Environmental Protection Agency

40 CFR Parts 264, 265, 266, 268 and 271

[OSW-FR-88-011; SWH-FRL-3420-4]

Land Disposal Restrictions for First Third Scheduled Wastes

AGENCY: Environmental Protection Agency (EPA).

ACTION: Final rule.

SUMMARY: The Environmental Protection Agency (EPA) is today promulgating regulations implementing the congressionally mandated prohibitions on land disposal of hazardous wastes listed in 40 CFR 268.10. This action is taken in response to amendments to the Resource Conservation and Recovery Act (RCRA), enacted in the Hazardous and Solid Waste Amendments (HSWA) of 1984. Today's notice promulgates specific treatment standards and effective dates for certain so-called "First Third" wastes. In addition, the Agency is promulgating regulations implementing the land disposal restrictions for those First Third wastes for which EPA is not establishing a treatment standard.

Furthermore, today's rule establishes regulations that do not specifically involve First Third wastes (or do not apply exclusively to such wastes). These actions include modifications to the existing requirements for the "no migration" petition process and the rescission of the nationwide capacity variance for hazardous wastes (other than contaminated soils) containing halogenated organic compounds (HOCs) granted by the Agency in the July 8, 1987 rulemaking. The Agency is also amending the treatment standard applicable to certain California list HOC wastes to allow burning in industrial boilers and furnaces, and revising the treatment standard for methylene chloride in spent solvent wastewaters from the pharmaceutical industry. EPA also is amending 40 CFR 266.20 to require that most hazardous wastes used in a manner constituting disposal meet the applicable treatment standards for the prohibited hazardous waste that they contain as a condition of remaining exempt from other RCRA standards. Additionally, today's rule modifies portions of the land disposal restrictions framework.

EFFECTIVE DATE: This final rule is effective August 8, 1988, except for the modification to 40 CFR 268.5(h)(2), which becomes effective November 8, 1988.

ADDRESS: The official record for this rulemaking is identified as Docket Number F-88-LDR9-FFFFF and is located in the EPA RCRA Docket (located in the 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 make copies of the docket materials at a cost of $.15 per page.

FOR FURTHER INFORMATION CONTACT: For general information about this rulemaking contact the RCRA Hotline, Office of Solid Waste (OS-305), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (800) 424-9346 (toll free) or (202) 382-3000 in the Washington, DC metropolitan area. For information on specific aspects of this rule contact Stephen Weil, Mitch Kidwell or William Fortune, Office of Solid Waste (OS-333), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-4770. For specific information on treatment standards/BDAT, contact James Berlow or Larry Rosengrant, Office of Solid Waste (OS-322), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-7917. For specific information on capacity determinations/national variances, contact Jo-Ann Bassi, or Linda Malcolm, Office of Solid Waste (OS-322), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382-7917.

SUPPLEMENTARY INFORMATION:

PREAMBLE OUTLINE

PREAMBLE OUTLINE—Continued

PREAMBLE OUTLINE—Continued

PREAMBLE OUTLINE—Continued

POSSIBLE OUTLINE—Continued

I. Background

A. Summary of the Hazardous and Solid Waste Amendments of 1984 and the Land Disposal Restrictions Framework

1. Statutory Requirements

The Hazardous and Solid Waste Amendments (HSWA), enacted on November 8, 1984, prohibit the land disposal of hazardous wastes. Specifically, the amendments specify dates when particular groups of hazardous wastes are prohibited from land disposal unless "it has been demonstrated to the Administrator, to a reasonable degree of certainty, that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the wastes remain hazardous" (RCRA sections 3004 (d)(1), (e)(1), (g)(5), 42 U.S.C. 6924 (d)(1), (e)(1), (g)(5)). Congress established a separate schedule for restricting the disposal by underground injection of solvent- and dioxin-containing hazardous wastes, wastes referred to collectively as California list hazardous wastes (RCRA section 3004(f)(2), 42 U.S.C. 6924(f)(2)), and soil and debris resulting from CERCLA section 104 and 106 response actions and RCRA corrective actions when the soil and debris contains listed spent solvent and dioxin hazardous wastes.

The amendments also require the Agency to set "levels or methods of treatment, if any, which substantially diminish the toxicity of the waste or substantially reduce the likelihood of migration of hazardous constituents from the waste so that short-term and long-term threats to human health and the environment are minimized" (RCRA section 3004(m)(1), 42 U.S.C. 6924(m)(1)). Wastes that meet treatment standards established by EPA are not prohibited and may be land disposed. (The Agency can also grant a variance from a treatment standard by establishing a new treatability group and corresponding treatment standard for a specific waste following a successful petition demonstration). In addition, a hazardous waste that does not meet the treatment standard may be land disposed provided the "no migration" demonstration specified in sections 3004 (d)(1), (e)(1) and (g)(5) is made.

For the purposes of the restrictions, HSWA defines land disposal "to include, but not be limited to, any placement of * * * hazardous waste in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome formation, salt bed formation, or underground mine or cave" (RCRA section 3004(k), 42 U.S.C. 6924(k)).

Although HSWA defines land disposal to include injection wells, disposal of solvents, dioxins, and California list wastes in injection wells is covered on a separate schedule. The disposal of such wastes in deep wells is subject to the land disposal restrictions by August 8, 1988.

The land disposal restrictions are effective when promulgated unless the Administrator grants a national variance from the statutory date and establishes a different date (not to exceed two years beyond the statutory deadline) based on "the earliest date on which adequate alternative treatment, recovery, or disposal capacity which protects human health and the environment will be available" (RCRA section 3004(h)(2), 42 U.S.C. 6924(h)(2)). The Administrator may also grant a case-by-case extension of the statutory deadline for up to one year, renewable once for up to one additional year, when an applicant "demonstrates that there is a binding contractual commitment to construct or otherwise provide such alternative capacity but due to circumstances beyond the control of such applicant such alternative capacity cannot reasonably be made available by such effective date" (RCRA section 3004(h)(3), 42 U.S.C. 6924(h)(3)). A case-by-case extension can be granted whether or not a national capacity variance has been granted.

The statute also allows treatment of hazardous wastes in surface impoundments that meet certain minimum technological requirements (or certain exceptions thereto). Treatment in surface impoundments is permissible provided the treatment residues that do not meet the treatment standard(s), or applicable statutory prohibition levels where no treatment standards have been established, are "removed for subsequent management within one year of the entry of the waste into the surface impoundment" (RCRA section 3005(j)(11)(B), 42 U.S.C. 6925(j)(11)(B)).

In addition to prohibiting the land disposal of hazardous wastes, Congress also prohibited the storage of any waste which is prohibited from land disposal unless "such storage is solely for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal" (RCRA section 3004(j), 42 U.S.C. 6924 (j)).

2. Solvents and Dioxins

Effective November 8, 1986, HSWA prohibited land disposal (except by underground injection into deep wells) of dioxin-containing hazardous wastes numbered F020, F021, F022, and F023 [1] and solvent-containing hazardous wastes numbered F001, F002, F003, F004, and F005 listed in 40 CFR 261.31 (RCRA sections 3004 (e)(1), (e)(2), 42 U.S.C. 6924 (e)(1), (e)(2)). Effective August 8, 1988, the disposal of these wastes into deep injection wells is prohibited (RCRA section 3004 (f)(2), (f)(3), 42 U.S.C. 6924 (f)(2), (f)(3)). During the period ending November 8, 1988, this prohibition does not apply to disposal of solvent and dioxin contaminated soil or debris resulting from a response action taken under section 104 or 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) or a corrective action taken under Subtitle C of RCRA (RCRA section 3004(e)(3), 42 U.S.C. 6924 (e)(3)).

On November 7, 1986, EPA promulgated a final rule (51 FR 40572) implementing RCRA section 3004(e). This rule not only established the general framework for the land disposal restrictions program, but also established treatment standards for the F001–F005 solvent wastes and F020–F023 and F026–F028 dioxin-containing wastes. For a more detailed summary of

[1] The final dioxin rulemaking (50 FR 1978, January 14, 1985) contains three waste codes, F026, F027, and F028, not specified in the statute. The additional waste codes are a result of reorganizations and do not represent a substantive departure from the waste codes enumerated in section 3004(e)(1).

the land disposal restrictions framework, including those regulations promulgated in the November 7, 1986 final rule, refer to the April 8, 1988 proposal (53 FR 11742).

3. California List Wastes

Effective July 8, 1987, the statute prohibited further land disposal (except by deep well injection) of the following wastes listed or identified under section 3001 of RCRA.

(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/l.

(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/l;

(ii) cadmium and/or compounds (as Cd) 100 mg/l;

(iii) chromium (VI and/or compounds (as Cr VI)) 500 mg/l;

(iv) lead and/or compounds (as Pb) 500 mg/l;

(v) mercury and/or compounds (as Hg) 20 mg/l;

(vi) nickel and/or compounds (as Ni) 134 mg/l;

(vii) selenium and/or compounds (as Se) 100 mg/l; and

(viii) thallium and/or compounds (as Tl) 130 mg/l.

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

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

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

(RCRA sections 3004 (d)(1), (d)(2), 42 U.S.C. 6924 (d)(1), (d)(2)). Effective August 8, 1988, the underground injection into deep wells of these wastes is prohibited (RCRA section 3004 (f)(2), (f)(3), 42 U.S.C. 6924 (f)(2), (f)(3)). During the period ending November 8, 1988, there is no prohibition on the land disposal of California list wastes that are contaminated soil or debris resulting from a response action taken under section 104 or 106 of CERCLA or a corrective action taken under Subtitle C of RCRA (RCRA section 3004(e)(3), 42 U.S.C. 6924(e)(3)).

On July 8, 1987, EPA promulgated a final rule (52 FR 25760) implementing RCRA section 3004(d). This rule established treatment standards for California list wastes containing PCBs and certain HOCs, and codified the statutory prohibition on liquid corrosive wastes. The statutory prohibition is in effect for the California list wastes containing free cyanides, metals, and the California list dilute HOC wastewaters. For a more detailed summary of the land disposal restrictions framework, including the regulations and modifications promulgated in the July 8, 1987 rule, refer to the April 8, 1988 proposal (53 FR 11742).

4. Scheduled Wastes

The amendments required the Agency to prepare a schedule by November 8, 1986 for restricting the land disposal of all hazardous wastes listed or identified as of November 8, 1984 in 40 CFR Part 261, excluding solvent- and dioxin-containing wastes and California list wastes covered under the schedule set by Congress. The schedule, based on a ranking of the listed wastes that considers their intrinsic hazard and their volume, is to ensure that prohibitions and treatment standards are promulgated first for high volume hazardous wastes with high intrinsic hazard before standards are set for low volume wastes with low intrinsic hazard. The statute further requires that these determinations be made by the following deadlines:

(A) At least one-third of all listed hazardous wastes by August 8, 1988.

(B) At least two-thirds of all listed hazardous wastes by June 8, 1989.

(C) All remaining listed hazardous wastes and all hazardous wastes identified as of November 8, 1984, by one or more of the characteristics defined in 40 CFR Part 261 by May 8, 1990.

If EPA fails to set a treatment standard by the statutory deadline for any hazardous waste in the first third or second third of the schedule, the waste may be disposed in a landfill or surface impoundment provided "such facility" is in compliance with the minimum technological requirements specified in RCRA section 3004(o) (RCRA section 3004(g)(6)). [Note.—In today's final rule, EPA is interpreting the term "such facility" in 3004(g)(6) to refer to the individual surface impoundment or landfill unit]. In addition, prior to disposal, the generator must certify to the Administrator that he has investigated the availability of treatment capacity and has determined that disposal in such landfill or surface impoundment is the only practical alternative to treatment currently available to the generator. This restriction on the use of landfills and surface impoundments applies until EPA sets a treatment standard for the waste or until May 8, 1990, whichever is sooner. Other forms of land disposal are not similarly restricted and may continue to be used for disposal of untreated wastes until EPA promulgates a treatment standard or until May 8, 1990, whichever is sooner. If the Agency fails to set a treatment standard for any scheduled hazardous waste by May 8, 1990, the waste is automatically prohibited from all forms of land disposal after that time unless the waste is the subject of a successful "no migration" demonstration (RCRA section 3004(g)(5), 42 U.S.C. 6924(g)(5)). (Also, the May 8, 1990 effective date may be extended under RCRA section 3004(h)(2) for certain Second Third and Third Third wastes, and until August 8, 1990 for certain First Third wastes.) In a May 28, 1986 final rule (51 FR 19300), EPA published the schedule for setting treatment standards for the listed and identified hazardous wastes. All wastes that are identified as hazardous by characteristic are scheduled in the Third Third, as required by RCRA. This schedule is incorporated in 40 CFR 268.10, 268.11, and 268.12.

Today's final rule promulgates the conditions under which wastes included in the first one third of the schedule of restricted hazardous wastes listed in 40 CFR 268.10 (First Third) may continue to be land disposed. This rule finalizes the April 8, 1988 (53 FR 17578) and May 17, 1988 (53 FR 15000) proposed rulemakings.

5. Newly Identified and Listed Wastes

RCRA requires the Agency to make a land disposal prohibition determination for any hazardous waste that is newly identified or listed in 40 CFR Part 261 after November 8, 1984 within six months of the date of identification or listing (RCRA section 3004(g)(4), 42 U.S.C. 6924(g)(4)). However, the statute does not provide for an automatic prohibition of the land disposal of such wastes if EPA fails to meet this deadline.

B. Summary of the Proposed Rules

1. Proposed Approach

In the interest of allowing the regulated community the most time possible for notice and comment on the Agency's approach to implementing RCRA section 3004(g), EPA believed it was prudent to propose today's rule in two separate notices. The first proposal, April 8, 1988 (53 FR 11742), proposed treatment standards and effective dates for 24 listed hazardous wastes. This proposal also presented and solicited comment on the Agency's approach to implementing the "soft hammer" provisions pursuant to RCRA section 3004(g)(6), which are applicable to First Third wastes for which EPA has not set

treatment standards or effective dates. If EPA fails to set treatment standards for any Second Third wastes by June 8, 1989, the "soft hammer" provisions will also be applicable. Amendments to the "no migration" petition process and to certain of the framework regulations, were also proposed in the April 8 notice.

The second proposal, May 17, 1988 (53 FR 17578), proposed treatment standards and effective dates for 17 additional listed hazardous wastes. Also presented in the second proposal were new capacity determinations based on the 1987 National Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities. These new capacity determinations revised the effective dates proposed in the April 8, 1988 proposal for several waste codes, and also proposed to rescind certain national variances granted in previous rulemakings (November 7, 1986, 51 FR 40572; July 8, 1987, 52 FR 25760).

Today's rulemaking finalizes both the April 8 and May 17 proposals. The land disposal restrictions effective dates for First Third wastes which are disposed in deep injection wells are not addressed in this final rule, but rather, are being addressed in a separate rulemaking.

2. Applicability

In both the April 8, 1988 and May 17, 1988 proposals, EPA clarified the applicability of treatment standards to wastes derived from the treatment, storage or disposal of listed wastes and to mixtures of prohibited hazardous wastes or nonwaste matrices (such as soil). The Agency emphasized the following two points:

1. All of the residues resulting from treatment of the original listed wastes are likewise considered to be the listed waste by virtue of the derived-from rule contained in 40 CFR 261.3(c)(2). Consequently, all of the residues generated in the course of treatment would be prohibited from land disposal unless they satisfy the applicable treatment standard or meet one of the exceptions to the prohibition.

2. In general, treatment standards contain concentration levels for wastewaters and concentration levels for nonwastewaters (i.e., wastewaters and nonwastewaters are identified as separate treatability groups). These treatment standards apply to residuals resulting from treatment of the original prohibited waste. Thus, all solids resulting from treatment of a prohibited waste would have to meet the treatment standard for nonwastewaters. Likewise, wastewaters resulting from treatment (e.g., scrubber waters from incineration) would have to meet the wastewater treatment standards. EPA wishes to make clear that this approach is not meant to allow partial treatment only to change the applicable treatment standard.

In addition, the Agency clarified the applicability of the treatment standards to residues resulting from types of management other than treatment. Examples are contaminated soil or leachate derived from managing the waste. In these cases, the mixture is deemed to be the listed waste, either because of the derived-from rule, the mixture rule (40 CFR 261.3(a)(2)(iv)), or because the listed waste is contained in the matrix (see e.g., 40 CFR 261.3(d)(2), 40 CFR 261.33(d), RCRA section 3004(e)(3)). Thus, the prohibition for the particular listed waste applies to this type of waste.

3. Best Demonstrated Available Technologies (BDAT)

In the April 8 and May 17 proposals, the Agency defined the waste treatability groups by waste codes (generally separating the waste codes into "wastewater" and "nonwastewater" treatability groups) and identified the Best Demonstrated Available Technologies (BDAT) for each treatability group. Treatment standards applicable to the specific waste codes (and treatability groups) are based on the treatment performance levels achievable by the corresponding BDAT identified for each treatability group. Although treatment standards are generally expressed as concentration levels that represent the performance of BDAT, EPA wishes to clarify that any technology not otherwise prohibited (i.e., impermissible dilution) may be used to meet the applicable treatment standards. Specifically, compliance with the land disposal restrictions treatment standards is achieved by meeting the numerical performance standards established for each constituent. The specific technology (BDAT) upon which the standards are based does not need to be used (except when technologies are set as the standards, e.g. halogenated organic compounds (HOCs)).

In the April 8, 1988 **Federal Register** notice (53 FR 11742), incineration was proposed as BDAT for waste codes K015, K016, K018, K019, K020, K024, K030, K037, and K048–K052 (and the proposed treatment standards consequently were based upon the performance of that technology). Chromium reduction, followed by chemical precipitation and vacuum filtration was proposed as BDAT for K062. Solvent extraction followed by incineration of the extract and by steam stripping and activated carbon adsorption for the wastewater stream was proposed as BDAT for K103 and K104. High temperature metals recovery was proposed as BDAT for K061. For K071, acid leaching and chemical oxidation was proposed as BDAT for nonwastewaters, and sulfide precipitation and filtration was proposed as BDAT for wastewaters. Total recycle was proposed as BDAT for K069 wastes. EPA determined that the wastes K004, K008, K036, K073, and K100 are no longer being generated and disposed, and therefore, did not identify BDAT for these wastes.

In the May 17, 1988 proposal (53 FR 17578), stabilization was proposed as BDAT for waste codes F006 and K046. For waste codes K001 and K086 (solvent washes and sludges subcategory), BDAT was proposed as incineration followed by stabilization of nonwastewater residuals and chromium reduction followed by chemical precipitation for wastewater residuals. The proposed BDAT for nonwastewater forms of K022 was proposed as fuel substitution followed by metals stabilization and metals precipitation of scrubber water. Fuel substitution or incineration was the proposed BDAT for K083. EPA proposed rotary kiln incineration as BDAT for K087 and solicited information to support a conclusion that total recycling could be accomplished for some K087 subcategories. BDAT for K099 was proposed as chemical oxidation with chlorine. Incineration followed by stabilization of ash residues to immobilize the metals was the proposed BDAT for both K101 and K102. BDAT was proposed as thermal recovery for K106 nonwastewaters and sulfide precipitation followed by filtration for K106 wastewaters. The Agency determined that waste codes K021, K025, and K060, were no longer generated, and thus "No Land Disposal" was the proposed BDAT treatment standard. Waste codes K044, K045, and K047 also had "No Land Disposal" as the proposed treatment standard because open burning/open detonation was identified as treatment for these reactive wastes. Because open burning and open detonation are not considered to be land disposal provided that no reactive constituents remain after detonation (see 51 FR 40580), there would be no land disposal of a hazardous waste (see 40 CFR 261.3(a)(2)(iii)).

EPA also proposed to revise the treatment standard for methylene chloride in F001–F005 wastewaters from the pharmaceutical industry to be based on the performance of steam stripping. Furthermore, in the May 17, 1988

proposal, EPA solicited additional comment on an approach that would amend the § 268.42(c)(2) treatment standards to allow burning of California list HOCs in industrial boilers and furnaces (as well as incinerators) in accordance with applicable regulatory requirements.

4. Waste Analysis Requirements

In the April 8, 1988 proposal, EPA presented its approach to waste analysis (see 53 FR 11764). Since treatment standards represent the performance level of BDAT applied to a particular waste, the Agency's approach was to require waste analysis that best measures what the BDAT treatment technology is intended to accomplish (even though use of the identified BDAT is not required). For example, if incineration (a destruction technology) is identified as BDAT, then the treatment standards are expressed as total constituent concentration levels (i.e., waste analysis is a total composition analysis, rather than an extract analysis) to evaluate whether destruction occurs optimally. Similarly, if stabilization (an immobilization technology) is identified as BDAT, then the treatment standards are expressed as constituent concentration levels in a Toxicity Characteristic Leaching Procedure (TCLP) (see 40 CFR Part 268 Appendix I) extract to reflect whether immobilization has been optimized.

The Agency also clarified that in cases where a combination of both a destruction or removal technology and a stabilization or fixation technology is identified as BDAT, then both analyses must be employed to monitor compliance with the treatment standards. In such cases, neither test alone is designed to ensure that the technology-based treatment standards (which would be expressed as both total composition and TCLP extract concentration levels) have been met.

5. Nationwide Variance from the Effective Date

Due to the lack of sufficient alternative protective treatment or recovery capacity to treat certain of the wastes to the applicable treatment standards, a national capacity variance was proposed for several of the waste codes addressed in the April 8 and May 17 proposals. This determination was based on a comparison of the volumes of wastes requiring treatment to the amount of treatment capacity available for such treatment. Although EPA usually does not require that BDAT technologies be used to meet the applicable treatment standards (unless the technology is specified as the treatment standard for the waste in § 268.42), capacity figures are derived based on technologies identified as BDAT, to ensure that adequate treatment is available to meet the treatment standards.

In the April 8 notice, EPA proposed a two-year national variance from the effective date for K016, K018, KO19, K020, K024, K030, K037, K048–K052, K061, K071, K103 and K104. However, the Agency also noted that new capacity determinations would be presented (and thus, these proposed variances would be revisited) in a supplemental proposal (i.e., the May 17 proposal).

In the May 17 notice, EPA proposed a two-year national variance from the effective date for one additional waste code, K106, and for certain contaminated soils (First Third) that require solids incineration capacity. Also, the Agency revised the April 8 proposal, and proposed not to grant a variance for K016, K018, K019, K020, K024, K030, K037, K103, and K104. Therefore, the First Third wastes for which a two-year national variance from the effective date was proposed are K048, K049, K050, K051, K052, K061, K071 and K106. In addition, the May 17 notice proposed a two-year capacity variance for certain contaminated soils that require solids incineration capacity. The variance was proposed for soils contaminated with First Third wastes, and soils from RCRA and CERCLA response actions contaminated with solvents, dioxins and California list wastes.

Additionally, the May 17 proposal revisited certain national variances granted by previous rulemakings (i.e., November 7, 1986, 51 FR 40572; and July 8, 1987, 52 FR 25760). In light of new capacity data indicating that sufficient liquid incineration capacity exists to incinerate or thermally combust certain wastes, EPA proposed to rescind the variances granted for the following wastes:

(a) Spent solvent wastes identified as EPA Hazardous Waste Nos. F001–F005 generated by small quantity generators producing from 100–1,000 kilograms of hazardous waste per month;

(b) Solvent waste generated from section 104 or 106 response actions under CERCLA or any RCRA corrective action, except where the waste is contaminated soil or debris; and

(c) Hazardous wastes containing HOCs in concentrations greater than or equal to 1,000 mg/l, except for California list HOC contaminated soils.

6. "Soft Hammer" Requirements

In the April 8 proposal, the Agency presented its approach to implementing RCRA section 3004(g)(6), the so-called "soft hammer" provision. This "soft hammer" provision applies to First Third (and Second Third) wastes for which EPA fails to set treatment standards and effective dates by the statutory deadlines (for First Third wastes, this deadline is August 8, 1988), and applies until May 8, 1990 or until EPA promulgates treatment standards, whichever is sooner.

EPA interpreted the statutory provision to apply only to such First Third wastes when they are disposed in landfill and surface impoundment units, and further interpreted the statutory language to require that such disposal units must meet the minimum technological requirements of RCRA section 3004(o) (double liner, leachate collection system, and ground water monitoring, or equivalent performance as provided in RCRA section 3004(o)(2)). The Agency's approach to the "soft hammer" provisions required that the generator (or owner or operator) certify that there is no treatment practically available that meaningfully reduces toxicity or mobility of the waste and that, therefore, disposal of these wastes in a landfill or surface impoundment unit that meets the minimum technological requirements of section 3004(o) is the only practical alternative. This certification would also apply to those "soft hammer" wastes for which treatment was practically available and which have been treated to reduce toxicity or mobility and for which no further treatment is practically available; thus, disposal of the treatment residuals in a landfill or surface impoundment unit that meets the minimum technological requirements is the only alternative.

