**ENVIRONMENTAL PROTECTION AGENCY**

**40 CFR Parts 260, 261, 262, 264, 265, 268, 270, and 271**

**[SWH-FRL-3219-1]**

# Land Disposal Restrictions for Certain "California List" Hazardous Wastes and Modifications to the Framework

**AGENCY:** Environmental Protection Agency (EPA).

**ACTION:** Final rule.

**SUMMARY:** The Environmental Protection Agency is today promulgating regulations restricting land disposal of certain "California list" wastes: liquid hazardous wastes containing polychlorinated biphenyls (PCBs) above specified concentrations; and hazardous wastes containing halogenated organic compounds (HOCs) above specified concentrations. In addition, today's final rule codifies the statutory land disposal prohibitions on certain California list corrosive wastes. This action also establishes methods for determining compliance with the prohibitions and modifies portions of the land disposal restrictions framework which was promulgated on November 7, 1986 (51 FR 40572).

EPA is taking this action in response to the Resource Conservation and Recovery Act (RCRA), as amended by the Hazardous and Solid Waste Amendments of 1984 (HSWA), which requires EPA to restrict the land disposal of hazardous wastes containing the California list constituents above specified concentrations. Today's rule does not establish regulations for the California list wastes containing metals or free cyanides beyond requirements set forth in the statute. EPA may establish more stringent requirements for these wastes in a separate rulemaking.

Today's rule, however, does address the Agency's approach to determining compliance with the statutory prohibitions on the metal-bearing and free cyanide containing wastes.

**EFFECTIVE DATE:** This final rule is effective July 8, 1987.

**ADDRESSES:** The official record for this rulemaking is identified as Docket Number LDR-4 and is located in the EPA RCRA Docket Room (sub-basement) 401 M Street, SW., Washington, DC 20460. The docket is open from 9:00 to 4:00 Monday through Friday, except for public holidays. To review docket materials, the public must make an appointment by calling (202) 475-9327. The public may copy a maximum of 50 pages from any regulatory docket at no cost. Additional copies cost $.20 per page.

**FOR FURTHER INFORMATION CONTACT:** For general information contact the RCRA Hotline, Office of Solid Waste (WH-562), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (800) 424-9346 (toll-free) or (202) 382-3000 locally.

For information on specific aspects of this final rule contact: Gary A. Jonesi or Jacqueline W. Sales, Office of Solid Waste (WH-562B), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460, (202) 382-4770.

**SUPPLEMENTARY INFORMATION:**

## Preamble Outline



## I. Background

### *A. Summary of Hazardous and Solid Waste Amendments of 1984*

The Hazardous and Solid Waste Amendments of 1984 (HSWA), enacted on November 8, 1984, prohibit the continued land disposal of hazardous wastes beyond specified dates unless the Administrator determines, based on a case-specific petition, that there will be "no migration" of hazardous

constituents from the disposal unit or injection zone for as long as the wastes remain hazardous. Wastes treated in accordance with the treatment standards set by EPA pursuant to RCRA section 3004(m) are not subject to the prohibitions and may be land disposed. The land disposal prohibitions are effective immediately upon promulgation unless the Agency sets another effective date based on the earliest date that adequate alternative treatment, recovery, or disposal capacity which is protective of human health and the environment will be available. The relevant statutory deadlines are as follows:

1. Scheduled Wastes and Newly Listed Wastes

On May 28, 1986 (51 FR 19300), EPA promulgated a schedule for making land disposal restrictions decisions for all hazardous wastes listed or identified by characteristic as of November 8, 1984, excluding solvent and dioxin wastes and the California list wastes which are subject to a statutory schedule. If EPA fails to set treatment standards or grant a "no migration" petition for any of the scheduled wastes by May 8, 1990, all such wastes will be prohibited from land disposal. (Hazardous wastes containing California List constituents are prohibited from land disposal at concentrations which exceed the statutory levels.)

For any hazardous waste identified or listed after November 8, 1984, EPA is required to make a land disposal restriction determination within 6 months of the date of identification or listing. However, there is no automatic prohibition on land disposal if EPA misses a deadline for any newly listed or identified waste.

2. Solvents and Dioxins

On November 7, 1986, EPA promulgated a final rule that established a framework for implementing the congressionally mandated land disposal prohibitions (51 FR 40572). The rule established procedures for establishing treatment standards, for granting nationwide variances from statutory effective dates, for granting extensions of effective dates on a case-by-case basis, for evaluating petitions allowing variances from the treatment standard, and for evaluating petitions demonstrating that continued land disposal is protective of human health and the environment. In addition, the November 7, 1986 final rule established treatment standards and effective dates for wastes included in the first phase of the land disposal prohibitions: certain solvent-containing and dioxin-containing hazardous wastes.

3. California List

Today's rule addresses the second phase of the land disposal restrictions i.e., the California list wastes. The California list consists of liquid hazardous wastes containing certain metals, free cyanides, polychlorinated biphenyls (PCBs), corrosives with a pH of less than or equal to two (2.0), and liquid and nonliquid hazardous wastes containing halogenated organic compounds (HOCs) as described below:

(A) Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing free cyanides at concentrations greater than or equal to 1,000 mg/1.

(B) Liquid hazardous wastes, including free liquids associated with any solid or sludge, containing the following metals (or elements) or compounds of these metals (or elements) at concentrations greater than or equal to those specified below:

(i) Arsenic and/or compounds (as As) 500 mg/1;

(ii) Cadmium and/or compounds (as Cd) 100 mg/1;

(iii) Chromium (VI and/or compounds (as Cr VI)) 500 mg/1;

(iv) Lead and/or compounds (as Pb) 500 mg/1;

(v) Mercury and/or compounds (as Hg) 20 mg/1;

(vi) Nickel and/or compounds (as Ni) 134 mg/1;

(vii) Selenium and/or compounds (as Se) 100 mg/1; and

(viii) Thallium and/or compounds (as T1) 130 mg/1;

(C) Liquid hazardous waste having a pH less than or equal to two (2.0).

(D) Liquid hazardous wastes containing polychlorinated biphenyls at concentrations greater than or equal to 50 ppm.

(E) Hazardous wastes containing halogenated organic compounds in total concentration greater than or equal to 1,000 mg/kg.

Collectively, these hazardous wastes are referred to as the California list because the State of California developed regulations to restrict the land disposal of hazardous wastes containing these constituents, and Congress subsequently incorporated these prohibitions into the 1984 Amendments to RCRA. (RCRA sections 3004(d) (1) and (2), 42 U.S.C. 6924(d) (1), and (2)). Congress intended the California list prohibitions as a starting point in carrying out the congressional mandate to minimize land disposal of hazardous waste. Congress' intent in specifying threshold levels for the land disposal of California list wastes was to avoid time-consuming litigation over the selection of appropriate levels. However, section 3004(d)(2) of RCRA directs the Agency to substitute more stringent concentration levels where necessary to protect human health and the environment.

*B. Summary of Proposed Rule*

1. Prohibition Levels

On December 11, 1986 (51 FR 44714), the Agency proposed to codify the statutory levels for all of the California list as set forth in RCRA section 3004(d). The Agency requested comments on an alternative approach that would substitute more stringent concentration levels for those California list metals for which Extraction Procedure (EP) toxicity characteristic levels exist. The Agency also requested comment on whether the prohibition levels should be lowered for the remaining metals for which EP levels have not been established.

2. Applicability

The Agency proposed to require use of the Paint Filter Liquids Test (PFLT) in determining whether a waste is considered to be a liquid or a nonliquid for purposes of the California list prohibitions. For purposes of determining whether a liquid waste exceeds the applicable prohibition levels, EPA proposed to require that the regulated community analyze both the free liquid portion of the waste and the residual solids remaining in the paint filter using the Toxicity Characteristic Leaching Procedure (TCLP). The Agency also proposed to define the universe of prohibited HOCs as those constituents listed as a hazardous constituent under Appendix VIII to Part 261. Finally, the Agency also proposed to apply the statutory level for cyanides (1,000 mg/1) to total cyanide rather than free cyanide because of the lack of a precise definition of free cyanide and because complexed cyanide may convert to free cyanide under certain conditions that may exist in the environment.

3. Treatment Standards and Effective Dates

In the proposed rule, the Agency established treatment standards expressed as specified technologies for the prohibited liquid hazardous wastes containing PCBs and for the prohibited liquid and nonliquid hazardous wastes containing HOCs (except for dilute HOC wastewaters). The proposed treatment standard for the PCB containing wastes was thermal destruction in accordance with the technical standards required by regulations promulgated pursuant to the

Toxic Substances Control Act (TSCA). The Agency proposed to establish a two-year nationwide variance for these wastes. Incineration in accordance with existing RCRA regulations was proposed as the treatment standard for most HOCs. However, based on a lack of incineration capacity, the Agency proposed a two-year nationwide variance from the prohibition effective date for these HOC wastes. The Agency also proposed a performance based treatment standard for corrosives wastes having a pH less than or equal to two (2.0). The Agency did not propose required treatment standards for the remaining California list wastes; however, applicable technologies generally capable of meeting the statutory prohibition levels were discussed in the proposal.

4. Modifications to the Land Disposal Restrictions Regulatory Framework

EPA also proposed to modify portions of the land disposal restrictions framework established in the November 7, 1986 final rule. These proposed changes would apply to all wastes subject to the land disposal restrictions. Among them was a proposal to strengthen the dilution prohibition by amending § 268.3 to prohibit dilution as a means of achieving the prohibition levels or as a means of circumventing the effective date of a land disposal prohibition. The Agency also proposed a prohibition on evaporation of hazardous constituents for purposes of obtaining an exemption under § 268.4 which provision allows otherwise prohibited wastes to be treated in surface impoundments without the wastes first being treated to the section 3004(m) standards.

The Agency also proposed to amend Part 270 to provide more flexibility in handling restricted wastes by allowing permitted facilities to use the minor modification process to change their operations and treat or store restricted wastes in tanks or containers, subject to certain enumerated conditions. The Agency further proposed that the so-called reconstruction ban in § 270.72(e) not apply to interim status facilities adding treatment or storage capacity (also in tanks or containers) to comply with the land disposal restrictions.

*C. Summary of Today's Final Rule*

1. Applicability

Today the Agency is promulgating land disposal prohibitions and effective dates for liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm (California list PCBs) and other liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg/kg (California list HOCs). In addition, EPA is establishing treatment standards expressed as specified technologies for these PCB and HOC wastes (except for dilute HOC wastewaters). EPA is also codifying the statutory prohibition on land disposal of liquid hazardous wastes with a pH less than or equal to two (2.0) (California list corrosives).

Today's final rule does not establish prohibition levels, treatment standards, or effective dates for the California list liquid hazardous wastes containing metals or free cyanides. Rather, EPA is publishing a notice of data availability and request for comment which outlines the Agency's findings with respect to establishing more stringent prohibition levels. Since a final decision as to more stringent land disposal prohibitions for these wastes will be contained in a separate notice, most comments on metals and free cyanide issues received in response to the December 11, 1986 proposal will be addressed in that final rule. The California list metals and free cyanides are only addressed in today's final rule for purposes of explaining the Agency's approach to demonstrating compliance with the statutory prohibitions which automatically become effective on July 8, 1987, and for purposes of determining if the statutory prohibition date shall be immediately effective or whether national capacity variances shall be granted.

The California list PCB and HOC wastes that are not subject to a national capacity variance are prohibited from land disposal unless the wastes comply with the applicable treatment standards (including potential alternative standards granted pursuant to § 268.42(b)), a "no migration" petition has been granted by the Administrator pursuant to § 268.6, a case-by-case capacity variance has been granted pursuant to § 268.5, or the wastes are treated in an impoundment which is exempt from land disposal prohibitions under § 268.4.

The California list corrosives, metal-bearing wastes, and free cyanide wastes are prohibited from land disposal on July 8, 1987, unless a "no migration" petition has been granted by the Administrator under § 268.6, or the Administrator grants a case-by-case capacity variance under § 268.5. In complying with these prohibitions, the regulatory framework promulgated on November 7, 1986 (51 FR 40572) is applicable. Unless otherwise specified in today's rule, the Part 268 (e.g., § 268.7 tracking, notification and certification) and related RCRA Subtitle C requirements (e.g., § 264.13 and § 265.13 waste analysis requirements) are applicable to all of the California list wastes, including the metal and free cyanide containing wastes.

Where treatment standards and prohibitions effective dates are promulgated for California list waste constituents that are also covered under the November 7, 1986 solvents and dioxins final rule, the constituent-specific treatment standards and effective dates promulgated on November 7, 1986 apply. For example, HOC-containing wastes that are also covered by the F001 or F002 spent solvent listings are prohibited from land disposal according to the effective date specified on November 7, 1986 and must be treated to the levels specified in that final rule (or meet those levels as generated). They need not be incinerated in order to reach such levels. (This example assumes that the waste does not exceed the California list prohibitions levels for any constituent but HOCs. See section III. G. below.)

2. Testing Requirements

Today's rule requires that the Paint Filter Liquids Test (PFLT) be used to determine whether a waste, including a free cyanide or metal-bearing waste, is considered to be a liquid or nonliquid waste for purposes of the California list land disposal restrictions. The procedure is method 9095 in EPA Publication No. SW-846, "Test Methods for Evaluating Solid Waste."

The Agency proposed to determine whether a waste is a liquid, and thus potentially subject to the California list land disposal restrictions, at the point of disposal. However, today's final rule departs from the proposal and clarifies EPA's position that wastes (both California list wastes and other wastes restricted under RCRA section 3004) are considered to be prohibited at the point of generation, as described in more detail in the "Scope and Applicability" section of today's preamble.

To determine whether a waste meets the specified prohibition levels, the Agency is departing from the proposed rule which stated that an extract generated using the Toxicity Characteristic Leaching Procedure (TCLP) would be tested. Today's final rule requires a total constituent analysis when testing liquid wastes containing PCBs or liquid or nonliquid wastes containing other HOCs. This approach requires that the entire waste sample be analyzed for the constituents of concern. Today's rule also states that when testing liquid hazardous wastes to

evaluate whether they have a pH less than or equal to two (2.0), the existing method for determining the characteristic of corrosivity in § 261.22(a)(1) is required.

In determining compliance with the statutory prohibition levels for metals and free cyanides, EPA will be evaluating whether the filtrate generated from the Paint Filter Liquids Test contains the prohibited constituents in concentrations exceeding the specified levels. The literal sense of the statutory language "liquid hazardous waste, including free liquids associated with any solid or sludge" is that the free cyanide and metal containing waste bans applies when the true aqueous portions of the wastes contain concentrations exceeding the statutory levels. Further, the HOC wastes are prohibited when "total concentration(s)" exceed the statutory levels. The absence of any reference to total concentrations in the metal and cyanide waste provisions strongly suggests a difference in regulatory approach. EPA thus disagrees with those commenters who claimed that a total constituent analysis of the metal and cyanide wastes is mandated.

Consistent with the framework established on November 7, 1986, generators may determine whether their wastes are restricted based on knowledge of the waste pursuant to § 268.7.

3. Halogenated Organic Compounds (HOCs)

The Agency is promulgating the definition of HOCs as proposed (i.e., as a compound containing a carbon-halogen bond), but is modifying the proposed limitation on those HOCs subject to the California list restrictions. Only those HOCs that are listed on a new Appendix III to Part 268 are included within the regulatory definition. In limiting the universe of HOCs subject to today's final rule, the Agency is clarifying that polymeric materials such as polyvinyl chlorides (PVCs) are not HOCs within the scope of the HOC land disposal restrictions because they are not listed on Appendix III.

4. Treatment Standards and Effective Dates

a. *HOCs.* Pursuant to today's final rule, all liquid and nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg/kg except dilute HOC wastewaters (i.e., HOC-water mixtures containing primarily water and which contain less than 10,000 mg/l HOCs) must be incinerated in accordance with existing RCRA regulations. However, EPA has determined that there is a nationwide lack of such incineration capacity and, therefore, is promulgating a 2-year variance from these treatment standards. HOC wastewaters need not be incinerated but they must be treated to the 1,000 mg/l prohibition level. Because the Agency is unable to determine that there is insufficient treatment capacity for these wastewaters, they are not subject to the 2-year variance. Such wastewaters are prohibited as of July 8, 1987, unless those wastewaters are also F001–F005 spent solvent wastewaters granted a 2-year variance in the November 7, 1986 final rule. HOC wastewaters regulated as hazardous because they contain such listed solvent hazardous wastes remain exempt from the treatment requirements until November 8, 1988.

b. *PCBs.* Liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm must be treated in accordance with existing TSCA thermal treatment regulations at 40 CFR Part 761. EPA proposed to grant a 2-year variance from the July 8, 1987 prohibition effective date for these wastes due to a perceived lack of incineration capacity. However, today's final rule does not grant such a variance.

Although the treatment standards applicable to the California list PCB and HOC wastes are expressed as specified technologies which must be used, alternative treatment methods (e.g., chemical dechlorination of PCBs) may also be utilized provided the Administrator finds that a petitioner's method can achieve a measure of performance equivalent to the method specified by EPA and certain other requirements under § 268.42 are met.

5. Prohibition on Dilution and Evaporation

As proposed, today's rule strengthens the existing prohibition on dilution of restricted wastes by amending § 268.3 to include a prohibition on dilution as a means of avoiding the land disposal restrictions. Thus, dilution of wastes to concentrations below the applicable levels is prohibited, as is dilution to circumvent the effective date of a prohibition on land disposal. Today's final rule also prohibits evaporation of hazardous constituents as the principal means of treatment for purposes of obtaining an exemption under § 268.4, which provision allows treatment of otherwise prohibited wastes in surface impoundments.

6. Permit Modifications and Changes During Interim Status

As proposed, today's final rule allows permitted facilities to use the minor modification process, under certain conditions, to obtain approval to change their facilities to treat or store restricted wastes in tanks or containers as necessary to comply with the land disposal restrictions. Also, today's final rule allows interim status facilities to expand their operations by more than 50 percent, in terms of capital expenditures, to treat or store restricted wastes in tanks or containers as necessary to comply with the land disposal restrictions.

*D. Rationale for Immediate Effective Date*

Today's rule is effective on July 8, 1987. Absent any regulatory action by EPA, the California list land disposal restrictions in section 3004(d) take effect automatically on July 8, 1987; thus, this is the latest date for EPA to promulgate regulations that will prevent the "hammer" in section 3004(d) from falling. Section 3004(h) of RCRA provides that regulations promulgated under sections 3004(d), (e), (f), or (g) take effect immediately. Moreover, section 3004(m) provides that regulations setting treatment standards must have the same effective date as the applicable regulation promulgated under sections 3004(d), (e), (f), or (g). Therefore, since the statute clearly provides that the regulations implementing section 3004(d) go into effect on July 8, 1987, EPA finds that good cause exists under RCRA section 3010(b)(3) to provide for an immediate effective date. For the same reasons, EPA finds that good cause exists under 5 U.S.C. section 553(d)(3) to waive the requirement that regulations be published at least 30 days before they become effective.

In addition, EPA is promulgating rules establishing an administrative framework for implementing the prohibitions and interpreting certain statutory terms (such as "liquid", "halogenated organic compound", etc.). These rules are a necessary adjunct to the prohibitions which take effect immediately by operation of law, and so it would be impractical for the Agency to delay their effectiveness. Good cause thus exists to make them effective immediately. In the alternative, many of these provisions could be viewed as interpretive rules, and so may take effect immediately.

## II. Scope and Applicability

### *A. RCRA Section 3004(d) Requirements*

The RCRA section 3004(d) provisions prohibit the land disposal of hazardous wastes containing California list constituents above specified concentrations. With the exception of HOCs, the restricted wastes must be liquids. In order to be subject to the section 3004(d) provisions, a given waste must meet each of the four criteria discussed in this section: (1) The waste must contain a constituent specified in the California list provisions or have a pH less than or equal to two (2.0) (see section 3004(d)); (2) the physical form of the waste must be a liquid (except for HOCs); (3) the waste containing the California list constituent must be listed or identified as hazardous under RCRA section 3001 (as implemented in 40 CFR Part 261); and (4) the waste must contain a concentration of one or more California list constituents at or above the levels specified in section 3004(d).

#### 1. Definition of California List Constituents

The Agency proposed to define cyanides as any substance that can be shown as having a resonance structure containing a carbon-nitrogen triple bond. There were numerous comments as to the proposed definition of prohibited cyanides and EPA has modified its approach as a result to apply more clearly to the free cyanides in the waste.

The California list metals are easily defined with reference to the periodic table of elements. This requirement applies both to individual constituents and to the relevant metal portion of any compounds containing California list metals.

The Agency proposed that wastes having a pH less than or equal to two (2.0) are to be determined using the method specified for determining the characteristic of corrosivity at 40 CFR 261.22(a)(1). No commenters addressed this issue; therefore, EPA is promulgating this definition as proposed in order to maintain consistency with the existing definition.

The proposed definition of PCBs is consistent with the existing definition in the PCB regulations promulgated under the Toxic Substances Control Act (TSCA). Although one commenter suggested an alternative definition, the Agency does not believe that it is consistent with congressional intent. Therefore, the proposed definition is being promulgated in today's final rule.

EPA proposed to define the universe of prohibited HOCs as any compound that contains a carbon-halogen bond and is listed as a hazardous constituent in 40 CFR Part 261, Appendix VIII. The comments generally supported this approach; however, concern was expressed over the open-ended nature of Appendix VIII and the availability of test methods for all constituents on Appendix VIII. In response to these comments, the Agency has slightly modified its definition of HOCs for purposes of today's final rule.

More detailed definitions of corrosive wastes, and wastes containing cyanides, PCBs, or HOCs are provided later in the preamble sections addressing those constituents.

#### 2. Physical Form Requirement

Except for HOCs (which are prohibited from land disposal in both liquid and nonliquid form), RCRA section 3004(d) prohibits the land disposal of California list wastes only if such wastes exist in liquid form.[1] For purposes of determining whether a given waste is a liquid, the Agency proposed to require use of the Paint Filter Liquids Test (Method 9095 in EPA Publication SW-846). On April 30, 1985 (50 FR 18370), EPA promulgated a final rule requiring use of the Paint Filter Liquids Test in determining whether a waste sample contains free liquids. The Paint Filter Liquids Test is described in detail in both the April 30, 1985 **Federal Register** notice and in the background document for the December 11, 1986 proposed rule. Basically, the method consists of placing a predetermined amount of the waste in a paint filter. If any portion of the waste passes through the filter within five minutes, the waste is deemed to contain free liquids. For purposes of the California list proposal, it would also be considered a liquid waste.

