (4) toxic dusts, mists, fumes, or gases, or (5) flammable fumes or gases.

Below are examples of potentially incompatible wastes, waste components, and materials, along with the harmful consequences which result from mixing materials in one group with materials in another group. The list is intended as a guide to owners or operators of treatment, storage, and disposal facilities, and to enforcement and permit granting officials, to indicate the need for special precautions when managing these potentially incompatible waste materials or components.

This list is not intended to be exhaustive. An owner or operator must, as the regulations require, adequately analyze his wastes so that he can avoid creating uncontrolled substances or reactions of the type listed below, whether they are listed below or not.

It is possible for potentially incompatible wastes to be mixed in a way that precludes a reaction (e.g., adding acid to water rather than water to acid) or that neutralizes them (e.g., a strong acid mixed with a strong base), or that controls substances produced (e.g., by generating flammable gases in a closed tank

equipped so that ignition cannot occur, and burning the gases in an incinerator).

In the lists below, the mixing of a Group A material with a Group B material may have the potential consequence as noted.

California Department of Health, February 1975.

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BILLING CODE 6560-01-M

**Group 1-A**  
 Acetylene sludge  
 Alkaline caustic liquids  
 Alkaline cleaner  
 Alkaline corrosive liquids  
 Alkaline corrosive battery fluid  
 Caustic wastewater  
 Lime sludge and other corrosive alkalies  
 Lime wastewater  
 Lime and water  
 Spent caustic

**Group 1-B**  
 Acid sludge  
 Acid and water  
 Battery acid  
 Chemical cleaners  
 Electrolyte, acid  
 Etching acid liquid or solvent  
 Pickling liquor and other corrosive acids  
 Spent acid  
 Spent mixed acid  
 Spent sulfuric acid

Potential consequences: Heat generation; violent reaction.

**Group 2-A**  
 Aluminum  
 Beryllium  
 Calcium  
 Lithium  
 Magnesium  
 Potassium  
 Sodium  
 Zinc powder  
 Other reactive metals and metal hydrides

**Group 2-B**  
 Any waste in Group 1-A or 1-B

Potential consequences: Fire or explosion; generation of flammable hydrogen gas.

**Group 3-A**  
 Alcohols  
 Water

**Group 3-B**  
 Any concentrated waste in Groups 1-A or 1-B  
 Calcium  
 Lithium  
 Metal hydrides  
 Potassium  
 SO<sub>2</sub>Cl<sub>2</sub>, SOCl<sub>2</sub>, PCl<sub>5</sub>, CH<sub>3</sub>SiCl<sub>3</sub>  
 Other water-reactive waste

Potential consequences: Fire, explosion, or heat generation; generation of flammable or toxic gases.

**Group 4-A**  
 Alcohols  
 Aldehydes  
 Halogenated hydrocarbons  
 Nitrated hydrocarbons  
 Unsaturated hydrocarbons  
 Other reactive organic compounds and solvents

**Group 4-B**  
 Concentrated Group 1-A or 1-B wastes  
 Group 2-A wastes

Potential consequences: Fire, explosion, or violent reaction.

**Group 5-A**  
 Spent cyanide and sulfide solutions

**Group 5-B**  
 Group 1-B wastes

Potential consequences: Generation of toxic hydrogen cyanide or hydrogen sulfide gas.

**Group 6-A**  
 Chlorates  
 Chlorine  
 Chlorites  
 Chromic acid  
 Hypochlorites  
 Nitrates  
 Nitric acid, fuming  
 Perchlorates  
 Permanganates  
 Peroxides  
 Other strong oxidizers

**Group 6-B**  
 Acetic acid and other organic acids  
 Concentrated mineral acids  
 Group 2-A wastes  
 Group 4-A wastes  
 Other flammable and combustible wastes

Potential consequences: Fire, explosion, or violent reaction.

Source: "Law, Regulations, and Guidelines for Handling of Hazardous Waste."