7. "No Migration" Petition Requirements

The April 8 proposal also included amendments to 40 CFR 268.6, the "no migration" petition process. The Agency did not present its interpretation of the statutory "no migration" language of RCRA section 3004 (d), (e), and (g) for surface disposal units; this interpretation will be presented in a separate rulemaking. The amendments presented in the April 8 notice did, however, propose additional requirements relating to:

(a) Documenting compliance with other applicable laws;

(b) Submitting monitoring plans;

(c) Procedures to be followed if there are changes in operating conditions after an exemption is granted; and

(d) Procedures to follow upon detection of hazardous constituent migration.

8. Comparative Risk Assessment

In both the April 8 and May 17 proposals, EPA presented a change in its approach to using comparative risk assessment as a decision tool in the determination of "available" treatment technologies. In the development of regulations restricting the land disposal of certain spent solvent and dioxin-containing wastes (November 7, 1986 final rule) and California list wastes (July 8, 1987 final rule), comparative risk assessments were conducted to ensure that technologies which presented greater risk than land disposal of untreated wastes were not considered in identifying BDAT. These analyses did not affect the determinations of whether a treatment was considered "available".

Upon further consideration of the existing comparative risk analysis, EPA decided not to utilize this assessment to determine "available" technologies in the First Third proposals. EPA did, however, present the possibility of conducting risk analyses in the future to distinguish between the overall degree of risk posed by alternative treatment technologies and to make determinations concerning the "best" technology based on net risk posed by the alternative technologies.

9. Modifications to the Framework

In both the April 8 and May 17 notices, the Agency proposed several modifications to the existing framework for the land disposal restrictions found in 40 CFR Part 268. EPA's implementation of the "soft hammer" provision, which restricts the disposal in landfills and surface impoundments of First Third wastes for which EPA has not set a treatment standard, was proposed in 40 CFR 268.8. Additional regulatory amendments were proposed to account for the First Third wastes, and especially, "soft hammer" wastes.

EPA also proposed to amend the recordkeeping requirements of § 268.7. The amendments would require storage facilities to be brought into the recordkeeping system, and also require generators to keep copies of the notices, certifications, and waste analyses that are associated with each shipment of restricted wastes. These changes help to ensure that a restricted waste can be tracked from the point of generation to its ultimate destination. Additionally, the Agency proposed to set a five-year limitation on the time period that such records are required to be retained by the generator.

In the April 8 proposal, EPA proposed changes to the regulatory language in § 268.6 concerning "no migration" petitions that reflect the new requirements presented in the April 8 preamble. In the May 17 proposal, EPA proposed amendments (based on recent capacity data) to certain variances granted in previous rulemakings. The Agency also proposed certain other relatively minor changes to the framework provisions.

II. Summary of Today's Final Rule

A. Applicability

Today the Agency is promulgating treatment standards and effective dates for only certain First Third wastes (i.e., those hazardous wastes listed in 40 CFR 268.10, promulgated in May 28, 1986 (51 FR 19300) pursuant to RCRA section 3004(g)). For those wastes listed in § 268.10 for which EPA does not establish treatment standards or effective dates, the Agency is promulgating regulations to allow for continued land disposal in § 268.8. These so-called "soft hammer" provisions (discussed in detail in section III.C. of today's preamble) apply until May 8, 1990, or until treatment standards or extensions to the effective date are promulgated, whichever is sooner. On May 8, 1990, there is an automatic prohibition on the land disposal of hazardous wastes listed or identified prior to the enactment of HSWA. [Note.—Today's rule does not establish treatment standards for any of the P- or U-list wastes in § 268.10. However, certain of these wastes may be subject to the California list halogenated organic compounds treatment standards, once the standards become effective.]

Also, this rule clarifies the relationship of the California list final rule (July 8, 1987, 52 FR 25760) to First Third wastes (see section III. E.). In addition, this rule clarifies the applicability of Part 268 Subpart D treatment standards to "derived-from" wastes and waste mixtures (see section III. A. 4.).

In addition, the Agency notes that the treatment standards it is promulgating today are not applicable to First Third wastes that are disposed by deep-well injection. (See RCRA section 3004(g)(5) authorizing EPA to prohibit "one or more methods of land disposal" of scheduled hazardous wastes; in this rulemaking, EPA is prohibiting disposal in surface units of most of the wastes in the first third of the schedule; EPA will address disposal by deep-well injection in a later rulemaking.) Wastes that are disposed by deep-well injection are regulated under 40 CFR Part 148, and the applicability of today's 40 CFR Subpart D treatment standards to such wastes will be addressed in a separate rulemaking. Until that time, First Third wastes disposed by deep-well injection are subject to the "soft hammer" provisions of § 268.8.

B. Waste Analysis and Recordkeeping Requirements

The Agency is today promulgating the approach to waste analysis—what to analyze to evaluate the performance of the treatment technology—was proposed. Basically, where BDAT is a destruction or removal technology, waste analysis that is most appropriate for measuring such destruction or removal is required—i.e., total waste analysis. Similarly, where BDAT is identified as an immobilization technology (e.g., stabilization), waste analysis that most appropriately measures mobilization is required—i.e., analysis of a waste extract. In cases where both technologies are identified as BDAT, both types of waste analyses are required. For a more detailed discussion, see section III. B.

In addition, the Agency is today promulgating a 5-year record retention requirement, as proposed in the May 17, 1988, **Federal Register** notice. This discussion is also included in section III. B. of today's preamble.

C. Treatment Standards and Effective Dates

Today's final rule establishes treatment standards and effective dates for many First Third wastes. In section III. A., the Agency identifies the waste treatability groups by waste codes and identifies the Best Demonstrated Available Technology (BDAT) for each waste code. Treatment standards applicable to each treatability group are based on the performance levels achievable by the corresponding BDAT identified for each treatability group. The Agency strongly reiterates that any technology not otherwise prohibited (i.e., impermissible dilution) may be used to meet the concentration based treatment standards.

Also, EPA is promulgating amendments to the existing treatment standards for wastewaters containing methylene chloride (as a spent solvent) generated by the pharmaceutical industry, and for California list halogenated organic compounds. See section III. A. for further discussions.

Effective dates are established based on the Agency's determination of whether sufficient protective treatment (or recovery) capacity is available to treat the restricted wastes. Although the regulated community is not required to treat restricted wastes with the technology identified as BDAT (where

treatment standards are expressed as concentration levels), the Agency generally bases its capacity determination on the availability of this technology, thus helping to ensure that adequate treatment capacity is currently available to treat wastes in compliance with the applicable treatment standard. For a detailed discussion of capacity, refer to section III. H.

D. "Soft Hammer" Requirements

Section III. C. of today's preamble discusses the requirements applicable to those First Third wastes for which treatment standards or effective dates have not been promulgated. Basically, the generator must demonstrate and certify that there is no practically available treatment that reduces toxicity or mobility of the waste and that disposal of these wastes in a landfill or surface impoundment unit that meets the minimum technological requirements of RCRA section 3004(o) (double liner, leachate collection system, and ground water monitoring) is the only practical alternative. If treatment is practically available, the generator must certify that his waste is being treated by the best treatment (i.e., the treatment which provides the most environmental benefit) practically available, as indicated in his demonstration. The residuals from treatment of "soft hammer" wastes remain "soft hammer" wastes, and if disposed in a landfill or surface impoundment unit, must be placed in a unit meeting the minimum technological requirements of 3004(o) (including section 3004(o)(2) if an appropriate demonstration can be made).

E. Reinterpretation of RCRA Section 3004(h)(4)

As discussed in section III. D., the Agency is promulgating its reinterpretation of RCRA section 3004(h)(4) as presented in the April 8, 1988, proposal. This interpretation effects the disposal of restricted wastes which have been granted an extension to the effective date (either a national capacity variance or a case-by-case extension) in a landfill or surface impoundment. Under the interpretation promulgated today and effective on November 8, 1988 (during the interim period, the original interpretation applies), if such restricted wastes are disposed in a landfill or surface impoundment unit, the individual landfill or surface impoundment *unit* must meet the minimum technological requirements of RCRA section 3004(o).

F. "No Migration" Requirements

As discussed in section III. F., the Agency is today promulgating amendments to 40 CFR 268.6, the "no migration" petition process. As proposed on April 8, 1988, these amendments cover the demonstrations required in the petition and certain other requirements on the owner or operator of a waste management unit that is subject to a "no migration" variance.

G. Nonrulemaking Procedures for Site-Specific Variances From the Treatment Standard

The Agency is promulgating amendments to the existing 40 CFR 268.44 to modify the procedures for obtaining site-specific variances from the treatment standard. This action is taken in response to commenters' request for a more streamlined procedural mechanism for obtaining a variance from the treatment standard. EPA believes that, in certain cases, informal rulemaking are neither required nor warranted, and that a more streamlined procedure for obtaining a variance from the treatment standard is justified. This approach is discussed in more detail in section III. K. of today's preamble.

III. Detailed Discussion of Today's Final Rule

A. Determination of Treatability Groups and Development of Treatment Standards

1. Waste Treatability Groups

For the First Third wastes, EPA used the individual listed waste codes as the starting point for developing waste treatability groups. In cases where EPA believed that wastes represented by different codes could be treated to similar concentrations using identical technologies, the Agency combined the codes into one treatability group. EPA based its initial treatability group decisions primarily on whether the waste codes were generated by the same or by similar industries from similar processes. EPA believes that such groupings can be made because of the high likelihood that the waste characteristics which affect treatment performance will be similar for these different waste codes. This conclusion is explained in more detail in the relevant background document for each particular waste code.

The treatment standards in today's rule generally contain concentrations presented constituent by constituent for "wastewaters" and for "nonwastewaters". The treatment standards apply to the wastes as generated as well as all of the residual wastes generated in treating the original prohibited waste. See RCRA section 3004(m)(2) indicating that treatment standards apply both to wastes and to treatment residuals therefrom. Thus, for example, all K101 and K102 wastes (including the solid residuals generated from treating K101 and K102) would have to meet the treatment standards for nonwastewaters and all wastewaters (including those generated from treating these wastes) would have to meet the treatment standards for wastewaters. For the purpose of defining the applicability of the treatment standard in this rule, the Agency defines wastewaters as wastes that contain less than 1% total organic carbon (TOC) and less than 1% total suspended solids (i.e., total filterable solids) except for those wastes identified as F001, F002, F003, F004, and/or F005 where the Agency indicated a different definition of the solvent wastewater treatability group (see 51 FR 40579 for the definition of a solvent-water mixture). Those wastes that do not meet this definition are considered to be nonwastewaters. A facility is not allowed to dilute or perform partial treatment on a waste in order to switch the applicability of a nonwastewater standard to a wastewater standard or vice versa.

However, EPA wishes to emphasize that where a waste that consists primarily of water (such as a leachate) is classified as a nonwastewater solely by its filterable solids content (i.e., total suspended solids (TSS) levels), the waste can be subjected to dewatering techniques to remove the filterable solids. Treatment standards for nonwastewaters are then applicable to the filtered solids. The filtrate is then subject to the treatment standards for the wastewaters, assuming that the filterable solids content has been reduced to less than one percent by weight. These standards are applicable if the wastes are to be placed in land disposal units, according to the appropriate provisions of today's rule.

2. Identification of BDAT

A detailed discussion of the Agency's general methodology for establishing BDAT standards is provided in 51 FR 40572 (November 7, 1986). Section III. A. of today's preamble discusses the specific application of the methodology to the First Third wastes, and provides a summary of some of the principal elements of the BDAT methodology.

Consistent with the general methodology, EPA first determined which technologies were

"demonstrated" for a particular treatability group. EPA then screened the available treatment data for a particular treatability group with regard to the design and operation of the system, the quality assurance/quality control analyses of the data, and the analytical tests used to assess treatment performance. This screening step is consistent with EPA's promulgated approach in the November 7, 1986, rulemaking for solvent waste codes F001–F005. Also, this screening step recognizes the fact that different performance measures may be appropriate depending on the technology used (e.g., total constituent analysis for destruction of organics by incineration technologies versus TCLP analysis for immobilization of metal constituents by stabilization technologies). EPA was able to emphasize the design and operation of the treatment system for the First Third wastes because its field tests have been modified to gather detailed data to support these analyses.

After the initial screening test, EPA adjusted all treated data values based on the analytical recovery obtained in order to take into account analytical interferences associated with the chemical makeup of the treated sample. For example, a treated residual data point of 0.2 mg/kg with an analytical recovery of 50 percent would be adjusted to 0.4 mg/kg.

After adjusting the data, EPA then averaged the performance levels achieved for the various treatment operations (for which the Agency had complete data) and compared the mean values using the analysis of variance test (ANOVA), as described in the November 7, 1986, preamble (see 51 FR 40591), to determine if one technology performed significantly better. In general, where one technology performed better, it was determined to be "Best". If this technology was also determined to be "Available" (i.e., it is commercially available and provides substantial treatment), then the technology was selected as the Best Demonstrated Available Technology (BDAT). In cases where EPA only has data on one technology, but is aware of other demonstrated technologies, EPA used its engineering judgment to determine that these other technologies would not be expected to significantly improve the level of performance.

3. Compliance with Performance Standards

Treatment standards promulgated in today's rule are performance standards reflecting the performance achieved by "BDAT". As such, compliance with these standards requires only that the treatment level be achieved prior to land disposal. It does not require the use of any particular treatment technology. While dilution of the waste as a means to comply with the standard is prohibited, wastes that are generated in such a way as to naturally meet the standard can be land disposed without treatment. With the exception of treatment standards that prohibit land disposal, all treatment standards proposed today are expressed as concentration levels either in the waste (§ 268.43) or in an extract of the waste (§ 268.41).

It is important to note that several commenters misinterpreted EPA's position on compliance with the performance standards and the identification of a technology as the basis for BDAT. The specific technologies identified as the basis for BDAT for each waste code are simply those technologies which EPA utilized to develop the waste-specific performance standards. A comparable methodology exists under the Clean Water Act in establishing BPT, BAT, PSES, NSPS, and PSNS effluent limitation guidelines and standards. Any technology or combination of technologies not otherwise prohibited (i.e., impermissible dilution) can be used to achieve these standards. EPA has not, in this First Third final rule, prohibited the use of any other applicable treatment or recycling technology unless that technology is considered to be land disposal.

In today's rulemaking, EPA has used both total constituent concentration and TCLP analyses of the treated waste as measures of technology performance. For all organic and cyanide constituents, EPA is basing the treatment standards on the total constituent concentration found in the treated waste. EPA based its decision on the fact that technologies exist to remove or destroy these constituents. Accordingly, the best measure of performance would be the extent to which the various organic compounds have been removed or destroyed (as measured by the total amount of constituent remaining after treatment). The legislative history emphasizes the desirability of actually destroying organic hazardous constituents [Vol. 130, Cong. Rec. S9179 (daily ed. July 25, 1984)]. [Note.—EPA's land disposal restrictions for solvent waste codes F001–F005 and dioxin waste codes F020–F023, F026–F028 (51 FR 40572) use the TCLP value as a measure of performance. At the time that EPA promulgated the treatment standards for the solvents and dioxins, useful data were not available on total constituent concentrations in treated residuals and, as a result, the TCLP data were considered to be the best measure of performance.] Where the Agency has based treatment standards on removal/recovery or destruction, whether metals or organics, the treatment standards thus are based on total waste analysis.

In cases where treatment standards for metals are based on stabilization, EPA is using the TCLP as the measure of the treatment technology's performance. The Agency's rationale is that stabilization is meant to chemically and physically minimize the mobility of the metals in the waste and that the TCLP test is specifically designed to measure the mobility of the hazardous constituents. For wastes where treatment standards are based on sequential treatment processes due to the presence of organics and metals, the waste must meet both total constituent concentrations for organics and TCLP concentrations for metals prior to land disposal.

In both the April 8, 1988 and the May 17, 1988 proposed rules for the First Third wastes, the proposed treatment standards were reported with a varying number of significant figures. The final standards in today's rule have been adjusted and rounded off to a maximum of two significant figures (in some cases, a particular standard may have only one significant figure). EPA did not intend that any greater accuracy be achieved other than that which is attainable through the standard analytical methods employed to develop the treatment data.

4. Applicability of Treatment Standards to Mixtures and Other "Derived-From" Residues

In a number of instances in today's rule, BDAT consists of an operation or series of treatment operations which generate additional waste residues. For example, BDAT for wastes K101 and K102 is based on incineration followed by metals (ash) stabilization. Incineration generates two residues requiring treatment, namely the ash residues and the scrubber waters. Treatment of the scrubber waters (to remove metals) may generate further additional inorganic residues which also may require stabilization. Ultimately, these additional wastes may require land disposal and must, therefore, meet the same standards as the stabilized ash residues. With respect to these additional wastes, the Agency wishes to emphasize that all of the residues from treatment of the original listed wastes are considered to be the listed waste by virtue of the derived-from rule contained

in 40 CFR Part 261.3(c)(2). Consequently, all of the wastes generated in the course of treatment would be prohibited from land disposal unless they satisfy the applicable treatment standard or meet one of the exceptions to the prohibition.

The Agency has not performed tests in all cases on every waste that can result from every part of the treatment train. However, the Agency's treatment standards are based on treatment of the most concentrated form of the waste. Consequently, the Agency believes that the less concentrated wastes generated in the course of treatment can be treated to these standards.

Today's treatment standards also apply to waste mixtures; i.e., mixtures of different waste streams. As the Agency has repeatedly stated in previous preambles, the more stringent standard applies in cases where a waste mixture has two or more applicable treatment standards. The Agency believes that such wastes can be treated to the meet the treatment standards applicable to the underlying wastes for several reasons. Waste mixtures commonly result in a waste in which individual constituents are less concentrated than in the original wastes. Also, in establishing treatment standards, the Agency allows for a reasonable amount of variability in the generation and treatment of the waste. Finally, while EPA believes that waste mixtures can be treated to meet the treatment standards, the rules do contain a procedure that allows a petitioner to gain a variance from the treatment standard by demonstrating that his waste cannot be treated to the level specified in the rule (see 40 CFR 268.44). To date, the Agency has not received a petition for such a variance, indicating that the treatment standards currently in effect are achievable.

The Agency, however, has determined that one class of waste mixtures—mixed hazardous/radioactive wastes—should not be included in the First Third and is amending § 268.12 (the Third Third) to move such wastes to the final third of the scheduled wastes. Therefore, these wastes will not be prohibited from land disposal until May 8, 1990. The Agency is taking this action based on the relatively small volumes of such wastes being generated; while the individual hazardous wastes may be generated in large volumes, the mixed hazardous/radioactive wastes are not. The Agency notes that this action only affects First Third wastes; spent solvents, dioxins and California list wastes that are mixed with radioactive wastes are subject to the applicable treatment standards when the standards are effective. [Note.—As discussed in section III. C. 3. a., the Agency believes that the schedule is absolutely committed to its discretion, and that the schedule of prohibited wastes therefore can be amended without notice and comment.]

EPA discussed in detail in the May 17, 1988, preamble the principle that residues from managing listed wastes, or that contain listed wastes, are covered by the prohibition for the listed waste (53 FR 17586). EPA made the following points:

(1) Hazardous waste listings are retroactive, so that once a particular waste is listed, all wastes meeting that description are hazardous wastes no matter when disposed. (As discussed below, this does not mean that such wastes are necessarily subject to Subtitle C regulation, only that they are hazardous wastes.) For example, if on August 9, 1988, EPA were to list distillation bottoms from production of X as a hazardous waste, all such distillation bottoms would be hazardous wastes, regardless of when they are or were generated. They are the thing that is listed.

(2) Residues derived from treating, storing, or disposing of these wastes are therefore also hazardous by virtue of the derived-from rule (§ 261.3(c)(2)), the mixture rule, or in some cases, because the waste itself is still found in the matrix (see § 261.3(d)(2)).

(3) Consequently, for purposes of the land disposal restrictions program, residues from managing First Third wastes, listed California list wastes, and spent solvent and dioxin wastes are all considered to be subject to the prohibitions for the underlying listed hazardous wastes.

Public comment centered on the implications of these principles with respect to management of leachate that derives from management of listed hazardous wastes. The Agency indicated that leachate could be affected by these principles: The derived from-rule explicitly mentions leachate as a type of derived-from residue that is covered by that rule, and since the statute includes "leaking" within the definition of "disposal", leachate leaking from listed wastes is therefore derived from the disposal of these wastes. As explained more fully below, however, certain of the commenters' concerns regarding leachate (for example, implications for permitting of inactive or subtitle D disposal units) appear to be misplaced.

Commenters also argued that in many cases, leachate could not be treated to the BDAT treatment levels because it is a different type of waste from the one on which the treatment standards were based. Commenters submitted certain data to support these assertions. Commenters also made the point that since leachate can contain all or most of the listed waste codes, and the Agency has indicated that waste matrices containing a number of prohibited wastes must be treated to meet the most stringent standard for every waste contained in the matrix, it would be hard to design a treatment system for leachate since it would not be clear what the ultimate treatment standard would be until EPA finishes developing treatment standards for all of the listed hazardous wastes. A variation of this comment was that treatment standards for different wastes contributing to leachate could be incompatible, making it impossible to treat all constituents to the applicable treatment standards. Commenters also stated that EPA had not accounted for treatment of leachate in its capacity estimates. A number of commenters made the further point that, especially with respect to subtitle D non-hazardous waste units, EPA's reading tended to penalize persons voluntarily collecting and treating leachate who had kept accurate historic records of what wastes went into the disposal unit. Finally, several commenters suggested that leachate should be viewed as a separate treatability group and that the Agency should develop separate treatment standards for it.

EPA first addresses those comments which disputed the Agency's interpretation of its own rules. The Agency will then address those comments questioning the applicability to leachate and other derived-from wastes of treatment standards based upon treatment of the waste from which the waste is derived.

a. *Retroactivity of Waste Listings.* A few commenters disputed the Agency's reading that hazardous waste listings are retroactive; that is, all wastes meeting the listing description are hazardous regardless of when they were disposed. EPA believes this point to be nearly self-evident: a waste either does or does not match a listing description. The time at which a waste was disposed does not affect what that waste is. Spent solvent still bottoms disposed of in 1979 (before Agency action listing these wastes as hazardous) are as much spent solvent still bottoms as those disposed in 1981 (after the listing took effect).

In addition, there are a whole series of statutory provisions that give retroactive application to hazardous waste listings. Section 103(c) of CERCLA, enacted in

November 1980 and implemented by rule in April 1981, provides that:

> (A)ny person who owns or operates or who at the time of disposal owned or operated * * * a facility at which [hazardous wastes identified or listed under RCRA section 3001] are or have been stored, treated, or disposed of shall, unless such facility has a permit issued under subtitle C of [RCRA], notify the Administrator * * * of the existence of such facility. * * * 42 U.S.C. 9603(c).

This language indicates that wastes that have been disposed in inactive facilities are still RCRA hazardous wastes once they are identified or listed, and that owners and operators of the facilities where the hazardous wastes had been disposed are required to notify the Agency of the wastes' existence. In fact, by the terms of the statute, the provision applies *only* to hazardous wastes at inactive facilities—facilities with the waste which ceased managing the waste before it was identified or listed—because any facility with interim status or a permit is explicitly exempted from the CERCLA notification requirement. EPA's implementation of these rules followed this literal statutory language and thus required all inactive facilities still holding hazardous waste that the Agency had since identified or listed to notify EPA (46 FR 22146, 22149; April 25, 1981). Thus, EPA and Congress indicated that the Agency's listing regulations applied retroactively to hazardous wastes in inactive units, i.e., to units that ceased active management before the effective date of the subtitle C regulations.

EPA, in its May 17, 1988 notice, also cited RCRA sections 3004 (d)(3) and (e)(3) as further support for the proposition that hazardous waste listings apply to wastes whose management ceased before the date of the listing. These provisions provide that contaminated soil and debris that contain listed spent solvent or dioxin-containing hazardous wastes (or certain other wastes mentioned in section 3004(d)(2)) generated by a response action under section 104 or 106 of CERCLA, or by corrective action required under RCRA section 3004(u), remain subject (on a slower timetable) to the land disposal restrictions provisions. RCRA section 3020(b) is a similar provision. It provides that groundwater that is contaminated with hazardous waste generated by a CERCLA response or a RCRA corrective action is not subject to an otherwise-applicable prohibition on disposal in certain types of underground injection wells (provided that the contaminated groundwater is managed in accordance with certain specified standards).