Commenters unanimously supported use of the test; therefore, today's final rule requires use of the Paint Filter Liquids Test to determine whether wastes, including the metal-bearing and cyanide wastes subject to the automatic statutory prohibitions, are liquids for purposes of the California list prohibitions. EPA is clarifying that once a waste is determined to be a liquid, the entire waste is prohibited (provided the concentration of California list constituents in the filtrate, or, for PCBs and HOCs, the entire waste, exceeds the applicable levels), not just the liquid portion. The Paint Filter Liquids Test thus determines whether wastes are liquids for purposes of the California list prohibitions, but not what portion of the waste is prohibited.

#### 3. Hazardous Waste Requirement

RCRA section 3004(d)(2) states that the California list land disposal prohibition "applies to the following hazardous wastes listed or identified under section 3001." This section covers any wastes which are either listed as hazardous under 40 CFR Part 261 or exhibit one or more of the characteristics of hazardous waste identified in Part 261 (i.e. ignitability, corrosivity, reactivity, or EP toxicity), and which also contain a California list constituent. Since PCBs are not currently regulated as hazardous under RCRA, they would have to be mixed with or contained in a RCRA hazardous waste or otherwise be contained in a waste that exhibits a characteristic in order to be subject to the California list prohibitions.

#### 4. Concentration Levels Prohibited From Land Disposal

The California list prohibitions in RCRA section 3004(d) establish certain concentration levels above which there is a strong statutory presumption against land disposal. After the effective date of the prohibitions, the only circumstances in which such wastes may be land disposed in concentrations above the levels specified in section 3004(d) are those cases: (a) For the California list metal and free cyanide containing wastes and corrosive wastes, where the waste has been treated and rendered nonliquid; (b) for the California list PCB wastes, where the waste has been treated by the specified technologies or is subject to a variance from the treatment requirements of § 268.42(b); or (c) for any of these wastes where a petition has been granted pursuant to the § 268.6 "no migration" standards adopted on November 7, 1986 (51 FR 40640).

a. *Codifying the statutory prohibition levels.* HSWA specifies allowable concentration levels for each of the California list constituents; however, the statute and legislative history give EPA both the authority and flexibility to establish more stringent concentration levels. Although EPA is codifying the statutory prohibition levels for the California list corrosives and the California list wastes containing HOCs and PCBs, hazardous wastes that are corrosive or contain these constituents

[1] EPA will address the solid phase of many of the California list wastes at later dates in accordance with the schedule finalized on May 28, 1986 (51 FR 19300). Listed wastes containing metals in a solid matrix will be addressed pursuant to the various time frames in the final schedule and nonliquid wastes identified by characteristic will be addressed no later than May 8, 1990, in accordance with the provisions in RCRA section 3004(g)(4) and the final schedule.

(except for PCBs, which are not currently regulated as hazardous wastes under RCRA unless they are otherwise contained in hazardous wastes) will be reevaluated according to the Agency's final schedule for promulgating land disposal restrictions (51 FR 19300).

The California list metal and cyanide wastes are being addressed in a separate final rule because the Agency currently is compiling and evaluating data which may indicate that more stringent prohibition levels are necessary to protect human health and the environment. A separate notice of data availability and request for comments will outline EPA's basis for lowering the prohibition levels and establishing treatment standards. As will be discussed more fully in that notice, the Agency is considering promulgating prohibitions on the California list metal and cyanide wastes at levels 100 times existing drinking water standards. Similarly, treatment standards that would be promulgated in the next several months (concurrent with such lower levels) will serve as an interim measure until EPA reevaluates these wastes according to the May 28, 1986 final schedule.

b. *Determination of whether wastes exceed the concentration levels.* Having codified the PCB, HOC, and corrosives statutory prohibition levels, EPA must specify a method for determining whether a waste as generated equals or exceeds these levels. Using the Paint Filter Liquids Test to determine whether or not a waste is a liquid results in a filtrate (the liquid that comes through the filter) and, in many cases, a residue that is left behind. The California list constituents may be contained in the filtrate, entrained in the matrix of the solid residue left on the filter, or may be partitioned between the two phases. Because of this possible partitioning, the Agency considered several approaches as to which part or parts of the wastes should be analyzed in order to determine if the concentration of California list constituents is greater than or equal to the statutory prohibition levels.

The Agency received numerous comments on this issue, many of which were critical of requiring use of the Toxicity Characteristic Leaching Procedure (TCLP) in determining the applicable concentration level. Among the criticisms were comments that the TCLP was inappropriate for use on HOCs in light of statutory language prohibiting HOCs in "total concentration", and comments that the PCB regulations under TSCA require what is in effect a total constituent analysis. For these and other reasons discussed later in today's preamble, EPA is requiring that a total constituent analysis be performed on the liquid hazardous wastes containing PCBs as well as the nonliquid hazardous wastes containing HOCs.

For the liquid hazardous wastes containing free cyanides or the specified metals, EPA is requiring that only the filtrate generated from the Paint Filter Liquids Test be tested in order to determine the applicable statutory concentration levels. Thus, the Agency reads section 3004(d) as applying only when the liquid portion of a waste (which includes the free liquids which partition in the Paint Filter Liquids Test) contains concentrations of the specified metals and free cyanides in excess of the statutory levels. When testing the relevant portions of these wastes, EPA is recommending use of the applicable methods in "Test Methods for Evaluating Solid Waste: Physical/ Chemical Methods", EPA Publication No. SW-846, 3d ed., November, 1986.

As in the November 7, 1986, final rule, generators may also determine whether their wastes are restricted using knowledge of the waste. However, a correction notice published in the June 4, 1987, Federal Register (52 FR 21010) clarifies that in such cases the generator must maintain all supporting data used to make such a determination on-site in the generator's files.

### *B. Determination of When California List Wastes Are Restricted*

#### 1. Rationale for Changing from Proposed Point of Disposal Approach

In the proposed rule, EPA stated that California list wastes are determined to be liquids at the point of disposal. While noting that this approach deviates from the November 7, 1986 solvents and dioxins rule (51 FR 40620) which requires that wastes are determined to be restricted at the point of generation, EPA stated that the proposed approach is consistent with congressional concerns about the land disposal of the California list constituents in their liquid or mobile form. Except for the HOC wastes, which are prohibited in both liquid and nonliquid form, the statutory prohibitions apply only to liquid hazardous wastes. Therefore, EPA proposed to allow liquid California list wastes to be treated (e.g., by solidification) at any point, so as to render the waste a nonliquid, and subsequently eligible for land disposal.

EPA continues to believe that Congress' primary goal in enacting the California list prohibitions was to eliminate the land disposal of highly toxic liquid hazardous wastes as a starting point; however, as the Agency noted in a recent notice of data availability and request for comment (52 FR 22356, June 11, 1987), the Agency agrees with the commenter who stated that determining whether these wastes are restricted at the point of disposal is not what Congress intended. The legislative history regarding dilution indicates that Congress intended hazardous wastes, including the California list wastes, to be restricted at the point of generation. (*See e.g.,* H.R. Rep. No. 198, Part I, 98th Cong., 1st Sess. 34-35 (1983).)

Furthermore, a point of disposal approach is inconsistent with the Agency's stated concerns regarding the dilution of California list wastes because the amended dilution language in § 268.3 only applies to restricted wastes. If a waste is not considered to be restricted until the point of disposal, then, by definition, it is not subject to any of the land disposal restriction regulations prior to that time, including the dilution prohibition. This is clearly not what Congress or EPA intended. A point of disposal approach likewise undermines the congressional directive that where the Agency specifies section 3004(m) pretreatment standards, wastes may be land disposed only after being pretreated in accord with those standards (i.e., by a specified method or to a specified level).

The Agency recognizes that it can be argued that the California list statutory language is jurisdictional, i.e., that hazardous wastes which do not fall within the scope of the California list language in section 3004(d) are not prohibited. One commenter made a similar argument that because wastes are only prohibited by statute when land disposed, any determination of their regulatory status must be made at the point of disposal. EPA does not view the section 3004(d) language as jurisdictional (past the point of generation) because such a reading renders the section 3004(m) standards mandated for such wastes, as well as the dilution prohibition, virtually meaningless.

However, the question of whether the section 3004(d) language is jurisdictional is essentially an academic one since the Agency possesses independent authority under RCRA section 3004(g) to require that these wastes be pretreated by specified methods or to specified levels. In essence, EPA could simply prohibit land disposal of certain of the section 3004(g) wastes on an accelerated timetable. This reduces the debate to a matter of semantics (i.e., characterizing

the rule as a section 3004(d) or a section 3004(g) rule), and in such circumstances the Agency has great latitude in choosing the means by which to proceed. *See e.g., CMA v. NRDC,* 105 S. Ct. 1102, 1111 (1985). For these reasons, therefore, EPA finds unpersuasive the notion that the California list statutory language is a jurisdictional bar requiring prohibition determinations to be made only at the point of disposal.

2. Final Approach

Having determined not to use a point of disposal approach, EPA is clarifying in today's rule when wastes are considered "prohibited," both for purposes of the California list restrictions and within the remainder of the land disposal restrictions framework.

Today's final rule indicates that "initial generators" of hazardous wastes must determine whether their wastes are prohibited. In interpreting this language to determine at what particular point generators are to make this determination, the Agency has considered two principal options. These are: (1) At the point of generation (see 51 FR at 40620 (Nov. 7, 1986), 51 FR 44727 (Dec. 11, 1986) (raising the issue)); or (2) at the point of common aggregation preceding centralized treatment (52 FR 22356 (June 11, 1987)). In this last-mentioned notice, EPA advanced as reasons for interpreting the rules to use a point of aggregation approach the feasibility of sampling wastes in enclosed systems such as pipes or process vessels, plus the fact that aggregation in many cases is a legitimate and necessary step in centralized treatment processes.

Commenters to the June 11, 1987 notice pointed out, however, the severe practical difficulties of determining a precise point of legitimate aggregation. Commenters also raised the issue that a point of aggregation approach could result in less treatment of concentrated waste streams, or could in some cases lead to impermissible dilution.

Upon reconsideration, EPA has decided to adhere to the interpretation from the November 7, 1986 rules that initial generators are to determine if their hazardous wastes are prohibited at the point of generation. 51 FR 44620. In the first place, the implementation difficulties with a point of aggregation approach are considerable, and could only be solved on a case-by-case basis, raising the possibility of uncertainty and inconsistent determinations. The point of generation is easier to demarcate, and, indeed, EPA's rules on when a waste is hazardous already use this test. *See* § 261.3 (b)(1) and (b)(3). The Agency sees no compelling reason to deviate from this long-standing regulatory requirement.

Perhaps more important is the need to avoid the possibility of compromising applicable treatment standards. For example, if a generator generates four solvent-bearing wastestreams, one an organic liquid containing greater than 10,000 ppm prohibited solvent, and the other three containing less than 10,000 ppm solvents, it was the Agency's intention (and existing rules require) that the concentrated stream has to meet the treatment standard based on incineration (*see* § 268.41(a) and Appendix II to Part 268), and that, if these streams are aggregated, the aggregated streams must meet the treatment standards based on incineration as well (*see* § 268.41(b); *see also* 51 FR at 40623, both of which state that where wastes are combined for treatment, treatment residues must meet the treatment standard for the common constituents). These settled principles could be confused by a point of aggregation approach.

The practical difficulties the Agency saw with a point of generation approach appear to be manageable. As far as the difficulties of sampling enclosed systems, EPA believes that in most cases waste stream pipes are easily entered by installing sample taps. This should not interfere with on-going treatment processes. No claims of difficulty installing such taps have been made since implementation of the solvent ban rule, which adopted a point of generation approach. Generators also can determine if wastes are prohibited based on knowledge of their waste. (§ 268.7(a)). In extreme cases where these means would severely disrupt process or treatment operations, wastes could be sampled when they exit closed systems.

The Agency also wished to ensure that any determination scheme not interfere with, or discourage legitimate centralized treatment. A point of generation approach would not do so. EPA reiterates that aggregation of waste streams for centralized treatment is not considered to be a form of impermissible dilution (51 FR 40592, 52 FR 22356); it is a form of mixing that facilitates treatment. Artificial aggregation points designed to avoid a prohibition certainly would not be considered legitimate, however. (The Agency would also distinguish the case where a waste not requiring treatment or not aiding in treatment is mixed. This would be impermissible dilution, as it would merely dilute hazardous constituents into a larger volume of wastes to lower constituent concentrations. (51 FR 40592).)

EPA also repeats that California list wastes for which there are no treatment standards may be aggregated for treatment (assuming no impermissible dilution) and would no longer be considered prohibited if they no longer exceed the specified prohibition levels or are rendered nonliquid. For example, if a generator generated liquid lead-bearing wastestreams of 1,000, 300, 40, and 50 mg/l lead and aggregated them for centralized treatment and the waste streams before or after treatment contained less than 500 mg/l lead, the waste currently would not be prohibited. Hazardous sludges generated from wastewater treatment likewise would not be prohibited if they do not contain free liquids; nor would such sludges currently be prohibited if they contained free liquids whose filtrate contained less than 500 mg/l lead. (Should EPA promulgate treatment standards for California-list lead-bearing wastes, then the combined lead-bearing wastes in this example would have to meet that treatment standard. (§ 268.41(b).)

Thus, should EPA ultimately adopt treatment standards for California list metal and free cyanide wastes, these wastes would have to meet or be treated to meet these standards and not simply be treated to reduce concentrations below the prohibition levels or be rendered nonliquid. Where treatment standards are expressed as specified technologies, the Agency has stated in the November 7, 1986 final rule that such specified technologies must be employed. *See e.g.,* 51 FR 40628. For example, in today's final rule, the California list wastes containing PCBs must be treated in accordance with the standards specified in § 268.42 (i.e., thermal destruction in incinerators or high efficiency boilers) and may not be rendered nonliquid in order to avoid the Part 268 requirements. EPA believes that this approach reflects the intent of RCRA section 3004(m) to require treatment to a level or "by a method specified in regulations." Allowing solidification of such wastes in lieu of the specified method(s) would undermine the congressional directive in section 3004(m) to require pretreatment and would make EPA's establishment of treatment standards meaningless.

Under these circumstances, EPA does not see that a point of generation approach would require alteration of legitimate centralized treatment practices, or force unwarranted batch treatment. The Agency consequently sees no reason to alter its existing approach.

3. Ramifications of the Final Approach

Determinations as to whether a waste is both a liquid and exceeds the applicable concentrations of hazardous constituents thus would be made at the point of generation. The generator notification and certification requirements in § 268.7(a) likewise would apply at this point.

This point of generation principle also has several ramifications in determining how to treat prohibited wastes, and to what levels such wastes must be treated. With respect to those wastes for which the treatment standard is specified as a method, the wastes would be considered prohibited at the point of generation, with the further consequence that they would require treatment using such methods. Likewise, where EPA has established performance levels as the treatment standard, wastes would have to be treated until they meet that standard. (See also the correction notice published in the June 4, 1987 **Federal Register**.) Thus, prohibited solvent and dioxin-containing wastes (i.e. solvent and dioxin-containing wastes prohibited at the point described above) would have to be treated to the levels specified in § 268.41. Prohibited solvent or dioxin-containing wastes treated to the one percent level specified in the § 268.30(a)(3) national capacity variance would continue to require treatment to the specified levels. For example, if a prohibited solvent still bottom is incinerated and the incinerator ash residue does not meet the treatment standard but contains less than one percent total F001–F005 solvent constituents, further treatment would be required.

As explained in the June 11, 1987 notice, however, there is one exception to the principle that treatment residues from prohibited wastes must continue to be treated until they meet the treatment standard. This is where treatment results in a residue that belongs to a different treatability group than the initial waste and the Agency has already determined that there is inadequate nationwide capacity to treat the wastes belonging to that group.

For example, if an incinerator was to burn an F001–F005 spent solvent containing greater than or equal to one percent total F001–F005 solvent constituents and generate a scrubber water, this resulting scrubber water belongs to a different treatability group, i.e. the wastewater treatability group. If the scrubber water contains F001–F005 solvent constituents in concentrations less than one percent but greater than the applicable treatment standards, further treatment of the scrubber water would not be required until November 8, 1988 because the Agency has already determined that there is inadequate nationwide capacity to treat liquids containing less than one percent total F001–F005 solvent constituents.

As stated in the June 11, 1987 notice, this distinction comes directly from the Agency's own estimates of available treatment capacity. These estimates included capacity for further treatment of solid (or slurry) solvent treatment residues which did not meet the treatment standards. No capacity was allocated for wastewaters resulting from treatment of these wastes.

The discussion above covers situations where wastes are determined by their initial generator to be presently prohibited at the point of generation (i.e., not subject to any variance). The Agency is clarifying that where the waste initially generated is subject to a national capacity or other variance, any residue from treating the waste remains subject to the variance. This point follows directly from the principle reiterated most recently in the Agency's correction notice (52 FR 21010, June 4, 1987) that the initial generator of hazardous waste determines whether his waste is presently prohibited from land disposal (see § 268.30(a)(3), as amended).

Thus, using F001–F005 solvent wastes as examples, residues from treating small quantity generator wastes (either 1–100 kg/month, or 100–1,000 kg/month), CERCLA response action or RCRA corrective action wastes, or an initial generator's solvent waste containing less than one percent total F001–F005 solvent constituents, would remain exempt regardless of solvent concentration in the residue (or regardless of whether the residues met the treatment standards) since the waste's status has already been determined by the initial generator. The policy rationale for this is that any other result creates a disincentive for treatment. 52 FR 22357. (This discussion assumes that the treatment residues derive solely from treating exempted wastes. If both exempt and regulated wastes are commingled and treated, residues would not automatically be exempt.)

EPA adds several caveats. First, although wastes are considered to be prohibited as early as the point of generation, the California list prohibitions also must necessarily apply at the point of disposal in cases where the waste is not subject to any of the above stated variances. See RCRA sections 3004(d)–(q), 51 FR 40597 (November 7,1986), and 40 CFR 268.7(c) (land disposal facilities are ultimately responsible for ensuring that wastes not meeting the treatment standards or prohibition levels, or not otherwise exempt, are not land disposed). For example, if a waste is initially a nonliquid, but changes its physical form and becomes a liquid (for instance, in transit), the waste would still be prohibited if it exceeds the specified California list concentration levels at the point of disposal. (In this last example, standards could apply to treatment facilities as well. *See e.g.*, § 268.7(b).)

Second, if a non-hazardous waste is treated and the resulting treatment residue is a hazardous waste, the new hazardous waste would be subject to any applicable prohibitions from that point of generation. This is the initial point at which a waste could become subject to RCRA Subtitle C regulation, and therefore to any of the prohibitions. (Furthermore, there is no inconsistency with the regulatory provisions discussed above referring to initial generators, because these provisions apply to initial generators of *hazardous* wastes.)

Finally, as noted in the November 7, 1986, final rule, where a waste generated before a land disposal prohibition effective date is later removed from storage or disposal, it becomes subject to the land disposal prohibitions at that point (assuming that at the time of removal the waste is ineligible for one of several variances and does not already meet the applicable treatment standards). 51 FR 40577. Similarly, residues generated from such wastes, such as leachate or contaminated groundwater containing F001–F005 solvent wastes disposed prior to November 8, 1986, would be viewed as newly generated wastes. Their eligibility for the national capacity variance (or the statutory variance for certain CERCLA response action and RCRA corrective action wastes) would consequently be determined *de novo* upon removal, and not by reference to the composition of the waste prior to the prohibition effective date.

## III. Detailed Discussion of Today's Final Rule

### *A. Free Cyanides and Metals*

Today's final rule does not establish prohibition levels or treatment standards for the California list wastes containing free cyanides or metals. These determinations will be made in a separate rulemaking. Today's rule, however, does address the Agency's approach to determining compliance with the statutory prohibitions on the

metal-bearing and cyanide wastes which are automatically effective prior to the separate rulemaking.

1. Definition of Free Cyanides and California List Metals

The Agency proposed to define the universe of prohibited cyanide wastes as any substance that can be shown as having a resonance structure containing a carbon-nitrogen triple bond. The proposed definition would have prohibited the land disposal of wastes containing "total" cyanides above the statutory concentration levels and would have required the use of the Toxicity Characteristic Leaching Procedure (TCLP) to develop a waste extract, which would have then been tested for cyanide concentration levels. The Agency recommended using Method 9010 for Total Cyanide in *Test Methods for Evaluating Solid Wastes, Physical Chemical Methods* (EPA Publication SW–846). This approach was criticized by many commenters as being contrary to the statutory language prohibiting "free" cyanides. Many of these commenters suggested that Method 9010-Cyanides Amenable to Chlorination would be more appropriate. Other commenters suggested that EPA adopt the weak acidic dissociable test from *Standard Methods for the Evaluation of Water and Wastewater* (16th Edition, 1985) (Ref. 4 in Proposal). Commenters in general did not agree with the proposed use of the TCLP to develop a waste extract for further testing.

After evaluating the comments, EPA agrees that the filtrate from the Paint Filter Liquids Test is the portion of the sample that should be analyzed for free cyanides. The Agency is not requiring the use of a particular test, but agrees with commenters that the statutory restriction in section 3004(d) is on "free" cyanides. For analytical purposes, EPA is recommending the use of the Cyanides Amenable to Chlorination test in Method 9010 (EPA Publication SW–846) for determining "free" cyanide concentrations. The Agency believes this is among the more accurate existing methods for measuring free cyanides, it is widely used, and it was recommended by most of the commenters to the proposed rule.

For purposes of the RCRA section 3004(d) prohibition, the California list metals are defined with reference to the periodic table of elements. As discussed in the "Scope and Applicability" section of today's final rule, this requirement applies both to individual constituents and to the relevant metal portion of any compounds containing such metals.

2. Physical Form Requirement

As discussed in the "Scope and Applicability" section of today's final rule, RCRA section 3004(d) prohibits land disposal of the free cyanide and metal wastes only in a liquid form. In determining whether hazardous wastes containing these prohibited constituents are liquids, EPA is requiring use of the Paint Filter Liquids Test. EPA believes that the statutory language referring to "liquid hazardous wastes, including free liquids associated with any solid or sludge" prohibits only the true aqueous portion of the waste plus the filtrate. Not only is this the literal sense of the section 3004(d) language, but the section 3004(c) liquids in landfill provision uses almost identical language (prohibiting disposal in landfills of certain "liquid hazardous or free liquids contained in hazardous waste"), and legislative history to that provision states that this language applies to "liquid in the conventional sense * * * and the free flowing or liquid portion * * * that readily separates." The legislative history further states that the liquid determination can permissibly be made using the Paint Filter Liquids Test. S. Rep. No. 284, 98th Cong., 1st Sess. 22 (1983).

3. Hazardous Waste Requirement

As with the other California list wastes, the free cyanide and metal wastes must be regulated as hazardous under RCRA in order to be subject to the section 3004(d) prohibitions. This provision covers any wastes that are either listed as hazardous under 40 CFR Part 261 or exhibit one or more characteristics of hazardous waste identified in Part 261 (i.e., ignitability, corrosivity, reactivity, or EP toxicity), and which also contain the specified metals or cyanides.

4. Concentration Levels Prohibited From Land Disposal

The Agency proposed to codify the statutory prohibition levels for the California list cyanide and metal wastes; however EPA is not finalizing these proposed levels in today's rule. Instead, EPA is publishing a separate notice of data availability and request for comment requesting comment and data on appropriate prohibition levels and establishing treatment standards for these wastes. Subject to the comments received in response to that notice, EPA will promulgate a final rule addressing these issues.

Prior to promulgation of this separate rule, statutory prohibitions in RCRA section 3004(d) become automatically effective. These concentrations are those described in the section entitled "Summary of Hazardous and Solid Amendments of 1984" at the beginning of today's preamble. As discussed above, EPA interprets the statutory prohibitions as applying when free cyanide or metal concentrations in the filtrate developed using the Paint Filter Liquids Test exceed the statutory concentration levels.

*B. Corrosives*

1. Final Approach

A *Definition of wastes with pH less than or equal to 2.0.* The Agency proposed to adopt the statutory definition for the liquid hazardous wastes as wastes having a pH less than or equal to two (2.0). No alternative definitions were suggested by commenters. The Agency is therefore finalizing the definition as proposed. The definition is the one currently used in the existing corrosivity characteristic at 40 CFR 261.22(a)(1).

B. *Hazardous waste and physical form requirements.* By definition, acidic wastes are hazardous based on the characteristic of corrosivity found in 40 CFR 261.11(aF)(1) when the pH is less or equal to 2.0. If these wastes are treated to a pH greater than two (2.0), they are no longer characteristic hazardous wastes and may be land disposed in a Subtitle D facility. Additionally, section 3004(d)(2) specifies that the California list land disposal restrictions apply onl y to liquid wastes (with the exception of HOCs). Therefore, since the Agency is not specifiying a technolohgy-based treatment standard, corrosive wastes may be neutralized to a pH greater than 2.0 or rendered nonliquid by chemical fixation or other treatment methods and be eligible for land disposal. If a wastes is hazardous solely because of the characteristic of corrosibity (pH > 2.0), rendering it nonliquid also renders it nonhazardous because the characteristic of corrosivity based on low *pH only applies to aqueous wastes.*

c. *pH levels prohibited.* The Agency proposed to codify the statutory prohibition levels for these acific wastes. To determine if the wastes exceed the prohibitionl level, the Agency proposed to require testing using the test method specified in 40 CFR 261.22(a)(1). Inadvertantly, EPA also proposed (as part of the general proposal to use the TCLP) that this test method was to be applied to a leachate generated by the TCLP. Use of the TCLP is inappropriate for the corrosive wastes, since it involves a pH adjustment step and use of an acidic extractant. EPA had intended that the

pH of a waste be determined by testing the waste sample—not a leachate—to see if it has the properties in § 261.22(a)(1). Thus, today's rule requires that the waste sample be tested using the method specified in § 261.22(a)(1) to determine whether its pH is less than or equal to two (2.0).

2. Determination Not to promulgate Treatment Standards

The Agency proposed that treatment that neutralizes acidic wastes to above two (2.0) are BDAT treatment, and requested comment on whether this type of treatment should be codified as a specified method or performance-based standard. The majority of commenters supported the proposed approach and recommened that treatment be cofified as a performance-based standard. They preferred the performance-based standard because it is consistent with the hazardouw characteristic, it simplifies demonstration of compliance, and it places no limitation on technological developments.

One commenter suggested an alternative treatment standard for corrosive wastes, recommending that the pH levels be raised to a level above four (4.0). The commenter argued that this approach was more consistent with operational recommendations of synthetic liner manufacturers to prevent liner damage caused by acidic wastes. The Agency recognizes the need to fully evaluate treatment performance data and information before promulgating a treatment standard for acidic wastes. The Agency is codifying the statutory prohibition level in today's final rule, but is not promulgating a treatment standard for wastes with pH less than or equal to two (2.0). This approach will not result in any differences for the generator of TSDF, since they still must comply with the prohibition on wastes with a pH less than or equal to two (2.0) specified in 40 CFR 268.32 before the waste is land disposed. The Agency will address the issue of the appropriate treatment standard for corrosive wastes when ti considers the scheluded wastes (51 FR 19300).

Another commenter argued that the Agency should establish an alternative treatment standard for its corrosive wastewater because portions of the wastewater are utilized in a gypsum recovery process that requires the water to be at a pH less than two (2.0). This request does not take into account the statutory language in RCRA section 3004(m) which requires that treatment methods or levels be those "which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents * * *." The commenter's argument regarding its process simply does not address these statutorily mandated requirements. The process in fact is designed to *maintain* the very property which makes the waste hazardous. Thus, even if EPA were to take action to establish treatment standards for these corrosive wastes, the Agency could not grant the commenter's request.

*C. Polychlorinated Biphenyls (PCBs)*

1. Final Approach

a. *Definition of polychlorinated biphenyls (PCBs).* For the California list restrictions, the Agency is defining PCBs consistent with the definition of 40 CFR 761.3. That provision defines PCBs for purposes of regulation under the Toxic Substances Control Act (TSCA) as "any chemical substance that is limited to the biphenyl molecule that has been chlorinated to varying degrees or any combination of substances which contain such substance." In addition, inadvertently generated non-Aroclor PCBs are defined as "the total PCBs calculated following division of the quantity of monochlorinated biphenyls by 50 and dichlorinated biphenyls by 5." This was inserted in the TSCA regulations in recognition that monochlorinated biphenyls are less toxic and less persistent than dichlorinated biphenyls, which are themselves less toxic and less persistent than polychlorinated biphenyls with greater than two chlorines.

Although an alternative definition of PCBs was suggested by a commenter, EPA believes that in the absence of an alternative definition of PCBs specified in HSWA, it is reasonable to adopt the existing definition found in the TSCA regulations. The statutory reference to 50 ppm is drawn directly from the Agency's regulations, evincing an intent to use the existing regulatory framework. Furthermore, the regulatory definition accounts for differing degrees of hazard associated with different compounds. Such a definition appears to be consistent with congressional intent, as expressed in section 3004(d), to concentrate on wastes that are known to create substantial risk. Moreover, the Agency believes that an alternative definition would add confusion to an already complex and overlapping framework for regulating PCBs. An alternative definition considered by EPA would not have employed the use of division factors for inadvertently generated PCBs. Under this definition, PCBs would have been defined as "the biphenyl molecule that has been chlorinated to any degree." EPA does not believe that this approach is consistent with congressional intent, therefore, the Agency is adopting the TSCA regulatory definition as discussed above.

b. *Hazardous waste requirement.* Since PCBs are not listed as hazardous wastes under RCRA, PCB-containing wastes are only subject to the California list prohibitions if they are mixed with or otherwise contained in wastes which are listed as hazardous under 40 CFR Part 261, or if the mixture exhibits one or more of the characteristics of hazardous waste identified in Part 261 (i.e., ignitability, corrosivity, reactivity, and EP toxicity).

Transformers often contain both PCBs and hazardous constituents listed in 40 CFR Part 261, Appendix VIII. However, if the waste containing these constituents is not a listed or characteristic hazardous waste, the California list prohibition does not apply. For example, some transformers contain isomers of tetrachlorobenzene and trichlorobenzene. Although several of these isomers (e.g. 1,2,4,5-tetrachlorobenzene and 1,2,4-trichlorobenzene) are listed as Appendix VIII hazardous constituents, EPA has not listed wastes containing these isomers as hazardous where the source of the waste is a spent dielectric fluid. Consequently, these PCB-containing spent dielectric fluids will be subject to the California list land disposal prohibitions only if they are mixed with a listed hazardous waste or if they exhibit a characteristic indentified in Part 261.

c. *Prohibition levels.* EPA is codifying the 50 ppm prohibition level specified in section 3004(d)(2)(D) of RCRA. This level is consistent with the comprehensive PCB regulations existing under the Toxic Substances Control Act (TSCA) and, at this time, the Agency does not have data suggesting that a different level is necessary. Under today's final rule, liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm are prohibited from land disposal unless they are treated in accordance with § 268.42, are the subject of a successful "no migration" petition under § 268.6, or are granted a case-by-case extension or national capacity variance.

In determining whether a liquid hazardous waste contains PCBs in concentrations greater than or equal to 50 ppm, EPA proposed requiring testing of a leach extract generated using the TCLP. Because the Agency believes that Congress adopted the 50 ppm prohibition level to be consistent with

existing regulations under TSCA, EPA also believes that the test methods required under TSCA are appropriate for use in determining compliance with the land disposal restrictions. The methods specified in the TSCA regulations at 40 CFR 761 do not test leach extracts. Those methods require testing of the total waste. In addition, the statutory prohibition on PCB-containing wastes is expressed in "ppm" rather than "mg/l" as used for the other California list liquid wastes, suggesting that consideration of the solid fraction in the PCB-containing waste is appropriate. Therefore, today's final rule requires that once a hazardous waste containing PCBs is determined to be a liquid, then the total waste (not an extract or filtrate) must be analyzed for purposes of determining compliance with the California list land disposal restrictions.

2. Existing Regulations of PCBs

Regulations promulgated pursuant to TSCA currently address the land disposal of PCB wastes which are not mixed with RCRA hazardous wastes. The TSCA requirements at 40 CFR Part 761 vary depending on the concentration of PCBs in the waste and the physical form in which the waste is disposed, i.e., in bulk liquid form, as a containerized liquid, or as a nonliquid. Disposal of PCBs at concentrations below 50 ppm is not regulated under TSCA unless such concentrations were created by diluting a higher concentration of PCB or unless they are used in specified ways, i.e., as a sealant, coating, dust control agent, pesticide carrier, or as a rust prevention agent on pipes. Liquid PCBs at concentrations greater than or equal to 50 ppm, but less than 500 ppm, may be incinerated or burned in a high efficiency boiler. They may also be land disposed pursuant to the TSCA regulations, but with certain limitations, some of which are summarized in the December 11, 1986 proposed rule (51 FR 44723). Liquid wastes containing PCBs at concentrations greater than or equal to 500 ppm must be incinerated according to TSCA regulations or disposed of by any other approved alternate methods (40 CFR 761.60(e)) that can achieve a level of performance equivalent to the technical standards set in 40 CFR 761.70. Such liquid wastes containing PCBs at concentrations greater than or equal to 500 ppm cannot be land disposed.

3. Relationship Between HSWA and Existing Regulations

Several provisions in HSWA impose restrictions on the land disposal of PCB wastes which are not contained in the existing TSCA or RCRA regulations. The TSCA regulations at 40 CFR 761.1(e) clearly state that where there is an inconsistency between TSCA and RCRA standards, the more stringent regulations govern. In addition, the HSWA legislative history (H.R. Rep. No. 198, Part I, 98th Cong., 1st Sess. 56 (1983)) suggests that allowing the more stringent provisions to govern is also consistent with Congress' understanding of the regulatory scheme. Today's final rule integrates a number of the TSCA requirements into the RCRA framework in order to ensure that where there is an inconsistency between TSCA and RCRA standards the more stringent regulations govern (see § 268.5, § 268.6, § 268.42, and § 268.50 in today's final rule and the accompanying preamble discussions in the section entitled "Modifications to the Land Disposal Restrictions Framework"). For a further discussion of the PCB land disposal requirements in light of the RCRA section 3004(c) liquids in landfill prohibitions and the RCRA section 3004(d) requirements, see the December 11, 1986 proposed rule (51 FR 44723).

4. Treatment Standards

EPA is establishing treatment standards for liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm. The Agency proposed to require thermal destruction (i.e., treatment in incinerators or high efficiency boilers) of such wastes pursuant to the operating standards set forth in 40 CFR 761.60 and 761.70. None of the commenters challenged the appropriateness of these proposed standards, and EPA is promulgating the treatment standards as proposed. Alternative treatment methods (e.g., chemical dechlorination) may be used where the Administrator has determined that such methods achieve a measure of performance equivalent to that achievable by methods EPA has specified, and where certain other enumerated conditions are satisfied. See § 268.42(b). See the section in today's final rule entitled "Treatment Standards" for a further discussion of the treatment standards applicable to the California list PCB-containing wastes.

5. Prohibition Effective Date

The Agency proposed to grant a 2-year nationwide variance from the July 8, 1987 statutory effective date based on a perceived lack of adequate thermal treatment capacity for the California list PCB wastes. Several commenters stated that there is sufficient treatment capacity for liquid halogenated wastes. Although the commenters did not provide quantitative data to support these assertions, EPA has revised its capacity estimates and determined that there does not appear to be a nationwide lack of adequate capacity to treat liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm. Thus, the proposed 2-year variance is not being promulgated in today's final rule. Rather, the statutory effective date of July 8, 1987 is applicable to the California list PCB wastes. To the extent that isolated shortages of capacity occur, applicants may apply for case-by-case extensions pursuant to § 268.5. See the section in today's final rule entitled "Capacity Determinations and Effective Dates" for a further discussion of the Agency's basis for the approach.

*D. Halogenated Organic Compounds (HOCs)*

1. Final Approach

a. *Definition of halogenated organic compounds (HOCs).* HOCs are compounds containing a carbon and a halogen in the molecular formula. Halogens include the five nonmetallic elements in Group VIIA of the periodic table: fluorine (F), chlorine (Cl), bromine (Br), iodine (I), and astatine (At). For purposes of the California list land disposal prohibitions, the Agency proposed a definition for HOCs that would require a carbon-halogen bond. The rationale for this proposed definition was that compounds that lack such a bond, but that have a halogen attached to an atom such as nitrogen (e.g., aniline hydrochloride), are not true HOCs. All the commenters who addressed this issue agreed that a carbon-halogen bond should be required; therefore, today's final rule promulgates the HOC definition as proposed.

b. *Hazardous waste requirement.* Wastes containing HOCs are only subject to the California list prohibitions if the waste is listed as hazardous under 40 CFR Part 261 or exhibits one or more of the characteristics of hazardous waste identified in Part 261. However, the waste listing or characteristic need not be related to the HOC content of the hazardous waste for it to be covered.

c. *Concentration levels prohibited.* The RCRA section 3004(d)(2)(E) prohibition codified today applies only to hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg/kg. Although EPA is codifying the statutory prohibition level as proposed, the Agency will be evaluating each hazardous waste containing HOCs in accordance with the final schedule for implementing the land

disposal restrictions (51 FR 19300). At that time, prohibitions on land disposal and treatment standards will be established to the extent necessary for individual HOCs or groups of related HOCs.

In determining the concentration of HOCs in a hazardous waste, the Agency recognized that the proposed carbon-halogen definition presents a potential problem because it would include a number of polymerized and other halogenated compounds that are generally considered nonhazardous due to their relative immobility and lack of toxicity. EPA stated in the proposal that Congress did not indicate an intent to include within the California list prohibitions every possible HOC such as polymers that comprise solid plastics and vinyls. Instead, EPA stated that Congress was concerned with constituents that are mobile and/or potentially hazardous to human health and the environment. Therefore, the Agency proposed to limit the HOCs included under the California list prohibition to those HOCs which are regulated as hazardous under 40 CFR Part 261 or listed in Appendix VIII to Part 261.

Many commenters agreed with the Agency's proposed rationale for limiting the HOC prohibition; however, several suggested that the Agency clarify that polyvinyl chlorides (PVCs) are not subject to the California list prohibitions. Although some commenters supported the reference to Appendix VIII as a means of limiting the HOC prohibition, other commenters stated that testing for Appendix VIII constitutents is difficult due to, among other things, the lack of appropriate test methods and the undefined boundaries inherent in the list (e.g., because of the "not otherwise specified" (N.O.S.) categories). The commenters suggested that EPA substitute Part 264, Appendix IX in place of Part 261, Appendix VIII as a limitation on the HOC prohibition.

EPA agrees with the concerns of commenters regarding testing and is requiring in today's final rule that, in determining whether a hazardous waste contains HOCs in concentrations above the California list prohibition level, only those HOCs which are listed in Part 268 Appendix III must be included in the calculation. Appendix III is being added to Part 268 in today's final rule. It consists of all HOCs which EPA currently analyzes in establishing section 3004(m) treatment standards expressed as performance levels. (See the "BDAT Pollutant List" in *Generic Quality Assurance Project Plan for Land Disposal Restrictions Program (BDAT)*, U.S. EPA, Office of Solid Waste, March 12, 1987.) The Agency has also added PCBs not otherwise specified to this Appendix because the "BDAT Pollutant List" that formed the basis for Appendix III only lists certain Aroclor PCBs (whereas the existing TSCA regulations apply to non-Aroclor PCBs as well).

Appendix III is a finite list of constituents for which test methods exist, thereby addressing the commenters' concerns. It includes only HOCs found in Appendix VIII of Part 261, and so is limited to toxic HOCs, satisfying the concerns of commenters and the Agency that innocuous HOCs not be included. EPA is not adopting the Part 264 Appendix IX limitation suggested by several commenters because it has not been finalized as yet and because Appendix IX only addresses those HOCs that are water soluble, and so would not be appropriate when HOCs are found in solid matrices. (When finalized, Appendix IX will serve as the new list of constituents for which ground water monitoring is required.) The list adopted in Appendix III to Part 268 also contains HOCs that are not water soluble and, therefore, EPA believes it addresses congressional concerns and better represents a comprehensive yet enforceable list of HOCs to be regulated.

In finalizing the HOC prohibition, EPA is reiterating that compounds such as PVCs, even if contained in hazardous wastes, are not within the scope of the California list prohibitions because PVCs are not included on Appendix III to Part 268. However, monomeric vinyl chloride is subject to the restrictions because it is listed in Part 268 Appendix III.

In testing for the HOCs discussed above, EPA proposed to require use of the TCLP. Several commenters were critical of this approach because they stated that the statutory prohibition on HOCs "in total concentration" indicated that EPA should require total constituent analysis.

The Agency agrees with the comments that a total constituent analysis better reflects congressional intent (as well as the literal statutory language) regarding the HOC prohibition and, therefore, today's final rule departs from the proposed approach in this respect. As a result, the entire waste (not an extract) must be tested in order to determine the concentrations of the HOCs discussed above. However, as in the November 7, 1986 final rule, generators need not test their wastes if they can make a determination as to whether or not they are restricted using knowledge of the waste. In doing so, generators must maintain all supporting data used to make such a determination on-site in the generator's files.

2. Relationship to California List Prohibition on PCBs

As discussed earlier in the preamble, today's final rule codifies the RCRA section 3004(d)(2)(D) prohibition on the land disposal of liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm. Because PCBs are also halogenated organic compounds, EPA reads the PCB prohibition as placing an upper limit of 50 ppm on the concentration of PCBs that may be contained in a hazardous waste containing HOCs which is land disposed. (As discussed more fully later in today's preamble, the treatment standards and prohibition effective dates for the PCB-containing wastes, as the more waste-specific determinations, would control and the HOC treatment standards and effective dates are superceded).

The limitation of 50 ppm, however, is only applicable to *liquid* hazardous wastes containing PCBs. Therefore, a nonliquid hazardous waste containing PCBs at concentrations greater than or equal to 50 ppm may be land disposed without violating the California list PCB prohibition on HOCs as long as the total concentration of HOCs does not exceed 1,000 mg/kg. For example, a nonliquid hazardous waste containing 200 mg/kg (ppm) PCBs and 700 mg/kg (ppm) other HOCs may be land disposed because the 50 ppm prohibition does not apply to nonliquids and because the 900 mg/kg total HOC concentration does not exceed the 1,000 mg/kg threshold promulgated in today's final rule.

If the total concentration of HOCs in either a liquid or nonliquid hazardous waste is greater than or equal to 1,000 mg/kg, the waste is prohibited from land disposal even if the concentration of PCBs is below 50 ppm. For example, a liquid hazardous waste containing 25 mg/kg (ppm) PCBs and 980 mg/kg HOCs other than PCBs in prohibited from land disposal under the California list HOC prohibition despite the fact that the California list prohibition on PCBs would allow up to 50 ppm PCBs in a liquid hazardous waste to be land disposed. Also, a nonliquid hazardous waste containing 400 mg/kg (ppm) PCBs and 700 mg/kg HOCs other than PCBs is prohibited from land disposal despite the fact that existing regulations promulgated under TSCA would allow such nonliquid PCB wastes to be disposed in an approved landfill.

3. Treatment Standards

EPA is establishing incineration as the treatment standard for all hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg/l except dilute HOC wastewaters (i.e., liquid hazardous wastes that are primarily water and contain HOCs in total concentration less than 10,000 mg/l). As explained more fully below, however, if an HOC-containing waste already is subject to a treatment standard for a specific HOC (e.g., and F001 or F002 spent solvent, or a prohibited dioxin- or PCB-containing waste), the treatment standard applicable to the more specific HOC waste would control. Thus, when all of the treatment standards become effective, the wastes need not be incinerated to meet the solvent, dioxin, and PCB treatment standards. (See the section of today's final entitled "Treatment Standards" for a further discussion of the treatment requirements applicable to the California list HOC-containing wastes).

4. Prohibition Effective Dates

Due to a lack of incineration capacity, the Agency proposed to grant a 2-year nationwide variance from the July 8, 1987 statutory effective date for the California list wastes requiring incineration. EPA did not propose to grant a nationwide variance for the dilute HOC wastewaters. As a result, these wastes would be prohibited from land disposal as of July 8, 1987. EPA received mixed comments regarding available treatment capacity for the California list HOC wastes; however, no quantitative data were submitted suggesting that incineration capacity was adequate. Therefore, the Agency is promulgating the 2-year variances as proposed. To the extent that new data are developed by the Agency, revised capacity determinations will be made, some of which could result in the revocation of existing nationwide variances. (For a further discussion of these issues, see the section in today's final rule entitled "Capacity Determinations and Effective Dates.")