Commenters argued that these provisions do not define what is a hazardous waste and therefore do not show that listed wastes are necessarily affected by these provisions. These provisions were added to the statute so as not to impede the pace of certain ongoing cleanup actions (See S. Rep. No. 284, 98th Cong. 2d Sess. 21). Most of the wastes from these cleanup actions were deposited at the sites before 1980. For example, all of the dioxin-containing wastes at the Missouri dioxin sites were deposited before 1980 (well before these wastes were listed in 1985). EPA believes that the obvious reading of these provisions is that Congress considered the wastes being removed from these actions to be listed wastes—the dioxin-containing wastes at the Missouri sites are good examples—and therefore adjusted the land disposal restrictions effective date for these wastes accordingly (or in the case of section 3020(b), accommodated certain types of cleanups involving reinjection of hazardous wastes). The Agency does not believe it makes sense to assume, as the commenters did, that these provisions apply only to the small percentage of CERCLA and corrective action response wastes that exhibit a RCRA characteristic or are listed by name (i.e., "leachate from Missouri dioxin sites"). (One commenter stated mistakenly that EPA actually had listed dioxin-containing soil and debris; the dioxin listings, F020–F023, F026–F028, apply only to process wastes and to ash from incinerating contaminated soil. EPA indicated in the preamble to these listings that contaminated soil and other mixed and derived from residues would be affected by the listings (see 50 FR 1994, Jan. 14, 1985). This is by virtue of the mixture and derived from rules, or because the listed waste would be contained in a matrix like soil.)

EPA believes therefore that the hazardous waste listings can be retroactive. Thus, wastes derived from treating, storing, or disposing of these wastes likewise are hazardous, as are mixtures of these wastes and other solid wastes. For land disposal restrictions purposes, this means that these residues could become subject to the land disposal restrictions for the listed waste from which they derive if they are managed actively after the effective date of the land disposal prohibition for the underlying waste.

b. *Derived-From Wastes Have the Same Waste Code as the Waste From Which They are Derived.* EPA disagrees with those commenters that said that derived-from or mixed wastes do not have the same waste code as the waste from which they are derived, are mixed with, or that they contain. The derived-from and mixture rules state, in essence, that listed wastes remain hazardous until delisted. What other hazardous wastes could these listed wastes be if not the waste from which they are derived or mixed? (Indeed, how were all of these wastes covered under the land disposal restrictions schedules in §§ 268.10–268.12 if not under the waste codes, since the schedule nowhere lists leachate or other derived-from residuals separately.) (Cf. *O'Leary* v. *Moyer's Landfill, Inc.*, 523 F. Supp. 642, 656 (E.D. Pa. 1981) ("A hazardous waste does not lose that description because it is mixed with some other waste, or is found in leachate, 40 CFR 261.3(a)[sic](2)(ii) * * *; indeed, leachate from hazardous waste is an important target of RCRA.")) The Agency's delisting regulations make this point by requiring petitioners with mixed or derived-from wastes to make the same demonstration that a delisting petitioner would make for the underlying waste (40 CFR 260.22(b)). The delisting petitioner also may prove that the waste as a whole is not hazardous, as can any delisting petitioner with respect to any hazardous waste. Indeed, there have been dozens of delisting petitions filed to delist residues derived from treating or disposing of multiple wastes, and it is clear from these petitions and Agency action that these residues are deemed to be listed wastes covered by the original waste codes (see, e.g. 51 FR 41324; November 14, 1986 (delisting Envirite treatment residues from treating multiple wastes, stating that the delisting is for "treatment residue (EPA hazardous waste numbers F006, F007, F008, F009, F011, F012, F019, K002, K003, K004, K005, K006, K007, K008, and K062)").

EPA also believes that section 3004(e)(3) confirms this position by stating that soils and debris contaminated with the listed solvent and dioxin wastes become subject to the prohibitions for the listed wastes even though they are not the waste itself, but rather a type of residue from management of the waste. In this regard, EPA notes that other land disposal restrictions provisions likewise equate prohibited wastes and residues from their management. Section 3004(m)(2) thus states that when a prohibited waste has been treated to the level or by the method specified by EPA (pursuant to section 3004(m)(1)), then "such waste or residue thereof" is no longer prohibited from land disposal.

One commenter also stated, incorrectly, that the Agency itself does not follow this principle in its own

CERCLA program. In fact, when EPA identifies a waste at a CERCLA response site as deriving from management of a listed waste, the residue *is* considered to be the listed waste. EPA in fact considered such wastes in its capacity estimates for each of the waste prohibitions adopted or proposed to date, surely an unnecessary action unless such residues are prohibited by virtue of the prohibition for the listed waste (see, e.g. 51 FR 40311; November 7, 1986).

The same commenter asserted erroneously that EPA had stated that solvent mixtures were not covered by the section 3004(e) prohibition on listed solvent wastes. EPA actually stated that certain solvent formulations containing 10 percent or more solvent ingredients which were listed as hazardous for the first time on December 31, 1985, were not covered by the prohibition for F001–F005 wastes (51 FR 40584; November 7, 1986). This statement has nothing to do with mixtures of hazardous waste spent solvents and other solid wastes, which are covered by the section 3004(e)(3) prohibition. (Indeed, when EPA initially proposed the solvent prohibition, many commenters criticized the Agency's capacity estimates for not taking into account mixture and derived-from rule residuals containing these listed wastes, all of which residues were covered by the prohibition and which therefore needed to be assessed (51 FR 40311; Nov. 7, 1986). EPA's final capacity estimates for the solvent prohibition rule therefore included all of these residues.)

c. *Consequences of EPA's Interpretation are Exaggerated.* Commenters expressed significant concerns that EPA's interpretation would lead to RCRA permitting of all inactive hazardous waste sites that collect leachate. They believed that if leaching is considered to be a form of disposal (which it is, since leaking is occurring, see RCRA section 1004(3)), then units from which leachate is leaking are thereby subtitle C management units subject to all of the RCRA requirements.

This reading is not correct. The permitting requirement under RCRA section 3005(a) applies to new and existing disposal facilities. "Disposal facility" is defined in the rules as "a facility * * * at which hazardous waste is intentionally placed into or on any land or water, and at which waste will remain after closure" (see § 260.10). Section 3005(a) prohibits the operation of such facilities without a permit after the effective date of the permitting regulations, November 19, 1980. Thus, only facilities where hazardous waste is intentionally placed into land or water after November 19, 1980 require a RCRA disposal permit. Collection of hazardous leachate at otherwise inactive units consequently does not activate the unit.

A second concern dealt with subtitle D facilities that generate leachate. Commenters expressed concern that because these landfills all accepted small quantity generator listed hazardous wastes, all leachate from these facilities was thereby hazardous by the derived from rule. EPA, however, does not read the derived from rule as applying to small quantity generator hazardous wastes. Although the rules are not explicit on this point, the Agency views this exemption, like other comparable provisions such as the household waste exclusion, as applying cradle-to-grave so that residues from managing the waste retain the exemption or exclusion. In this regard, the rules are explicit that the mixture rule does not apply to mixtures of small quantity generator wastes and solid wastes (see § 261.5(h)). EPA views the derived from rule as similarly inapplicable.

d. *EPA's Reading Creates Negative Environmental Incentives.* EPA is sensitive to the comment that its reading penalizes facilities that collect their leachate and have accurate, historic records of what wastes were accepted at the units. However, this assertion is not completely correct. Facilities collecting hazardous leachate can manage the leachate in such a way as not to trigger subtitle C requirements (including the land disposal restrictions) by managing the leachate in tanks at facilities subject to regulation under the Clean Water Act (see § 264.1(g)(6)). Consequently, the reading most directly discourages subsequent management in surface impoundments, a reasonable outcome given the statutory antipathy for these devices (see RCRA section 1002(b)(7)). Indeed, the statute even allows otherwise prohibited hazardous wastes to be managed in particular types of surface impoundments without first meeting pretreatment standards (although unlike treatment tanks, such impoundments are regulated units) (see RCRA section 3005(j)(11)), so what the Agency's interpretation actually discourages is management in surface impoundments that do not satisfy the section 3005(j)(11) standards. In addition, since the derived-from rule merely shifts the burden of proving that a derived from waste is not hazardous, truly non-hazardous leachate derived from listed wastes can be delisted. There have, in fact, been delisting applications filed to delist leachate derived from listed hazardous wastes that were disposed before 1980.

Finally, EPA does not accept the argument that facilities are better off if they do not collect contaminated leachate, and so will discontinue voluntary collection. Continued release of such leachate exposes the facility to CERCLA liability, common law tort liability, and possibly criminal liability under intentional endangerment statutes. What EPA's reading does is to ensure that once hazardous derived-from residues are collected, their subsequent management will be controlled under the statute designed to control management of hazardous waste. EPA has no other statutory tool for assuring prospectively that proper management will occur. In fact, in the end, what EPA finds most troubling in the commenters' arguments is that hazardous residues from inactive sites could be withdrawn and managed without regard for RCRA requirements. Thus, for example, under the commenters' position, leachate from sites where chlorophenoxy pesticide residues were disposed could be collected and taken to non-subtitle C units (unlined impoundments, for example) because the leachate would not be considered to be a hazardous waste. This is because the waste from which the leachate is derived was disposed before the effective date of the listing, and the leachate does not exhibit any of the hazardous waste characteristics. Indeed, under some of the commenters' arguments, collecting and managing the waste itself at these sites (rather than the leachate derived from the waste's disposal) would not trigger subtitle C requirements. EPA does not find this result to be in accord with statutory policies or the language of the regulations.

e. *Whether Leachate Can Meet the Treatment Standards for the Wastes From Which It Is Derived.* Commenters also argued that landfill leachate could not typically be treated to meet the treatment standards in the rule. They also maintained that leachate (or at least leachate from commercial waste disposal facilities) should have its own treatability group reflecting its significant difference from the wastes from which it is derived.

EPA stated at proposal that although it is correct that EPA's treatment standards are based on treating single wastes, leachate that is derived from disposal of these wastes could be treated to meet the treatment standards because leachate typically is more dilute than the waste from which it is derived. Thus, for example, if the original

wastewater contains 200 ppm of methylene chloride, while leachate from disposal of the waste contains 5 ppm of methylene chloride, the leachate could be treated to meet a standard based on treating the waste with 200 ppm methylene chloride. EPA also noted that a treatability variance was available to accommodate those situations where leachate could not be treated to meet the treatment standards (53 FR 17586; May 17, 1988).

Commenters assert, however, that commercial leachate is not just from one waste, but from many. Even so, EPA still believes that leachate, even from multiple waste codes, can be treated to meet the underlying wastewater treatment standards because it contains lower concentrations of the constituents of concern than the wastes on which the treatment standards are based. Nor has the Agency seen evidence that leachate typically contains interfering agents, not found in the original wastes, that impede treatment performance. EPA has carefully examined the data submitted during the public comment period, and finds that it essentially confirms the Agency's statements at proposal. That is, the leachate has comparable or lower levels (in some cases, orders of magnitude lower) than the wastes on which treatment standards are based. None of the data suggest that leachate from commercial facilities is somehow so exceptional that it cannot be treated to meet the standards. (Indeed, of these data, many of the samples would meet the treatment standards as generated and so would not require treatment at all.) The Agency expects that where groundwater contaminated with leachate is being treated in pump-and treat operations, the standards can be met with existing technology. The treatability variance in section 268.44 also is available in those cases where leachate proves to be untreatable to the applicable standard for the prohibited wastes that it contains.

EPA also has carefully considered comments that leachate deriving from multiple waste codes will be subject to conflicting, multiple treatment standards. Examples contained in the public comments were of leachate derived from wastes whose treatment standards were based on both oxidation and reduction technologies. Another example was of leachate derived partially from wastes whose treatment standards require total constituent analysis (because treatment is based on destruction of organics), and partially derived from other wastes whose treatment standards require TCLP analysis (for fixation of inorganics). EPA does not find these examples persuasive. Waste constituents can be treated sequentially in treatment trains to avoid the types of alleged incompatibilities. For example, if leachate contains both cyanide and hexavalent chromium, cyanide can be oxidized in a tank, and hexavalent chromium can be reduced and precipitated afterwards in a separate tank. Leachate containing both organics and inorganics can be treated in a treatment train with organics being stripped, followed by metals being precipitated. Many of the treatment standards for First Third wastes are in fact based upon treatment trains of these types.

Several commenters complained of the unfairness of planning to meet a "moving target" of treatment standards. That is, they maintained that because leachate contains (or potentially contains) many or even most of the listed waste codes, they will not know until completion of the land disposal restrictions in 1990 what ultimate treatment standards for leachate will be, given that the leachate will have to be treated to meet the most stringent level for the constituents for which there are overlapping treatment standards. EPA believes, however, that ultimate treatment standards for wastewaters will not differ to any great degree. Wastewater treatment technologies are relatively standardized, and achieve performance results that are similar unless the matrices are exceptionally contaminated or contain high concentrations of interfering agents. Based on the data presently available, EPA has not found this to be the case with leachate, even leachate from commercial hazardous waste landfills. Thus, EPA believes that conventional wastewater treatment technologies or treatment trains—for example, some type of stripping technology followed by a type of chemical precipitation—will generally be able to achieve treatment standards for leachate. To the extent this becomes an issue as EPA proposes treatment standards for the remaining hazardous wastes, commenters can present data showing that conventional waste treatment systems for leachate are unable to achieve treatment standards. No such data were presented with regard to leachate containing solvents and First Third prohibited wastes, in the Agency's view. Since these wastes tend to be the most contaminated (see the statutory prioritization of solvents and the Agency's prioritization of First Third wastes based on RCRA section 3004(g)(5)), EPA believes it reasonable that subsequent treatment standards will be comparable to those already adopted.

Finally, regarding comments on the capacity to treat leachate, most collected leachate is presently treated in a way that does not even implicate RCRA, and so does not create a demand on available capacity. Thus, as noted above, tanks that treat leachate (and any other wastewater) at facilities subject to regulation under the Clean Water Act's NPDES or pretreatment programs are exempt from almost all RCRA regulation. Most leachate is treated in tanks, according to comments and the Agency's own information, and so does not require additional treatment capacity. Commenters noted that some facilities have impoundments that are used to perform polishing type treatment of leachate, but EPA believes, based on the information presented, that leachate can be treated to meet treatment standards before being placed in impoundments so that impounded leachate need not create demands on existing treatment capacity.

5. Transfer of Treatment Standards

In today's rule, some treatment standards are not based on testing of the treatment technology on the specific waste subject to the treatment standard. Instead, the Agency determined that the constituents present in the waste can be treated to the same performance levels as observed in other wastes for which EPA has previously developed treatment data. EPA believes transferring treatment performance from tested to untested wastes is valid technically.

Transfer of treatment standards to wastes from similar processing steps requires little formal analysis because of the likelihood that similar production processes will produce a waste matrix with similar characteristics. However, in the case where the industries are similar, but other aspects of production processes may be dissimilar, EPA more closely examines the waste characteristics prior to concluding that the untested waste constituents can be treated to levels associated with tested wastes.

EPA undertakes a two-step analysis when determining whether wastes generated by different processes can be treated to the same level of performance. First, EPA reviews the available waste characteristic data to identify those parameters which are expected to affect treatment selection. EPA has identified some of the most important constituents and other parameters needed to select the

treatment technology appropriate for a given waste.

Second, when an individual analysis suggests that an untested waste can be treated with the same technology as a waste for which treatment performance data are already available, EPA then analyzes a more detailed list of constituents that represent some of the most important waste characteristics which the Agency believes will affect the performance of the technology. By examining and comparing these characteristics, the Agency determines whether the untested wastes will achieve the same level of treatment as the tested waste. Where the Agency determines that the untested waste can be treated as well as the tested waste, the treatment standards can be transferred. A detailed discussion of this transfer process for each waste and constituent can be found in the BDAT background documents for each waste or waste treatability group.

Several commenters stated that they do not believe that standards for certain constituents could be transferred to certain waste codes. EPA's response to these comments are addressed in the sections of today's preamble that discuss that particular waste code or treatability group.

6. No Land Disposal as the BDAT Treatment Standard

EPA is establishing "no land disposal" as the treatment standard for several of the First Third wastes. This standard is analogous to the zero discharge standard established as Best Available Technology (BAT) under the Clean Water Act's effluent guideline program. It indicates that after examining available data, the Agency has identified that: (1) The waste can be totally recycled without generating a prohibited residue; or (2) the waste is not currently being land disposed; or (3) the waste is no longer being generated.

Several commenters provided information that for certain wastes that one or more of these premises is invalid. In those cases, the Agency will not finalize the treatment standard of "no land disposal", and will not establish a treatment standard for that waste in today's rule. The soft hammer provisions, as discussed elsewhere in this preamble, will therefore apply for those wastes or subcategories of wastes. EPA intends to develop treatment standards for these wastes prior to May 8, 1990.

For those nonwastewaters for which no specific comments were received refuting the validity of EPA's basis for "no land disposal", EPA has promulgated the standard as final. EPA has not promulgated a "no land disposal" standard as final for any wastewaters. Since First Third wastes have been historically managed in land disposal units, EPA recognizes that the potential exists for the generation of leachate from these land disposal units. Based on waste characterization data submitted by several commenters, leachates appear to meet EPA's definition of wastewaters. Therefore, EPA believes that constituent standards must be established for wastewaters (i.e., leachates) and that a "no land disposal" is not justified based on the premise of "no generation". It is important to point out that this standard is not intended to imply that the waste was so extremely hazardous that it could not be safely land disposed or handled, but rather that alternative forms of management exist for them. The Agency believes that where it has finalized a treatment standard of "no land disposal", there should either be no generation of this type of waste or that such generated wastes can be handled in a manner that will not require land disposal. In cases where a waste is generated and the basis for the "no land disposal" standard was that the waste was not being generated, or where a waste is significantly different than the waste examined by EPA (e.g., a specific spill residue), a person may petition the Agency for a treatment standard applicable to their waste using the provisions of § 268.44. Prior to May 8, 1990, the Agency could also, through a rulemaking, make the "soft hammer" provisions of § 268.8 applicable in these situations.

7. Waste Specific Treatment Standards

This section describes the development of BDAT treatment standards for all of the First Third wastes covered by today's rule.

a. *Revision of BDAT Treatment Standard for Methylene Chloride in Wastewaters from the Pharmaceutical Industry Listed as F001, F002, F003, F004 and/or F005.* Today's rule promulgates the proposed revision to the treatment standard for methylene chloride in F001–F005 wastewaters from the pharmaceutical industry. Where EPA has set a treatment standard, it is not precluded from revising that standard after the statutory date provided that rulemaking procedures are followed. RCRA section 3004(m)(1) states specifically that treatment standards are to be revised as appropriate. EPA believes that revision of this standard at this time is appropriate and timely, since the effective date for compliance will occur on November 8, 1988.

One commenter suggested that the Agency does not have adequate information to justify using treatment data from an agricultural chemical facility in determining the treatability of wastewaters from pharmaceutical facilities. In particular, the commenter believes that concentrations of methylene chloride, dissolved solids, methanol and the presence of other constituents in the wastes from the pharmaceutical industry are significantly different from those in the wastes that were studied by EPA and that these differences would affect the treatment performance for these wastes.

Based on information provided in the background document for the proposed rule, data indicated that the wastewater from the agricultural facility contained methylene chloride concentrations ranging from 2,500 to 7,400 ppm, while the wastewaters from the pharmaceutical plant contained concentrations ranging from 225 to 10,000 ppm. The Agency believes that this difference in methylene chloride concentrations is not significant and would not affect the performance of the treatment system. In addition, the Agency believes that a plant generating wastewaters with higher methylene chloride concentrations could use a steam stripper treatment system of a larger design or one with an increased retention time in order to comply with these standards.

Information provided in the background document for the proposed rule also showed that the concentration of methanol in the pharmaceutical industry wastewaters ranged from 369 to 1,684 ppm while the concentration of methanol in the agricultural wastewaters ranged from 55 to 81 ppm. The Agency recognizes that there is a difference in methanol concentrations; however, it believes that the concentration of methanol would not affect the performance of the treatment system because methanol has a higher boiling point than methylene chloride and it does not form an azeotrope with methylene chloride. In fact, methanol forms a binary azeotrope with water at a specific temperature and pressure.

Commenters also cited the difference in dissolved solids levels between pharmaceutical wastewaters and

agricultural wastewaters. Data show that the concentration of dissolved solids in the pharmaceutical wastewaters ranged from 2,000 to 4,000 ppm, while the agricultural wastewaters ranged from 89,000 to 122,000 ppm. Although, the difference in concentration is significant, the Agency believes that the agricultural wastewaters with higher concentrations of total dissolved solids are more difficult to treat. Thus, EPA concludes that the wastewaters from the pharmaceutical industry would be easier to steam strip due to the relatively lower dissolved solids content and therefore, should be able to meet the treatment standard. Therefore, EPA maintains that it does have adequate information to justify using treatment data from an agricultural chemical facility in determining the treatability of wastewaters from pharmaceutical facilities. Thus, the Agency is promulgating the standard for wastewaters from the pharmaceutical industry based on the transfer of treatment data for wastewaters from the agricultural industry.

This treatment standard was established based on the performance of a steam stripping process. While the standard is based on data obtained from a steam stripping process, other treatment technologies that can achieve this standard are not precluded from use by this rule.

The Agency feels that it is important to reiterate that none of the treatment standards for other hazardous constituents in F001–F005 wastewaters, or any hazardous constituents in F001–F005 nonwastewaters have been revised; these standards remain as promulgated on November 7, 1986 (51 FR 40572). Also, the Agency has not revised the standard for methylene chloride in F001–F005 wastewaters other than those from the pharmaceutical manufacturing industry.

The final revised BDAT treatment standard for methylene chloride in wastewaters identified as F001, F002, F003, F004 and/or F005 from the pharmaceuticals industry is listed in the table following this section. (Note that the treatment standard is reflected in the regulations by amending § 268.41 for wastewaters from the pharmaceutical industry by removing methylene chloride and its corresponding concentration of 12.7 mg/l, and adding the revised treatment standard in § 268.43).

BDAT TREATMENT STANDARDS FOR F001, F002, F003, F004, AND F005 (WASTEWATERS)

[Pharmaceuticals Industry Subcategory]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Methylene chloride.	0.44	Not applicable.

b. *F006—Wastewater treatment sludges from electroplating operations except from the following processes: (1) Sulfuric acid anodizing of aluminum; (2) tin plating on carbon steel; (3) zinc plating (segregated basis) on carbon steel; (4) aluminum or zinc-aluminum plating on carbon steel; (5) cleaning/stripping associated with tin, zinc and aluminum plating on carbon steel; and (6) chemical etching and milling of aluminum.* Today's rule promulgates treatment standards for five constituents proposed for F006 nonwastewaters. Individual standards based on the analysis of TCLP leachates have been established for cadmium, total chromium, lead, nickel, and silver and are listed in the table at the end of this section.

These treatment standards were established based on the performance of a stabilization process using cement kiln dust as a binding agent. Other stabilization binding agents and other treatment technologies that can achieve these standards are not precluded from use by this rule.

At the time of this rule, the Agency had not completed its evaluation of waste characterization and treatment information for antimony, arsenic, barium, and selenium. The proposed rule contained the notation "reserved" for these constituents, noting that EPA would be setting standards when the evaluation was completed. Several commenters suggested that a treatment standard of "reserved" was confusing to the regulated community and unnecessary. Since individual standards would still have to be proposed and promulgated through the normal rulemaking procedures, no benefit is achieved by the "reserved" notation for these constituents. Therefore, the Agency has dropped it from the final rule for this waste code.

Several commenters argued that EPA should not regulate copper or zinc, as EPA proposed to do, because they are not hazardous constituents specifically listed on Appendix VIII of 40 CFR Part 261. The Agency does not totally agree, in that both zinc cyanide and copper cyanide are listed on Appendix VIII, and both are or may be components of electroplating wastes. Further, EPA has determined that both zinc and copper are aquatic toxins, and the Agency considered adding them to Appendix VIII for that reason. However, in this rulemaking the Agency is only regulating zinc and copper when they are indicators of performance of treatment of other Appendix VIII hazardous constituents. Further, the Agency believes that these metal constituents are controlled by treatment of the metal constituents that are regulated by today's rule and therefore, is not promulgating standards for copper or zinc as part of the treatment standards for F006 nonwastewaters.

F006 wastewater treatment sludges may contain treatable levels of cyanides. EPA does not consider stabilization—BDAT for the metals in this waste—to be a demonstrated technology for the treatment of cyanide. The Agency is currently investigating the use of technologies such as electrolytic oxidation, alkaline chlorination, wet air oxidation, ozonation, and other chemical oxidation as applicable technologies for F006 wastes that contain treatable quantities of cyanide. EPA will determine which of these technologies should be the basis of the BDAT standard when these data become available later this year. Since EPA has insufficient information to establish either a separate treatability group for F006 nonwastewaters containing treatable levels of cyanide or a treatment standard for the cyanide contained in them, the Agency is identifying the treatment standard as "reserved" until a standard can be proposed later this year. Because the Agency believes that a standard will be proposed within six months, the use of "reserved" is important in assuring that generators focus their attention on the treatment of cyanide as well as the metal constituents regulated in today's rule. It is also important to note that, until a standard for cyanide in F006 nonwastewaters is promulgated, those F006 nonwastewaters containing cyanides may be land disposed, as long as they do not exceed the statutory cyanide concentration prohibited under the statutory "California List" restrictions—namely liquid hazardous wastes containing free cyanides at concentrations of 1000 ppm or greater. [RCRA 3004(d), 42 U.S.C. 6924(d); see also 52 FR 25760, July 8, 1987].