*E. Treatment Standards*

Today's final rule promulgates treatment standards for several of the California list wastes. Unlike the concentration-based treatment standards established for the solvent- and dioxin-containing wastes on November 7, 1986 (51 FR 40572), today's treatment standards are expressed as specified technologies. These specified technologies are applicable to the California list wastes containing HOCs (except for dilute HOC wastewaters) and the California list wastes containing PCBs. Today's final rule does not establish treatment standards for the California list wastes that contain metals or free cyanides. Treatment standards for these wastes are being addressed in a separate final rulemaking. Today's final rule also does not establish treatment standards for the California list corrosive wastes. As a result, the statutory prohibitions on liquid hazardous wastes containing cyanides, metals, and those having a pH less than or equal to two (2.0) govern the degree to which such wastes must be treated prior to land disposal.

1. HOC Containing Wastes

As discussed in the proposed rule (51 FR 44725), the treatment technologies applicable to hazardous wastes containing HOCs in total concentration greater than or equal to the 1,000 mg/kg statutory prohibition level are similar to those technologies identified as the basis for establishing BDAT for the F001–F005 solvent wastes. (F001 and F002 spent solvents are halogenated organic compounds.) These technologies include incineration, batch distillation, thin film evaporation, fractionation, biological degradation, activated carbon adsorption, and steam stripping.

a. *Dilute HOC wastewaters.* Among these technologies, EPA determined in the November 7, 1986 final rule that wastewater treatment technolgies such as biological treatment, activated carbon adsorption, and steam stripping should form the basis for concentration-based treatment standards applicable to the F001–F005 solvent wastewaters. However, the Agency did not propose to establish treatment standards for HOCs not covered by the November 7, 1986 final rule. The rationale for this approach was that the wide variety of contituents included within the term "halogenated organic compounds", even as limited in this rulemaking, makes it impractical at this time for EPA to develop wastewater treatment standards expressed either as concentration levels or as specified technologies. Application of technologies such as biological treatment, activated carbon adsorption, or steam stripping may be effective for many HOC wastes; however, a generalization that one or all of them constitutes BDAT for such a wide variety of compounds is not possible at this time.

In the absence of data submitted by the commenters, EPA is promulgating the dilute HOC wastewater prohibition as proposed. As a result, dilute HOC wastewaters (i.e., wastes that are primarily water and contain less than 10,000 mg/l HOCs) must be treated to concentrations below the 1,000 mg/l statutory prohibition level prior to land disposal. However, no particular methods for achieving this level are specified in today's final rule. As stated in the proposal, EPA will reevaluate each of the HOCs covered under the California list prohibitions (except for the solvent and dioxin-containing wastes for which the Agency has already established treatment standards on November 7, 1986) in accordance with the schedule published in the **Federal Register** on May 28, 1986 (51 FR 19300).

b. *Other HOC wastes.* For the California list HOC wastes that are not dilute wastewaters as defined above, EPA proposed to establish treatment standards expressed as a specified technology. The required method specified in the proposal was incineration in accordance with the existing requirements of 40 CFR Part 264 Subpart O or 40 CFR Part 265 Subpart O.

One commenter stated that the administrative record does not support the Agency's selection of incineration as BDAT for these non-wastewater hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg/kg. The same commenter also stated that in establishing incineration as BDAT the Agency must demonstrate at least the same level of treatment performance as that required for permitting under 40 CFR Part 264 Subpart O. For example, the commenter asserted that since EPA is promulgating a generic rulemaking, it must demonstrate 99.99% destruction and removal efficiency (four 9s DRE) for all HOCs the Agency includes within the scope of the HOC treatment standard.

The Agency disagrees with the commenter that the administrative record does not support EPA's selection of incineration as BDAT for the non-wastewater HOC wastes subject to today's final rule. In the preamble to the proposed rule (51 FR 44725), the Agency cited the November 7, 1986 final rule as support for a determination that incineration represents BDAT for most organic liquids as well as organic and inorganic sludges and solids. Further support for incineration as the basis for BDAT is the fact that incineration is presently a demonstrated and currently used treatment method for most PCB compounds. These halogenated organic PCB compounds are very stable and difficult to destroy. The background documents for the November 7, 1986 final rule contain data regarding the incineration of hazardous wastes

containing HOCs (chlorinated solvents). The data summarize the performance of 10 incinerators at nine facilities. Of the nine facilities, seven facilities incinerated HOC wastes and all seven showed a reduction in the concentration of HOCs in incinerator ash sufficient to satisfy the RCRA section 3004(m) requirement that any treatment levels or methods specified by EPA substantially diminish the toxicity of the waste so that short-term and long-term threats to human health and the environment are minimized.

The requirement that hazardous waste incinerators achieve 99.99% DRE is codified in the existing RCRA regulations under Part 264 Subpart O. The requirement is also mandated by statute. RCRA section 3004(o)(1)(B). The California list final rule does not reopen consideration of the permit standards. If a facility demonstrates that a restricted waste cannot be incinerated in compliance with Subpart O requirements, the facility may petition the Agency for a treatment variance pursuant to § 268.44 or the facility may petition EPA for approval to use an alternative equivalent treatment method pursuant to § 268.42(b).

The Agency recently proposed that burning HOC wastes in boilers industrial furnaces in compliance with proposed Part 266 standards would be equally effective as Subpart O incineration and suggested that such methods could form the basis for a revised determination of BDAT. 52 FR 16982 (May 6, 1987). These standards could provide for use of these alternatives to incineration in treating prohibited HOC wastes without requiring a case-specific demonstration as to equivalency pursuant to § 268.42(b).

c. *Applicability of today's treatment standards.* Although EPA has determined that incineration is an appropriate treatment standard for the broad category of wastes referred to as HOCs, the Agency recognizes that the California list was intended as a starting point in the land disposal restrictions and so where the Agency has developed waste-specific data it is desirable to refine the treatment requirements accordingly. Such waste-specific requirements are likely to be more reliable, as the wastes themselves are better characterized. Furthermore, as discussed in the November 7, 1986 final rule, the Agency prefers to establish concentration-based treatment standards rather than treatment standards expressed as specified technologies because EPA believes that this will provide the regulated community with greater flexibility in meeting treatment standards and will encourage the development of more efficient and innovative technologies.

Consistent with these principles, and in response to a commenter's concern over which treatment standards apply where a waste contains several constituents, the HOC treatment standards promulgated in today's final rule are only applicable to those HOCs that are not covered by other Agency rulemakings under § 268.41, § 268.42, or § 268.43. The Agency has provided in § 268.42 that treatment standards established for wastes containing individual California list constituents will supersede today's treatment standards. With respect to the prohibition effective date, the waste-specific determination that adequate treatment capacity does or does not exist for the more specific type of HOC waste would also be controlling. Therefore, § 268.32 states that the prohibition effective date established for the more specific HOC waste would apply, not the prohibition effective date established today for the generic HOC wastes.

For example, a restricted waste (i.e., a waste to which no variances apply) containing an F001 or F002 halogenated spent solvent constituent (such as trichloroethylene—F001) is subject to a concentration-based treatment standard. See Table CCWE, 51 FR 40642, November 7, 1986). Thus, such a waste need only be treated to meet the applicable levels in Table CCWE. The Agency is not requiring that incineration be used to achieve this level. However, the waste must be treated to these levels effective November 8, 1986 and is not entitled to the 2-year nationwide capacity variance applicable to non-solvent HOCs.

The Agency cautions, however, that these principles stating that waste-specific determinations as to treatment standards and effective dates are controlling over more generic determinations only applies where the wastes are a subset of HOCs for which treatment standards and prohibition effective dates exist. (The wastes currently affected by this overlap are the prohibited solvent, dioxin, and PCB wastes. Several additional examples of the Agency's approach in such cases are provided following the section entitled "Capacity Determinations and Effective Dates" in today's preamble.) Where a hazardous waste contains both HOCs and non-HOC constituents (e.g., prohibited levels of a California list metal in liquid form), the waste would be prohibited from land disposal until it is in compliance with the treatment standard for both HOC and non/HOC constituents (or, until treatment standards are promulgated for the California list metals, the waste also meets the statutory prohibition levels or has been treated and rendered nonliquid). In this case, unlike the case of the HOC/more-specific-HOC overlap, there is no necessary relation between treatment of the non-HOC constituent and the HOCs, so that HOCs could go untreated if the treatment standards for only the non-HOC constituents applied. The general principle here is that where different constituents are present in the same waste (as opposed to one constituent appearing on two lists, e.g., an F001–F002 solvent which is also an HOC), all of the constituents in the waste must be in compliance with, or be treated to comply with, all specified treatment standards (or prohibition levels where no treatment standards have been established). The same principle would apply in determining prohibition effective dates for wastes containing HOCs and non-HOC constituents. Unless the Agency had specifically addressed this type of waste matrix in its capacity determinations, the prohibition effective date for each constitutent would be applicable.[2]

For example, where a liquid hazardous waste contains both California list metals above the statutory prohibition levels and HOCs in total concentration greater than or equal to 10,000 mg/l, the applicable prohibition effective dates are July 8, 1987 for the metal portion of the waste and July 8, 1989 for the HOC portion. This reading is not only consistent with the Agency's analysis of available treatment capacity (EPA is finding that there presently does not exist a nationwide shortage of treatment capacity for such metals), but it is also necessary to avoid situations where the Agency would be granting a national capacity variance for a period longer than two years. This could happen, for instance, in the case of an F001–F005 solvent waste which is entitled to the 2-year variance from the November 8, 1986 prohibition effective date but which also contains prohibited concentrations of California list constituents (e.g., metals) for which EPA

[2] Even if the Agency had addressed this type of waste matrix, EPA is not precluded from revising its determinations as to treatment standards and corresponding prohibition effective dates (within certain statutory constraints regarding the length of variances to the effective date.) However, the Agency's subsequent determination would have to evince a clear intent to supersede an earlier determination; otherwise each prohibition effective date would apply.

established an effective date later than November 8, 1988 (assuming only for purposes of this example that such a variance was granted for the metal-bearing wastes). Since national capacity variances cannot exceed two years (RCRA section 3004(h)(2)), the variance on the solvent portion of the waste could not extend beyond November 8, 1988. For these reasons, today's final rule states in § 268.32 that constituents in a waste may become subject to prohibitions different times.

2. PCB-Containing Wastes

The Agency proposed to establish treatment standards expressed as specified technologies for liquid hazardous wastes containing PCBs in concentrations greater than or equal to 50 ppms. The proposed methods were thermal treatment pursuant to the technical requirements in the TSCA regulations at 40 CFR 761.60 (burning in high efficiency boilers) or 40 CFR 761.70 (incineration). Commenters did not challenge the appropriateness of the well established TSCA treatment specifications, therefore, EPA is finalizing the treatment standards as proposed.

The treatment standards promulgated today in § 268.42(a) are consistent with the TSCA regulations which require the incineration of liquid wastes containing PCBS at concentrations greater than or equal to 500 ppm. Liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm and less than 500 ppm may be burned in either high efficiency boilers or in incinerators. As with the prohibited HOC weastes or any other wastes subject to treatment standards expressed as specified technologies, alternative equivalent methods may be used provided they are approved by the Administrator according to the standards and procedures specified in § 268.42(B).

Applications for approval of alternative equivalent methods should be submitted to the EPA Administrator; however, where such applications involve PCB-containing wastes copies should also be sent to the Director, Exposure Evaluation Division, Office of Toxic Substances, and to the Chief, Waste Treatment Branch, Office of Solid Waste.

Regardless of whether the specified methods in § 268.42(a) or alternative equivalent methods approved under § 268.42(b) are employed, EPA is clarifying that, since the PCB wastes subject to today's prohibitions are contained in RCRA hazardous wastes, compliance with the applicable provisions in 40 CFR Parts 264, 265, and 266 is also required. The more stringent technical operating requirements for incineration in the TSCA regulations are applicable; however, facilities treating these liquid hazardous wastes containing PCBs must also be in compliance with existing RCRA interim status or permit standards specified in Part 264 and 265. In addition, any Part 266 regulations that may be promulgated with respect to the burning of hazardous wastes in boilers and industrial furnaces will also apply. (See 52 FR 16982, May 6, 1987.)

Liquid hazardous wastes may contain both PCBs and other hazardous constituents for which EPA has established different treatment standards or prohibition effective dates. An example would be solvent wastes and PCB wastes mixed in a single matrix. In this circumstance, both sets of treatment standards and effective dates would apply. This is consistent with the principle outlined above that where different constituents are present in a waste, all applicable treatment standards and prohibition effective dates must be complied with.

*F. Capacity Determinations and Effective Dates*

1. HOC–Containing Wastes

On December 11, 1986, EPA proposed that liquid hazardous wastes containing halogenated organic compounds (HOCs) in total concentrations greater than or equal to 1,000 mg/l and less than 10,000 mg/l HOCs ("dilute HOC wastewaters") be prohibited effective July 8, 1987. EPA did not consider proposing a 2-year nationwide variance for the dilute HOC wastewaters, in part, because the Agency believed it was legally precluded from granting capacity variances where treatment standards are not specified. For all other California list HOC wastes, EPA proposed incineration as the required treatment method and proposed to grant a 2-year nationwide variance from the July 8, 1987 prohibition effective date due to a lack of incineration capacity. For these wastes, EPA stated that incineration capacity was already exhausted as a result of the land disposal prohibitions for solvent-containing hazardous wastes.

Several commenters suggested that there was available thermal treatment capacity for liquid HOC wastes. Other commenters questioned whether the Agency was in fact legally precluded from granting capacity variances where it did not establish treatment standards. Additional commenters noted that the Agency had already found that there is inadequate capacity to treat dilute solvent wastewaters, which are a subset of dilute HOC wastewaters, and noted the incongruity of not granting a corresponding variance for the dilute HOC wastewaters. The Agency has reexamined these issues in light of the comments received and in light of new information. EPA's findings are set out below.

a. *Legal constraints on granting national capacity variances.* As stated in the Agency's recent notice of data availability and request for comment (52 FR 22356, June 11, 1987), the threshold issue here is whether the Agency is barred as a matter of law from granting capacity variances where it does not specify treatment standards. Upon reexamination, EPA believes there is no absolute legal constraint. No commenter to the June 11, 1987 notice challenged this conclusion. The statute itself contemplates that such variances can be granted. Section 3004(h)(2) indicates that the Agency may grant a national capacity variance in either of two cases: (1) With respect to wastes prohibited when the Agency promulgates regulations pursuant to section 3004(d)–(g); or (2) with respect to hazardous wastes "subject to a prohibition" under those same subsections. In this latter case, the prohibition would take effect by operation of law (i.e., the so-called statutory hammer would fall), and no treatment standards would be established. Yet the statute states that EPA remains authorized to grant national capacity variances. The Agency could grant case-by-case extensions of the effective date under section 3004(h)(3) as well, since (h)(3) authorizes extensions to an "effective date which would otherwise apply" under subsections (d)–(g) or subsection (h)(2). These effective dates, as just explained, can take effect whether or not the Agency promulgates treatment standards.

In addition, the statutory standard that authorizes EPA to grant capacity variances is not identical to the language in section 3004(m) authorizing EPA to establish waste treatment standards. The Agency construes this to mean that it need not consider precisely identical factors. Section 3004(h)(2) requires the Agency's determination to be based on availability of "adequate alternative treatment, recovery, or disposal capacity which protects human health and the environment * * *". This can either be broader or narrower, under different circumstances, than treatment satisfying the section 3004(m) standards. 51 FR at 40600. The key point here, however, is that the existence of the different statutory standards for

granting capacity variances and establishing treatment standards confirms that the two determinations are not inextricably linked.

b. *Determination not to grant national capacity variance for dilute HOC wastewaters.* Although the Agency's rationale at proposal for not granting national capacity variances for dilute nonsolvent HOC wastewaters would no longer apply, the Agency does not believe such a variance is warranted. The Agency's estimates are that these wastes are generated in low volumes, and most of these wastes are believed to contain less than the statutory HOC prohibition level. 52 FR 22358. No commenter challenged this conclusion. In addition, there is some available commercial capacity to treat these wastes. 51 FR 40614.

Commenters to the December 11, 1986 proposed rule and the June 11, 1987 notice did not document any shortage of available treatment capacity; however, several suggested that the Agency's determination in the November 7, 1986 rule that there is inadequate treatment capacity for certain dilute solvent wastewaters (which are also HOCs) is inconsistent with the proposed approach not to grant a nationwide variance for the dilute HOC wastewaters. The two rules are consistent. The dilute solvent wastewaters granted a national capacity variance in the November 7, 1986 rule are not limited to wastes containing 1,000 mg/l solvent HOCs. Rather, many of those wastes contain less than 1,000 mg/l solvent HOCs and, therefore, are not subject to the capacity demands imposed by the California list prohibitions.

The Agency notes, however, that the national capacity variance for F001–F005 solvent-containing wastewaters would continue to apply even if the solvent wastes also contain over 1,000 mg/l HOCs as long as the wastewater is regulated as hazardous because of the F001–F005 solvent constituents. This is because EPA has already addressed these specific types of HOC wastes on November 7, 1986 and has indicated in the California list proposal (51 FR 44725) and earlier in today's preamble that such waste-specific determinations supersede the California list determinations. However, if the solvent-HOC hazardous wastewater is not regulated as hazardous by virtue of being an F001–F005 solvent, it does not meet the definition of those wastes addressed in the November 7, 1986 rule and, therefore, it is subject to the prohibition effective date promulgated for the dilute HOC wastewaters. As a result, the hazardous waste would be prohibited effective July 8, 1987 despite the fact it might contain constituents identical to those specified in the F001–F005 listings.

C. *Determination to grant national capacity variance for HOC liquids containing greater than 10,000 mg/l HOCs and HOC solids.* As stated earlier in this section to today's final rule, EPA has specified incineration as the required treatment for all California list HOC wastes except dilute HOC wastewaters and determined that, due in large part to the additional demand placed on incinerators as a result of the November 7, 1986 solvent restrictions, there is a nationwide lack of incineration capacity. Several commenters suggested that incineration capacity exists for the liquid HOC wastes; however, quantitative data were not submitted to support these assertions. Other commenters agreed with the Agency's capacity analysis as discussed in the proposed rule (51 FR 44732). Based on EPA's data and public comments, the Agency is granting the proposed 2-year nationwide variances from the July 8, 1987 prohibition effective date for these categories of California list HOC wastes.

As noted in the previous section entitled "Treatment Standards," the Agency prefers to establish concentration-based treatment standards rather than treatment standards expressed as specified technologies because concentration-based standards provide the regulated community with flexibility and are believed to encourage the development of innovative new treatment processes or more efficient operation of existing technologies. In addition, EPA intends to revise treatment standards as new technologies emerge or the Agency obtains new data. For example, the Agency's recent proposal (52 FR 16982, May 6, 1987) to regulate the burning of hazardous wastes (including HOCs) in boilers and industrial furnaces and to specify numerous operating requirements could form the basis for a revision of the HOC treatment standard. In the absence of regulatory standards specifying operation of these devices, the Agency is not yet comfortable including them as treatment methods, and intends to first analyze comments to the May 6, 1987 proposal before instituting any such action. Should EPA revise the treatment standards as mentioned above, or in other ways, a revised capacity determination will be required in order to justify the continuance to today's national capacity variances.

2. PCB-Containing Wastes

On December 11, 1986, EPA proposed treatment standards for the California list liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm. In proposing these treatment standards (i.e., thermal treatment in accordance with existing technical requirements set forth in the TSCA regulations at 40 CFR Part 761), EPA also proposed to grant a 2-year nationwide variance based on a perceived lack of such thermal treatment capacity.

A reevaluation of existing data and new volume and incineration capacity data indicate that there is not a nationwide shortage of capacity to manage the small volumes of these PCB wastes that are currently land disposed.

For the liquid wastes containing PCBs at concentrations greater than or equal to 500 ppm, the TSCA regulations in 40 CFR Part 761 already require incineration. Since none of these wastes can permissably be land disposed currently, the California list prohibitions do not add any incremental demand to a capacity analysis. Therefore, the Agency is not granting the proposed 2-year nationwide capacity variance. As with the HOC wastes discussed above, any individual demonstrations of capacity shorfalls may warrant a case-by-case extension provided the requirements of § 268.5 are met.

The primary impact of the California list prohibitions on PCB-containing wastes is on liquid wastes containing PCBs at concentrations greater than or equal to 50 ppm and less than 500 ppm. Such wastes could previously be land disposed under the TSCA regulations provided absorbents are added and other requirements are met. Today's final rule prohibits the land disposal of such concentrations if contained in hazardous waste; however, Agency data indicate that very low volumes are currently being land disposed. In addition, treatment capacity in high efficiency boilers and alternative technologies (e.g., chemical dechlorination) appear to be adequate. Therefore, additional demand for treatment as a result of the California list prohibitions appears minimal and existing estimates of capacity supply do not warrant granting a nationwide variance for these wastes. This conclusion was not disputed by any commenter to the June 11, notice.

3. Metals, Free Cyanides, and Corrosives

The Agency stated in the November 7, 1986 final rule (51 FR 44732) and the June

11, 1987 notice (52 FR 22359) that it does not believe it is necessary to grant a national capacity variance for the California list metal, cyanide, and corrosive wastes, given the relative ease with which treatment can be conducted and unregulated tank capacity can be installed. Several commenters challenged this conclusion. EPA is currently reevaluating its assumption that tank capacity and associated treatment devices can be rapidly installed; however, the Agency does not believe it can currently justify granting of national capacity variances given its uncertainties about volumes of wastes generated, existence of commercial treatment capacity, plus the ability to treat these California lists wastes to render them nonliquid (ordinarily a relatively unsophisticated treatment process) and, therefore, no longer prohibited. In addition, the fact that EPA has only received two petitions to date requesting case-by-case extensions for California list wastes suggests that no national shortages exist. To the extent that there are isolated shortages in capacity, case-by-case extensions may be granted pursuant to the requirements of § 268.5. Although today's final rule does not grant a nationwide variance for these wastes, the Agency is concerned that certain large volume flows might pose a capacity problem, and is compiling and evaluating data relevant to future capacity determinations.

*G. Examples Illustrating Integration of Today's Final Rule With Other Land Disposal Restrictions Rules*

The following examples are the Agency's interpretation of the operation of today's final rule. (These examples assume that none of the exemptions in §§ 268.4, 268.5, and 268.6 apply.)

1. *Generator A generates a liquid hazardous waste containing 2,000 ppm HOCs, some of which are F001 hazardous waste solvents.* The waste must meet the treatment standard for the F001 solvent by November 8, 1988. The treatment standards and prohibition effective dates for spent solvent wastes control here because these solvents are a subset of HOCs already addressed in the November 7, 1986 final rule. (See § 268.30(a)(3) which states that solvent wastes containing less than 1% total F001–F005 constituents as initially generated are prohibited effective November 8, 1988. 51 FR 40641, 52 FR 21012, 21017.)

2. *Generator B generates a nonliquid hazardous waste containing 12,000 ppm HOCs, over 10,000 ppm of which are F001 solvents.* For the same reasons as the previous example, the waste must meet the treatment standard for F001 solvents, but it need not be incinerated to do so. The land disposal prohibition for F001 wastes containing greater than or equal to 1% total F001–F005 solvent constituents is already in effect (since November 8, 1986). (This answer assumes that the waste is not generated by a small quantity generator, a CERCLA response action, or RCRA corrective action.)

3. *Generator C, a small quantity generator (SQG) of 100–1,000 kg per month of hazardous waste, generates a spent solvent waste containing 20,000 ppm of F001 solvents and 25,000 ppm of other HOCs.* The treatment standard for F001 solvents will apply as of November 8, 1988 because the Agency has determined that there is currently insufficient nationwide treatment capacity for such spent solvent wastes generated by SQGs. (See §268.30(a)(1) at 51 FR 40641.) As these SQG F001 solvents are a subset of HOCs already addressed in the November 7, 1986 final rule, their treatment standards and prohibition effective data will control.

4. *Generator D, a large quantity generator, generates a non-CERCLA liquid hazardous waste containing 600 ppm PCBs and 11,000 ppm hazardous waste spent chlorinated solvents.* The waste must meet the treatment standard for both solvents and PCBs, and must do so by incineration. These prohibitions are effective immediately. Solvents and PCBs are considered to be different constituents and, therefore, both sets of treatment standards and prohibition effective dates (November 8, 1986 and July 8, 1987, respectively) apply. While the earlier examples illustrate that the HOC prohibitions are superseded by prohibitions on more specific types of HOCs, this is not the case here because solvents are not a subset of PCBs or vice versa.

5a. *Generator E, a small quantity generator (100–1,000 kg/mo), generates the same waste as Generator D in the previous example.* Because EPA has not found any shortage in nationwide PCB treatment capacity, this waste would have to be incinerated as of July 8, 1987.

5b. *Same facts as the previous example, except the waste is not a liquid.* Only the treatment standards and November 8, 1986 prohibition effective date for the solvent applies because nonliquid PCB wastes are not prohibited in today's final rule.

6. *Generator F generates a liquid hazardous waste containing 11,000 mg/l HOCs and 600 mg/l lead.* The HOC portion of the waste is not prohibited until July 8, 1989. The metal portion of the waste is prohibited immediately. Once the HOC prohibition becomes effective, the waste cannot be land disposed until it has been incinerated. The residue from incineration may be land disposed if it is a nonliquid (e.g., an ash) or, if still a liquid (e.g., a scrubber water), it contains less than 500 ppm lead (or more stringent levels that may be specified). The general principle here is that where a waste contains different constituents that are not subsets, the waste must meet the treatment standards and prohibition effective dates for each such constituent.

*H. Comparative Risk and Available Treatment Alternatives*

As EPA recognized in establishing a framework for implementing the statutorily mandated land disposal restrictions, Congress did not intend that risks to human health and the environment be increased as a result of such restrictions. To help prevent situations in which regulations restricting hazardous wastes from the land disposal would encourage treatment technologies posing greater risks than those posed by direct land disposal, EPA is conducting comparative risk analyses. In the November 7, 1986 final rule (51 FR 40572), the Agency conducted comparative risk assessments for the first category of wastes subject to the land disposal restrictions, i.e., certain dioxin-containing the solvent-containing hazardous wastes.

The Agency has conducted comparative risk assessments in conjunction with establishing section 3004(m) treatment standards for several of the California list wastes. The methodology employed is similar but not identical to that utilized in the November 7, 1986 solvents and dioxins final rule. The RCRA Risk-Cost Analysis (WET) Model continues to be the primary tool for assessing comparative risks; however, the WET Model has been revised on the basis of detailed case studies performed for the November 7, 1986 final rule and public comments responding to the Agency's approach in that rulemaking.

Results of the comparative risk analysis are not being used to allow continued land disposal of untreated hazardous waste. Instead, treatment technologies that are determined to pose greater total risks than land disposal of untreated wastes are excluded (i.e., considered "unavailable") as a basis for establishing the section 3004(m) treatment standards. If the best or most efficient treatment technology for a waste is determined to be riskier than land disposal, the decision to classify it as unavailable will have a direct impact

on the level or method established as the section 3004(m) treatment standard. The treatment standard, which must be based on the capabilities of the best demonstrated available treatment technologies for a waste, is then based upon the capabilities of the best demonstrated treatment technology that does not pose greater risks than land disposal. To the extent that the next best treatment technology performs less efficiently than the best technology (in terms of the fate of its residuals in the environment), the resulting section 3004(m) treatment standard will be less stringent.

As noted in the November 7, 1986 final rule, treatment technologies identified as riskier than land disposal, and therefore, classified as unavailable for purposes of establishing standards, may still be used by facilities in complying with treatment standards expressed as performance levels. Accordingly, EPA is committed to developing sufficient regulatory controls or prohibitions over the design and operation of these technologies to ensure that their use in complying with the treatment standards does not result in increased risks to human health and the environment. The analyses conducted in support of these comparative risk assessments will provide a basis for developing such controls or prohibitions, however, additional supporting data will be necessary. Where, as in today's final rule, the section 3004(m) treatment standards are expressed as specific methods which must be utilized, a determination to classify a treatment alternative as unavailable will prohibit the use of that technology in complying with the applicable treatment standards.

The comparative risk analysis conducted for selected California list wastes estimated the human health risks of land disposal practices and treatment alternatives for California list PCB and HOC wastes. These assessments produced estimates of two measures of risk: the probability of harm to the maximum exposed individual (MEI risk); and the total number of cases of health effects (population risk). For a treatment to be considered unavailable with respect to a certain waste stream: (1) It had to be more risky than land disposal along all points of the risk distribution; (2) the treatment and land disposal risks had to share the same medium and constitutent of concern; and (3) the first two conditions had to be met for both the population and MEI risk distributions for that waste stream.

Results of the comparative risk assessments indicate that the best demonstrated treatment methods for the PCB and HOC wastes are not clearly riskier than land disposal. Whenever treatment is less risky or it is uncertain that a given treatment technology or treatment train is clearly riskier than land disposal, as in today's final rule concerning California list wastes, the Agency will consider the treatment available for determining treatment standards and will develop data to support additional regulatory controls that may be appropriate. All alternate treatment technologies modeled in this analysis were determined to be available alternatives to the land disposal of HOC-containing California list wastes. For all PCB-containing California list wastes, incineration to 99.9999 percent (six 9s) destruction and removal efficiency (DRE) was determined to be an available alternative to disposal in a landfill.

## IV. Modifications to the Land Disposal Restrictions Framework

Today's final rule does two things. First, it addresses the land disposal of the second category of wastes scheduled for prohibition under RCRA section 3004, i.e., the "California list" wastes. Second, it modifies portions of the land disposal restrictions framework promulgated on November 7, 1986 (51 FR 40572). Unless otherwise specified (e.g. the unique waste analysis requirements codified in § 268.32), the modified framework applies to both California list wastes and all other restricted wastes. This section in today's final rule describes the substantive changes made in the framework and briefly discusses any unique requirements with respect to the California list wastes.

### *A. General Waste Analysis (§ 264.13 and § 265.13)*

In the November 7, 1986 final rule (51 FR 40637–38), the Agency amended the general waste analysis provisions by requiring owners or operators to specify in their written waste analysis plans certain procedures and schedules for meeting the requirements of the § 268.4 treatment in surface impoundments exemption. In particular, § 264.13(b)(7)(iii) and § 265.13(b)(7)(iii) require the waste analysis plan to specify the procedures and schedules for complying with the RCRA section 3005(j)(11)(B) requirement to annually remove hazardous residues for subsequent management. In implementing the hazardous residue removal requirement, the Agency stated that such residues need not be delisted. Rather, EPA provided in § 268.4(a)(2) that the removal requirement could be satisfied if the residues which do not meet the Subpart D treatment standards are removed. The rationale for this approach is that since wastes meeting the treatment standards may be land disposed, such wastes should not be subject to the removal requirement.

Today's rule does not change the basic thrust of this approach. However, many of the California list wastes are subject to prohibition levels which are not expressed (at least as yet) as treatment standards. Similar to wastes that are treated to meet corresponding treatment standards, California list wastes treated to below the prohibition levels may be land disposed. Today's final rule revises § 268.4(a)(2) to provide that where no treatment standards have been established (e.g., for several of the California list wastes), residues not meeting the applicable prohibition levels are subject to the annual removal requirement. As a result, the waste analysis requirements are also revised accordingly. (Incidentally, such a residue could not be rendered nonliquid and then be placed back in an impoundment unless it also meets the specified prohibition level because it would become liquid again immediately upon placement in the impoundment.)

### *B. Purpose, Scope and Applicability of Part 268 (§ 268.1)*

In § 268.1 of the November 7, 1986, final rule (51 FR 40638), the Agency stated that the Part 268 land disposal restrictions apply to generators, transporters, and owners or operators of treatment, storage, or disposal facilities. EPA also noted (51 FR 40577) that the land disposal restrictions apply to both interim status and permitted facilities.

Section 268.1 also contains certain exemptions from the land disposal prohibitions. Among these are exemptions for: (1) Wastes that are subject to successful case-by-case extensions pursuant to § 268.5; (2) wastes that are the subject of a successful "no migration" petition pursuant to § 268.6; (3) contaminated soil and debris resulting from a response action taken under section 104 or section 106 of CERCLA or resulting from a corrective action required under RCRA; and (4) wastes generated by small quantity generators of less than 100 kilograms of non-acute hazardous wastes per month or less than 1 kilogram of acute hazardous waste per month. These exemptions continue to apply.

The Agency notes that it omitted to cross-reference an existing regulatory exemption in proposing the California list rules. This is the exemption in 40 CFR 262.51 for a farmer disposing of waste pesticides from his own use on

his own farm in accordance with the disposal instructions on the pesticide label. There is no suggestion in RCRA or the legislative history that this practice, which can be similar to lawful application of a pesticide product, was intended to be subject to the land disposal prohibitions. The Agency discussed this omission in the June 11, 1987 notice of data availability and received no adverse comment. Therefore, today's final rule codifies this exemption in § 268.1(d) and revise § 262.51 accordingly.

EPA is not amending § 268.1 to exempt lab packs, as requested by some commenters. As the Agency stated in the November 7, 1986 final rule (51 FR 40584), lab packs remain subject to the land disposal restrictions because neither the legislative history nor the statute indicate that lab packs can be excluded from the land disposal restrictions if they contain restricted wastes in concentrations exceeding the applicable treatment standards or prohibition levels. In addition, liquid wastes contained in lab packs must comply with the Part 264 and Part 265 requirements regarding the placement of containerized liquids in landfills.

*C. Definitions Applicable to this Part (§ 268.2)*

As stated earlier in today's preamble, EPA is defining the California list constituents subject to the RCRA section 3004(d) prohibitions on land disposal. To avoid confusion in the regulated community over which wastes are subject to the section 3004(d) prohibitions, the Agency has codified several of these definitions in § 268.2. A more detailed discussion of the basis for these definitions appears in the earlier preamble sections addressing each constituent.

The Agency also notes that today's rule slightly revises the language defining the term "land disposal" to correct an ambiguity in the November 7, 1986 version of the definition. As revised, the definition clearly states that "land disposal" is "placement in or on the land" and that such placement need only be "for disposal purposes" when placement occurs in the concrete vault or bunker. See RCRA section 3004(k).

*D. Dilution Prohibition (§ 268.3)*

EPA proposed to amend the § 268.3 dilution prohibition promulgated on November 7, 1986 (51 FR 40639) to include dilution to avoid a prohibition in Subpart C of Part 268 (e.g., dilution to below the restrictions levels for the California list wastes) and dilution to circumvent the effective date of a Subpart C prohibition on land disposal. As proposed, these amendments to § 268.3 would apply to the entire land disposal restrictions program, and not just to the California list wastes. For example, a waste prohibited from land disposal as of November 8, 1986 because it contains greater than or equal to 1% total F001–F005 solvents could not be diluted to create a solvent waste containing less than 1% total F001–F005 solvent constituents in order to take advantage of the November 8, 1988 prohibition effective data applicable to the latter group of solvent wastes.

Most of the commenters supported the proposed amendments to the dilution prohibition; however, several expressed concern that solidification not be eliminated as a means of treating restricted hazardous wastes. They stated that solidification is treatment, not dilution, and should be allowed.

EPA is promulgating the amendments to the dilution prohibition as proposed; however, the Agency is clarifying that it agrees with the commenters that solidification—i.e., treatment that renders the waste nonliquid—is appropriate treatment in many cases. Therefore, legitimate solidification technologies are appropriate for use on the California list metal-bearing wastes, at least until treatment standards have been established for such wastes.

In the November 7, 1986 final rule (51 FR 40592), EPA noted that many treatment methods require the addition of reagents, but do not thereby constitute dilution. Addition of these reagents produces physical or chemical changes and does not merely dilute the hazardous constituents into a larger volume of waste so as to lower the constituent concentration. Where such physical or chemical changes do not occur, or where the hazardous constituents (e.g., metals) are not otherwise immobilized, "solidification" techniques may possibly be considered dilution as a substitute for adequate treatment within the meaning of the § 268.3 prohibition.

As a practical matter, even where solidification techniques are not considered dilution, the liquids in landfills prohibitions set forth in § 264.314 and § 265.314 remain applicable. These provisions place certain prohibitions on the use of absorbents. (See, for example, "Statutory Interpretative Guidance on the Placement of Bulk Liquid Hazardous Waste in Landfills," OSWER Policy Directive #9487.00–2A, June 11, 1986.)

EPA notes that once treatment standards are promulgated for the liquid metal-bearing wastes, solidification in and of itself will no longer be a permissible means of treatment to avoid a prohibition. Solidification will either have to achieve the treatment levels or, where treatment standards have been expressed as specified technologies, those technologies must be utilized. Where particular technologies have been specified, any treatment methods not specified in § 268.42 or approved under § 268.42(b) are not allowed. Thus, in today's final rule, the California list wastes containing PCBs must be treated using the specified thermal destruction technologies (i.e., incineration or burning in high efficiency boilers).

The Agency also notes here that, as stated earlier in today's preamble, legitimate aggregation of waste streams (e.g., wastewaters) to facilitate centralized treatment is not considered impermissible dilution. However, artificial aggregation of wastes to avoid a land disposal prohibition standard, or mixing substances that do not either themselves need to be treated or which do not aid in treatment, would be considered impermissible.

*E. Treatment Surface Impoundment Exemption: Evaporation Prohibition (§ 268.4)*

In addition to modifying the treatment residue removal requirement as described in section A of this unit in today's preamble, EPA is also revising § 268.4 to prohibit, in certain circumstances, the evaporation of hazardous constituents for purposes of obtaining an exemption allowing treatment of prohibited in surface impoundments. The Agency proposed this limitation because of its belief that only impoundments used to treat restricted wastes to reduce their toxicity or mobility, and not just to transfer hazardous constituents and their associated risks to other media (e.g., from the land to the air), should be eligible for the § 268.4 exemption.

A majority of the commenters supported the proposed prohibition, but several suggested that *de minimis* or other releases incident to treatment should be allowed. One commenter stated that EPA should focus on the risks of evaporation in defining the appropriate scope of the prohibition. The Agency agrees with the comments that *de minimis* evaporation incident to properly operated and effective treatment methods should be allowed in the context of today's final rule. Today's final rule thus states that evaporation of hazardous constituents as the principal means of treatment is not considered permissible treatment for purposes of a § 268.4 exemption.

In finalizing the proposed prohibition, EPA emphasizes that it is defining what

constitutes permissible "treatment" for purposes of section 268.4 and RCRA section 3005(j)(11). EPA agrees that evaporation risks should be evaluated but not in the context of today's final rule. The Agency is not determining in this final rule whether evaporation from such impoundments poses risks requiring control. This will be determined in the context of rules implementing RCRA section 3004(n). Rather, EPA is stating that impoundments which merely evaporate hazardous constituents are not engaging in an activity justifying receipt of prohibited wastes. This reading of the statute is a corollary to the prohibition on dilution: both evaporation as described above and dilution do nothing to remove, destroy, or immobilize contaminants as contemplated by RCRA. The thrust of the statutory provision in section 3005(j)(ll) is to grant a limited exemption for impoundments engaged in treatment which to some extent meet the objectives of section 3004(m), namely which reduce levels of toxicity or reduce the potential for hazardous constituents to migrate from the waste. Practices which do nothing more than transfer hazardous constituents to other media fail to satisfy this objective. Put another way, since placement of restricted wastes in surface impoundments is considered land disposal under RCRA section 3004(k) and § 268.2, the Agency does not believe that Congress intended to allow this exemption where impoundments are essentially engaged in land disposal, i.e., placement on the land followed by the evaporation of hazardous constituents. Therefore, today's final rule prohibits such evaporation as the "principal" means of treatment for purposes of a § 268.4 exemption.

An example of impermissible evaporation of hazardous constituents as the "principal" means of treatment is where the sole activity occurring in the impoundment is the volatilization of organic compounds into the ambient air. However, EPA recognizes that certain treatment practices include evaporation as a consequence of treatment (e.g., aggressive biological treatment) or involve emissions of hazardous constituents incident to other treatment. These practices are nonetheless legitimate treatment under § 268.4 because they destroy or immobilize hazardous constituents. (This is not to say that "aggressive" treatment is necessarily required in order to comply with § 268.4.)

The Agency is also clarifying its intent that evaporation of water or other compounds not on the list of "hazardous constituents" (in 40 CFR Part 261, Appendix VIII) is not addressed by today's final rule. Therefore, a treatment process involving the evaporation of water as the principal means of treatment is currently eligible for a § 268.4 exemption. For example, dewatering liquid metal-bearing wastes to concentrate metals for recovery or further treatment is acceptable under today's final rule.

*F. Case-by-Case Extensions (§ 268.5)*

In § 268.5 of the November 7, 1986 final rule (51 FR 40639), EPA established procedures for obtaining case-by-case extensions to a prohibition effective date pursuant to the authority of RCRA section 3004(h)(3). One requirement in § 268.5 for obtaining such extensions is that the applicant demonstrate that he has entered into a binding contractual commitment to construct or otherwise provide treatment, recovery, or disposal capacity that meets the applicable treatment standards. The rationale for this requirement is that Congress intended to encourage the development of alternative capacity by accommodating those making a good faith effort to comply with the prohibitions by the effective date but who are unable to do so due to circumstances beyond their control. (See S. Rep. No. 284, 98th Cong., 1st Sess. 19 (1983).) The basic thrust of this approach is not changed by today's final rule; however, the Agency has recognized that applicants cannot demonstrate a binding contractual commitment to provide capacity meeting treatment standards where no treatment standards have been established (e.g., for several of the California list wastes). Therefore, EPA is revising § 268.5 to require that, where no treatment standards have been established, the capacity being provided must meet the underlying statutory standard of being protective of human health and the environment.

Two other modifications to § 268.5 are also being promulgated in today's final rule, both of which deal with how prohibited wastes subject to a case-by-case extension may be managed during the period of such an extension. On November 7, 1986, EPA stated that such wastes may be placed in landfills or surface impoundments provided certain minimum technological requirements are met. Section 268.5(h)(2) references the applicable minimum technological requirements specified in Part 264 and Part 265; however, § 265.221 does not contain a reference to the RCRA section 3005(j)(1) provision stating that existing interim status surface impoundments must be in compliance with the minimum technological requirements applicable to new impoundments by November 8, 1988. Although the Agency has not codified this statutory requirement, it remains applicable. In order to clarify the regulated community's obligations, however, today's final rule references the RCRA section 3005(j)(1) requirement in § 268.5(h)(2).

Another modification to § 268.5(h)(2) is made in today's final rule with respect to the disposal of California list PCB-containing wastes that are subject to a case-by-case extension. In order to integrate the TSCA and RCRA requirements, a new paragraph (h)(2)(v) is added which states that a landfill disposing of such PCB-containing wastes during the period of an extension must be in compliance with both the TSCA regulations for chemical waste landfills at 40 CFR 761.75 (PCB wastes at 50 ppm or greater may not be placed in surface impoundments under the TSCA regulations) and the Part 264 and 265 requirements. This modification has been made to ensure that the more stringent of the two sets of requirements apply.

*G. "No Migration" Petitions to Allow Continued Land Disposal (§ 268.6)*

In the November 7, 1986, final rule (51 FR 40640), EPA established procedures for granting petitions allowing prohibited wastes to be land disposed where applicants can demonstrate, to a reasonable degree of certainty, that there will be "no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous." RCRA sections 3004 (d), (e), and (g). Today's final rule does not change the procedures established in § 268.6; however, the exemption is being limited by excluding certain PCB-containing wastes from eligibility for such exemptions.

Current TSCA regulations require that liquid wastes containing PCBs at concentrations greater than or equal to 500 ppm be incinerated according to 40 CFR 761.70 standards. In order to avoid the possibility of circumventing this TSCA requirement, EPA is revising § 268.6 to provide that liquid hazardous wastes containing PCBs at concentrations greater than or equal to 500 ppm are not eligible for such "no migration" exemptions. Although this limitation was not specifically discussed in the December 11, 1986 proposal, the Agency did state (51 FR 44723) that where there is an inconsistency between TSCA and RCRA standards, the more stringent requirements govern. Today's modification to § 268.6 simply codifies an existing TSCA standard within the

RCRA regulations in order to facilitate compliance by the regulated community.

*H. Waste Analysis and Recordkeeping (§ 268.7)*

In the November 7, 1986, final rule (51 FR 40597), EPA acknowledged that the ultimate responsibility is on land disposal facilities to ensure that prohibited wastes are not illegally disposed. However, the Agency also recognized that a testing and tracking scheme is critical to implementation and, as a result, imposed certain waste analysis, notice and recordkeeping requirements on generators and treatment facilities, as well as land disposal facilities. These requirements, as specified in § 268.7 and set forth in the Agency's recent correction notice (52 FR 21010, June 4, 1987), are not substantially modified in today's final rule.