Several commenters argued that dewatering technologies such as vacuum filtration, plate and frame pressure filtration, and centrifugation should be allowed and should be the basis for

BDAT. While these technologies do reduce the water content in the waste and generally reduce the volume of solid residuals that require disposal, the Agency maintains that these technologies are merely simple physical treatment technologies and generally do not provide any significant treatment of the metals or cyanide contained in the sludge. In cases where dewatering alone produces a residual that can meet the treatment standards, the Agency believes that it is the treatment prior to the dewatering step that has provided the most effective treatment of the metal constituents. Dewatering technologies are not precluded from use by this regulation and can be considered applicable technologies when the residuals meet the promulgated treatment standards or when dewatering is incorporated into an additional treatment train that produces a residual that can achieve these levels. Such a treatment train may include treatment technologies such as chromium reduction, cyanide destruction, metals precipitation, settling, filtration (or centrifugation), and solidification.

One commenter identified cases where metal recovery processes have been used for metal-bearing sludges. However, at this time, their applicability to F006 treatment sludges has not been examined in order to develop additional standards. The concentrations and identity of metals in F006 wastes vary depending on the specific metals used in the plating process. EPA has not been able to define any particular subcategories of F006 wastes that would be amenable to a particular recovery process.

Commenters also insisted that because metal recovery processes for electroplating wastewaters exist and are being used, EPA should establish a treatment standard of "no land disposal" for F006 and thereby, force all electroplating wastewaters to recovery. EPA does not believe this alternative to be viable because it is not clear that all electroplating wastewaters are amenable to recovery, and even if they were, the recovery processes themselves generate a sludge which would be F006, and thus require a treatment standard. Thus, the concentrations and identity of metals in these wastewaters can vary depending on the specific metals used in the plating process. In addition, other wastewaters are often generated at electroplating facilities from sump collections of floor rinsings, from accidental spills and from general maintenance. While these wastewaters may be potentially recovered by mixing with other process waters, there is a strong possibility that they could foul the recovery process due to nonhazardous contaminants from the floor. Recovery processes often include reverse osmosis and cation exchange techniques. These techniques often produce acidic or caustic backwashes which also must be treated. The sludge from these processes would also be classified as F006.

At this time, EPA has not been able to define any particular subcategory of electroplating wastewaters that would be amenable to a particular recovery process. Thus, the Agency believes that it is unlikely that a standard of "no land disposal" would be justified for all F006 wastes. It is important to point out that, where EPA has set a treatment standard, it is not precluded from revising that standard after the statutory date provided that rulemaking procedures are followed.

F006 waste is a sludge consisting of precipitated residues generated following treatment of wastewaters from electroplating operations. Several commenters have identified specific sources of wastewater forms of F006 such as those being generated at a CERCLA site, during a corrective action at a RCRA facility, and as a leachate from a landfill. Since generation of F006 wastewaters does occur, the premise of no generation as a basis for the treatment standard of "no land disposal" appears to be unjustified. (Please note as an interpretive matter, that supernatant from F006 generation is not considered to be F006, but simply wastewater from treatment of electroplating wastewaters. Filtrate from F006 sludges could be hazardous under the derived-from rule, but if it is similar in terms of identity and concentration of constituents in the influent to the wastewater treatment process, it is not considered to be derived-from F006. Rather, it is the original influent wastewater.)

The Agency is, therefore, not able to promulgate the treatment standard for F006 wastewaters in today's rule. EPA does intend to propose and promulgate numerical treatment standards for F006 wastewaters prior to May 8, 1990. It is likely that these standards will be based upon information available from EPA's NPDES discharge limitation program for electroplating facilities. Since no standard is promulgated in today's rule for F006 wastewaters, this subgroup of wastes is restricted from land disposal according to the "soft hammer" provisions described in other sections of this preamble. [**Note.**—As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of F006 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

BDAT TREATMENT STANDARDS FOR F006

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Cadmium	(1)	0.066
Chromium (total)	(1)	5.2
Lead	(1)	.51
Nickel	(1)	.32
Silver	(1)	.072
Cyanides (total)	(2)	(2)

1 Not applicable.
2 Reserved.

c. *K001—Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.* Today's rule promulgates treatment standards for K001 wastewaters and nonwastewaters. BDAT treatment standards for the organic constituents in K001 wastewaters and nonwastewaters were established based on the performance of a rotary kiln incinerator and specifically on the concentrations found in the residuals. BDAT treatment standards for the metal constituents in K001 nonwastewaters (ash residues) were established based on the performance of a stabilization treatment process and those for the metal constituents in K001 wastewaters were based on chemical precipitation. Other treatment technologies such as biodegradation, solvent extraction, and/or stabilization that can achieve these standards are not precluded from use by this rule.

For all wastes identified as K001, EPA is promulgating final treatment standards for six organic constituents. These are naphthalene, pentachlorophenol, phenanthrene, pyrene, toluene, and xylenes. EPA is also promulgating final treatment standards for lead. The final standard

for pentachlorophenol is the result of a relatively high analytical quantitation limit observed for this particular K001 waste. No data was received which allowed EPA to lower this standard based on lower quantitation limits for pentachlorophenol in other K001 wastes. Therefore, the promulgated standard for this constituent is as proposed.

EPA considered the establishment of treatment standards for polychlorinated dibenzofurans and polychlorinated dibenzodioxins. In the proposed rule, EPA had specifically requested comments on this issue. However, no additional data was submitted which could be evaluated to propose numerical treatment standards for these constituents. Some commenters stated that if EPA set standards for these particular hazardous constituents, no commercial facility would accept these wastes for treatment. In this final rule, EPA is not setting treatment standards for these constituents. However, it is important to point out that, where EPA has set a treatment standard, it is not precluded from revising that standard after the statutory date provided that rulemaking procedures are followed. This includes the addition of hazardous constituents such as the polychlorinated dibenzofurans and polychlorinated dibenzodioxins.

Several commenters argued that EPA should not regulate copper or zinc, as EPA proposed to do, because they are not hazardous constituents specifically listed on Appendix VIII of 40 CFR Part 261. The Agency does not totally agree, as discussed earlier. However, in this rulemaking the Agency is only regulating zinc and copper when they are indicators of performance of treatment of other Appendix VIII hazardous constituents. Further, the Agency believes that these metal constituents are controlled by treatment of the metal constituents that are regulated by today's rule and therefore, is not promulgating standards for copper or zinc as part of the treatment standards for K001 wastes.

Several commenters suggested that land treatment also can be considered to be BDAT for this waste. Land treatment is defined as a form of land disposal under section 3004(k). Treatment standards are those that apply before land disposal; wastes must meet these standards before they can be land disposed. See section 3004(m); see also sections 3004 (d), (e), (f), and (g), all of which refer to the (m) standards as pretreatment standards which apply before land disposal. Moreover, where Congress wished to allow a form of land disposal for wastes not already meeting the treatment standard, it said so directly. See section 3005(j)(11). There is no such directive for treatment in land treatment units of wastes not already meeting the treatment standard (or subject to some type of exception from a prohibition). Consequently, EPA must reject these commenters' suggestions as a matter of law.

BDAT TREATMENT STANDARDS FOR F001

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Naphthalene	8.0	(1)
Pentachlorophenol	37	(1)
Phenanthrene	8.0	(1)
Pyrene	7.3	(1)
Toluene	.14	(1)
Xylenes	.16	(1)
Lead	(1)	0.51

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR F001

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Naphthalene	0.15	(1)
Pentachlorophenol	.88	(1)
Phenanthrene	.15	(1)
Pyrene	.14	(1)
Toluene	.14	(1)
Xylenes	.16	(1)
Lead	.037	(1)

[1] Not applicable.

d. *K015—Still bottoms from the distillation of benzyl chloride.* The BDAT treatment standard of "no land disposal" for K015 nonwastewaters was proposed based on the performance of a liquid injection incinerator and the fact that the waste contained no measurable ash (the solid residue from incineration). The detection limit for the ash content of the K015 nonwastewaters studied by EPA was 0.01% by weight. Since no comments were received indicating generation of K015 wastes with detectable levels of ash, EPA has decided that the premise of "no ash" as a basis for the treatment standard of "no land disposal" appears to be justified. Therefore, today's rule promulgates the final treatment standard of "no land disposal" for all K015. One commenter expressed concern that if K015 were mixed with a waste that did contain an ash, the resultant ash would be subject to the "no land disposal" standard for K015. EPA agrees with the commenter that the standard would be applicable, but believes that blending with a waste or fuel that contains no ash is an option that allows compliance with the "no land disposal" standard for K015. At the same time, EPA also recognizes that K015 may be generated with an ash content if K015 were inadvertently spilled (such as on soil). However, EPA cannot anticipate this type of nonroutine generation and therefore, has to disagree with these commenters. The Agency also believes that for situations such as this, the petition processes for obtaining a variance from the treatment standard provides potential generators with a viable procedure for managing the waste.

The use of other treatment technologies are not precluded by this rule. For example, while rotary kiln and fluidized bed incinerators are generally designed to handle solids and sludges, these units often are designed to incinerate liquids. In any case, where these or other treatment technologies can treat K015 without generating an ash or other solid residual, these units may be used to achieve the "no land disposal" standard for the K015 nonwastewaters.

Today's rule also promulgates final treatment standards for K015 wastewaters for all constituents as proposed. The regulated constituents are anthracene, benzal chloride, benzo (b and/or k) fluoranthene, phenanthrene, toluene, total chromium and nickel. BDAT treatment standards for the organic constituents were established based on the performance of a liquid injection incineration and the concentrations found in the scrubber water. BDAT treatment standards for the metal constituents in wastewaters were based on chemical precipitation. Because no comments were received on the proposed regulation of any of the specific constituents for K015 wastewaters, EPA assumes that generators of K015 wastes agree with EPA's assessment of the treatability of these wastes. All final treatment standards are listed in the following table:

BDAT TREATMENT STANDARDS FOR K015

[Nonwastewaters]

NO LAND DISPOSAL BASED ON NO ASH

BDAT TREATMENT STANDARDS FOR K015

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Anthracene	1.0	(1)
Benzal chloride	.28	(1)
Benzo (b and/or k) fluoranthene	.29	(1)
Phenanthrene	.27	(1)
Toluene	.15	(1)
Chromium (total)	.32	(1)
Nickel	.44	(1)

[1] Not applicable.

e. *K016—Heavy ends or distillation residues from the production of carbon tetrachloride. K018—Heavy ends from the fractionation column in ethyl chloride production. K019—Heavy ends from the distillation of ethylene dichloride in ethylene dichloride production. K020—Heavy ends from the distillation of vinyl chloride in vinyl chloride production. K030—Column bottoms or heavy ends from the combined production of trichloroethylene and perchloroethylene.* Today's rule promulgates final treatment standards for K016, K018, K019, K020 and K030 wastewaters and nonwastewaters as proposed. These five listed hazardous wastes are generated in the production of chlorinated chemicals in the organic chemical industry. The Agency noted in the April 8, 1988 proposal (53 FR 11755) that K019 was originally scheduled for Part 268 regulation in the Second Third (effective June 8, 1989). However, due to the similarity between K019 and the other wastes in this treatability group (K016, K018, K020 and K030), the Agency has chosen to accelerate the schedule for K019.

Several commenters opposed this accelerated schedule for K019, stating that business operations had been planned based on K019 being regulated in June of 1989. However, the statute does not preclude EPA from prohibiting the land disposal of a given waste ahead of schedule (and the schedule in §§ 268.10–268.12 itself says that wastes will be evaluated by a given date, indicating that the specified date is the latest time by which EPA will act), and in fact compels the Agency to prohibit the land disposal of hazardous wastes as soon as possible. Having identified BDAT and developed treatment standards for K019 wastes, the Agency believes the most prudent approach is to promulgate the standards and effective date as proposed.

BDAT treatment standards for the organic constituents in these wastes are based on the performance of rotary kiln incineration and the concentrations found in the residuals. Other treatment technologies such as fluidized bed incineration, biodegradation, and solvent extraction, that can achieve these standards are not precluded from use by this rule.

As described fully in the background document for these wastes, individual constituent standards from waste code K019 have been transferred to those of constituents in waste codes K016, K018, K020, and K030. The Agency based this transfer of standards primarily on the physical and chemical similarity of the individual organic constituents as well as the similarities in overall characteristics of the individual wastes. Because no comments were received on the proposed regulation of any of the specific constituents for K016, K018, K019, K020 and K030 wastes, EPA assumes that generators of these wastes agree with EPA's assessment that these treatment standards can be achieved. The regulated constituents and BDAT treatment standards for these wastes are listed in the tables at the end of this section.

BDAT TREATMENT STANDARDS FOR K016

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Hexachlorobenzene	28	(1)
Hexachlorobutadiene	5.6	(1)
Hexachlorocyclopentadiene	5.6	(1)
Hexachloroethane	28	(1)
Tetrachloroethene	6.0	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K016

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Hexachlorobenzene	0.033	(1)
Hexachlorobutadiene	.007	(1)
Hexachlorocyclopentadiene	.007	(1)
Hexachloroethane	.033	(1)
Tetrachloroethene	.007	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K018

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Chloroethane	6.0	(1)
1,1-Dichloroethane	6.0	(1)
1,2-Dichloroethane	6.0	(1)
Hexachlorobenzene	28	(1)
Hexachlorobutadiene	5.6	(1)
Hexachloroethane	28	(1)
Pentachloroethane	5.6	(1)
1,1,1-Trichloroethane	6.0	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K018

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Chloroethane	0.007	(1)
Chloromethane	.007	(1)
1,1-Dichloroethane	.007	(1)
1,2-Dichloroethane	.007	(1)
Hexachlorobenzene	.033	(1)
Hexachlorobutadiene	.007	(1)
Pentachloroethane	.007	(1)
1,1,1-Trichloroethane	.007	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K019

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Bis(2-chloroethyl)ether	5.6	(1)
Chlorobenzene	6.0	(1)
Chloroform	6.0	(1)
1,2-Dichloroethane	6.0	(1)
Hexachloroethane	28	(1)
Naphthalene	5.6	(1)
Phenanthrene	5.6	(1)
Tetrachloroethene	6.0	(1)
1,2,4-Trichlorobenzene	19	(1)
1,1,1-Trichloroethane	6.0	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K019

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Bis(2-chloroethyl)ether	0.007	(1)
Chlorobenzene	.006	(1)
Chloroform	.007	(1)
p-Dichlorobenzene	.008	(1)

BDAT TREATMENT STANDARDS FOR K019—Continued

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
1,2-Dichloroethane	.007	(1)
Fluorene	.007	(1)
Hexachloroethane	.033	(1)
Naphthalene	.007	(1)
Phenanthrene	.007	(1)
1,2,4,5-Tetrachlorobenzene	.017	(1)
Tetrachloroethene	.007	(1)
1,2,4-Trichlorobenzene	.023	(1)
1,1,1-Trichloroethane	.007	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K020

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
1,2-Dichloroethane	6.0	(1)
1,1,2,2-Tetrachloroethane	5.6	(1)
Tetrachloroethene	6.0	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K020

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
1,2-Dichloroethane	0.007	(1)
1,1,2,2-Tetrachloroethane	.007	(1)
Tetrachloroethene	.007	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K030

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Hexachlorobutadiene	5.6	(1)
Hexachloroethane	28	(1)
Hexachloropropene	19	(1)
Pentachlorobenzene	28	(1)
Pentachloroethane	5.6	(1)
1,2,4,5-Tetrachlorobenzene	14	(1)
Tetrachloroethene	6.0	(1)
1,2,4-Trichlorobenzene	19	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K030

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
o-Dichlorobenzene	0.000	(1)
p-Dichlorobenzene	.008	(1)
Hexachlorobutadiene	.007	(1)
Hexachloroethane	.033	(1)
Pentachloroethane	.007	(1)
1,2,4,5-Tetrachlorobenzene	.017	(1)
Tetrachloroethene	.007	(1)
1,2,4-Trichlorobenzene	.023	(1)

[1] Not applicable.

f. *K022—Distillation bottom tars from the production of phenol/acetone from cumene.* Today's rule promulgates final treatment standards for K022 nonwastewaters as proposed. Treatment standards for the organic constituents in these wastes are based on the performance of a fuel substitution unit and the concentrations found in the ash residuals. Treatment standards for the metal constituents in nonwastewaters (ash residues) are based on the performance of a stabilization treatment process. Other treatment technologies such as liquid injection incineration, rotary kiln incineration, and fluidized bed incineration, that can achieve these standards are not precluded from use by this rule.

The variety in types of alternative incineration units that are potentially applicable and are believed able to achieve the treatment standards, is primarily due to the physical form of the K022 nonwastewaters. As initially generated, K022 wastes are still bottoms that are typically pumped directly from the distillation unit as viscous organic liquids, while they remain hot. Upon cooling, the viscosity of the waste will increase and K022 can become tarry and viscous. It can be kept fluidized by mixing it with various light hydrocarbons, waste olefinic oils or solvents. If not fluidized or kept hot, the waste will eventually harden into an organic solid. One commenter suggested that these viscous or hardened solids should be able to be reheated and thus, fluidized. While the Agency has not verified this, it believes that the immediate onsite management of the waste is the determining factor on whether the waste can be handled as a liquid or as a solid.

For wastes identified as K022 nonwastewaters, EPA is promulgating final treatment standards for seven constituents. These are toluene, acetophenone, phenol, diphenylamine, diphenylnitrosamine, nickel and total chromium. The standard for diphenylamine and diphenylnitrosamine is listed as the sum of these constituents. This is necessary because the two compounds cannot be distinguished using EPA's standard analytical testing procedure.

At the time of this rule, the Agency had not completed its evaluation of waste characterization and treatment information for sulfide. The proposed rule contained the notation "reserved" for these constituents, noting that EPA would be setting standards when the evaluation was completed. Several commenters suggested that a treatment standard of "reserved" was confusing to the regulated community and unnecessary. Since individual standards would still have to be proposed and promulgated through the normal rulemaking procedures, no benefit is achieved by the "reserved" notation for these constituents. Therefore, the Agency has dropped it from the final rule for this waste code.

In the proposed rule EPA considered establishing treatment standards for polychlorinated dibenzofurans and polychlorinated dibenzodioxins for ash residuals from the burning or incineration of K022 nonwastewaters. A sample of untreated ash from the burning of K022 as a fuel substitute was analyzed for isomers of chlorinated dibenzofurans and chlorinated dibenzodioxins. A trace amount (parts per trillion) of tetrachlorodibenzofurans (TCDF) was detected in this sample. This amount was determined to be below the typical BDAT quantitation level for these compounds. In the proposed rule, EPA had specifically requested comments on the issue of regulating these compounds. Also, the Agency had noted that it was reexamining the analytical quantification procedures for the reported tetrachlorodibenzofurans. The Agency has since discovered that the laboratory that performed the analysis for isomers of chlorinated dibenzofurans and chlorinated dibenzodioxins had failed to provide audit samples or fortified (spiked) samples. Thus, the accuracy of quantification below the typical BDAT quantitation levels for the reported tetrachlorodibenzofurans can not be determined. EPA has concluded that additional analysis reproducing these results, with the proper QA/QC performed, would be required before EPA can consider development of treatment standards for these compounds. No additional data were submitted from commenters that could

be evaluated to propose treatment standards for these constituents.

As described fully in the background document for this waste, individual standards for total chromium and nickel for the K022 nonwastewaters have been transferred from the performance of solidification on F006 wastes. The Agency based this transfer of standards based primarily on the physical and chemical similarity of the individual metal constituents as well as the similarities in overall characteristics of the wastes. Because no comments were received on the proposed regulation of any of the specific constituents for K022, EPA assumes that generators of these wastes agree with EPA's assessment that these treatment standards can be achieved. The regulated constituents and BDAT treatment standards for these wastes are listed in the tables at the end of this section.

The BDAT treatment standard of "no land disposal" for K022 wastewaters was proposed based on the performance of a fuel substitution unit that generated no scrubber water. This information was the basis of the "no land disposal" standard for K022 wastewaters. In the proposed rule, EPA specifically requested comment on the premise of the "no land disposal". In response, one commenter stated that he does generate K022 wastewaters as a scrubber water. Other commenters have identified additional potential sources of wastewater forms of K022 such as those being generated at a CERCLA site, during a corrective action at a RCRA facility, and as a leachate from a landfill where K022 nonwastewaters or K022 ash residues have been previously disposed. Since generation of these wastewaters has been identified, the premise of "no generation" appears to be unjustified. As a result, the Agency has decided to not promulgate a final rule of "no land disposal" K022 wastewaters. EPA does intend to propose and promulgate treatment standards for these wastes prior to May 8, 1990. Since no standard is promulgated in today's rule for K022 wastewaters, these wastes are restricted from land disposal according to the "soft hammer" provisions described in other sections of this preamble. [NOTE: As discussed in detail in section III.C.3., EPA is amending section 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K022 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in non-minimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

BDAT TREATMENT STANDARDS FOR K022

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Acetophenone	19	(1)
Sum of diphenylamine and diphenylnitrosamine	13	(1)
Phenol	12	(1)
Toluene	.034	(1)
Chromium (total)	(1)	5.2
Nickel	(1)	.32

[1] Not applicable.

g. *K024—Distillation bottom tars from the production of phthalic anhydride from naphthalene.* Today's rule promulgates final treatment standards for K024 wastewaters and nonwastewaters. (The Agency notes that the proposed treatment standards (see 53 FR 11757 and 11790; April 8, 1988) were in error; however, the background document for the proposed rule contained the correct concentration levels for phthalic acid—which are being promulgated today). Treatment standards are based on the performance of rotary kiln incineration and the concentrations found in the ash and scrubber water residuals. Other treatment technologies such as fluidized bed incineration and fuel substitution that can achieve these standards are not precluded from use by this rule.

EPA is regulating phthalic acid for both K024 wastewaters and K024 nonwastewaters. This constituent, although not listed as a hazardous constituent in Part 261 Appendix VIII, is being regulated as a surrogate for phthalic anhydride. Phthalic anhydride is a hazardous constituent; however, it cannot be easily analyzed, in that the analytical method readily hydrolyzes the compound to phthalic acid. The BDAT treatment standards for these wastes are listed in the following tables:

BDAT TREATMENT STANDARDS FOR K024

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Phthalic acid	28	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K024

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Phthalic acid	0.54	(1)

[1] Not applicable.

h. *K037—Wastewater treatment sludge from the production of Disulfoton.* Today's rule promulgates final treatment standards for K037 wastewaters and nonwastewaters as proposed. Treatment standards are based on the performance of rotary kiln incineration and the concentrations found in the ash and scrubber water residuals. Other treatment technologies such as fluidized bed incineration, fuel substitution units, biodegradation, and solvent extraction, that can achieve these standards are not precluded from use by this rule.

EPA is regulating Disulfoton and toluene for K037 wastewaters and K037 nonwastewaters. Because no comments were received on the proposed regulation of these standards, EPA assumes that generators of these wastes agree with EPA's assessment that these treatment standards can be achieved. The BDAT treatment standards for these wastes are listed in the following tables:

BDAT TREATMENT STANDARDS FOR K037

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Disulfoton	0.1	(1)
Toluene	28	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K037

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Disulfoton	0.003	(1)
Toluene	.028	(1)

[1] Not applicable.

i. *K044—Wastewater treatment sludges from the manufacturing and processing of explosives. K045—Spent carbon from the treatment of wastewater containing explosives. K047—Pink/red water from TNT operations.* Today's rule promulgates "no land disposal" as the final treatment standard for K044, K045 and K047 wastewaters and nonwastewaters. The treatment standard for these wastes was established based on EPA's determination that open burning and open detonation of reactive (e.g., explosive) wastes is not considered land disposal. So long as no reactive constituents remain after detonation, there would be no land disposal of a hazardous waste (40 CFR 261.3(a)(2)(iii)). In order to provide clarification, EPA has modified the "no land disposal" standard to read "no land disposal based on reactivity".

Other technologies, such as incineration in specially designed explosion protected units and chemical deactivation processes, that can render these wastes nonreactive are not precluded from use by this rule based on a determination that residues from these technologies are no longer reactive (i.e., explosive).

One commenter pointed out that there are no established and approved analytical methods to determine the reactivity characteristic for wastes. The commenter noted that approved methods would be useful in determining whether the treatment of K044, K045, K046, and K047 was sufficient to render the waste nonreactive. The Agency agrees with the commenter to the fact that there is no official OSW analytical method (i.e., according to SW–846, 3rd ed.) to test for reactivity. However, the Agency has recently reviewed a testing protocol developed by the Department of Defense to measure the characteristic of reactivity for their hazardous wastes. While this protocol does not contain official OSW methods, the Agency believes that it represents logical and safe analytical procedures for determining the characteristic of reactivity (particularly for explosive wastes). Additional information on this protocol can be found in the background document for K046.