Generators remain responsible for determining whether their wastes are restricted from land disposal and may continue to make this determination based on knowledge of their waste, testing, or both. A unique aspect of today's final rule is that, when testing, the Toxicity Characteristic Leaching Procedure (TCLP) is not required for the California list wastes. Rather than testing an extract developed using the TCLP (as is required for the solvents and dioxins to determine if wastes meet the applicable treatment standards), § 268.32 specifies the relevant portion of the waste to test, i.e., the entire waste and not a leach extract for HOCs, PCBs, and corrosives. Other revisions to § 268.7 involve modifications and the notice and certification provisions to require reference to the applicable prohibition levels where no treatment standards are established. The remainder of § 268.7 is unchanged.

*I. Waste Specific Prohibitions—California List Wastes (§ 268.32)*

The primary focus of today's rule is on codifying statutory land disposal prohibitions, establishing effective dates, and, for certain California list wastes, promulgating treatment standards. Today's final rule adds a new § 268.32 which contains the prohibitions and effective dates. The unique waste analysis requirements for these wastes are also included in § 268.32.

Prohibitions and effective dates for the California list metal and free cyanide containing wastes are not included in today's final rule. These determinations will be made in a separate rulemaking. In the interim, the statutory prohibitions in RCRA section 3004(d)(2)(B) are applicable and today's preamble discusses the Agency's approach to determining compliance with the statutory prohibitions. In addition, § 268.32 (and § 268.42) are revised to state that the California list prohibitions, treatment standards, and effective dates for HOCs are superseded by more specific Agency determinations regarding treatment standards and prohibition effective dates (e.g., any determinations already made for solvent-containing and dioxin-containing wastes on November 7, 1986, or any determinations to be made according to the May 28, 1986 schedule. (51 FR 19300)).

The rationale for this approach is that EPA has recognized (51 FR 44725) that it is difficult to establish prohibitions and treatment standards for the broad and diverse categories of wastes specified on the California list. In both the December 11, 1986 proposal (51 FR 44715) and today's final rule, EPA has noted that Congress intended the California list prohibitions to serve as a starting point in carrying out the congressional mandate to minimize land disposal of hazardous waste. Therefore, as the Agency develops data on particular waste streams, it will promulgate prohibitions, treatment standards, and effective dates that will supersede those promulgated today.

*J. Treatment Standards Expressed as Specified Technologies (§ 268.42)*

Today's final rule establishes treatment standards expressed as specified technologies for the California list wastes containing HOCs (except dilute HOC wastewaters) and those containing PCBs. The technologies specified in § 268.42(a) are thermal treatment methods currently subject to existing regulations and are discussed in more detail in today's preamble section entitled "Treatment Standards." Because the PCB wastes subject to these treatment standards are mixed with RCRA hazardous wastes, the Agency is reiterating in § 268.42(a)(1) that compliance with both the TSCA and RCRA standards is required in treating such wastes. This will ensure that today's treatment standards do not result in reducing the stringency of existing treatment requirements for PCB wastes or RCRA hazardous wastes.

EPA is also clarifying two aspects of § 268.42(b). As promulgated on November 7, 1986 (51 FR 40642), this provision allows the Administrator to approve the use of alternative treatment methods provided an applicant can demonstrate that such alternatives can achieve a measure of performance equivalent to that achievable by methods EPA has specified. A further demonstration must be made that the alternative treatment method does not pose an unreasonable risk to human health or the environment.

One commenter suggested that such equivalency petitions may only be granted through rulemaking after notice and public comment. The Agency does not fully agree. Such a determination could be made in such a way as not to have general applicability and effect, and so amount only to an individualized variance. The Agency does not believe that in such instances rulemaking procedures necessarily are required. To the extent, however, that Agency action on an equivalency petition would have general applicability and effect (for example, indicating that a technology constituted an equivalent technology for classes of wastes and generators), then rulemaking procedures would be appropriate. The EPA would make this determination when evaluating each petition. The language in § 268.42(b) therefore should not be read to require use of rulemaking procedures in every case.

The Agency is removing the language in § 268.42(b) requiring petitioners to demonstrate that their treatment method does not pose an "unreasonable risk." This standard is drawn from the Toxic Substances Control Act (TSCA) and is inappropriate for a RCRA determination. EPA is substituting the RCRA standard which requires a demonstration that the alternative treatment method is "protective of human health and the environment." To the extent that the equivalency petition is made with respect to PCB-containing wastes also regulated under TSCA, the applicant would also have to satisfy the "unreasonable risk" standard contained in 40 CFR 761.60(e) as part of the demonstration required independently under the TSCA regulations. The remainder of the § 268.42(b) framework continues to apply.

*K. Prohibitions on Storage of Restricted Wastes (§ 268.50)*

Today's final rule does not modify the framework for prohibiting storage of restricted wastes; however, two revisions are being made that are unique to the California list wastes. First, the applicability provision in § 268.50(e) is being modified to account for wastes for which treatment standards are not specified (e.g., several of the California list wastes). As promulgated on November 7, 1986 (51 FR 40642), this provision exempted from the storage prohibitions any wastes meeting the applicable treatment standards, i.e., wastes that are not prohibited from land disposal. Today's revisions to § 268.50(e)

simply extend this principle to wastes that are not prohibited from land disposal but for which treatment standards are not specified.

Section 268.50 is also being revised to incorporate an existing TSCA PCB storage prohibition into the RCRA regulations in order to integrate the two sets of requirements and facilitate compliance by the regulated community. Existing TSCA regulations at 40 CFR 761.65(a) require that wastes containing PCBs at concentrations greater than or equal to 50 ppm be removed from storage and disposed within one year from the date when they were first placed into storage. The RCRA regulations in § 268.50, however, allow storage of restricted wastes in tanks or containers where such storage is "solely for the purpose of the accumulation of such quantities of hazardous waste as necessary to facilitate proper recovery, treatment, or disposal." Despite some confusion in the regulated community, § 268.50 does not establish a firm time limit on allowable storage of restricted wastes. Section 268.50 merely shifts the burden of demonstrating compliance (or lack thereof) when restricted wastes are stored beyond one year. Storage violations may occur within one year, or storage may be allowable beyond one year, depending on the reasons for such storage. Absent a modification to § 268.50 for the California list PCB wastes, the open-ended RCRA storage prohibition could circumvent the flat one-year limit imposed by the TSCA regulations. Therefore, today's final rule revises § 268.50 to require that the California list PCB wastes may only be stored in accordance with the § 268.50 requirements, but that such storage is limited to one year. For the convenience of the regulated community, today's rule also revises § 268.50 to incorporate the § 761.65(b) provision requiring certain physical characteristics at such PCB storage facilities (e.g., adequate roofing, walls, and floors with curbing).

*L. Minor Modifications of Permits and Changes During Interim Status (§ 270.42 and § 270.72)*

On December 11, 1987, the Agency proposed two amendments to the requirements in Part 270 to give facilities the ability to change their operations to treat or store restricted wastes in tanks or containers as necessary to comply with the Part 268 land disposal restrictions. For permitted facilities it was proposed that such changes could be approved through the minor modification process under certain conditions. It was also proposed that these expansions at interim status facilities would not be subject to the reconstruction ban. The following two sections discuss the comments received on the proposed approach and a description of the provisions contained in today's final rule.

1. Minor Modifications of Permits (§ 270.42)

All comments received on the proposed amendment to the minor permit modification regulations supported the proposed approach. Commenters indicated that the use of minor modifications would be essential to allow facilities to respond promptly and effectively to the land disposal restrictions. The Agency agrees with the commenters and is promulgating § 270.42(p) essentially as proposed.

Specifically, this provision will allow permitted facilities to use the minor modification process in obtaining approval to make changes as needed to treat or store restricted wastes in tanks or containers in order to comply with Part 268 land disposal restrictions, provided the permittee complies with the following conditions: first, the owner or operator must submit a complete major permit modification application pursuant to §§ 124.5 and 270.41; second, the applicant must demonstrate that changes in a unit to treat or store restricted wastes in tanks or containers are necessary to comply with the land disposal restrictions of Part 268; and third, the applicant must ensure that such units comply with the applicable Part 265 standards until the major modification request is granted or until Part 265 closure and post-closure responsibilities are fulfilled. For example, any tanks used to treat or store restricted wastes would be subject to the tank system standards of Part 265, Subpart J, which include secondary containment requirements for new tanks (see 51 FR 25422, July 14, 1986). The authorization to continue in operation with the changes terminates upon final administrative disposition of the major modification request or the termination of the permit.

One commenter suggested that the minor modification provision should be expanded to include units other than tanks and containers. As stated in the preamble to the proposal, EPA believes that the addition of other treatment processes, such as incineration, is likely to raise issues that would be best addressed through the major modification process. However, the Agency is exploring these issues as part of an overall review of the permit modification regulations. EPA recently completed regulatory negotiations on permit modifications, and expects to issue a proposed rule in the next several months.

2. Changes During Interim Status: Removal of Reconstruction Limits (§ 270.72)

The Agency proposed to allow interim status facilities to modify their operations to treat or store restricted wastes in tanks or containers as necessary to comply with the land disposal restrictions without being required to obtain a permit even if such changes exceed the reconstruction limits. Current regulations at § 272.72(e) require owners or operators of interim status facilities that may need to expand the facility by more than 50 percent (in terms of capital investment) to defer such changes until a permit is issued.

Virtually all of the commenters supported the proposed approach to waive the 50 percent reconstruction limits for interim status facilities. They further commented that delaying such necessary changes to the facility until a permit is issued could present significant operational difficulties at the facility. The Agency, therefore, is amending §270.72(e) essentially as proposed to allow owners or operators to modify interim status facilities to handle wastes restricted from land disposal without being subject to the 50 percent capital expenditure limit. Pursuant to today's final rule, interim status facilities would be required to file a revised Part A application prior to such changes. Applicants must also demonstrate that the changes were necessary to comply with the land disposal restrictions of Part 268. Facilities allowed to expand their operations by more than 50 percent under today's final rule continue to be subject to the Part 265 standards.

**V. Effects of the Land Disposal Restrictions Program on Other Environmental Programs**

As an alternative to using BDAT treatment, the regulated community might dispose of restricted California list wastes using non-RCRA disposal options. Two options regulated under the Marine Protection, Research, and Sanctuaries Act (MPRSA) (33 U.S.C. 1401) are ocean dumping and ocean-based incineration. The Agency conducted an analysis of the potential shift in demand for these options resulting from the restrictions on land disposal of solvent, dioxin, and California list wastes. The results are described in "Assessment of Impacts of Land Disposal Restrictions on Ocean Dumping and Ocean Incineration of Solvents, Dioxins, and California List

Wastes." (U.S. EPA, 1986). This assessment was based on a methodology to score and rank waste streams for relative acceptability for ocean disposal, based on technical requirements, environmental criteria, and, to a limited extent, risk to human health and the environment. This analysis was supplemented with an analysis of cost factors and capacity constraints.

The scoring/ranking methodology was based on technical requirements (e.g., physical form and heating value) and MPRSA environmental criteria (e.g., constituent concentrations, toxicity, solubility, density, and persistence of the waste) associated with ocean disposal of hazardous waste. The capacity analysis assumed that those wastes least acceptable for ocean disposal will be treated or disposed of by land-based methods. The cost analysis assumed that additional land-based treatment capacity would be built to treat waste streams for which the costs of land-based treatment would be less than the costs of ocean disposal (including on-land transportation to a port located on the East Coast).

The results of the cost/capacity analysis indicated that, as a result of the land disposal restrictions, approximately 20.3 million gallons per year of hazardous waste containing HOCs, 15.1 million gallons per year of liquid hazardous wastes containing metals, and 8.2 million gallons per year of liquid hazardous wastes containing PCBs could create demands for ocean dumping and ocean-based incineration. Such demands result from capacity shortfalls of land-based treatment (e.g., incineration and chemical precipitation) and the relatively lower cost of ocean dumping and ocean-based incineration, taking into account the costs of transportation on land. The cost/capacity analysis did not take into account technical requirements or environmental criteria.

The Agency expanded the cost/capacity analysis to evaluate the wastes based on cost, capacity, technical requirements and MPRSA environmental criteria, and to a limited extent, risk to human health and the environment. The results of that analysis indicated that ocean disposal of some of these waste streams may incur risks to the marine environment. Clearly, potential risks will influence whether or not ocean dumping permits, for example, would be issued for the affected waste streams. However, under present statutory authorities, with the exception of certain specified wastes, EPA may not disapprove ocean dumping of a hazardous waste for failure to comply with one or more environmental criteria. EPA must consider all statutory factors under section 102(a) of the MPRSA in its decision-making on permit issuance, not just compliance with environmental criteria. Consequently, EPA will have to make case-by-case decisions on whether such permits will be issued for hazardous waste streams prohibited from land disposal.

## VI. State Authority

### *A. Applicability of Rules in Authorized States*

Under section 3006 of RCRA, EPA may authorize qualified States to administer and enforce the RCRA program within the State. Following authorization, EPA retains enforcement authority under sections 3008, 3013 and 7003, although authorized States have primary enforcement responsibility. The standards and requirements for authorization are found in 40 CFR Part 271.

Prior to the Hazardous and Solid Waste Amendments of 1984 (HSWA), a State with final authorization administered its hazardous waste program in lieu of EPA administering the Federal program in that State. The Federal requirements no longer applied in the authorized State, and EPA could not issue permits that the State was authorized to issue. When new, more stringent, Federal requirements were promulgated or enacted, the State was obligated to enact equivalent authority within specified time frames. New Federal requirements did not take effect in an authorized State until the State adopted the requirements as State law.

In contrast, under RCRA section 3006(g) (42 U.S.C. 6926(g)) new requirements and prohibitions imposed by HSWA take effect in authorized States at the same time that they take effect in non-authorized States. EPA is directed to carry out these requirements and prohibitions in authorized States, including the issuance of permits, until the State is granted authorization to do so. While States must still adopt HSWA-related provisions as State law to retain final authorization, HSWA applies in authorized States in the interim.

Today's rule is promulgated pursuant to sections 3004(d) through (k), and (m), of RCRA (42 U.S.C. 6924), provisions added by HSWA. Therefore, it is being added to Table 1 in 40 CFR 271.1(j) which identifies the Federal program requirements that are promulgated pursuant to HSWA and take effect in all States, regardless of their authorization status. States may apply for either interim or final authorization for the HSWA provisions in Table 1, as discussed in the following section. The Agency is modifying Table 2 in § 271(j) also to indicate that this rule pertains to the self-implementing statutory provision of the RCRA amendments.

### *B. Effect on State Authorizations*

As noted above, EPA will implement these regulations in authorized States until States modify their programs to adopt the regulations and the modification is approved by EPA. Because these rules are promulgated pursuant to HSWA, a State submitting a program modification may apply to receive either interim or final authorization under RCRA section 3006(g)(2) or 3006(b), respectively, on the basis of requirements that are substantially equivalent or equivalent to EPA's. The procedures and schedule for State program modifications for either interim or final authorization are described in 40 CFR 271.21. It should be noted that all HSWA interim authorizations will expire January 1, 1993 (see § 271.24(c)).

Section 271.21(e)(2) requires States that have final authorization to modify their programs to reflect Federal program changes, and to subsequently submit the modifications to EPA for approval. The deadline by which the State must modify its program to adopt today's rule is July 1, 1991 (July 1, 1992, if a State statutory change is necessary). These deadlines can be extended in certain cases (see § 271.21(e)(3)). Once EPA approves the modification, the State requirements become Subtitle C RCRA requirements.

States with authorized RCRA programs may have requirements similar to those in today's rule. These State regulations have not been assessed against the Federal regulations being promulgated today to determine whether they meet the tests for authorization. Thus, a State is not authorized to implement these requirements in lieu of EPA until the State program modification is approved. Of course, States with existing standards may continue to administer and enforce their standards are a matter of State law. In implementing the Federal program EPA will work with States under cooperative agreements to minimize duplication of efforts. In many cases EPA will be able to defer to the States in their efforts to implement their programs, rather than take separate actions under Federal authority.

States that submit official applications for final authorization less than 12 months after the effective date of these

standards are not required to include standards equivalent to these standards in their application. However, the State must modify its program by the deadlines set forth in § 271.21(e). States that submit official applications for final authorization 12 months after the effective date of these standards must include standards equivalent to these standards in their application. Section 271.3 sets forth the requirements a State must meet when submitting its final authorization application.

*C. State Implementation*

There are several unique aspects of today's rule which affect State implementation and impact State actions on the regulated community:

1. Under 40 CFR Part 268, Subpart C, EPA is promulgating nationwide land disposal restrictions for all generators and TSDFs of certain types of hazardous waste. In order to retain authorization, States must adopt the regulations under this Subpart, since State requirements cannot be less stringent than Federal requirements.

2. Under § 268.32, the Agency may grant a national capacity variance to the prohibition effective date for up to two years if it is found that there is insufficient alternative treatment capacity. Under § 268.5, case-by-case extensions to the effective date of up to one year (renewable for an additional year) may be granted for specific applicants lacking adequate capacity.

EPA Headquarters is solely responsible for granting such extensions. It is clear that RCRA section 3004(h)(3) intends for the Administrator to grant such extensions after consulting the affected States, on the basis of national concerns that only the Administrator can evaluate. Therefore, this aspect of the program cannot be delegated to the States.

3. Under § 268.42(b) and § 268.44, the Agency may grant a waste-specific variance from a treatment standard in cases where it can be demonstrated that the physical or chemical properties of the waste differs significantly from wastes analyzed in developing the treatment standard, and, the waste cannot be treated to specified levels or by specified methods.

The Agency is solely responsible for granting such variances since the result of such an action will be the establishment of a new waste treatability group. Wastes meeting the criteria of this newly established waste treatability group may also be eligible for the variance. Thus, granting such a variance could have national impacts. Therefore this aspect of the program cannot be delegated to the States.

4. Under § 268.6, EPA may grant petitions of specific duration to allow land disposal of certain hazardous waste where applicants can demonstrate that there will be no migration of hazardous constitutents from the disposal unit or injection zone for as long as the waste remains hazardous.

States that have the authority to impose land disposal prohibitions may be authorized under RCRA section 3006 to grant petitions for such exemptions. Decisions on site-specific petitions do not require the national perspective required to grant extensions or variances from the treatment standard. The Agency expects few "no migration" petitions, therefore, EPA is currently requiring that these be handled at EPA Headquarters, though the States may be authorized to grant these petitions in the future. Also, since the Agency has had few opportunities to implement the newly promulgated land disposal restrictions, the Agency expects to gain valuable experience and information from review of "no migration" petitions that may affect future land disposal restrictions rulemakings. In accordance with RCRA section 3004(i), EPA will publish its determination that the "no migration" demonstration has been made in the **Federal Register**.

States are free to impose their own land disposal prohibitions if they are more stringent or broader in scope than Federal programs (RCRA section 3009 and 40 CFR 271.1(i)). Where States impose such prohibitions, the broader or more stringent State ban governs and EPA's action is without meaning in the State.

## VII. Regulatory Requirements

*A. Regulatory Impact Analysis*

Executive Order 12291 requires EPA to assess the effect of contemplated Agency actions during the development of regulations. Such an assessment consists of a quantification of the potential benefits and costs of the rule, as well as a description of any beneficial or adverse effects that cannot be quantified in monetary terms. In addition, Executive Order 12291 requires that regulatory agencies prepare an analysis of the regulatory impact of major rules. Major rules are defined as those likely to result in:

1. An annual cost to the economy of $100 million or more; or

2. A major increase in costs or prices for consumers or individual industries, or

3. Significant adverse effects on competition, employment, investment, innovation, or international trade.

The Agency has performed an analysis of today's regulation to assess the economic effect of associated compliance costs. Total costs of restrictions on affected wastes are expected to be $93.7 million per year. Although the rule does not constitute a major rule under Executive Order 12291, EPA has nonetheless prepared a formal regulatory impact analysis of today's regulatory action in recognition of the effect of the rule on a broad spectrum of American industry.

The remainder of this section describes the analyses performed by EPA in support of today's rule affecting all California list wastes identified in section 3004(d)(2) of the Resource Conservation and Recovery Act (RCRA).

1. Cost and Economic Impact Methodology

EPA has assessed the costs, benefits and potential economic effects of this rule and of major regulatory alternatives to it. In the final rule, EPA has specified treatment standards or concentration levels for each of the five waste groups identified as part of the California list. For the corrosive wastes, EPA is codifying the statutory prohibition specified in section 3004(d)(2) of RCRA. For the PCB and most HOC wastes, EPA has specified treatment standards as described earlier in today's preamble. Finally, for the liquid hazardous wastes containing the specified metals and free cyanides, EPA is deferring to the statutory levels at this time.

In addition to assessing the regulation itself, the Agency has examined major regulatory alternatives to it. This preamble presents results for the final rule only. Each of the alternatives is explored in detail in the Regulatory Impact Analysis (RIA) that is available for viewing in the docket.

EPA establishes the total costs and economic impacts of this rule in three steps. First, EPA estimates the population of wastes, facilities and waste management practices that will be affected. Next, it derives the total social costs of the regulation by adding costs for individual facilities. Finally, EPA assesses economic impacts on affected facilities by comparing total costs for individual facilities to standard measures of facility financial vitality.

a. *Affected population and practices.* The affected population is the total number of hazardous waste treatment, storage and disposal facilities (TSDFs) and generators land disposing of California list wastes either directly at the generation site or indirectly through the purchase of commercial land

disposal capacity. This group's waste management practices are assessed to identify baseline costs of managing wastes and incremental cost increases attributable to today's rule.

The number of facilities that land dispose of affected wastes was determined using the EPA's 1981 Regulatory Impact Analysis Mail Survey.[3] Waste quantities and management costs for facilities responding to the Mail Survey are scaled up to represent the national population by means of weighting factors developed within the survey. EPA estimates that 339 facilities comprise the total national population of commercial and noncommercial facilities land disposing of California list wastes on-site, excluding RCRA wastes mixed with polychlorinated biphenyls (PCBs). This estimate is based on 1981 survey data adjusted for intervening regulatory requirements.

EPA estimates that an additional 2,162 plants generate more than 1,000 kilograms per month of wastes that are sent off-site for management. The waste is disposed of either by noncommercial TSDFs (e.g., those owned by the firm generating the waste but at a different location), or by a commercial TSDF.

Generators of less than 1,000 kilograms per month were not included in the 1981 survey because they were considered exempt at that time. However, the 1984 amendments to the Solid Waste Disposal Act directed EPA to lower the exemption for small quantity generators (SQGs) from 1,000 to 100 kilograms per month by March 31, 1986, so SQGs generating between 100 and 1,000 kilograms of waste per month for off-site disposal are also included in the affected population. The Agency estimates that these SQGs add 2,046 plants to the affected population. Plant- and waste-specific data on this group are derived from EPA's Small Quantity Generator Survey.[4]

Because PCBs are not themselves a listed RCRA hazardous waste, data on generators of PCBs mixed with hazardous wastes regulated under RCRA were not specifically gathered in the RIA Mail Survey. However, recently developed data on this group indicate that there are approximately 63 generators of mixed PCB/RCRA hazardous wastes.[5]

EPA's characterization of current management practices for these groups includes the cost of compliance with regulations that have taken effect since the 1981 survey was conducted. In particular, EPA has adjusted waste management practices reported to reflect compliance with the provisions of 40 CFR Part 264. In making this adjustment, the Agency assumes facilities elect the least costly methods of compliance. This adjustment defines not only baseline management practices and costs associated with them, but also the number of waste streams in the affected population. For example, for 16 facilities, the costs of land disposing certain wastes are driven so high by regulations predating this final rule that other management modes are less expensive. EPA assumes that these facilities no longer land dispose these wastes and that these wastes are therefore no longer part of the population of waste streams that may be affected by any restrictions on land disposal.

No aggregate models have been developed for the population of treatment, storage, and disposal facilities and small quantity generators examined in this analysis. Instead, individual observations in the data sources have been weighted to represent the national population of wastes and management practices. For generating plants disposing of large quantities of California list wastes off-site, model plants representing average, maximum, and minimum waste quantities were developed to assess the range of potential economic effects. For generators of mixtures of PCBs and RCRA hazardous wastes, economic effects were assessed using model plants representing typical waste quantity and plant size characteristics.

b. *Development of costs.* Once the waste quantity and the type and method of treatment are known for the affected population, EPA estimates the costs of compliance for individual facilities. The analysis detailed in this section is based on cost estimates for surveyed facilities representing the affected population. EPA estimates baseline and compliance waste management costs using engineering judgment. Wastes amenable to similar types of treatment are grouped to identify economies of scale available through co-treatment and disposal.

EPA developed baseline waste management costs by adjusting 1981 waste management practices to reflect compliance with regulatory requirements predating restrictions on land disposal. Costs for disposal in surface impoundments assume compliance with section 3005(j) of RCRA, which requires surface impoundments to fully retrofit with double liners and leachate collection systems between liners (subjects to certain exemptions). This assumption could lead to an overestimate of baseline disposal costs and, thus, to an underestimate of incremental costs for surface impoundments exempted from these requirements. Existing regulatory requirements are also considered in developing costs for disposal in landfills and waste piles.

Facilities face several possible options if they may no longer land dispose their wastes. EPA applies the same rationale in predicting facility choice among these options as it does in establishing the affected population: facilities are assumed to elect the least costly method of complying with the requirements of this rule. Costs of compliance are derived by predicting the minimum-cost method of compliance with land disposal restrictions for each facility and calculating the increment between that and baseline disposal costs. As in the analysis of baseline costs, economies of scale in waste management are considered.

Shipping costs for wastes sent off-site for management are also considered. In the development of baseline waste management costs, the transportation distance assumed for off-site waste treatment and/or disposal is 100 miles. Most plants now sending wastes off-site do so for disposal. Although the likely effect of restrictions will be to require treatment before and in addition to disposal, the Agency has not increased the assumed transportation distance. This implies that plants now sending wastes off-site for disposal only can also purchase treatment services from the same commercial facilities. Even if the assumption that average transportation distances will not increase does not accurately predict the effects of this rule, EPA's examination of the sensitivity of results to this assumption revealed that varying the assumption in travel distances, even by as much as a factor of eight, has a

[3] EPA conducted the RIA Mail Survey of hazardous waste generators and TSDFs to determine waste management practices in 1981. Facilities that handled less than 1,000 kilograms of waste per month were not regulated in 1981 and thus are not included in the data. For more information see the "National Survey of Hazardous Waste Generators and Treatment, Storage and Disposal Facilities Regulated under RCRA in 1981." Because the 1981 survey was a statistical sample and not a census, updating it with more current information available to the Agency from other sources is difficult. Based on these sources, however, EPA believes that this estimate may overstate the actual number of TSDFs now land disposing of California list waste.

[4] Office of Solid Waste, "National Small Quantity Hazardous Waste Generator Survey," February 1985.

[5] Office of Solid Waste, "Characterization of Mixed PCB/RCRA Hazardous Wastes," February 1985.

minimal effect on results. This is because many plants that send wastes off-site send small amounts, and economies of scale, reflected in per-unit prices of waste disposal at large commercial facilities, outweigh even major increases in shipping costs.

EPA developed facility-specific compliance costs in two components, which are weighted and then summed to estimate total national costs of the rule. The first component of the total compliance cost is incurred annually for operation and maintenance of alternative modes of waste treatment and disposal. The second component of the compliance cost is a capital cost, which is an initial outlay incurred for construction and depreciable assets. Capital costs are restated as annual values by adjusting them into equivalent yearly payments using a capital recovery factor based on a real cost of capital of 7 percent. These annualized capital costs are then added to yearly O&M costs to derive an annual equivalent cost.

c. *Economic impact analysis*—i. *Noncommercial TSDFs and SQGs.* EPA assesses economic impacts on non-commercial TSDFs and SQGs in several steps. First, the Agency employs a general screening analysis to compare facility-specific incremental costs to financial information about firms, disaggregated by Standard Industrial Classification (SIC) and number of employees per facility. This comparison generates two ratios, which EPA uses to identify facilities likely to experience adverse economic effects. The first is a ratio of individual facility compliance costs to costs of production. This ratio represents the percent product price increase for facility output that occurs if the entire compliance cost—accompanied by facility profit—is passed through to customers in the form of higher prices. A change exceeding five percent is considered to imply a substantial adverse economic effect on a facility. The second is a coverage ratio relating cash from operations to costs of compliance. This ratio represents the number of times that facility gross margin covers the regulatory compliance cost if the facility fully absorbs the cost. For this ratio, a value of less than 20 is considered to represent a significant adverse effect. The coverage ratio is the more stringent of the two ratios, but exceeding the critical level in either one suggests that a facility is likely to be significantly affected. These ratios bound possible effects on individual firms. This analysis considers only pre-tax costs, because Census data are stated in before-tax terms.

Once facilities experiencing adverse economic effects are identified using the two screening ratios, more detailed financial analysis is performed to verify the results and to focus more closely on affected facilities. For this subset of facilities, the coverage ratio is adjusted to allow a portion of costs to be passed through. Economic effects on individual facilities are examined assuming that product price increases of one and five percent are possible. Those facilities for which the coverage ratio is less than two are considered likely to close.

ii. *Commercial TSDFs.* Commercial TSDFs are here defined as those facilities that accept fees in exchange for management of wastes generated elsewhere. For this group of facilities, there exists no Census SIC from which to draw financial information. Two SICs that EPA might use as proxies, 4953 and 4959, do not distinguish between financial data for hazardous waste treatment firms and for firms managing municipal and solid wastes. Consequently, the analysis of economic effects on commercial facilities is qualitative. This analysis includes an examination of the quantity of waste each facility receives from the waste group restricted by today's rule. EPA also examines the ability of each facility to provide the additional treatment required once these restrictions are promulgated, and thus to retain or expand that portion of its business generated by restricted wastes.

iii. *Generators of large quantities of wastes.* EPA's analysis of the economic effects of this rule on generating plants disposing of large quantities of affected wastes off-site assumes that commercial facilities can entirely pass on the costs of compliance with this regulation in the form of higher prices for waste management services. Because of data limitations in the RIA Mail Survey, EPA has not developed plant-specific characterizations of wastes, treatment methods, and compliance costs for generators, as it has for TSDFs. EPA's analysis of the economic effects of today's final rule on this group uses RIA Mail Survey data to develop model plants generating average, maximum, and minimum waste quantities. This allows EPA to assess the range of possible effects on generating plants.

2. Costs and Economic Impacts

Total costs of regulating California list wastes do not qualify this rule as a major rule under Executive Order 12291, since the total annualized costs of restricting land disposal of these wastes are estimated at $93.7 million per year. These costs are not adjusted for the effect of taxation, which is merely a transfer from one sector of the economy to another. Costs are stated in 1986 dollars.

Today's regulation will affect entities in a variety of four-digit SICs, including chemicals and allied products, petroleum products, and metals industries. Two SIC sectors, chemicals and allied products (SIC 28) and primary metals (SIC 33) together account for approximately three-fourths of the after-tax cost of complying with the land disposal restrictions.

Economic effects have been assessed for both noncommercial and commercial facilities. Noncommercial facilities are those that generate and manage their own wastes, as distinct from facilities that accept fees in exchange for managing and disposing of wastes generated by others. Of 308 (weighted) noncommercial facilities nationally, 39 (weighted) facilities may experience financial distress because of this rule, and six of these appear likely to close.

EPA estimates that 31 (weighted) commercial facilities will incur incremental costs as a result of the restriction on land disposal of California list wastes. Fifty-eight percent of these commercial facilities offer a range of hazardous waste management services, including land-based disposal, storage, and treatment. The increased demand this rule will create for highly priced treatment services may actually strengthen the financial position of these firms by allowing them to increase their market shares. On the other hand, for the 16 percent of commercial facilities that offer solely land-based management of restricted wastes, the increased emphasis on treatment prior to land disposal may prove economically disadvantageous. It was not possible to characterize the remaining 26 percent of commercial facilities based on services offered.

Turning to effects on generators, EPA found that based on average waste quantities, the SIC sectors generating California list wastes include 2,162 (weighted) plants. Of these, 34 (weighted) plants may experience significant financial distress based on costs imposed by restrictions on land disposal. This represents 1.6 percent of all waste-generating plants that may face increased waste management prices. Based on further analysis, none of the 34 distressed plants appear likely to close.

Total annualized national costs for the 2,046 (weighted) small quantity generators (SQGs) of California list wastes are $4.5 million. Based on engineering estimates of prices for off-site waste management services, costs

for SQGs generating the maximum of 1,000 kilograms per month of nothing but hazardous wastes specified in the California list would incur not more than $13,200 annually in incremental compliance costs. Economic ratios for all plants in each 4-digit sector represented in the SQG survey were examined. In 102 (weighted) cases, plants seemed likely to experience some financial distress, and none of these plants appear likely to close. Thus, restricting land disposal of California list wastes may have substantial adverse economic effect on approximately 5 percent of all generators of small quantities of wastes.

Economic effects on generators of mixed PCB/RCRA wastes are also not expected to be significant; although, because of data limitations, no plant-specific analysis could be undertaken. Further information on economic effects on all groups mentioned above is available in the regulatory impact analysis (RIA) supporting this rule.

The following table summarizes the economic impact information presented above:

| Type of firm | No. of firms | Significantly impacted |
|---|---|---|
| Noncommercial | 308 | 39 |
| Small Quantity Generators | 2,046 | 102 |
| PCB Generators | 63 | 0 |
| Large Quantity Generators | 2,162 | 34 |
| Commercial TSDFs [1] | 31 | — |
| Totals | 4,610 | 175 |

[1] Because of the assumption of full cost pass-through by commercial TSDFs, no economic effects are identified for this group.

3. Methodology Used in Assessing Benefits and Cost-Effectiveness

The RIA performed by the Agency evaluated the benefits of three regulatory alternatives for restricting the land disposal of California list wastes. As with the discussion of cost and economic impacts, this preamble only presents results associated with the final rule.

The benefits of today's final rule were evaluated by considering the reduction in human health risk that results from treating California list wastes to below statutory levels prior to land disposal rather than managing by baseline land disposal practices. Human health risk is defined as the probability of injury, disease, or death over a given time due to responses to doses of disease causing agents. Predicting human health risk entails estimating quantitatively the consequences of human exposure to these agents. To estimate risks of baseline and alternative technologies, the analysis characterizes wastes, technologies, releases, environmental transport, and dose-response relationships based on a number of simplifying assumptions. These include:

—The steady-state management and release of wastes—in other words, the quantity of waste managed in the baseline continues to be managed—and subject to releases—ad infinitum;
—Exposure to contaminated media is steady-state;
—The dose results from daily consumption of surface and ground water, inhalation of air, and ingestion of contaminated fish over 70 years by a 65 kg person;
—The dose-response relationship for carcinogens is linear, without a threshold; for noncarcinogens it is a modified linear response;
—Risks are based on exposures to all constituents in each waste stream; and
—Risks are not discounted.

The human health risk posed by a waste management practice is a function of complex interactions between the toxicity of the chemical constituents in the waste stream and the extent of human exposure to these chemicals (e.g., considering, among other things, the hydrogeologic settings at land disposal units and the fate and transport of chemical constituents of wastes).

EPA estimates human health risk in four steps. The first step is to estimate the concentrations of each of the hazardous constituents of the waste stream in each of the three media (air, surface water, ground water) into which they may be released in the course of waste management. These estimates depend on the steady-state release rates calculated for each technology, and on environmental fate and transport. The next step is to estimate the total human intake, or dose, of each of the chemicals through inhalation of air and ingestion of ground water, surface water, and contaminated fish. The Agency next calculates the risk to an individuals from the dose derived in the previous step. EPA estimates the relationship of dose to effect (using the "dose-response" curve developed based on toxicity data), and weights the effect according to severity. Finally, EPA estimates the population at risk by multiplying the average individual risk by the number of people in a given environment, which is derived by a Monte Carlo simulation involving 2,000 iterations.

In assessing the benefits of the rule, EPA limits the analysis to reductions in human health effects attributed to a reduction in exposure to the toxic constituents in the wastes. Other benefits, such as improvements in environmental quality, are not quantified. As a result, the benefits of the land disposal restrictions for California list wastes may be underestimated. Furthermore, the assessment may underestimate benefits since the effects of the comparative risk analysis were not included. Therefore, negative benefits resulting from a technology considered riskier than land disposal (which would be designated not available for purposes of establishing treatment standards) were included in the analysis. Although this assessment does not estimate potential increases in risk from increased transportation and handling of California list wastes, an initial analysis indicates that such increases are not likely to be significant.

4. Benefits and Cost-Effectiveness

Based on this benefits analysis, the final rule is estimated to result in a net reduction in health risk equal to 2,298 weighted cases (e.g., cancer, fetal toxicity, decreases in reproductive capacity) over seventy years, which represents a 71.1 percent reduction from baseline practices. Of the total reduction, 2,048 cases—or 89 percent of the benefit—comes from changes to land disposal technologies, such as disposal in landfills, land farms, wastes piles, and disposal impoundments. An additional 10 percent reduction in risk comes from changes to land-based storage practiced in surface impoundments. Finally, approximately 1 percent of the total reduction comes from changes in treatment practiced in surface impoundments.

The analysis is in no sense time-dependent. Benefits are expressed as steady-state annual values. No attempt has been made to compare the initial year at which steady-state risk values are reached across options or between an option and the baseline. However, it can be generally observed that the effect of restricting land disposal is to reduce risk in absolute terms while shifting it forward temporally. This is because ground water risks, the type likely to predominate in the baseline, tend to occur a long time after waste is land disposed of, because of the slowness of constituent movement in this medium. However, air and surface water risks—while lower as a whole—are likely to predominate in the post-regulation scenario. Migration of wastes in these

media is relatively rapid, and thus risks are incurred sooner.

*B. Regulatory Flexibility Analysis*

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601, whenever an agency is required to publish a notice of rulemaking for any proposed or final rule, it must prepare and make available for public comment a Regulatory Flexibility Analysis that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). This analysis is unnecessary if the agency's administrator certifies that the rule will not have a significant economic effect on a substantial number of small entities.

EPA evaluated the economic effect of the rule on small entities, here defined as concerns employing fewer than 50 people. Because of data limitations, this small business analysis excludes generators of large quantities of California list wastes. The small business population here examined therefore includes only two groups: all noncommercial treatment, storage, and disposal facilities employing fewer than 50 persons, and all small quantity generators which are also small businesses.

One hundred and fifty-four (weighted) TSDFs are small businesses. Of these, six (weighted) exceed threshold values on the cost of production ratio, a figure that represents four percent of this small business population. Of the total of 2,046 small quantity generators examined in this analysis, the vast majority are also small businesses. A total of five SQGs (or less than one percent of all small businesses) exceeded threshold values on the cost of production ratios.

According to EPA's guidelines for conducting Regulatory Flexibility Analyses, if over 20 percent of the population of small businesses is likely to experience financial distress based on the costs of a rule, then the Agency is required to consider that the rule will have a significant effect on a substantial number of small entities and to perform a formal Regulatory Flexibility Analysis.[6] EPA has examined the rule's potential effects on small businesses as required by the Regulatory Flexibility Act and has concluded that today's final rule will not have a significant economic effect on a substantial number of small entities. As a result of this finding, EPA has not prepared a formal Regulatory Flexibility Analysis document in support of this rule. More detailed information on small business impacts is available in technical background documents prepared in support of this rulemaking.

*C. Review of Supporting Documents*

The primary source of information on current land disposal practices and industries affected by this rule is EPA's National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities. Waste stream characterization data and engineering costs of waste management are based on the 1981 RIA Mail Survey and on reports by the Mitre Corporation, "Composition of Hazardous Waste Streams Currently Incinerated," (April 1983), and "The RCRA Risk-Cost Analysis Model," (U.S. EPA, March 1984). The survey of small quantity generators has been the major source of data on this group. Data used to characterize generators of mixed PCB/RCRA hazardous wastes were taken from an EPA study, "Characterization of Mixed PCB/RCRA Hazardous Wastes," (February 1985). For financial and value of shipment information for the general screening analysis, 1982 Census data were used, adjusted by 1983 Annual Survey of Manufactures data. Producer price indices were also used to restate 1983 dollars in 1986 terms.

**List of Subjects in 40 CFR Parts 260, 261, 262, 264, 265, 268, 270, and 271**

Administrative practice and procedure, Confidential business information, Environmental protection, Hazardous materials, Hazardous materials transportation, Hazardous waste, Imports, Indian lands, Insurance, Intergovernmental relations, Labeling, Packaging and container, Penalties, Recycling, Reporting and recordkeeping requirements, Security measures, Surety measures, Surety bonds, Waste treatment and disposal, Water pollution control, Water supply.

Dated: July 6, 1987.

**Lee M. Thomas,**

*Administrator.*

Therefore, for reasons set out in the preamble, Chapter I of Title 40 is amended as follows:

## PART 262—STANDARDS APPLICABLE TO GENERATORS OF HAZARDOUS WASTE

I. In Part 262:

1. The authority citation for Part 262 continues to read as follows:

**Authority:** Secs. 1006, 2002, 3002, 3003, 3004, 3005, and 3017, of the Solid Waste Disposal Act, as amended by the Resource Conservation and Recovery Act of 1976, as amended (42 U.S.C. 6906, 6912, 6922, 6923, 6924, 6925, and 6937).

### Subpart E—Special Conditions

2. Section 262.51 is revised to read as follows:

**§ 262.51 Farmers**

A farmer disposing of waste pesticides from his own use which are hazardous wastes is not required to comply with the standards in this part or other standards in 40 CFR Parts 264, 265, 268, or 270 for those wastes provided he triple rinses each emptied pesticide container in accordance with § 261.7(b)(3) and disposes of the pesticide residues on his own farm in a manner consistent with the disposal instructions on the pesticide label.

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

II. In Part 264:

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

**Authority:** Secs. 1006, 2002, 3004, and 3005 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, 6924, and 6925).

### Subpart B—General Facility Standards

2. In § 264.13, paragraph (b)(7)(iii) is revised to read as follows:

**§ 264.13 General waste analysis.**

* * * * *

(b) * * *

(7) * * *

(iii) The annual removal of residues which are not delisted under § 260.22 of this chapter and do not exhibit a characteristic of hazardous waste, and which do not meet the treatment standards of Part 268 Subpart D of this chapter or. where no treatment standards have been established, the annual removal of residues which do not meet the applicable prohibition levels in Part 268 Subpart C or RCRA section 3004(d).

* * * * *

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

III. In Part 265:

1. The authority citation for Part 265 continues to read as follows·

**Authority:** Secs. 1006, 2002(a), 3004, 3005, and 3015 of the Solid Waste Disposal Act, as amended by the Resource Conservation and

[6] See U.S. EPA, "Guidelines for Compliance with the Regulatory Flexibility Act," February 1982.

Recovery Act of 1976, as amended (42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935).

## Subpart B—General Facility Standards

2. In § 265.13, paragraph (b)(7)(iii) is revised to read as follows:

**§ 265.13 General waste analysis.**

* * * * *

(b) * * *

(7) * * *

(iii) The annual removal of residues which are not delisted under § 260.22 of this chapter and do not exhibit a characteristic of hazardous waste, and which do not meet the treatment standards of Part 268 Subpart D of this chapter or, where no treatment standards have been established, the annual removal of residues which do not meet the applicable prohibition levels in Part 268 Subpart C or RCRA section 3004(d).

* * * * *

## PART 268—LAND DISPOSAL RESTRICTIONS

IV. In Part 268:

1. The authority citation for Part 268 continues to read as follows:

**Authority:** Secs. 1006, 2002(a), 3001, 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), 6921, and 6924).

2. The Table of Contents is amended by adding entries for § 268.32 and Appendix III to Part 268 to read as follows:

* * * * *

**Subpart C—Prohibitions on Land Disposal**

* * * * *

**§ 268.32 Waste specific prohibitions—California list wastes.**

* * * * *

**Appendix III to Part 268—List of Halogenated Organic Compounds Regulated Under § 268.32**

## Subpart A—General

3. In § 268.1, the word "or" after the semi-colon in paragraph (c)(3) is removed, the period ending paragraph (c)(4) is replaced with "; or" and paragraph (c)(5) is added to read as follows:

**§ 268.1 Purpose, scope and applicability.**

* * * * *

(c) * * *

(5) Where a farmer is disposing of waste pesticides in accordance with § 262.51.

4. In § 268.2, paragraph (a) is amended by adding definitions for "Halogenated organic compounds" and "Polychlorinated biphenyls" in alphabetical order and revising the definition for "Land disposal" to read as follows:

**§ 268.2 Definitions applicable to this part.**

(a) When used in this part the following terms have the meanings given below:

"Halogenated organic compounds" or "HOCs" means those compounds having a carbon-halogen bond which are listed under Appendix III to this Part.