BDAT TREATMENT STANDARDS FOR K044, K045, AND K047

[Nonwastewaters and wastewaters]

NO LAND DISPOSAL BASED ON REACTIVITY

j. *K046—Wastewater treatment sludges from the manufacturing, formulation, and loading of lead based initiating compounds.* Today's rule promulgates a final treatment standard only for those K046 nonwastewaters that are nonreactive. A TCLP treatment standard for lead was established for these wastes based on the performance of a stabilization process. The K046 that was specifically sampled and tested by the Agency was nonreactive (i.e., nonexplosive) as originally generated. This standard does not apply to K046 nonwastewaters that are reactive (i.e., explosive) as originally generated. Residues from the open detonation, open burning, or incineration of K046 nonwastewaters that are reactive as originally generated do not have to meet these standards.

Commenters to the proposed rule stated that the data used to set the treatment standard for nonreactive K046 nonwastewaters may not be representative of their K046 wastes. Descriptions of their processes and their wastes indicated that they are generating reactive K046 wastes that they are subsequently treated by open detonation or open burning, thus creating nonreactive K046 residuals. It was these wastes that they stated were different from the nonreactive K046 that EPA studied.

The waste sampled and tested by the Agency consisted primarily of a lead carbonate sludge generated from a chemical treatment process for wastewater that originally contained the explosive compound lead azide. This sludge contained approximately 95% water and approximately 1,000 ppm total lead. In contrast, residues from one facility consist of solid ash from burning or detonating a K046 that includes lead-based initiating compounds and other explosives. The Agency recognizes that these wastes are inherently different and were not examined by EPA during the development of the K046 treatment standards. The Agency intends to reexamine the data based on its testing of nonreactive K046 nonwastewaters and determine whether the data can be extrapolated to reactive K046 wastes containing untreated lead azide or whether new data must be obtained to set treatment standards for those residues from open detonation, open burning or specialized incineration of K046 wastes that were originally reactive as generated.

In today's rule, the Agency is taking this information into account and is setting treatment standards only for those K046 nonwastewaters that are nonreactive (i.e., nonexplosive) when they are initially generated. Reactive K046 nonwastewaters that must be open detonated do not have to meet the treatment standard promulgated as final in today's rule. No comments or data were received that specifically indicated the existence of nonreactive K046 (other than nonreactive residuals from open detonation or open burning of K046 that were originally explosive as generated) that could not meet the proposed treatment standard for lead. Therefore, the Agency assumes that generators of these nonreactive (as generated) K046 wastes agree with EPA's assessment that these treatment standards can be achieved.

Some commenters indicated that they generate a mixture of K044 and K046 and were concerned that the preamble is unclear as to whether reactive K046 wastes can first be treated by open burning or open detonation to remove the reactivity hazard before stabilization. Stabilization of reactive K046 or mixtures of nonreactive K046 with reactive K044, K045, K047 or other explosive wastes would require excessive handling in an essentially untried manner. It would be dangerous and contrary to industry safety practices to impose such requirement without adequate safety testing. The Agency agrees with these commenters, in that EPA is uncertain of the risk associated with pretreating reactive (i.e., explosive) K046 wastes by open burning to eliminate the explosion hazard. Residues that do not meet the treatment standards can promptly be removed for treatment by stabilization at facilities equipped and authorized to carry out such activities. This scenario eliminates the safety hazards while addressing environmental concerns related to the toxic constituents in the waste. However, the Agency prohibits the mixing of nonreactive K046 wastes (those that are nonreactive as initially generated) with explosive wastes such as K044, K045 or K047 in order to avoid the applicability of the promulgated final treatment standard for nonreactive K046 nonwastewaters.

In the proposed rule, the Agency recognized the existence of the generation of reactive (i.e., explosive)

K046 nonwastewaters and proposed a treatment standard of "no land disposal" for these wastes based on the same rationale that the Agency used for K044, K045 and K047. However, the Agency now realizes that this rationale is not applicable because the lead present in the wastes would remain on the ground after open detonation. The Agency believes that these residues could be physically removed from the land and solidified to prevent leaching of the lead. However, the Agency has not investigated the concentration of lead in these residuals nor has it investigated the performance of solidification for these. As a result, the Agency is, therefore, not able to promulgate the "no land disposal" treatment standard for the explosive K046 nonwastewaters in today's rule. EPA does intend to propose and promulgate treatment standards for these wastes prior to May 8, 1990. Since no standard is promulgated in today's rule for reactive K046 nonwastewaters, these wastes are restricted from land disposal according to the "soft hammer" provisions described in other sections of this preamble.

In the proposed rule, the Agency also proposed a treatment standard of "no land disposal" for all K046 wastewaters, based on the premise that they would not be generated. Several commenters have identified specific sources of wastewater forms of K046 such as those being generated at a CERCLA site, during a corrective action at a RCRA facility, and as a leachate from a landfill. Since generation of K046 wastewaters does occur, the premise of "no generation" as a basis for the treatment standard of "no land disposal" appears to be unjustified. The Agency is, therefore, not able to promulgate the treatment standard for K046 wastewaters in today's rule. EPA does intend to propose and promulgate numerical treatment standards for these wastes prior to May 8, 1990. Since no standard is promulgated in today's rule for K046 wastewaters, this subgroup of wastes is restricted from land disposal according to the "soft hammer" provisions described in other sections of this preamble. [Note.—As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K046 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

One commenter pointed out that there are no established and approved analytical methods to determine the reactivity characteristic for wastes. The commenter noted that approved methods would be useful in determining whether the treatment of K044, K045, K046, and K047 was sufficient to render the waste nonreactive. The Agency agrees with the commenter to the fact that there is no official OSW analytical method (i.e., according to SW 846, 3rd ed.) to test for reactivity. However, the Agency has recently reviewed a testing protocol developed by the Department of Defense to measure the characteristic of reactivity for their hazardous wastes. While this protocol does not contain official OSW methods, the Agency believes that it represents logical and safe analytical procedures for determining the characteristic of reactivity (particularly for explosive wastes). Further, the Agency believes that this testing protocol can be used as guidance in the determination of the applicability of the treatment standards for K046 wastes (i.e., the determination of whether the K046 waste is in the reactive or nonreactive subcategory). Additional information on this protocol can be found in the background document for K046.

BDAT TREATMENT STANDARDS FOR K046

[Nonwastewaters]

[Nonreactive subcategory]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Lead	(1)	0.18

[1] Not applicable.

k. *K048—Dissolved air flotation (DAF) float from the petroleum refining industry. K049—Slop oil emulsion solids from the petroleum refining industry. K050—Heat exchanger bundle cleaning sludge from the petroleum refining industry. K051—API separator sludge from the petroleum refining industry. K052—Tank bottoms (leaded) from the petroleum refining industry.* In today's rule EPA is promulgating treatment standards for wastewater and nonwastewater forms of K048, K049, K050, K051 and K052. These standards are based on reanalysis of the original treatment data for incineration and solvent extraction, as well as analysis of additional, recently submitted data on solvent extraction. In the proposed rule and background document for these wastes, the Agency had indicated that there was a statistical difference between these technologies. Several commenters pointed out that this difference is for only a few constituents and that the two technologies can achieve comparable performance for the majority of constituents. They also believe that there is little environmental benefit achieved in using the incineration performance data as the sole basis for setting treatment standards versus the incorporation of the solvent extraction data into the standard. They stated that both technologies could achieve concentrations of hazardous constituents in the residuals that were below health based limits for those constituents.

EPA's own statistical (ANOVA) comparison of the two technologies confirms that fluidized bed incineration provides significantly better treatment than solvent extraction for naphthalene and xylenes. However, for eleven other organic constituents there is no significant difference in achievable performance.

The proposed BDAT standards for K048–K052 nonwastewaters were based solely on the results obtained from the analysis of residual samples from incineration of K048 and K051 wastes at one refinery. Prior to the April 8, 1988 proposed regulation, industry had submitted treatment data for K048–K052 wastes using solvent extraction technologies. These data were incomplete for incorporation into the proposed standard, primarily because they did not include any total constituent concentrations in the wastes prior to treatment. During the comment period, these additional data, as well as other industry data, were provided to EPA, allowing the Agency to complete its analysis of the technology.

The solvent extraction process that was examined is designed to recover and recycle petroleum products from the K048–K052 nonwastewaters. Use of the technology thus furthers the broad Congressional goal of resource recovery as a preferred alternative to waste treatment alone (see, e.g. H.R. Rep. No. 198, 98th Cong. 1st Sess. at 31). Several commenters indicated that it also may be easier to obtain treatment permits for solvent extraction units than for incinerators due to less public concern

over the presence of these type of units in the community.

EPA has considered all of these comments and has decided that the resource recovery achieved by solvent extraction justifies its inclusion in the development of BDAT treatment standards. Therefore, EPA has established solvent extraction and incineration as BDAT for K048–K052 nonwastewaters and is promulgating revised numerical standards. EPA does not believe that this conflicts with the promulgated BDAT methodology.

A few weeks before promulgation of the final regulation, EPA received data showing performance of other types of solvent extraction systems on K048–K052. These data appear to indicate superior treatment of xylene and naphthalene than the system on which EPA is basing its treatment standards. The Agency has not had the opportunity to fully evaluate these data, however, nor has any member of the petroleum industry had the opportunity to comment on them. EPA consequently does not feel justified in basing treatment standards on this information. However the Agency is continuing to study these data and will propose to revise the treatment standards if such examination shows that significantly lower levels are actually achievable. Such a proposal may appear, for example, as part of the Second Third proposed rulemaking, expected a few months from now. However, as a result of these data, EPA believes it unwarranted to promulgate treatment standards for xylenes and naphthalene at the present time, and accordingly is reserving treatment standards for these constituents.

Today's rule promulgates treatment standards for all of the organic constituents proposed for K048, K049, K050, K051 and K052 nonwastewaters. Additionally, several other organic constituents are being regulated that were identified in characterization data for these wastes. EPA's testing of fluidized bed incineration showed substantial treatment of these constituents. However, treatment standards were not originally proposed for them because the Agency believed that they would be controlled by incineration and regulation of other organic constituents in the nonwastewater residuals from incineration. They are being regulated in today's rule because the additional data submitted by industry indicated that solvent extraction achieves substantial treatment for these constituents. However, the Agency does not have any data that indicate that these constituents would be necessarily controlled by solvent extraction if only the other organic constituents are regulated. The standards for the organic constituents are based on the results of the performance achievable by solvent extraction and/or incineration. Standards for arsenic, total chromium, nickel, and selenium are established based on the performance of a stabilization process. It is important to point out that while the standards for organic constituents are based on data obtained from solvent extraction and fluidized bed incineration, other treatment technologies such as rotary kiln incineration and biodegradation that can achieve these standards are not precluded from use by this rule.

Several commenters argued that EPA should not regulate copper, vanadium or zinc because they are not constituents specifically listed on Appendix VIII of 40 CFR part 261. The Agency does not totally agree, but is not adopting standards for these metals for reasons stated earlier in connection with F006 wastes. The final revised BDAT treatment standards for K048, K049, K050, K051 and K052 are listed in the tables at the end of this section.

Several commenters stated that dewatering technologies such as vacuum filtration, plate and frame pressure filtration, and centrifugation, as well as thermal drying, should be allowed and should be the basis of BDAT. They also provided leachability data on the residuals from these process. However, no total constituent concentration data were provided for comparison to the performance of incineration and solvent extraction. While these technologies do reduce the water content in the waste and generally reduce the volume of solid residuals that require disposal, they do not perform as well as incineration and solvent extraction technologies that EPA has determined to be BDAT for these wastes. A detailed comparison of these technologies is provided in the BDAT background documents for these wastes, located in the docket for this rule. At the same time, it is important to point out that these dewatering technologies are not precluded from use by this regulation and can be considered applicable technologies when used alone or when incorporated into an additional treatment train, provided that they produce a residual that can achieve the constituent concentrations in the treatment standards for that particular waste.

The proposed BDAT standards for organic constituents in K048–K052 wastewaters were based on a transfer of performance data for the scrubber water residual from the incineration of a similar waste. The Agency has recently completed an analysis of scrubber waters from the incineration of a K048 waste (performed earlier this year). The results of this analysis are comparable to the treatment performance data that were the basis for the proposed standards. The Agency has decided to promulgate the final treatment standards for K048–K052 wastewaters based on revised standards using the data from the incineration of the K048 waste.

Several additional organic constituents are being regulated in the K048–K052 wastewaters. These constituents were identified in characterization data for untreated K048–K052 wastes. EPA's testing of fluidized bed incineration showed substantial treatment of these constituents. However, treatment standards were not proposed for them because the Agency believed that they would be effectively controlled by incineration and regulation of other organic constituents (as indicators for these constituents) in the wastewaters. The Agency has chosen to regulate these additional organic constituents because it does not have any data that indicate that these constituents would be necessarily controlled by solvent extraction if only the other organic constituents are regulated. Because the Agency did not receive any comments nor solvent extraction treatment data for the K048–K052 wastewater residuals (from solvent extraction), the promulgated standards for the organic constituents in K048–K052 wastewaters are based on the results of the performance achievable by fluidized bed incineration. Today's rule also promulgates final treatment standards for metal constituents in K048–K052 wastewaters based on a transfer of treatment performance data (with the

exception of arsenic values, which are based on treatment of wastewaters of these petroleum refining wastes) for wastewaters containing metals using chromium reduction, lime and sulfide precipitation and vacuum filtration, as proposed.

BDAT Treatment Standards for K048

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Benzene	9.5	(1)
Benzo(a)pyrene	0.84	(1)
Bis(2-ethylhexyl)phthalate	37	(1)
Chrysene	2.2	(1)
Di-n-butyl phthalate	4.2	(1)
Ethylbenzene	67	(1)
Naphthalene	(2)	(1)
Phenanthrene	7.7	(1)
Phenol	2.7	(1)
Pyrene	2.0	(1)
Toluene	9.5	(1)
Xylenes	(2)	(1)
Cyanides (total)	1.8	(1)
Arsenic	(1)	0.004
Chromium (total)	(1)	1.7
Nickel	(1)	0.048
Selenium	(1)	0.025

[1] Not applicable.
[2] Reserved.

BDAT Treatment Standards for K048

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Benzene	0.011	(1)
Benzo(a)pyrene	.047	(1)
Bis(2-ethylhexyl)phthalate	.043	(1)
Chrysene	.043	(1)
Di-n-butyl phthalate	.060	(1)
Ethylbenzene	.011	(1)
Fluorene	.050	(1)
Naphthalene	.033	(1)
Phenanthrene	.039	(1)
Phenol	.047	(1)
Pyrene	.045	(1)
Toluene	.011	(1)
Xylenes	.011	(1)
Chromium (total)	.20	(1)
Lead	.037	(1)

[1] Not applicable.

BDAT Treatment Standards for K049

[Nonwastewaters])

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Anthracene	6.2	(1)
Benzene	9.5	(1)
Benzo(a)pyrene	0.84	(1)

BDAT Treatment Standards for K049—Continued

[Nonwastewaters])

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Bis(2-ethylhexyl)phthalate	37	(1)
Chrysene	2.2	(1)
Ethylbenzene	67	(1)
Naphthalene	(2)	(1)
Phenanthrene	7.7	(1)
Phenol	2.7	(1)
Pyrene	2.0	(1)
Toluene	9.5	(1)
Xylenes	(2)	(1)
Cyanides (total)	1.8	(1)
Arsenic	(1)	0.004
Chromium (total)	(1)	1.7
Nickel	(1)	0.048
Selenium	(1)	0.025

[1] Not applicable.
[2] Reserved.

BDAT Treatment Standards for K049

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Anthracene	0.039	(1)
Benzene	.011	(1)
Benzo(a)pyrene	.047	(1)
Bis(2-ethylhexyl)phthalate	.043	(1)
Carbon disulfide	.011	(1)
Chrysene	.043	(1)
2,4-Dimethylphenol	.033	(1)
Ethylbenzene	.011	(1)
Naphthalene	.033	(1)
Phenanthrene	.039	(1)
Phenol	.047	(1)
Pyrene	.045	(1)
Toluene	.011	(1)
Xylenes	.011	(1)
Chromium (total)	.20	(1)
Lead	.037	(1)

[1] Not applicable.

BDAT Treatment Standards for K050

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Benzo(a)pyrene	0.84	(1)
Phenol	2.7	(1)
Cyanides (total)	1.8	(1)
Arsenic	(1)	0.004
Chromium (total)	(1)	1.7
Nickel	(1)	.048
Selenium	(1)	.025

[1] Not applicable.

BDAT Treatment Standards for K050

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Benzo(a)pyrene	0.047	(1)
Phenol	.047	(1)
Chromium (total)	.20	(1)
Lead	.037	(1)

[1] Not applicable.

BDAT Treatment Standards for K051

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Anthracene	6.2	(1)
Benzene	9.5	(1)
Benzo(a)anthracene	1.4	(1)
Benzo(a)pyrene	.84	(1)
Bis(2-ethylhexyl)phthalate	37	(1)
Chrysene	2.2	(1)
Di-n-butyl phthalate	4.2	(1)
Ethylbenzene	67	(1)
Naphthalene	(2)	(1)
Phenanthrene	7.7	(1)
Phenol	2.7	(1)
Pyrene	2.0	(1)
Toluene	9.5	(1)
Xylenes	(2)	(1)
Cyanides (total)	1.8	(1)
Arsenic	(1)	0.004
Chromium (total)	(1)	1.7
Nickel	(1)	.048
Selenium	(1)	.025

[1] Not applicable.
[2] Reserved.

BDAT Treatment Standards for K051

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Acenaphthene	0.050	(1)
Anthracene	.039	(1)
Benzene	.011	(1)
Benzo(a)anthracene	.043	(1)
Benzo(a)pyrene	.047	(1)
Bis(2-ethylhexyl)phthalate	.043	(1)
Chrysene	.043	(1)
Di-n-butyl-phthalate	.060	(1)
Ethylbenzene	.011	(1)
Fluorene	.050	(1)
Naphthalene	.033	(1)
Phenanthrene	.039	(1)
Phenol	.047	(1)
Pyrene	.045	(1)
Toluene	.011	(1)
Xylenes	.011	(1)
Chromium (total)	.20	(1)
Lead	.037	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K052

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Benzene	9.5	(1)
Benzo(a)pyrene	.84	(1)
o-Cresol	2.2	(1)
p-Cresol	.90	(1)
Ethylbenzene	67	(1)
Naphthalene	(2)	(1)
Phenanthrene	7.7	(1)
Phenol	2.7	(1)
Toluene	9.5	(1)
Xylenes	(2)	(1)
Cyanides (total)	1.8	(1)
Arsenic	(1)	0.004
Chromium (total)	(1)	1.7
Nickel	(1)	.048
Selenium	(1)	.025

[1] Not applicable.
[2] Reserved.

BDAT TREATMENT STANDARDS FOR K052

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Benzene	0.011	(1)
Benzo(a)pyrene	.047	(1)
o-Cresol	.011	(1)
p-Cresol	.011	(1)
2,4-Dimethylphenol	.033	(1)
Ethylbenzene	.011	(1)
Naphthalene	.033	(1)
Phenanthrene	.039	(1)
Phenol	.047	(1)
Toluene	.011	(1)
Xylenes	.011	(1)
Chromium (total)	.20	(1)
Lead	.037	(1)

[1] Not applicable.

1. *K061—Emission control dust/sludge from the primary production of steel in electric furnaces.* Today's rule revises and promulgates final treatment standards for K061 nonwastewaters. The standards proposed on April 8, 1988, were based on the performance of a high temperature metals recovery (HMTR) unit. HMTR results in the formation of a residual slag which was analyzed to determine the performance of this technology. EPA received extensive comments from industry opposing the applicability, demonstrability, and economics of HTMR for low zinc content K061. As initially proposed, treatment standards for K061 wastes with greater than 2.4% total zinc were based on HTMR. However, the applicability of these standards was based on the concentration of zinc in the residual slag from HTMR; EPA did not consider the optimum operating feed concentrations for zinc. Several commenters specifically stated that HMTR is not feasible at total zinc concentrations in the feed material of below 5% by weight. Other commenters proposed minimum zinc concentrations of 20% zinc. The majority of the comments centered on 15% zinc as a minimum. Review of the sampling data from EPA's testing of HTMR indicates that the minimum feed concentration of zinc was 12.9% and the mean value of the feed concentrations was 14.3%. Many commenters urged EPA to establish treatment standards based on the performance of stabilization, with the concentration levels to be based on the data contained in EPA's background document for the proposed rule.

Based on review of this data and in response to the comments on minimum feed concentration of zinc, the Agency has decided to promulgate a final rule with two subcategories of K061 nonwastewaters: a High Zinc Subcategory (greater than or equal to 15% total zinc) and a Low Zinc Subcategory (less than 15% total zinc).

For the K061 High Zinc Subcategory, a final BDAT treatment standard of "no land disposal" will become effective on August 8, 1990, based on HTMR. As described later in this preamble, EPA is deferring the effective date until August 8, 1990 because of inadequate HTMR capacity to meet the demand that will be created by this rule. During the two year period until August 8, 1990, interim treatment standards for the K061 High Zinc Subcategory, based on stabilization, are applicable. These interim standards are identical to the final standards for the K061 Low Zinc Subcategory described in this section.

EPA sees no legal obstacle in adopting an interim treatment standard until such time as the "no land disposal" standard takes effect. If there is insufficient capacity presently available for the best treatment technology, EPA is not precluded from requiring that the next best treatment be utilized in the interim. The alternative would be to allow disposal of untreated hazardous wastes during the interim period. In addition, during the two year period, K061 wastes in the High Zinc Subcategory treated to meet the interim standard based on stabilization may be disposed in landfills that do not meet the minimum technology requirements. Since many commenters complained that if K061 became subject to the soft hammer they would be unable to dispose of the waste in these types of units, an interim treatment standard affords these commenters a measure of relief.

The treatment standard of "no land disposal" for the High Zinc Subcategory of K061 is based on the use of HTMR to recover zinc from K061 containing more than 15% total zinc. Several classes of HTMR systems exist including rotary kilns, flame reactors, electric furnaces, plasma arc furnaces, slag reactors, and rotary hearth kiln/electric furnace combinations. EPA is not requiring or recommending any specific class of HTMR as BDAT. The Agency believes that establishing HTMR as BDAT for these wastes is consistent with the national policy identified in HSWA to reduce the quantity of hazardous constituents treated and disposed. EPA has data that indicate that approximately 75% (by volume) of K061 wastes are classified as high zinc K061 wastes and contain zinc at concentrations equal to or greater than 15% by weight. At the same time, up to 60% of the total number of facilities generating K061 generate low zinc K061 wastes representing only 25% of the volume of K061.

In considering the HTMR standard for K061 wastes in the High Zinc Subcategory and specifically whether or not to express the standard as concentrations in the residuals from HTMR, the Agency considered the position stated in the proposed rule that if a secondary material being reclaimed in an industrial furnace is "indigenous" to that furnace, it ceases being a waste when it is reclaimed. The Agency has proposed to define "indigenous" to be any material generated by the same type of furnace in which it will be reclaimed. See proposed § 266.30(a), 52 FR 17034, May 6, 1987. The Agency considered other possible alternatives in the May 6, 1987 proposal, and commenters suggested additional possible interpretations which the Agency is now considering. However, the type of processing used to recover zinc from K061, plus the similarity of K061 to the raw materials smelted in zinc furnaces, appears to qualify K061 as "indigenous" under any of the current options being considered. Therefore, the Agency is promulgating a "no land disposal" standard for the High Zinc Subcategory in anticipation that a final definition of "indigenous" wastes that would include HTMR of K061 will be promulgated prior to the August 8, 1990 effective date of this standard. Also, the Agency is not precluded from revising the HTMR standard of "no land disposal" if the definition of "indigenous" waste is not made final or if it is altered in a way that might conceivably implicate the slag.

For the K061 Low Zinc Subcategory, final BDAT treatment standards, based on stabilization, will become effective on August 8, 1988. The regulated constituents and BDAT treatment standards for the two subcategories of K061 nonwastewaters are listed in the tables at the end of this section.

The revised BDAT treatment standards based on stabilization were established using performance data collected by EPA and previously referenced in the K061 and F006 background documents for the proposed rule. For lead and cadmium, the treatment standards for both subcategories are based on stabilization of a waste in the K061 nonwastewater High Zinc Subcategory. For total chromium, the treatment standards are based on stabilization of F006 wastes containing chromium. EPA has decided to transfer the chromium standard from F006 nonwastewaters to K061 nonwastewaters as a result of comments from manufacturers of specialty and stainless steel. These commenters pointed out that their K061 wastes required a separate treatment standard, due to high concentrations of chromium compared to the K061 from carbon steel manufacturers, which EPA tested. The Agency evaluated all available data characterizing K061 generated by specialty steel, stainless steel, and carbon steel production. The Agency agrees that there is a need to establish a treatment standard that accounts for the higher concentrations of chromium present in K061 generated by specialty and stainless steel production. Consequently, the Agency is promulgating the treatment standard for chromium based on stabilization of F006 electroplating wastes, many of which contain concentrations of chromium similar to those found in K061 generated by specialty and stainless steel production.

Nickel has been added to the list of regulated constituents since the time of proposal for two reasons. First, the proposed treatment standard was based on a technology (HTMR) which concentrated nickel in the treatment residual, and therefore, was not proposed as a regulated constituent. The final rule is based on a technology (stabilization) which shows significant reductions in the leachability of nickel. Since the final rule establishes metal concentrations in the waste extract, the Agency is establishing treatment standards for all constituents which are present at significant concentrations. For further discussion of regulated constituents see the Background Document for K061. Second, several commenters presented data showing that K061 from specialty and stainless steel production contain higher concentrations of chromium and nickel than the K061 from carbon steel which were previously stabilized. The Agency agrees that nickel is present in these K061 wastes at significantly higher levels, and therefore, is promulgating a treatment standard for nickel. This standard is based on stabilization of electroplating wastes (F006) containing concentrations of nickel similar to these K061 wastes.

For all K061 nonwastewaters, BDAT treatment standards are established based on cadmium, total chromium, lead and nickel concentrations in the waste extract using the TCLP. Several commenters questioned the Agency's decision not to use the data submitted as concentrations of constituents in the waste extract from the Extraction Procedure (EP) test. Several commenters also suggested that EP and TCLP test results were similar for K061. Data was submitted comparing EP and TCLP results for stabilized K061 wastes. This data showed no statistical difference in the results for the regulated constituents; however, the EP data did not include important information necessary for complete evaluation. Information missing included waste characterization of the untreated K061 wastes, design and operating data, mix ratios of solidification reagents, and laboratory quality assurance data. Consequently, the stabilization data provided which contained EP extract results were not used in calculation of the treatment standards for K061 nonwastewaters.

Several commenters stated that EPA should not regulate zinc because it is not a constituent specifically listed on Appendix VIII of 40 CFR Part 261. The Agency does not totally agree, in that zinc cyanide and zinc phosphide are listed on Appendix VIII. Further, zinc is an aquatic toxin, and the Agency considered adding it to Appendix VIII for that reason. However, in this rulemaking the Agency is only regulating zinc when it is an indicator of performance of treatment for other Appendix VIII constituents. Further, the Agency believes that zinc is controlled by stabilization of the metal constituents that are regulated by today's rule and is not promulgating zinc standards for either of the subcategories of K061.

However, the Agency is establishing the definitions of these subcategories based on the total concentration of zinc. While a treatment standard is not actually being set, it is necessary to determine the total zinc concentration to determine applicability of the appropriate standard. (See EPA Document SW-846, "Test Methods for Evaluating Solid Wastes", Third Edition, for guidance on composite sampling to determine if the 15 percent limit is met.) A facility is not allowed to dilute or perform partial treatment on a K061 waste in order to switch the applicability of the standard for the High Zinc Subcategory to the standard for the Low Zinc Subcategory. However, the Agency does recognize that K061 wastes in the Low Zinc Subcategory are often blended with wastes in the High Zinc Subcategory in order to obtain an optimum feed concentration for zinc. The Agency does not intend to preclude this operation, and furthermore, believes that this should not be a restricted practice, because the effective result of this practice is the applicability of a standard that is more stringent i.e., from stabilization to "no land disposal" (after August 8, 1990).

Today's rule is not promulgating the proposed treatment standard of "no land disposal" for K061 wastewaters. The basis of the wastewater standard was the premise that K061 was not anticipated to be generated. Several commenters provided information to the contrary indicating that K061 wastewaters are being generated and will continue to be generated. Several facilities indicated that their K061 nonwastewaters are generated as wet sludges rather than as dry baghouse dust. The water from treating and/or dewatering these sludges are classified as K061 wastewaters. In addition, the majority of the volume of K061 nonwastewaters has been historically disposed in landfills. The aqueous leachate collected from these landfills are "derived-from" K061 wastewaters. Commenters have also identified additional specific sources of wastewater forms of K061 such as those being generated at a CERCLA site, during a corrective action at a RCRA facility, as a leachate from a landfill, and as a residual from treatment processes such as dewatering. Since generation of K061 wastewaters does occur, the premise of no generation as a basis for the treatment standard of "no land disposal" is invalid. Therefore, the Agency cannot promulgate the proposed standard of "no land disposal" for K061 wastewaters as final. Since no standard is established for K061 wastewaters, this subgroup of wastes is restricted from land disposal according to the "soft hammer" provisions. EPA intends to develop and propose numerical treatment standards by May 8, 1990. [Note.—As discussed in detail in section III.C.3., EPA is amending § 268.12 to

include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K061 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

EPA solicited comment in the April 8, 1988, notice on the issue of whether commercial fertilizers that contain K061 dust as an ingredient should be required to meet BDAT as a condition of remaining exempt from the remaining RCRA standards when they are applied to the land. See 40 CFR § 266.20. After considering the public comment on this issue, EPA has decided not to amend the existing exemption at this time. Our reasons are the following: (1) Existing data appear to indicate that application of these fertilizers to the crops to which zinc-based fertilizers are applied does not pose significant risk from either a food chain contamination pathway or a groundwater contamination pathway; and (2) Constituent levels (and levels of extractable metals) of some of the toxic metals in zinc-based fertilizers are virtually the same, whether or not the fertilizers contain K061; levels of the remaining constituent (lead) are more variable, although some of the non K061 fertilizers (i.e., those fertilizers whose zinc comes from a non-waste source) contain more lead than any K061 fertilizer for which EPA has data. It thus is possible (although further study and data-gathering are required) that EPA could ultimately classify K061 based fertilizers as products rather than wastes.

It thus does not appear to the Agency to be the proper time to remove the existing exemption for these fertilizers. Because there has been no opportunity for notice and comment, and because of incomplete data, it also would not be proper to reclassify these fertilizers at this time. Accordingly, EPA is not taking action at this time, and so is leaving in place the exemption for zinc-containing fertilizers that include K061 wastes as ingredients.

A number of commenters (although none from the fertilizer industry) maintained that hazardous waste-derived fertilizers are not subject to RCRA at all, because the hazardous waste are not "discarded materials", and so are not solid wastes. They cited *American Mining Congress* v. *EPA*, 824 F.2d 1177 (D.C. Cir. 1987) for this proposition. EPA does not agree. The Agency views the practice as discarding for several reasons: (1) recycling involving direct placement of hazardous secondary materials on the land for final disposition is discarding because it is like land disposal, (2) unwanted contaminants in the hazardous secondary materials (for example, lead and cadmium in K061) which in no way contribute to recycling are being gotten rid of and in fact being disposed of. (Should it prove that lead and cadmium are present in hazardous waste and nonhazardous waste-derived zinc fertilizers at similar concentrations, this last point would no longer apply.) This use constituting disposal situation also does not involve the type of ongoing industrial process discussed by the court in the above-cited case. The Agency moreover finds these commenters' arguments unpersuasive given that they would make legal under RCRA such infamous use constituting disposal situations as Times Beach, Missouri (use of hazardous distillation bottom as dust suppressants). The Agency is convinced that neither Congress nor the court contemplated any such results.

INTERIM TREATMENT STANDARDS FOR K061

[Nonwastewaters]

[High Zinc Subcategory—Equal to or Greater than 15%]

[effective until August 8, 1990]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Cadmium	[1]	0.14
Chromium (Total)	[1]	5.2
Lead	[1]	0.24
Nickel	[1]	0.32

[1] Not applicable.

TREATMENT STANDARDS FOR K061

[Nonwastewaters]

[High Zinc Subcategory—Greater than 15%]

[Effective after August 8, 1990]

NO LAND DISPOSAL BASED ON RECYCLING

BDAT TREATMENT STANDARDS FOR K061

[Nonwastewaters]

[Low Zinc Subcategory—Less than 15%]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Cadmium	[1]	0.14
Chromium (Total)	[1]	5.2
Lead	[1]	0.24
Nickel	[1]	0.32

[1] Not applicable.

m. *K062—Spent pickle liquor generated by steel finishing operations of facilities within the iron and steel industry (SIC Codes 331 and 332).* Today's rule promulgates final treatment standards for K062 wastewaters and nonwastewaters as proposed. As initially generated, K062 spent pickle liquors contain less than 1% filterable solids and are classified as K062 wastewaters. Treatment standards for both K062 wastewaters and nonwastewaters were established based on the performance of chromium reduction followed by chemical precipitation with sulfide followed by precipitation, settling, filtering and dewatering of the solid residues. The standards for K062 wastewaters are based on the concentrations of metals in the wastewater residual from this process. The standards for K062 nonwastewaters are based on the analysis of TCLP leachates of the dewatered solid residues.

The standards shown below apply to all K062 wastewaters and nonwastewaters with the exception of residues generated as a result of lime ($Ca(OH)_2$) treatment that are not classified as hazardous wastes according to 40 CFR 261.3(c)(2)(ii) unless they are hazardous because they exhibit a characteristic. Therefore, any such residues would not have to comply with the BDAT treatment standards. The treatment standards do apply, however, to residues generated by other than lime precipitation.

A comment received on the August 12, 1987 Notice of Data Availability and Request for Comments (52 FR 29992) suggested that K062 nonwastewaters can be treated by high temperature metals recovery (HTMR). At this time, the applicability of HTMR to all K062 nonwastewaters has not been sufficiently verified in order to develop additional treatment standards. The

concentrations and identity of metals in K062 wastewaters vary widely depending on the specific steel being pickled. EPA has not been able to define any particular subcategories of K062 nonwastewaters that would be amenable to a particular recovery process.

Commenters also stated that since EPA is requiring the use of sulfide as a precipitant for K062 wastewaters, various recovery processes that are designed to recover metals from metal hydroxide precipitates would be precluded from use. This is not the case, for EPA is not requiring the use of sulfide, but rather establishing a performance standard for the K062 wastes. These standards do not exclude the use of lime as a precipitant. In fact, the Agency has information that the majority of generators are indeed using lime as a precipitant. These lime residues can already be sent to HTMR without meeting the standards for K062 nonwastewaters.

One commenter stated that EPA should alter the regulatory provision (§ 261.3(c)(2)(ii)) that excludes lime precipitated K062 nonwastewaters from the derived from rule. They stated that if sulfide precipitation can achieve a higher water quality, then it should be BDAT for all K062 wastewaters. The Agency cannot remove this exemption without following rulemaking procedures, and did not propose the change.

One commenter stated that since aqueous metal recovery processes for metal contaminated wastewaters exist and are being used, EPA should force K062 wastewaters to use them by establishing a treatment standard of "no land disposal" for K062. At this time, the applicability of these recovery processes to K062 wastewaters has not been sufficiently verified in order to establish a "no land disposal" standard. The high acid content and high variability in concentrations and identity of metals in these wastewaters may preclude the use of some technologies such as reverse osmosis and cation exchange due to the strong possibility that the acid or other metals could foul the recovery process. Thus, the Agency believes that a standard of "no land disposal" may eventually be possible to promulgate for certain subcategories of K062. However, it is unlikely that this standard would be justified for all K062 wastes. At this time, EPA has not been able to define any particular subcategories of K062 wastewaters that would be amenable to a particular aqueous recovery process.

Several commenters argued that EPA should not regulate copper because it is not a hazardous constituent specifically listed on Appendix VIII of 40 CFR Part 261. EPA has decided not to regulate copper here for the reasons stated earlier in connection with F003 wastes.

BDAT TREATMENT STANDARDS FOR K062

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Chromium (total)	(1)	0.094
Lead	(1)	.37

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K062

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Chromium (total)	0.32	(1)
Lead	.04	(1)
Nickel	.44	(1)

[1] Not applicable.

n. *K069—Emission control dust/sludge from secondary lead smelting.* The BDAT treatment standard of "no land disposal" for K069 wastewaters and nonwastewaters was proposed based on information supplied to the Agency that indicated that K069 wastes were totally recyclable without generation of residuals. In response to this premise, one commenter provided information that they generate a K069 nonwastewater that cannot be directly recycled due to a significantly different chemical composition. The information also indicates, that, while the waste being generated meets the definition of the listed waste K069, there also is a significant difference in how it is being generated.

Most K069 wastes are baghouse dusts and scrubber sludges that act as primary air pollution control devices (APCD). The commenter's facility utilizes a baghouse for particulate collection as its primary APCD. In addition, the air leaving the baghouse is sent through a "secondary" APCD, consisting of a wet venturi scrubber utilizing lime neutralization. This "secondary" APCD has been installed primarily to reduce sulfur dioxide emissions. The sludge from this process is technically the listed waste, K069, but consists primarily of lead contaminated calcium sulfate and calcium hydroxide rather than metallic lead, lead oxides, and metal oxides that comprise typical baghouse dusts. In addition, the facility stated that it has experimented with other neutralizing agents to produce a reclaimable sludge, but has not succeeded. At the time of this rule, the Agency has not completed its analysis of all of this information. However, it does believe that these K069 wastes are fundamentally different and that the basis of total recycling for the proposed standard of "no land disposal" for K069 wastes is not justifiably extrapolated to these types of K069 wastes.

For the purposes of this rule, the Agency is establishing a Calcium Sulfate Subcategory and a Non Calcium Sulfate Subcategory for K069 nonwastewaters. The Calcium Sulfate Subcategory is defined as those emission control sludges from secondary lead smelting that are generated as calcium sulfate from secondary wet scrubbers using lime neutralization. The Non Calcium Sulfate Subcategory is defined as those emission control sludges from secondary lead smelting that are not generated as calcium sulfate from secondary wet scrubbers using lime neutralization. It is important to point out that this definition specifically includes "secondary" wet scrubbers. The Agency also recognizes that K069 may be generated as a wet scrubber sludge from other primary APCDs and that the primary APCD may incorporate lime neutralization. Because no comments were received from generators of K069 from these type of primary APCDs, the Agency assumes that the generators agree with EPA's assessment of recyclability of these wastes. As a result, the Agency has decided to promulgate a final BDAT treatment standard of "no land disposal" based on total recycling for those K069 nonwastewaters in the Non Calcium Sulfate Subcategory. EPA intends to propose and promulgate numerical treatment standards for K069 nonwastewaters in the Calcium Sulfate Subcategory (i.e., those from secondary wet scrubbers using lime neutralization) prior to May 8, 1990.

Commenters have also identified additional specific sources of wastewater forms of K069 such as those being generated at a CERCLA site, during a corrective action at a RCRA facility, and as a leachate from a landfill. In the proposed rule, EPA had based a "no land disposal" standard for the wastewaters on the belief that the total recycling process generated no

wastewater residuals and that it was unlikely that other wastewater forms of K069 would be produced. Since generation of does occur, the premise of no generation as the basis for the standard appears to be unjustified. As a result, the Agency is therefore unable to promulgate a treatment standard for these wastewaters in today's rule. EPA does intend to propose and promulgate numerical treatment standards for these wastes prior to May 8, 1990. Since no standard is promulgated in today's rule for these K069 wastewaters, they are restricted from land disposal according to the "soft hammer" provisions. [Note.—As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K069 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33 (f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

BDAT TREATMENT STANDARDS FOR K069

[Nonwastewaters]

[Non Calcium Sulfate Subcategory]

NO LAND DISPOSAL BASED ON RECYCLING

o. *K071—Brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used.* Today's rule promulgates final treatment standards for K071 wastewaters and nonwastewaters. Analysis of a TCLP leachate for mercury is necessary to establish compliance with the treatment standard for K071 nonwastewaters. For K071 wastewaters, a total waste analysis for mercury is necessary to establish compliance with the standard. These standards are listed in the table at the end of this section.

The treatment standard for the K071 nonwastewaters was established based on the performance of a treatment process that includes a series of individual steps. The main purpose of which is to solubilize the mercury in the K071 brine sludge and later convert the mercury to a relatively insoluble mercury sulfide sludge. Mercury sulfide is one of the least soluble forms of mercury salts. Initially, the K071 brine sludge is leached with acid to solubilize certain forms of mercury. The sludge and acid leachate are mixed with an alkaline hypochlorite to oxidize the mercury to a highly soluble mercuric chloride (this also raises the pH). The resultant sludge is then washed with hydrochloric acid and water during a filtration step. The treatment standard for K071 nonwastewaters is based on the leachability of mercury from this filter cake. The filtrate contains the solubilized mercury, which is then precipitated out as a mercury sulfide sludge. This sulfide sludge is also filtered and/or dewatered. The aqueous residual from this process is classified as a K071 wastewater and must meet the treatment standard for mercury in K071 wastewaters. The sulfide sludge is classified as a K071 nonwastewater, unless the liquids were combined with other wastewaters from the mercury cell process prior to treatment. If so, it is a wastewater treatment residual listed specifically as K106. The Agency has data that indicate that this sulfide sludge (be it K071 or K106) will meet the treatment standard for K071 nonwastewaters, that was derived from the leachability of residual mercury in the leached brine sludge.

One commenter provided data on a specialized stabilization process for K071 brine sludges as they are initially generated (without acid or water washing). These data were generated from bench scale operations. The Agency has not determined whether this process has been demonstrated, as yet, on a full scale basis. The Agency is still in the process of examining the stabilization data for K071 nonwastewaters (as a process in lieu of acid leaching) that was submitted. EPA will determine if these data demonstrate sufficient treatment to be proposed as an alternative to acid leaching. At the time of this rule, EPA has insufficient information to establish direct stabilization as a demonstrated treatment alternative to the acid leaching procedure previously described.

Extensive EP leachate data were submitted to EPA by three facilities using only a water washing followed by a dewatering process. One of the three facilities supplied TCLP mercury concentrations for the treated K071. EPA considered, but did not use, any of these data points in the development of the treatment standards because the analysis of variance tests showed significantly better treatment was achieved by the acid leaching procedure. However, EPA would like to emphasize that other treatment technologies such as stabilization or water washing are not precluded from use by today's rule, provided that these technologies or combination of technologies can achieve the equivalent performance as measured by the treatment standards promulgated as final in today's rule.

Several commenters also stated that EPA wrongly considered the information indicating that the TCLP is a better measure of evaluating BDAT performance than the EP (Extraction Procedure). Data were submitted comparing EP data to TCLP data in both treated and untreated K071 wastes. Statistical analyses, performed by EPA, show that the EP and the TCLP procedures yield statistically similar results on the leachability of mercury in K071 wastes. Based on industry's willingness to accept a TCLP standard based on EP data and EPA analysis indicating a statistical relationship between the respective extraction methods for K071 wastes, the Agency has incorporated the additional EP data into its calculation of the final treatment standard for K071 nonwastewaters. However, the Agency maintains its position that, in general, the TCLP is a better measure of evaluating BDAT than the EP, except where data such as these exist for tests performed on the same treated waste.

Several commenters stated that a total mercury analysis is an inappropriate measure of performance for K071 nonwastewaters, since the BDAT treatment system is not designed as a complete recovery system (i.e., mercury is not being recovered directly, but rather it is being converted to recoverable mercury sulfides). At the time of the proposal, the Agency was developing a standard for K106 (wastewater treatment residues that are primarily mercury sulfides) based on recovery of the mercury by retorting of K106 wastes. EPA had determined that the mercury sulfide residues from treatment of K071 wastes were either the listed waste K106 or were similar enough to K106 wastes that they could be retorted for mercury recovery. EPA received extensive comments from industry opposing the applicability, demonstrability, and economics of retorting K106. At the same time, EPA has examined the data on the treatment of K106 and determined that there was insufficient data to support the promulgation of the proposed treatment standards based on retorting. See discussion of K106 wastes in section III.A.7.w. of this preamble. Since

recovery of K071 mercury sulfide residues was based on the establishment of retorting as BDAT for K106 and since the Agency has decided not to promulgate the standards for K106 at this time, EPA has decided to promulgate the treatment standard for K071 nonwastewaters only on the analysis of the TCLP leachate and not on a total mercury analysis. [Note: As previously stated, EPA prefers to establish treatment standards based on total metal analysis only when recovery is established as BDAT.] However, the Agency is not precluded from adding this requirement in the future, if a treatment standard based on retorting or some other recovery process is promulgated for K106 wastes.

BDAT TREATMENT STANDARDS FOR K071

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Mercury	(1)	0.025

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K071

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Mercury	0.030	(1)

[1] Not applicable.

p. *K073—Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production.* The BDAT treatment standard of "no land disposal" for K073 wastewaters and nonwastewaters was proposed based on the premise of "no generation". In the proposed rule, EPA specifically requested comment on this premise. In response, several commenters stated that at least one facility is generating K073 wastes. Since generation has been identified, the Agency is not able to promulgate a final treatment standard of "no land disposal" for any K073 wastes.

Additional information provided by one commenter indicates that at least one facility is incinerating its K073 wastes onsite and that this facility intends to cease the generation of K073 in the near future. Based on these comments, EPA now intends to pursue the development of BDAT treatment standards for K073. In particular, EPA will evaluate the performance of incineration on K073 provided that this facility intends to continue to generate K073 past May 8, 1990. If this facility ceases generation and no other generating facilities can be identified, EPA may decide to promulgate the proposed "no land disposal" treatment standard prior to May 8, 1990. However, since no standard is promulgated in today's rule for K073 wastes, these wastes are restricted from land disposal according to the "soft hammer" provisions. [Note.—As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K073 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

It is also important to note that, until standards for all K073 wastes are promulgated, those K073 wastes containing halogenated organics may only be land disposed as long as they do not exceed a total halogenated organic concentration of 1000 ppm established in the July 8, 1987 promulgated restrictions for "California List" wastes.

q. *K083—Distillation bottoms from aniline production.* The BDAT treatment standard of "no land disposal" for K083 wastewaters and nonwastewaters was proposed based on the performance of a liquid injection incinerator that generated no residuals. The K083 nonwastewater examined by EPA, contained no measurable ash content (solid residues from incineration) at a detection limit of 0.01% by weight. The liquid incineration unit that EPA visited, did not have a vent scrubber or other pollution control device and did not generate any scrubber water. This information was the basis of the "no land disposal" standard for K083.

In the proposed rule, EPA specifically requested comment on the premise of the "no land disposal" standards for both categories of K083 wastes. In response, several commenters stated that they do generate K083 nonwastewaters with detectable levels of ash and K083 wastewaters as scrubber waters. Since generation of these wastes has been identified, the premises of "no ash" and "no generation" may be unjustified for all K083 wastes.

As a result, the Agency has decided to promulgate a final rule of "no land disposal" only for one subcategory of K083 nonwastewaters. This subcategory is identified as the No Ash Subcategory and is defined as those K083 nonwastewaters with less than 0.01% by weight ash.

The use of other treatment technologies are not precluded by this rule. For example, while rotary kiln and fluidized bed incinerators are generally designed to handle solids and sludges, these units often are designed to incinerate liquids. In any case where these or other treatment technologies can treat K083 without generating an ash or other solid residual, these units may be used to achieve the "no land disposal" standard for the K083 nonwastewaters.

EPA does intend to investigate the comments submitted and, if necessary, propose and promulgate numerical treatment standards for K083 nonwastewaters with detectable ash content and K083 wastewaters prior to May 8, 1990. Since no standard is promulgated in today's rule for these K083 wastes, they are restricted from land disposal according to the "soft hammer" provisions. [Note.—As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K083 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

BDAT TREATMENT STANDARDS FOR K083

[Nonwastewaters]

[No Ash Subcategory—Less than 0.01%]

NO LAND DISPOSAL BASED ON NO ASH

r. *K086—Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from the cleaning of*

tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead. In today's rule, EPA is promulgating final treatment standards for seventeen organic constituents and two metal constituents in wastewaters and nonwastewaters in the K086 Solvent Washes Subcategory. These are acetone, n-butyl alcohol, ethyl acetate, ethyl benzene, methanol, methyl isobutyl ketone, methyl ethyl ketone, methylene chloride, toluene, 1,1,1,-trichloroethane, trichloroethylene, xylenes, bis (2-ethylhexyl) phthalate, cyclohexanone, 1,2-dichlorobenzene, naphthalene, nitrobenzene, total chromium, and lead. Treatment standards for all organic constituents are based on analyses of total constituent concentration. Treatment standards for metal constituents are based on analyses of leachate from the TCLP for all wastes identified as nonwastewaters and analyses of total constituent concentration for all wastes identified as wastewaters. The final treatment standards for the wastewater and nonwastewater forms of K086 Solvent Washes are listed in the tables at the end of this section.