* * * * *

"Land disposal" means placement in or on the land and includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, underground mine or cave, or placement in a concrete vault or bunker intended for disposal purposes.

"Polychlorinated biphenyls" or "PCBs" are halogenated organic compounds defined in accordance with 40 CFR 761.3.

* * * * *

5. Section 268.3 is revised to read as follows:

**§ 268.3 Dilution prohibited as a substitute for treatment.**

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

6. In § 268.4, paragraph (a)(2) is revised and paragraph (b) is added to read as follows:

**§ 268.4 Treatment surface impoundment exemption.**

(a) * * *

(2) The residues of the treatment are analyzed, as specified in § 268.7 or § 268.32, to determine if they meet the applicable treatment standards in Subpart D of this part, or, where no treatment standards have been established for the waste, the applicable prohibition levels specified in Subpart C of this part or RCRA section 3004(d). The sampling method, specified in the waste analysis plan under § 264.13 or § 265.13, must be designed such that representative samples of the sludge and the supernatant are tested separately rather than mixed to form homogeneous samples. The treatment residues (including any liquid waste) that do not meet the treatment standards promulgated under Subpart D of this part, or the applicable prohibition levels promulgated under Subpart C of this part or imposed by statute (where no treatment standards have been established), or which are not delisted under § 260.22 of this chapter and no longer exhibit a characteristic of hazardous waste, must be removed at least annually. These residues may not be placed in any other surface impoundment for subsequent management. If the volume of liquid flowing through the impoundment or series of impoundments annually is greater than the volume of the impoundment or impoundments, this flow-through constitutes removal of the supernatant for the purpose of this requirement. The procedures and schedule for the sampling of impoundment contents, the analysis of test data, and the annual removal of residue which does not meet the Subpart D treatment standards, or Subpart C or RCRA section 3004(d) prohibition levels where no treatment standards have been established, must be specified in the facility's waste analysis plan as required under § 264.13 or § 265.13 of this chapter.

* * * * *

(b) Evaporation of hazardous constituents as the principal means of treatment is not considered to be treatment for purposes of an exemption under this section.

7. In § 268.5, paragraphs (a)(2), (h)(1), and (h)(2)(iii) are revised and paragraph (h)(2)(v) is added to read as follows:

**§ 268.5 Procedures for case-by-case extensions to an effective date.**

(a) * * *

(2) He has entered into a binding contractual commitment to construct or otherwise provide alternative treatment, recovery (e.g., recycling), or disposal capacity that meets the treatment standards specified in Subpart D or, where treatment standards have not been specified, such treatment, recovery, or disposal capacity is protective of human health and the environment.

* * * * *

(h) * * *

(1) The storage restrictions under § 268.50(a) do not apply; and

(2) * * *

(iii) The surface impoundment, if in interim status, is in compliance with the requirements of Subpart F of Part 265,

§ 265.221 (a), (c), and (d) of this chapter, and RCRA section 3005(j)(1); or

* * * * *

(v) The landfill, if disposing of containerized liquid hazardous wastes containing PCBs at concentrations greater than or equal to 50 ppm but less than 500 ppm, is also in compliance with the requirements of 40 CFR 761.75 and Parts 264 and 265.

* * * * *

8. In § 268.6, paragraph (k) is added to read as follows:

**§ 268.6 Petitions to allow land disposal of a waste prohibited under Subpart C of Part 268.**

* * * * *

(k) Liquid hazardous wastes containing polychlorinated biphenyls at concentrations greater than or equal to 500 ppm are not eligible for an exemption under this section.

9. Section 268.7 is amended by revising paragraphs (a) introductory text, (a)(1) introductory text, (a)(1)(ii), (a)(2) introductory text, (a)(2)(i)(B), )(2)(ii), (b) introductory text, (b)(1)(ii), (b)(2) introductory text, (b)(2)(i), and (c) to read as follows:

**§ 268.7 Waste analysis and recordkeeping.**

(a) Except as specified in § 268.32 of this part, the generator must test his waste or an extract developed using the test method described in Appendix I of this part, or use knowledge of the waste, to determine if the waste is restricted from land disposal under this part.

(1) If a generator determines that he is managing a restricted waste under this part and the waste does not meet the applicable treatment standards, or where the waste does not comply with the applicable prohibitions set forth in § 268.32 of this part or RCRA section 3004(d), with each shipment of waste the generator must notify the treatment facility in writing of the appropriate treatment standards set forth in Subpart D of this part and any applicable prohibitions set forth in § 268.32 of this part or RCRA section 3004(d). The notice must include the following information:

* * * * *

(ii) The corresponding treatment standards and all applicable prohibitions set forth in § 268.32 or RCRA section 3004(d);

* * * * *

(2) If a generator determines that he is managing a restricted waste under this part, and determines that the waste can be land disposed without further treatment, with each shipment of waste he must submit, to the land disposal facility, a notice and a certification stating that the waste meets the applicable treatment standards set forth in Subpart D of this part and the applicable prohibitions set forth in § 268.32 of this part or RCRA section 3004(d).

(i) * * *

(B) The corresponding treatment standards and all appplicable prohibitions set forth in § 268.32 or RCRA section 3004(d);

* * * * *

(ii) The certification must be signed by an authorized representative and must state the following:

I certify under penalty of law that I personally have examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d). I believe that the information I submitted is true, accurate and complete. I am aware that there are significant penalties for submitting a false certification, including the possiblity of a fine and imprisonment.

* * * * *

(b) For wastes with treatment standards expressed as concentrations in the waste extract (§ 268.41), the owner or operator of the treatment facility must test the treatment residues or an extract of such residues developed using the test method described in Appendix I of this part to assure that the treatment residues or extract meet the applicable treatment standards. For wastes prohibited under § 268.32 of this part or RCRA section 3004(d) which are not subject to any treatment standards under Subpart D of this part, the owner or operator of the treatment facility must test the treatment residues according to the generator testing requirements specified in § 268.32 to assure that the treatment residues comply with the applicable prohibitions. For both circumstances described above, such testing must be performed according to the frequency specified in the facility's waste analysis plan as required by § 264.13 or § 265.13. Where the treatment residues do not comply with the applicable treatment standards or prohibitions, the treatment facility must comply with the notice requirements applicable to generators in paragraph (a)(1) of this section if the treatment residues will be further managed at a different treatment facility.

(1) * * *

(ii) The corresponding treatment standards and all applicable prohibitions set forth in § 268.32 or RCRA section 3004(d);

* * * * *

(2) The treatment facility must submit a certification with each shipment of waste or treatment residue of a restricted waste to the land disposal facility stating that the waste or treatment residue has been treated in compliance with the applicable performance standards specified in Subpart D of this part and the applicable prohibitions set forth in § 268.32 or RCRA section 3004(d).

(i) For wastes with treatment standards expressed as concentrations in the waste extract or in the waste (§ 268.41 or § 268.43), or for wastes prohibited under § 268.32 of this part or RCRA section 3004(d) which are not subject to any treatment standards under Subpart D of this part, the certification must be signed by an authorized representative and must state the following:

I certify under penalty of law that I have personally examined and am familiar with the treatment technology and operation of the treatment process used to support this certification and that, based on my inquiry of those individuals immediately responsible for obtaining this information, I believe that the treatment process has been operated and maintained properly so as to comply with the performance levels specified in 40 CFR Part 268 Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA section 3004(d) without dilution of the prohibited waste. I am aware that there are significant penalties for submitting a false certification, including the possibility of fine and imprisonment.

* * * * *

(c) The owner or operator of any land disposal facility disposing any waste subject to restrictions under this part must have records of the notice and certification specified in either paragraph (a) or (b) of this section. The owner or operator of the land disposal facility must test the waste or an extract of the waste or treatment residue developed using the test method described in Appendix I of this part, or using any methods required by generators under § 268.32 of this part, to assure that the wastes or treatment residues are in compliance with the applicable treatment standards set forth in Subpart D of this part and all applicable prohibitions set forth in § 268.32 of this part or RCRA section 3004(d). Such testing must be performed according to the frequency specified in the facility's waste analysis plan as required by § 264.13 or § 265.13.

## Subpart C—Prohibitions on Land Disposal

10. In Subpart C, paragraph (a)(4) is added to § 268.30 to read as follows:

**§ 268.30 Waste specific prohibitions—Solvent wastes.**

(a) * * *

(4) The solvent waste is a residue from treating a waste described in paragraphs (a)(1), (a)(2), or (a)(3) of this section; or the solvent waste is a residue from treating a waste not described in paragraphs (a)(1), (a)(2), or (a)(3) of this section provided such residue belongs to a different treatability group than the waste as initially generated and wastes belonging to such a treatability group are described in paragraph (a)(3) of this section.

* * * * *

11. In Subpart C, § 268.32 is added to read as follows:

**§ 268.32 Waste specific prohibitions—California list wastes.**

(a) Effective July 8, 1987, the following hazardous wastes are prohibited from land disposal (except in injection wells): (1) Liquid hazardous wastes having a pH less than or equal to two (2.0);

(2) Liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 ppm;

(3) Liquid hazardous wastes that are primarily water and contain halogenated organic compounds (HOCs) in total concentration greater than or equal to 1,000 mg/l and less than 10,000 mg/l HOCs.

(b)-(c) [Reserved]

(d) The requirements of paragraph (a) of this section do not apply until November 8, 1988 where the wastes are contaminated soil or debris resulting from a response action taken under section 104 or 106 of the Comprehensive Environmental Response, Compensation, and Liability Act or a corrective action required under RCRA Subtitle C.

(e) Effective July 8, 1989, the following hazardous wastes are prohibited from land disposal (subject to any regulations that may be promulgated with respect to disposal in injection wells):

(1) Liquid hazardous wastes that contain HOCs in total concentration greater than or equal to 1,000 mg/l and are not prohibited under paragraph (a)(3) of this section; and

(2) Nonliquid hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg/kg.

(f) Between July 8, 1987 and July 8, 1989, the wastes described in paragraphs (e)(1) and (e)(2) of this section may be disposed of in a landfill or surface impoundment only if the facility is in compliance with the requirements specified in § 268.5(h)(2).

(g) The requirements of paragraphs (a) and (e) of this section do not apply if:

(1) Persons have been granted an exemption from a prohibition pursuant to a petition under § 268.6, with respect to those wastes and units covered by the petition (except for liquid hazardous wastes containing polychlorinated biphenyls at concentrations greater than or equal to 500 ppm which are not eligible for such exemptions); or

(2) Persons have been granted an extension to the effective date of a prohibition pursuant to § 268.5, with respect to those wastes covered by the extension; or

(3) The wastes meet the applicable standards specified in Subpart D of this part or, where treatment standards are not specified, the wastes are in compliance with the applicable prohibitions set forth in this section or RCRA section 3004(d).

(h) The prohibitions and effective dates specified in paragraphs (a)(3) and (e) of this section do not apply where the waste is subject to a Part 268 Subpart C prohibition and effective date for a for a specified HOC (such as a hazardous waste chlorinated solvent, see e.g., § 268.30(a)).

(i) To determine whether or not a waste is a liquid under paragraphs (a) and (e) of this section and under RCRA section 3004(d), the following test must be used: Method 9095 (Paint Filter Liquids Test) as described in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods," EPA Publication No. SW-846.

(j) Except as otherwise provided in this paragraph, the waste analysis and recordkeeping requirements of § 268.7 are applicable to wastes prohibited under this Part or RCRA section 3004(d):

(1) The initial generator of a liquid hazardous waste must test his waste (not an extract or filtrate) in accordance with the procedures specified in § 261.22(a)(1), or use knowledge of the waste, to determine if the waste has a pH less than or equal to two (2.0). If the liquid waste has a pH less than or equal to two (2.0), it is restricted from land disposal and all requirements of Part 268 are applicable, except as otherwise specified in this section.

(2) The initial generator of either a liquid hazardous waste containing polychlorinated biphenyls (PCBs) or a liquid or nonliquid hazardous waste containing halogenated organic compounds (HOCs) must test his waste (not an extract or filtrate), or use knowledge of the waste, to determine whether the concentration levels in the waste equal or exceed the prohibition levels specified in this section. If the concentration of PCBs or HOCs in the waste is greater than or equal to the prohibition levels specified in this section, the waste is restricted from land disposal and all requirements of Part 268 are applicable, except as otherwise specified in this section.

## Subpart D—Treatment Standards

12. Section 268.40 is revised to read as follows:

**§ 268.40 Applicability of treatment standards.**

(a) A restricted waste identified in this subpart may be land disposed without further treatment only if an extract of the waste or of the treatment residue of the waste developed using the test method in Appendix I of this part does not exceed the value shown in Table CCWE of § 268.41 for any hazardous constituent listed in the Table CCWE for that waste.

(b) A restricted waste for which a treatment technology is specified under § 268.42(a) may be land disposed after it is treated using that specified technology or an equivalent treatment method approved by the Administrator under the procedures set forth in § 268.42(b).

13. In § 268.42, paragraph (a) is amended by adding paragraphs (a)(1) and (a)(2) and paragraph (b) is revised to read as follows:

**§ 268.42 Treatment standards expressed as specified technologies.**

(a) * * *

(1) Liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 ppm but less than 500 ppm must be incinerated in accordance with the technical requirements of 40 CFR 761.70 or burned in high efficiency boilers in accordance with the technical requirements of 40 CFR 761.60. Liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 500 ppm must be incinerated in accordance with the technical requirements of 40 CFR 761.70. Thermal treatment under this section must also be in compliance with applicable regulations in Parts 264, 265, and 266.

(2) Nonliquid hazardous wastes containing halogenated organic compounds (HOCs) in total concentration greater than or equal to 1,000 mg/kg and liquid HOC-containing wastes that are prohibited under § 268.32(e)(1) of this part must be incinerated in accordance with the requirements of Part 264 Subpart O or Part 265 Subpart O. These treatment standards do not apply where the waste is subject to a Part 268 Subpart C treatment standard for a specific HOC

(such as a hazardous waste chlorinated solvent for which a treatment standard is established under § 268.41(a)).

(b) Any person may submit an application to the Administrator demonstrating that an alternative treatment method can achieve a measure of performance equivalent to that achievable by methods specified in paragraph (a) of this section. The applicant must submit information demonstrating that his treatment method is in compliance with federal, state, and local requirements and is protective of human health and the environment. On the basis of such information and any other available information, the Administrator may approve the use of the alternative treatment method if he finds that the alternative treatment method provides a measure of performance equivalent to that achieved by methods specified in paragraph (a) of this section. Any approval must be stated in writing and may contain such provisions and conditions as the Administrator deems appropriate. The person to whom such approval is issued must comply with all limitations contained in such a determination.

14. In § 268.50, paragraphs (a) introductory text, and (e) are revised and paragraph (f) is added to read as follows:

**§ 268.50 Prohibitions on storage of restricted wastes.**

(a) Except as provided in this section, the storage of hazardous wastes restricted from land disposal under Subpart C of this part of RCRA section 3004 is prohibited, unless the following conditions are met:

* * * * *

(e) The prohibition in paragraph (a) of this section does not apply to hazardous wastes that meet the treatment standards specified under §§ 268.41, 268.42, and 268.43 or the treatment standards specified under the variance in § 268.44, or, where treatment standards have not been specified, is in compliance with the applicable prohibitions specified in § 268.32 or RCRA section 3004.

(f) Liquid hazardous wastes containing polychlorinated biphenyls (PCBs) at concentrations greater than or equal to 50 ppm must be stored at a facility that meets the requirements of 40 CFR 761.65(b) and must be removed from storage and treated or disposed as required by this part within one year of the date when such wastes are first placed into storage. The provisions of paragraph (c) of this section do not apply to such PCB wastes prohibited under § 268.32 of this part

15. After Subpart E, Appendix III is added to Part 268 to read as follows:

**Appendix III to Part 268—List of Halogenated Organic Compounds Regulated Under § 268.32**

In determining the concentration of HOCs in a hazardous waste for purposes of the § 268.32 land disposal prohibition, EPA has defined the HOCs that must be included in the calculation as any compounds having a carbon-halogen bond which are listed in this Appendix (see § 268.2). Appendix III to Part 268 consists of the following compounds:

*Volatiles*

Bromodichloromethane
Bromomethane
Carbon Tetrachloride
Chlorobenzene
2-Chloro-1,3-butadiene
Chlorodibromomethane
Chloroethane
2-Chloroethyl vinyl ether
Chloroform
Chloromethane
3-Chloropropene
1,2-Dibromo-3-chloropropane
1,2-Dibromomethane
Dibromomethane
Trans-1,4-Dichloro-2-butene
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethylene
Trans-1,2-Dichloroethene
1,2-Dichloropropane
Trans-1,3-Dichloropropene
cis-1,3-Dichloropropene
Iodomethane
Methylene chloride
1,1,1,2-Tetrachloroethane
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Tribromomethane
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichloromonofluoromethane
1,2,3-Trichloropropane
Vinyl chloride

*Semivolatiles*

Bis(2-chloroethoxy)ethane
Bis(2-chloroethyl)ether
Bis(2-chloroisopropyl) ether
p-Chloroaniline
Chlorobenzilate
p-Chloro-m-cresol
2-Chloronaphthalene
2-Chlorophenol
3-Chloropropionitrile
m-Dichlorobenzene
o-Dichlorobenzene
p-Dichlorobenzene
3,3'-Dichlorobenzidine
2,4-Dichlorophenol
2,6-Dichlorophenol
Hexachlorobenzene
Hexachlorobutadiene
Hexachlorocyclopentadiene
Hexachloroethane
Hexachloropropene
Hexachloropropene
4,4'-Methylenebis(2-chloroaniline)
Pentachlorobenzene
Pentachloroethane
Pentachloronitrobenzene
Pentachlorophenol
Pronamide
1,2,4,5-Tetrachlorobenzene
2,3,4,6-Tetrachlorophenol
1,2,4-Trichlorobenzene
2,4,5-Trichlorophenol
2,4,6-Trichlorophenol
Tris(2,3-dibromopropyl)phosphate

*Organochlorine Pesticides*

Aldrin
alpha-BHC
beta-BHC
delta-BHC
gamma-BHC
Chlordane
DDD
DDE
DDT
Dieldrin
Endosulfan I
Endosulfan II
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Isodrin
Kepone
Methoxyclor
Toxaphene

*Phenoxyacetic Acid Herbicides*

2,4-Dichlorophenoxyacetic acid
Silvex
2,4,5-T

*PCBs*

Aroclor 1016
Aroclor 1221
Aroclor 1232
Aroclor 1242
Aroclor 1248
Aroclor 1254
Aroclor 1260
PCBs not otherwise specified

*Dioxins and Furans*

Hexachlorodibenzo-p-dioxins
Hexachlorodibenzofuran
Pentachlorodibenzo-p-dioxins
Pentachlorodibenzofuran
Tetrachlorodibenzo-p-dioxins
Tetrachlorodibenzofuran
2,3,7,8-Tetrachlorodibenzo-p-dioxin

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

V. In Part 270:

1. The authority citation of Part 270 continues to read as follows:

**Authority:** Secs. 1006, 2002, 3005, 3007, 3019, and 7004 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, 6925, 6927, 6939 and 6974).

### Subpart D—Changes to Permits

2. In § 270.42, paragraphs (o)(1) and (o)(2) are revised and paragraph (p) is added to read as follows:

**§ 270.42 Minor modifications of permits.**

* * * * *

(o) * * *

(1) The hazardous waste has been prohibited from one or more methods of land disposal under Part 268 Subpart C or RCRA section 3004;

(2) Treatment is in accordance with § 268.4 (if applicable), § 268.3, and:

(i) Treatment is in accordance with applicable standards established under § 268.41, § 268.42, or § 268.44; or

(ii) Where no treatment standards have been established, treatment renders the waste no longer subject to the applicable prohibitions set forth in § 268.32 or RCRA section 3004.

* * * * *

(p) Allow permitted facilities to change their operations to treat or store hazardous wastes subject to land disposal restrictions imposed by Part 268 or RCRA § 3004 provided such treatment or storage occurs in containers or tanks and the permittee:

(1) Requests a major permit modification pursuant to § 124.5 and § 270.41;

(2) Demonstrates in the major permit modification request that the treatment or storage is necessary to comply with the land disposal restrictions of Part 268 or RCRA section 3004; and

(3) Ensures that the treatment or storage units comply with the applicable Part 265 and part 268 standards pending final administrative disposition of the major modification request. The authorization to make changes conferred in this paragraph shall terminate upon final administrative disposition of the permittee's major modification request under § 270.41 or termination of the permit under § 270.43.

### Subpart G—Interim Status

3. In § 270.72(e), paragraph (e) is revised to read as follows:

**§ 270.72 Changes during interim status.**

* * * * *

(e) In no event shall changes be made to an HWM facility during interim status which amount to reconstruction of the facility. Reconstruction occurs when the capital investment in the changes to the facility exceeds fifty percent of the capital cost of a comparable entirely new HWM facility. Changes prohibited under this paragraph do not include changes to treat or store in containers or tanks hazardous wastes subject to land disposal restrictions imposed by Part 268 or RCRA section 3004, provided that such changes are made solely for the purpose of complying with Part 268 or RCRA section 3004.

## PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

VI. In Part 271:

1. The authority citation for Part 271 continues to read as follows:

**Authority:** Secs. 1006, 2002(a), and 3006 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 6926).

### Subpart A—Requirements for Final Authorization

2. Section 271.1(j) is amended by adding the following entry to Table 1 in chronological order by date of publication:

**§ 271.1 Purpose and scope.**

* * * * *

(j) * * *

TABLE 1.—REGULATIONS IMPLEMENTING THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

| Date of promulgation | Title of regulation | Federal Register reference | Effective date |
|---|---|---|---|
| * * * * * | | | |
| July 8, 1987 | Land disposal restrictions for California list wastes | 52 FR 25760 | July 8, 1987. |
| * * * * * | | | |

3. Section 271.1(j) is amended by changing the sixth line from the bottom in table 2 by adding the publication date and the FR page number to read as follows:

TABLE 2.—SELF-IMPLEMENTING PROVISIONS OF THE HAZARDOUS AND SOLID WASTE AMENDMENTS OF 1984

| Effective date | Self-implementing provision | RCRA citation | Federal Register reference |
|---|---|---|---|
| * * * * * | | | |
| July 8, 1987 | Land disposal restrictions for California list wastes | 3004(d) | July 8, 1987, 52 FR 25760 |
| * * * * * | | | |

[FR Doc. 87-15340 Filed 7-7-87; 8:45 am]
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