By definition K086 wastes can be from one of three major subcategories (depending on the material used for washing). These are: (1) Solvent Washes; (2) Solvent Sludges; and (3) Caustic/Water Washes and Sludges. For the purposes of this rule, the K086 Solvent Washes Subcategory is defined as those K086 wastes which are derived from procedures which have used any organic solvents including, but not limited to, the following: acetone, n-butyl alcohol, cyclohexanone, 1,2-dichlorobenzene, ethyl acetate, ethyl benzene, methanol, methyl isobutyl ketone, methyl ethyl ketone, methylene chloride, naphthalene, nitrobenzene, toluene, 1,1,1,-trichloroethane, trichloroethylene, and/or xylenes. The Agency believes that these are the most typical solvents that become K086 Solvent Washes. While EPA is specifically identifying these sixteen solvents in order to clarify the definition of this subcategory, the Agency recognizes that other solvents may be used by generators. In these cases, EPA has not specifically developed treatment standards for that particular unlisted solvent. While no treatment standard for that solvent has been developed, the treatment standards for lead and total chromium do apply to these K086 Solvent Washes. It is also important to note that some of these solvents, including those that are specifically listed in the definition of the Solvent Washes Subcategory, are specifically listed under the solvent waste codes F001, F002, F003, F004 and/or F005. In such cases, the treatment standards for these solvent wastes that were promulgated November 7, 1986, are already in effect. However, where two sets of standards exist for a constituent in a particular waste that has more than one applicable waste code, the more stringent standard is applicable for that constituent. For those constituents where standards are expressed as a total concentration and a TCLP concentration, both standards may apply.

The treatment standards for all of the organic constituents in the K086 wastewaters and nonwastewaters are based on the performance achieved by incineration. The treatment standards for total chromium and lead in K086 wastewaters are transferred from a similar wastewater treated at a facility previously sampled by the Agency. The wastewater treatment system included hexavalent chromium reduction to convert any hexavalent chromium to the trivalent state, chemical precipitation with excess lime to precipitate dissolved metals as solids, and filtration to remove these solids. The residues of this wastewater treatment system include the treated wastewater and the solids that are classified, for the purposes of BDAT, as nonwastewaters. These residues did not require further treatment because TCLP leachate concentrations were not found at treatable levels. Further details regarding BDAT development and data transfer are provided in the Background Document for this waste code.

For the purposes of BDAT, any solid ash residues from the incineration of nonwastewaters in the K086 Solvent Washes Subcategory are also classified as nonwastewaters. Scrubber waters from air pollution control devices are classified as wastewaters. Both of these residues must meet the BDAT treatment standards for the K086 Solvent Washes Subcategory prior to placement in land disposal units.

While EPA has identified incineration in units with liquid injection as BDAT for K086 Solvent Washes, other treatment technologies such as fluidized bed incineration, multiple hearth incineration, rotary kiln incineration, fuel substitution units, batch distillation and fractional distillation that can achieve these standards are not precluded from use by this rule.

The Agency has data that suggests that approximately sixteen different BDAT List solvents could be used to clean ink formulating equipment. EPA is concerned that regulation of only the solvents that were found in the tested waste matrix would create an incentive to simply switch to the use of other solvents. For this reason, EPA is regulating all sixteen BDAT List solvents. EPA transferred the performance data achieved for some of these sixteen solvents from performance data for other solvents that had similar physical and chemical properties. The Agency believes that the solvents that have been determined to be similar, can be incinerated to the same treatment concentrations. Details on the transfer of standards can be found in the BDAT Background Document for this waste code. EPA specifically solicited comments on this transfer of performance data. Commenters objected to the transfer of many of these constituents. However, they did not provide sufficient data documenting that the proposed BDAT treatment standards are not achievable. EPA specifically requested that documentation be provided in order for the Agency to consider potential changes in the standards. As a result, today's rule promulgates final treatment standards as proposed.

Today's rule is not promulgating final treatment standards for K086 wastes in the Solvent Sludges Subcategory or the Caustic/Water Washes and Sludges Subcategory. Since no standard is established, these subcategories of K086 wastes are restricted from land disposal according to the "soft hammer" provisions. EPA intends to develop and propose numerical treatment standards by May 8, 1990. [**Note.**—As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K086 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in non-minimum technology units—although the requirements of section 3005(j) apply after November 8, 1988—and such residues will not be subject to the certification requirements of § 268.8.]

BDAT TREATMENT STANDARDS FOR K086

[Nonwastewaters]

[Solvent Washes Subcategory]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Acetone	0.37	(1)
bis(2-ethylhexyl)phthalate	.49	(1)
n-Butyl alcohol	.37	(1)
Cyclohexanone	.49	(1)
1,2-Dichlorobenzene	.49	(1)
Ethyl acetate	.37	(1)
Ethyl benzene	.031	(1)
Methanol	.37	(1)
Methylene chloride	.037	(1)
Methyl ethyl ketone	.37	(1)
Methyl isobutyl ketone	.37	(1)
Naphthalene	.49	(1)
Nitrobenzene	.49	(1)
Toluene	.031	(1)
1,1,1-Trichloroethane	.044	(1)
Trichloroethylene	.031	(1)
Xylenes	.015	(1)
Chromium (total)	(1)	0.094
Lead	(1)	.37

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K086

[Wastewaters]

[Solvent Washes Subcategory]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Acetone	0.015	(1)
bis(2-ethylhexyl)phthalate	.044	(1)
n-Butyl alcohol	.031	(1)
Cyclohexanone	.022	(1)
1,2 Dichlorobenzene	.044	(1)
Ethyl acetate	.031	(1)
Ethyl benzene	.015	(1)
Methanol	.031	(1)
Methylene chloride	.031	(1)
Methyl ethyl ketone	.031	(1)
Methyl isobutyl ketone	.031	(1)
Naphthalene	.044	(1)
Nitrobenzene	.044	(1)
Toluene	.029	(1)
1,1,1-Trichloroethane	.031	(1)
Trichloroethylene	.029	(1)
Xylenes	.015	(1)
Chromium (total)	.32	(1)
Lead	.037	(1)

[1] Not applicable.

s. *K087—Decanter tank tar sludge from coking operations.* In today's rule, EPA is promulgating final treatment standards for nine organic constituents and one metal constituent in K087 wastewaters and nonwastewaters. These are acenaphthalene, benzene, chrysene, fluoranthene, indeno (1,2,3-cd) pyrene, naphthalene, phenanthrene, toluene, xylenes, and lead. Treatment standards for all organic constituents are based on analyses of total constituent concentration. Treatment standards for metal constituents are based on analyses of leachate from the TCLP for all wastes identified as nonwastewaters and analyses of total constituent concentration for all wastes identified as wastewaters. The final treatment standards for K087 wastewaters and nonwastewaters are listed in the tables at the end of this section.

The treatment standards for all of the organic constituents in the K087 wastewaters and nonwastewaters are based on the performance achieved by incineration in a rotary kiln. The treatment standards for lead in K087 wastewaters are transferred from a similar wastewater treated at a facility previously sampled by the Agency. The wastewater treatment system included hexavalent chromium reduction to convert any hexavalent chromium to the trivalent state, chemical precipitation with excess lime to precipitate dissolved metals as solids, and filtration to remove these solids. The residues of this wastewater treatment system include the treated wastewater and the solids that are classified, for the purposes of BDAT, as nonwastewaters. Further application of a stabilization process to these solids may be necessary in order to conform with the BDAT treatment standards for K087 nonwastewaters. Further details regarding BDAT development and data transfer are provided in the Background Document for this waste code.

Several commenters stated that EPA should not regulate acenaphthalene, phenanthrene, xylenes or zinc because they are not constituents specifically listed on Appendix VII or Appendix VIII of 40 CFR Part 261. The Agency does not totally agree, in that coal tars, zinc cyanide and zinc phosphide are listed on Appendix VIII. One of the reasons that EPA considers coal tars hazardous is the presence of significant concentrations of polynuclear aromatic hydrocarbons such as acenaphthalene and phenanthrene. Xylenes have also been identified in abundance in coal tars. Further, zinc is an aquatic toxin, and the Agency considered adding it to Appendix VIII for that reason. However, in this rulemaking the Agency is only regulating zinc when it is an indicator of performance of treatment for other Appendix VIII constituents. Further, the Agency believes that zinc is controlled by treatment of lead, which is regulated by today's rule. Therefore, EPA is not promulgating final standards for zinc as part of the treatment standards for K087 wastes, but is promulgating final standards for acenaphthalene, phenanthrene and xylenes.

For the purposes of BDAT, any solid ash residues from the incineration of K087 nonwastewaters are also classified as nonwastewaters. Scrubber waters from air pollution control devices are classified as wastewaters. Both of these residues must meet the treatment standards for the K087 prior to placement in land disposal units.

While EPA has identified incineration in a rotary kiln as BDAT for K087 nonwastewaters, other treatment technologies such as fluidized bed incineration, multiple hearth incineration, rotary kiln incineration, and various fuel substitution units that can achieve these standards are not precluded from use by this rule.

Total recycling has been identified as a potentially applicable technology for K087 wastes. Total recycling involves treating the K087 waste for (1) reuse in the coke ovens or (2) production of a commercial tar product. At this time, however, EPA has not completed its analysis of data submitted for purposes of defining which K087 materials can be beneficially recycled. Industry commenters likewise agreed that not every K087 waste is amenable to recycling (although suggesting that most K087 as generated is recyclable).

BDAT TREATMENT STANDARD FOR K087

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Acenaphthalene	3.4	(1)
Benzene	0.071	(1)
Chrysene	3.4	(1)
Fluoranthene	3.4	(1)
Indeno (1,2,3-cd) pyrene	3.4	(1)
Naphthalene	3.4	(1)
Phenanthrene	3.4	(1)
Toluene	0.65	(1)
Xylenes	0.070	(1)
Lead	(1)	0.51

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K087

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Acenaphthalene	0.028	(1)
Benzene	.014	(1)
Chrysene	.028	(1)
Fluoranthene	.028	(1)

BDAT TREATMENT STANDARDS FOR K087—Continued

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Indeno (1,2,3-cd) pyrene	.028	(1)
Naphthalene	.028	(1)
Phenanthrene	.028	(1)
Toluene	.008	(1)
Xylenes	.014	(1)
Lead	.037	(1)

[1] Not applicable.

t. *K099—Untreated wastewater from the production of 2,4-dichlorophenoxyacetic acid (2,4-D).* Today's rule promulgates final treatment standards for K099 wastewaters and nonwastewaters. These standards are based on chemical oxidation using chlorine. This treatment system shows substantial treatment for 2,4-dichlorophenoxyacetic acid (2,4-D). The treatment standards for wastes identified as K099 are listed in the tables at the end of this section.

Other treatment technologies that the Agency believes are applicable are chemical oxidation using other oxidizers, wet air oxidation (a specialized form of chemical oxidation), carbon adsorption followed by incineration of the carbon, and biological treatment followed by incineration of the biological sludge. These and any other technology that can achieve these standards are not precluded from use by this rule.

For wastes and treatment residues identified as K099 nonwastewaters or wastewaters, EPA is promulgating treatment standards for seven organic constituents. These are 2,4-dichlorophenoxyacetic acid and six chlorinated dioxins and chlorinated dibenzofurans. The 1 ppb analytical quantitation limit for these constituents described in the final rule for dioxin containing wastes [51 FR 40643] is also used here. This level represents the analytical limit of quantitation that can be routinely achieved.

EPA specifically requested comment on the selection of chlorine oxidation as BDAT for K099. Chlorine oxidation was selected as the treatment technology for the destruction of 2,4-dichlorophenoxyacetic acid. The data indicate that this technology provides significant reduction of this chemical. However, the data appear to indicate a slight increase in the concentration of some of the chlorinated dioxins and dibenzofurans (all values below the routine quantitation limit of 1 part per billion) from the untreated waste to the treated residuals. At this time, EPA is not certain that this implies that the chlorine oxidation process is responsible for this slight increase. The Agency specifically requested comments and data that would indicate the existence of an alternative treatment technology that could achieve the same performance for the 2,4-dichlorophenoxyacetic acid without an increase in the chlorinated dioxins and dibenzofurans. Because no comments were received on alternative treatment technologies, EPA assumes that the commenters agree with EPA's assessment that chlorine oxidation represents BDAT for K099 wastes.

The Agency received a late comment that included additional data on the performance of chlorine oxidation on K099 wastes. This data, along with the data originally presented in the K099 background document for the proposed rule, was reexamined by the Agency. These additional data indicated that the proposed treatment standard for 2,4-dichlorophenoxyacetic acid could not be achieved on a routine basis. Sufficient data were submitted enabling the Agency to calculate a revised treatment standard for this constituent. Therefore, the Agency is promulgating the revised 2,4-dichlorophenoxyacetic acid standard as final along with the standards for the chlorinated dioxins and dibenzofurans are proposed.

BDAT TREATMENT STANDARDS FOR K099

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
2,4-Dichlorophenoxyacetic acid	1.0	(1)
Hexachlorodibenzo-p-dioxins	.001	(1)
Hexachlorodibenzofurans	.001	(1)
Pentachlorodibenzo-p-dioxins	.001	(1)
Pentachlorodibenzofurans	.001	(1)
Tetrachlorodibenzo-p-dioxins	.001	(1)
Tetrachlorodibenzofurens	.001	(1)

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K099

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
2,4-Dichlorophenoxyacetic acid	1.0	(1)
Hexachlorodibenzo-p-dioxins	.001	(1)
Hexachlorodibenzofurans	.001	(1)
Pentachlorodibenzo-p-dioxins	.001	(1)
Pentachlorodibenzofurans	.001	(1)
Tetrachlorodibenzo-p-dioxins	.001	(1)
Tetrachlorodibenzofurans	.001	(1)

[1] Not applicable.

u. *K101—Distillation tar residues from the distillation of aniline-based compounds in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds. K102—Residue from the use of activated carbon for decolorization in the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.* In today's rule, EPA is promulgating final treatment standards for K101 and K102 wastewaters and nonwastewaters. These include ortho-nitroaniline in K101 wastes and ortho-nitrophenol in K102 wastes as well as arsenic, cadmium, total chromium, lead, mercury and nickel. The final treatment standards for these wastes are listed in the tables at the end of this section.

The BDAT treatment standards for K101 and K102 nonwastewaters were proposed based on information supplied to the Agency that indicated that untreated K101 and K102 wastes contain 590 ppm to 0.83% of arsenic. In a late comment to the proposed rule, one commenter provided information that they generate K101 and K102 nonwastewaters that contain significantly higher concentrations of arsenic (up to 26.9% total arsenic). The commenter also stated that incineration of their wastes poses a significant increase in risk due to these high concentrations of arsenic. The Agency agrees with the commenter that these K101 and K102 wastes contain a significantly higher concentration of arsenic compared to those wastes studied by the Agency (i.e., the wastes that were used to develop the treatment standards). The Agency also agrees that direct incineration of organic wastes containing very high levels of arsenic,

such as the K101 and K102 wastes generated by the commenter, poses a significant increase in risk to human health and the environment. As a result, the Agency is therefore, unable to promulgate the proposed treatment standards as final for K101 and K102 wastes with high arsenic concentrations.

For the purpose of today's rule, the Agency is therefore establishing a High Arsenic Subcategory and a Low Arsenic Subcategory for K101 and K102 nonwastewaters. The High Arsenic Subcategory is defined as those K101 and K102 wastes that contain greater than or equal to 1% total arsenic. The Low Arsenic Subcategory is defined as those K101 and K102 wastes that contains less than 1% total arsenic. This level was established based primarily on the concentration of arsenic (0.83%) measured in the waste tested by EPA. A complete explanation of how this level was determined can be found in the background document for this waste. EPA intends to propose and promulgate numerical treatment standards for K101 and K102 wastes in the High Arsenic Subcategory prior to May 8, 1990. Since no standard is promulgated in today's rule for K101 and K102 nonwastewaters in this subcategory, they are restricted from land disposal according to the "soft hammer" provisions.

Potential technologies applicable to organic wastes containing high concentrations of arsenic, such as K101 and K102 wastes in the High Arsenic Subcategory, are chemical oxidation or wet air oxidation. These technologies destroy interfering organics and convert the organic arsenicals to inorganic forms of arsenic. The inorganic forms of arsenic may then be amenable for direct recovery or may be immobilized by specialized stabilization techniques.

The treatment standards for the organic constituents in K101 and K102 nonwastewaters in the Low Arsenic Subcategory are based on the performance achieved by incineration in a rotary kiln. The treatment standards for the metals are transferred from wastewater metals treatment data for similar wastes that have been previously developed by the Agency. The wastewater treatment system includes a chemical precipitation step to precipitate dissolved metals as solids followed by a filtration step to remove these solids. The residues of this wastewater treatment system include the treated wastewater and the solids that are classified, for the purposes of BDAT, as nonwastewaters. Further application of a stabilization process to these solids may be necessary in order to conform with the BDAT treatment standards for nonwastewaters. Further details regarding BDAT development and data transfer are provided in the Background Document for this waste code.

For the purposes of BDAT, any solid ash residues from the incineration of K1O1 and K102 nonwastewaters in the Low Arsenic Subcategory are also classified as nonwastewaters. Scrubber waters from air pollution control devices are classified as wastewaters. Both of these residues must meet the treatment standards prior to placement in land disposal units.

While EPA has identified incineration in a rotary kiln as BDAT for K101 and K102 nonwastewaters in the Low Arsenic Subcategory, other treatment technologies such as fluidized bed incineration, multiple hearth incineration, and rotary kiln incineration that can achieve these standards are not precluded from use by this rule.

For wastes identified as K101 and K102 nonwastewaters in the Low Arsenic Subcategory, EPA is regulating two specific organic constituents that are not included on the BDAT List but have been selected as indicators of effective treatment of these wastes. A standard for ortho-nitroaniline is promulgated for K101 and a standard for ortho-nitrophenol is promulgated for K102.

Several commenters stated that EPA should not regulate copper or zinc because it is not a constituent specifically listed on Appendix VIII of 40 CFR Part 261. The Agency does not totally agree, but is not adopting a standard for reasons stated in previous sections of this preamble for F006 wastes.

At the time of this rule, the Agency had not completed its evaluation of waste characterization and treatment information for antimony, arsenic and barium in K101 and K102 nonwastewaters from the Low Arsenic Subcategory or antimony in any K101 and K102 wastewaters. The proposed rule contained the notation "reserved" for these constituents, noting that EPA would be setting standards when the evaluation was completed. Several commenters suggested that a treatment standard of "reserved" was confusing to the regulated community and unnecessary. Since individual standards would still have to be proposed and promulgated through the normal rulemaking procedures, no benefit is achieved by the "reserved" notation for these constituents. Therefore, the Agency has dropped it from the final rule for the individual constituents noted above.

BDAT TREATMENT STANDARDS FOR K101

[Nonwastewaters]

[Low Arsenic Subcategory—less than 1% total arsenic]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Ortho-nitroaniline	14	[1]
Cadmium	[1]	0.066
Chromium (total)	[1]	5.2
Lead	[1]	.51
Nickel	[1]	.32

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K101

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Ortho-nitroaniline	0.27	[1]
Arsenic	2.0	[1]
Cadmium	.24	[1]
Lead	.11	[1]
Mercury	.027	[1]

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K102

[Nonwastewaters]

[Low Arsenic Subcategory—less than 1% total arsenic]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Ortho-nitrophenol	13	[1]
Cadmium	[1]	0.066
Chromium (total)	[1]	5.2
Lead	[1]	.51
Nickel	[1]	.32

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K102

[Wastewaters])

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Ortho-nitrophenol	0.028	[1]
Arsenic	2.0	[1]
Cadmium	.24	[1]
Lead	.11	[1]
Mercury	.027	[1]

[1] Not applicable.

v. *K103—Process residues from aniline extraction from the production of aniline. K104—Combined wastewater*

streams generated from nitrobenzene/aniline production. In today's rule, EPA is promulgating final treatment standards for K103 and K104 wastewaters and nonwastewaters. These include total concentration standards for aniline, benzene, 2,4 dinitrophenol, nitrobenzene and phenol for both K103 and K104 wastes. Final treatment standards for total cyanides are promulgated only for K104 wastewaters and nonwastewaters. The final treatment standards for these wastes are listed in the tables at the end of this section.

The treatment standards for the organic constituents in K103 and K104 wastewaters and nonwastewaters are based on the performance achieved by solvent extraction followed by steam stripping and activated carbon adsorption with incineration of the solvent stream from extraction. Other treatment technologies such as steam stripping followed by activated carbon adsorption, and steam stripping followed by biological treatment are not precluded from use by this rule.

The solvent-containing stream from solvent extraction potentially can be recycled to recover nitrobenzene and aniline, or incinerated. The steam stripper overheads are condensed and decanted with the organic constituents recycled back to the process. The spent carbon from the activated carbon adsorption column is sent off-site for thermal regeneration. While the incineration component of this technology is not demonstrated for K103 and K104, available information shows that it is demonstrated on wastes similar to the contaminated solvent stream from extraction.

Because the solvent-contaminated stream potentially contains a significant amount of an explosive compound (picric acid), EPA expressed concern in the proposed rule that it may not be possible to safely use incineration. One commenter stated their belief that incineration could present significant safety hazards due to the presence of a significant amount of this explosive compound. The commenter stated that although it is possible that picric acid in solution may not present an explosion hazard, crystals of picric acid may be formed during upsets and malfunctions in the treatment system. The commenter pointed out that the crystals may accumulate over time even though the conditions for formation may not always be present and unless wetted with water will be shock sensitive and could explode with considerable force. Thus, the commenter believes that incineration is not a viable technology for the K104 wastestream because of this potential for explosion.

EPA agrees that there is a potential for explosion if the combustion of these wastes is not properly controlled. However, incineration of these types of wastes is currently practiced. As such, incineration is fully demonstrated. EPA believes the issue of explosivity would be present for any technology used for this waste. Therefore, it is unreasonable to expect that EPA would exempt this or another waste from any treatment based on a mismanagement scenario. Instead, EPA expects that treatment facilities will take care to insure and provide design and operating conditions necessary in treating this waste to the concentrations promulgated in today's rule.

One commenter suggested that EPA incorrectly based the standards for K104 on a product processing step rather than a waste treatment technology. EPA defines BDAT for both K103 and K104 wastestreams as solvent extraction followed by steam-stripping and carbon adsorption. Objections to EPA's testing procedures were raised because the sampling occurred at a time when the plant was operating the process at conditions different from those now employed. The commenter contends that the solvent extraction procedure from which EPA obtained its BDAT data was actually a manufacturing process step that has been abandoned because of technical and economic infeasibility. The commenter objected to EPA's designation of the solvent extraction process as a waste treatment technology because at the point where the solvent extraction took place, neither the extract nor the residual streams were wastes. The commenter believes the solvent extraction procedure was an experimental processing step that occurred before the stream was identified for disposal. One commenter pointed out that EPA's determination of BDAT was improper based on the Agency's own statements regarding what constitutes "demonstrated" treatment technologies. The commenter noted that the Agency's final rule implementing land disposal restrictions for certain dioxin- and solvent-containing wastes (51 Federal Register 40571 et. seq.), EPA responded to commenters' concerns over use of experimental data, such as pilot and bench scale data to establish BDAT. The preamble to the regulation states that the Agency agrees with the commenters' position that its determinations should not be based on emerging and innovative technologies.

EPA believes that solvent extraction is a fully demonstrated technology. In fact, solvent extraction of organic constituents is used for treatment of hazardous wastes (see EPA's promulgated treatment standard for K048–K052 elsewhere in this notice) and widely used in the production of organic chemicals. Further, EPA frequently bases BDAT standards for individual wastes on the performance achieved by bench or pilot scale operation of demonstrated technologies when no full scale data are available. The commenter has provided no data to show that the performance achieved by a full scale solvent extraction system will not achieve the performance measured by EPA. However, EPA has established a variance procedure, if such data become available. In the interim, EPA believes that the proposed standards are achievable.

Use of solvent extraction does not require recycle of the extract back into the process. Instead, the extract can be incinerated to achieve the promulgated final standards. Recovery or reuse of the extract is not precluded by establishment of these standards. Selection of solvent extraction as part of the BDAT treatment process is based solely on its status as a demonstrated control technology that provides effective removal of constituents from the waste stream for subsequent destruction by incineration.

One commenter disagreed with the statistical methodology used in developing the treatment standards for K103 and K104 (the same methodology that is used for all of the BDAT treatment standards). Specifically, the commenter states that following good statistical practice, EPA should use a "multiplier" in the 99th percentile calculation that reflects the number of treatment data points used in the generation of the treatment standards. The 99th percentile used by EPA is as follows: $C99 = \exp(AVG + 2.33\ Stand.\ Dev.)$. In place of the 2.33 multiplier, the commenter suggests that EPA should use a value that corresponds to the specific number of data points used. For K103 and K104 wastewaters, this value would be 7.042.

EPA does not agree with the commenter that the 2.33 value should be changed to a multiplier that corresponds to the specific number of data points. EPA's rationale is summarized as follows: The 2.33 multiplier is extensively used by EPA in its variability factor calculations, including the Agency's effluent guidelines limitations and the recently promulgated solvent rule. Under classical statistical

theory, the 2.33 value can be used in the 99th percentile calculation for any number of data points, provided the mean and standard deviation are known (i.e., that additional data points will not increase these values). It is EPA's position (supported, in general, by available data) that as the number of data points increase, the mean and standard deviation will most frequently decrease. Therefore, EPA believes that the use of the 2.33 multiplier is appropriate. As evidence to this determination, EPA points to the variability factors currently developed for the constituents in K103 and K104. These factors are in the range of approximately 1.6 to 15.4, which substantially exceeds the variability seen in treatment of wastewaters with a much larger number of data points.

Additionally, an engineering analysis of well-designed and well-operated treatment systems would, in general, predict that both the average level of performance and variability would decrease with larger data bases. While well designed and well operated treatment systems do experience fluctuations in performance, these fluctuations are normally cyclical reflecting the fact that an inherent part of most treatment system control devices is that they continuously undercompensate and overcompensate for a desired control parameter. As the data base for such cyclical changes increases, the standard deviation would decrease because the range of values would be essentially the same, while the number of data points would be greater. As a final point in response to this comment, the commenter also recognizes that the multiplier they suggest may be inappropriate because it yields results which "might simply be too high." [Additional discussion can be found in the Agency's Response to Comments document.]

BDAT TREATMENT STANDARDS FOR K103

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Aniline	5.6	[1]
Benzene	6.0	[1]
2,4-Dinitrophenol	5.6	[1]
Nitrobenzene	5.6	[1]
Phenol	5.6	[1]

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K103

[Wastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Aniline	4.5	[1]
Benzene	.15	[1]
2,4-Dinitrophenol	.61	[1]
Nitrobenzene	.073	[1]
Phenol	1.4	[1]

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K104

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/kg)	TCLP (mg/l)
Aniline	5.6	[1]
Benzene	6.0	[1]
2,4-Dinitrophenol	5.6	[1]
Nitrobenzene	5.6	[1]
Phenol	5.6	[1]
Cyanides (Total)	1.8	[1]

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K104

[Nonwastewaters]

Constituent	Maximum for any single grab sample	
	Total composition (mg/l)	TCLP (mg/l)
Aniline	4.5	[1]
Benzene	0.15	[1]
2,4-Dinitrophenol	0.61	[1]
Nitrobenzene	0.073	[1]
Phenol	1.4	[1]
Cyanides (Total)	2.7	[1]

[1] Not applicable.

w. *K106—Wastewater treatment sludges from the mercury cell process in chlorine production.* On May 17, 1988, EPA proposed BDAT treatment standards for K106 nonwastewaters based on the performance of a thermal recovery (retorting) unit. However, the retorting process has been demonstrated chiefly on ores consisting primarily of mercury sulfides. In the proposed rule, the Agency stated that these ores are believed to have chemical and physical characteristics similar to K106 nonwastewaters. EPA received extensive comments from industry opposing the applicability, demonstrability, and economics of retorting K106 nonwastewaters. At the same time, EPA has examined the data that it has on the treatment of K106 and similar wastes and determined that there was insufficient data to support the promulgation of the proposed treatment standards for K106.

The Agency has data points from a literature source on the treatment of K106 nonwastewaters combined with K071 nonwastewaters using dewatering followed by retorting. Since the source reports that K106 comprised only 0.5% of the feed to the retort furnace, the Agency believes the waste mixture does not sufficiently represent the majority of K106 wastes. The Agency has additional data from the treatment of a different K106 nonwastewater using retorting. However, this K106 was not generated by the conventional method of sulfide precipitation, but consisted of elemental mercury that was concentrated in the residual from membrane filtration of wastewater from the mercury cell process. EPA did not consider these data to be representative of K106 nonwastewaters because nineteen of the twenty facilities generating K106 currently generate it as a mercury sulfide sludge or residual. The Agency also has data from EPA testing on treatment of K106 nonwastewaters by stabilization. Data collected during these tests show that, while these technologies were properly operated, the data indicated that no significant reduction in leachability was achieved and in some cases, the leachability was increased.

Based on review of the sufficiency of the available data and on the comments received, the Agency has decided not to promulgate final BDAT treatment standards for K106 nonwastewaters in today's rule. Until sufficient treatment performance data can be obtained that verify that these technologies can provide significant treatment for K106 wastes, the Agency does not believe that it can promulgate treatment standards based on either of these technologies. It is important to point out that the Agency is not precluding the use of retorting or solidification for these wastes and that these technologies may prove to be BDAT for these wastes. EPA does intend to propose and promulgate numerical treatment standards for these wastes prior to May 8, 1990. Since no standard is promulgated in today's rule, K106 wastes are restricted from land disposal according to the "soft hammer" provisions described in other sections of this preamble. [Note.—As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer"

waste contaminated groundwater. Thereby, moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K106 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33 (f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

The Agency has information on other technologies that have been identified as potentially applicable to K106 wastes. In particular, a secondary mercury recovery facility has been recently identified as treating K106 wastes by an unidentified process. Another facility that uses hydrazine to treat their wastewaters and generates K106 as a mercury hydroxide rather than a mercuric sulfide, subsequently retorts the K106 waste, to recover mercury prior to land disposal of a residual.

It is possible that because the sulfide precipitate is one of the least soluble forms of mercury salts, that no further treatment is required of K106 nonwastewaters. Since K106 already is a treatment residual from treating K071 and other mercury contaminated wastewaters, this result would be permissible under RCRA.

Other alternatives involve changing the process of generation of the wastewater treatment residuals from the use of sulfide to the use of hydrazine with lime precipitation to facilitate recovery of the mercury from K106 as a hydroxide residue. However, this would require authority under RCRA to regulate industrial process changes to facilitate changes in the composition of listed hazardous wastes. This authority does not currently exist.

x. *K004—Wastewater treatment sludge from the production of zinc yellow pigments. K008—Oven residue from the production of chrome oxide green pigments. K021—Aqueous spent antimony catalyst waste from fluoromethanes production. K025—Distillation bottoms from the production of nitrobenzene by the nitration of benzene. K036—Still bottoms from toluene reclamation distillation in the production of Disulfoton K060—Ammonia still lime sludge from coking operations. K100—Waste leaching solution from acid leaching of emission control dust/sludge from secondary lead smelting.* The BDAT treatment standard of "no land disposal" for K004, K008, K021, K025, K036, K060 and K100 wastewaters and nonwastewaters was proposed based on the premise of "no generation". In the proposed rule, EPA specifically requested comment on current and potential sources of generation of these wastes as either wastewaters or nonwastewaters. While the Agency has received no specific comments that indicated any current generation of nonwastewater forms of these wastes as specifically listed, several commenters stated that this rule would preclude them from generation of these wastes.

In particular, commenters indicated that K060 is no longer generated because sodium hydroxide is used as a reagent rather than ammonia. Thus, K060 is not generated as listed. They stated that they may be forced to switch to ammonia due to an anticipated shortage in the supply of sodium hydroxide, and would thus begin to generate K060 as listed. A commenter also indicated that his facility was generating K060, as listed, but claims that he is reusing the K060 as a chemical substitute. One commenter claimed that although his facility is currently not generating K060 due to a cessation in production, but they may decide to resume production in the future.

The Agency cannot anticipate shifts in generation due to fluctuating reagent market conditions and therefore, has to disagree with these commenters. The Agency points out that this rule does not preclude generation of these wastes, but rather restricts the placement of these wastes in land disposal units. It is also important to point out that this is one of premises behind the EPA's establishment of petition processes for obtaining a variance from the treatment standard.

In the proposed rule, EPA recognized the possibility that wastewater forms of these wastes could be generated at a CERCLA site, during a corrective action at a RCRA facility, or as a leachate from a landfill. The Agency, therefore, also proposed a "treatment standard" for these wastewaters of "no land disposal". By establishing this standard, a facility that generated and needed to treat a wastewater, could submit a petition to the Agency for a variance from this treatment standard. The Agency believed that few, if any, petitions for a variance would be submitted because facilities generally discharge these wastewaters to a POTW or surface water under a NPDES permit. However, comments from several facilities that have land disposal units that contain previously disposed K004, K008, K021, K025, K036, K060, and K100 nonwastewaters, stated that if leachate from these wastes are identified with their respective waste codes, then the leachate would be considered wastewater forms and the "no land disposal" standard based on "no generation" would not be justified. They also stated that elimination of land disposal of these wastewaters is not feasible and that numerical treatment standards should be promulgated.

The Agency agrees that this generation of wastewater could be significant, in that these wastes have been land disposed and do exist in many land disposal units. Therefore, the Agency has decided to promulgate a final BDAT treatment standard of "no land disposal" for only the nonwastewater forms of K004, K008, K021, K025, K036, K060, and K100 nonwastewaters. EPA does intend to propose and promulgate numerical treatment standards for the wastewater forms of these wastes prior to May 8, 1990. Since no standard is promulgated in today's rule for the wastewater forms of K004, K008, K021, K036, and K060, this subgroup of wastes is restricted from land disposal according to the "soft hammer" provisions. Because K025 and K100 are wastes from the Second Third and Third Third, respectively, these provisions are not applicable to the wastewater forms of K025 until June 8, 1989 and the wastewater forms of K100 until May 8, 1990 (unless individual numerical treatment standards are proposed and promulgated prior to those dates). [Note: As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater; thereby moving the aforementioned types of wastewaters into the group of wastes identified as the Third Third. Thus, these types of K004, K008, K021, K036, and K060 wastewaters are not subject to the "soft hammer" prohibitions in § 268.33(f). This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.]

BDAT TREATMENT STANDARDS FOR K004, K008, K021, K025, K036, K060, AND K100

[Nonwastewaters]

NO LAND DISPOSAL BASED ON NO GENERATION

8. Appropriate Technologies for Certain First Third Wastes for Which EPA Has Not Promulgated Treatment Standards

For the First Third Wastes identified in the tables at the end of this section, today's rule promulgates no specific BDAT treatment standards. RCRA section 3004(g)(6) (42 U.S.C. 6924(g)(6)) provides that if EPA fails to set treatment standards for any hazardous waste included in the schedule promulgated on May 28, 1986 (51 FR 19300) by the statutory deadline, such waste may be land disposed in a landfill or surface impoundment only if the facility meets certain statutory requirements and only until May 8, 1990. These requirements have been termed the "soft hammer" provisions.

EPA has identified several treatment technologies that are generally considered appropriate for the nonwastewater forms of the First Third Wastes. These technologies include: metal recovery, leaching/oxidation, metals stabilization, ash stabilization, chemical oxidation, cyanide destruction, biodegradation, incineration, PCB incineration, and open detonation/open burning. Treatment technologies generally considered appropriate for the wastewater forms of the First Third Wastes include: aqueous metal recovery, chromium reduction, metals precipitation, steam stripping, carbon adsorption, oxidation/reduction, chemical oxidation, cyanide destruction, biodegradation, incineration, and PCB incineration. As discussed in detail in section III.C.3., EPA is amending § 268.12 to include wastewater residues derived from the treatment of "soft hammer" wastes by certain processes, as well as leachate derived from the management of "soft hammer" wastes and "soft hammer" waste contaminated groundwater. This action will allow these wastewater residues to be disposed in nonminimum technology units and such residues will not be subject to the certification requirements of § 268.8.

The technologies are listed as general categories of technologies that EPA believes have a reasonable probability of application to the waste codes listed. These categories do not specify any particular type of technology (e.g., incineration can represent liquid incinerators, rotary kiln, fluidized bed incinerators, etc.). The actual choice of a particular technology or even train of technologies depends on the physical and chemical characteristics of the specific waste or waste code. Specific selection of one technology depends on its functional design (e.g., if a particular nonwastewater is an organic liquid, then a liquid incinerator may be chosen over one designed to handle only solids).

EPA notes that many of these wastes, when existing as untreated wastes, are already prohibited from land disposal because they are California List wastes. The liquid cyanide wastes, for example, could exceed the statutory prohibition levels for cyanide. Several of the organic hazardous wastes undoubtedly exceed the statutory levels for wastes containing halogenated organics (HOC wastes) and are thus subject to the HOC treatment standard (after the effective date). For further discussion of the relationship of the California list prohibitions to "soft hammer" wastes refer to section III.E.1.

The following tables are presented as an aid to generators seeking appropriate technologies to treat "soft hammer" F- and K-listed wastes. [For a discussion of the treatment requirements for "soft hammer" wastes refer to section III.C.] Several technologies are listed for each waste code, in descending order of preference. EPA notes that certain technologies are only appropriate for certain constituent types (i.e., cyanide destruction is appropriate for cyanide, not to metals or organics) and that more than one treatment technology may be required (if practically available) to treat the different constituents of concern in the waste. Thus, an F007 nonwastewater could require both cyanide destruction and metals recovery or stabilization prior to land disposal in a landfill or surface impoundment. Also, while one treatment process may generally satisfy the treatment requirements for "soft hammer" waste, the Agency recognizes that treatment trains (i.e., a combination of different treatment processes) may be appropriate for certain "soft hammer" wastes. For example, K022 wastewaters may require treatment by several of the technologies listed.

The Agency emphasizes that these tables are not to be considered as strict treatment guidelines. In general, however, EPA will use these tables in evaluating the demonstrations and certifications (see section III.C.3.) received for these wastes and is providing this information to aid the generator in determining the best practically available technology (if any) for treating his waste in compliance with § 268.8.

APPROPRIATE TREATMENT TECHNOLOGIES FOR FIRST THIRD NONWASTEWATERS

RCRA waste code	Potential California list applicability	Primary applicable treatment technologies
F007	Cyanides	Cyanide destruction.
F008		
F009	Metals	Metals recovery.
F019		Metals Stabilization.
K011	Cyanides	Cyanide destruction.
K013		Incineration.
K014		Wet air oxidation.
		Ash stabilization.
K017	Halogenated organics	Incineration.
K073		Biodegradation.
		Ash stabilization.
K031	Arsenic	Metals recovery.
K084		Leaching/oxidation.
K101 and K102/high arsenic		Metals stabilization.
K046/explosive	Lead	Open detonate/burn.
		Oxidation of explosive.
		Incineration.
		Metals stabilization.
K069/CaSO4	Lead	Leaching/oxidation.
		Metals stabilization.
K085	Halogenated organics and PCB's	PCB incineration.

APPROPRIATE TREATMENT TECHNOLOGIES FOR FIRST THIRD NONWASTEWATERS—Continued

RCRA waste code	Potential California list applicability	Primary applicable treatment technologies
K035	Organics and/or metals	Biodegradation. Ash stabilization. Incineration.
K083		Wet air oxidation.
K086 solv. sludges caust. water		Biodegradation. Ash stabilization.
K106	Mercury	Metals recovery. Metals stabilization.

APPROPRIATE TREATMENT TECHNOLOGIES FOR FIRST THIRD WASTEWATERS

RCRA waste code	Potential California list applicability	Primary applicable treatment technologies
F006	Cyanides	Cyanide destruction.
F007		
F008	Metals	Aqueous metals recovery.
F009		Chromium reduction.
F019		Metals precipitation.
K004	Chromium	Chromium reduction.
K008		Metals precipitation.
K061/all		
K011	Cyanides	Cyanide destruction.
K013		Carbon adsorption.
K014		
K017	Halogenated organics	Steam stripping.
K021		Carbon adsorption.
K073		Chemical oxidation. Biodegradation.
K022	Unlikely to be applicable	Steam stripping.
K035		Carbon adsorption.
K036		Chemical oxidation.
K083		Biodegradation.
K060		Metals precipitation.
K031	Arsenic, Lead or Mercury	Oxidation/reduction.
K046/nonexplosive		Metals precipitation.
K069/all		
K084		
K106		
K046/explosive	Lead	Oxidation of explosive. Metals precipitation.
K085	Halogenated Organics and PCB's	PCB incineration. Biodegradation. Carbon adsorption.
K086 solv. sludges caust. water	Halogenated Organics and/or	Biodegradation. Carbon adsorption.
	Metals	Chromium reduction. Metals precipitation.

9. Burning in Industrial Boilers and Industrial Furnaces as BDAT for Certain California List HOCs

In the May 17 proposal, EPA proposed to amend the § 268.42(a)(2) treatment standard (i.e., incineration) applicable to certain California list HOCs to include burning in industrial boilers and furnaces (53 FR 17604). This approach was based on an earlier May 6, 1987 proposed rule on boilers and industrial furnaces burning hazardous waste (52 FR 17021) and was reproposed in the May 17 proposal because the change in the HOC treatment standard will precede the boiler and industrial furnace rule (which is scheduled for promulgation in 1989) which will establish final permitting and interim status standards for emissions from these devices. The Agency is prepared to accept this discrepancy in timing of the boilers and furnaces rule because these devices are likely to be operated efficiently so as to achieve substantial destruction of the HOCs in the waste. This is because industrial boilers and furnaces have a commercial purpose which requires relatively efficient burning (see § 260.10 definitions of "boiler" and "industrial furnace"). In addition, non-industrial boilers, some of which might be expected to destroy HOCs less efficiently, are essentially prohibited from burning hazardous waste at all (see § 266.31(b)).

While many commenters agreed with the Agency's proposal, EPA received several comments opposed to this approach, stating that the amendment to the HOC treatment standard should be delayed until the industrial boilers and furnaces emissions standards are effective. However, the Agency maintains that the reasoning presented in the May 17 proposal is valid and is promulgating the proposed amendment to § 268.42(a)(2). Today's rule will allow industrial boilers and furnaces burning in accordance with applicable regulatory standards to burn California list HOCs. When Part 266 standards become effective for these devices, the devices thus must meet these standards. Until then, these devices must meet other applicable Federal, State and local standards.

B. Testing and Recordkeeping

1. Waste Analysis

With the exception of the "no land disposal" standard (as discussed in section III. A. 6.), the treatment standards established in today's action are based on either (1) the concentration levels of the hazardous constituents in the waste or treatment residual, (2) concentration levels in an extract developed by use of the Toxicity Characteristic Leaching Procedure (TCLP), or (3) concentration levels using both total constituent concentrations and TCLP analyses. Expressing treatment standards as constituent concentration levels reflects the performance achieved by the technology (or combination of technologies) identified as the Best Demonstrated Available Technology (BDAT).

In the April 8, 1988 and May 17, 1988 proposed rulemakings, the Agency discussed the rationale for determining the analytical tests that EPA believes provide the most accurate measure of the performance of the technologies identified as BDAT. Generally, wastes for which destruction and/or removal technologies are BDAT (specifically, technologies that act to destroy organic constituents and recovery processes that reduce the metal concentration in a waste) would require a total constituent concentration analysis. Conversely, wastes for which stabilization or fixation technologies (i.e., technologies that decrease waste constituent mobility) are identified as BDAT, would require a TCLP extract analysis. EPA also used the TCLP as a measure of performance of metal recovery technologies on the basis that the leachability of metals remaining in the residual should also be analyzed as a measure of performance. In cases where a combination of both destruction or removal technologies and stabilization or fixation technologies are identified as BDAT, both analyses were employed to monitor compliance with the treatment standards. EPA solicited comment on this approach.

Many of the commenters generally argued that the proposed waste analysis requirements were inappropriate for use or too restrictive. Several commenters argued that the use of total constituent analysis is unnecessarily stringent, is beyond levels needed to protect human health and the environment, and does not provide generators with flexibility in determining how best to meet the treatment standards. Some commenters asserted that where treatment standards are based on total constituent analysis, the development of innovative technologies and the application of existing technologies intended to reduce mobility will be discouraged. Other commenters expressed concern with the additional cost of the waste analysis requirements, particularly in cases where both testing methods must be used. Concerns with respect to the applicability of the analytical tests to complex mixtures of wastes were also expressed. Some commenters suggested an approach whereby the treatment standard would be developed based on both total constituent analysis and TCLP extract analysis, and would provide the generators with the flexibility of choosing the most appropriate analytical methodology.

Critical to the scheme for restricting land disposal of First Third wastes is the determination of whether certain constituent concentrations in wastes or treatment residues exceed the applicable treatment standards. Since today's treatment standards are based upon the performance capabilities of BDAT, the Agency continues to believe that the testing requirements should focus on the objective of the technology and provide the most accurate measure of the performance of that technology. Because the principle behind destruction and recovery technologies is to destroy or reduce the constituent concentration in a waste, the logical way to measure the performance of these technologies is to analyze total concentration of waste constituents. As noted in the April 8, 1988 proposal with respect to organic constituents, Congress expected that treatment would destroy organic constituents in hazardous wastes [Vol. 130 Cong. Rec. S9179 (daily ed. July 25, 1984)]. Where stabilization or fixation technologies are identified as BDAT, the TCLP is a better measure of performance since it is designed to measure the mobility of hazardous constituents from a waste matrix. The Agency believes this rationale to be the most defensible and thus is imposing the proposed waste testing/analysis approach as part of the land disposal restriction rules being finalized today.

This approach does not allow the choice of analytical methodologies, as suggested by some commenters, since the design of each analytical test (total constituent analysis or extract analysis) is most appropriate for monitoring the performance of certain technologies, but is not as appropriate for monitoring others. Commenters indicated that this approach may hinder the application of stabilization or fixation technologies. However, it will only do so where (a) current technologies intended to reduce mobility are unable to reach the level of performance provided by BDAT or (b) where such technologies are not applicable or appropriate on a waste-specific basis. Since the treatment standards are based upon the "best" available treatment technologies, the Agency believes that the constituent concentration capable of being reached by these treatments must be measured by analytical methods which reflect the levels for which the "best" treatments were designed. With respect to analysis of complex mixtures of wastes, the Agency recognizes that such wastes potentially may increase the total number of constituents with corresponding treatment standards. However, waste analysis requirements are limited to two analytical tests (total constituent analysis or the TCLP), even if all existing restriction rules are applicable to the waste.

2. Notification Requirements

The Agency, in today's rule, is broadening the applicability of the § 268.7 notification provisions to apply to the First Third wastes, whether or not treatment standards have been established. For First Third wastes for which treatment standards and effective dates have been established, the notification requirements are the same as for other restricted wastes. However, for "soft hammer" wastes, the applicable statutory waste management requirements are somewhat different than for other restricted wastes (namely, a RCRA section 3004(g)(6) certification to EPA is not required for "soft hammer" wastes when land disposed in units other than landfills or surface impoundments). To account for these differences, today's rule includes corresponding requirements in § 268.7.

The basic difference between the notification applicable to the "soft hammer" wastes and the notification applicable to other restricted wastes is that rather than requiring notice of the applicable treatment standard or applicable prohibition (see existing § 268.7(a)(1)), the notice for "soft hammer" wastes requires the generator to notify the receiving facility of the applicable "soft hammer" prohibitions codified in § 268.33 (i.e., that such wastes are prohibited from land disposal in landfill and surface impoundment units unless accompanied by a valid certification (and demonstration, if applicable) in accordance with the requirements of § 268.8, relating to the practical unavailability of treatment technologies). The EPA Hazardous Waste Number, the manifest number associated with the waste shipment (if any), and any available waste analysis

data must also be included in this "soft hammer" notice. The notification will inform treatment facilities (and other handlers) of the obligation to treat "soft hammer" wastes destined for disposal in landfill or surface impoundment units to the extent treatment is practically available. This notification also serves to inform managers of these wastes that the storage prohibition in § 268.50 is applicable to the waste.

Furthermore, today's action amends § 268.7(a)(3) to specify that generators of wastes which are the subject of case-by-case extensions or national variances, or disposers of wastes with "no migration" exemptions must provide notification with each shipment of waste to treatment and storage facilities receiving the wastes. This change supplements, and is consistent with, the existing requirements to notify disposal facilities. The Agency is also requiring that generators retain copies of this notification.

3. Recordkeeping Requirements

The November 7, 1986, rule (51 FR 40572) established a tracking system for wastes subject to the land disposal restrictions requiring treatment facilities to have copies of the notifications and certifications received from generators or other treatment facilities, and disposal facilities to have copies of the notifications and certifications provided by generators or treatment, storage and disposal facilities as codified in 40 CFR 268.7. To better facilitate the "cradle-to-grave" tracking system, today's action includes amendments to the recordkeeping regulations to cover additional off site shipment scenarios and facilities which were previously overlooked. In addition, today's rule amends the recordkeeping provisions to include certain record retention requirements.

The previous recordkeeping provisions were applicable to generators, treatment facilities, and land disposal facilities, but the rule language omitted mention of facilities that simply store prohibited wastes without treating them. As indicated in the April 8, 1988 proposal, there is no reason for storage facilities not to be covered by the recordkeeping requirements. The Agency believes that all facilities receiving restricted wastes should be on notice that the waste is restricted and should be notified of the applicable treatment standard (or applicable prohibition) for the waste as part of a "cradle-to-grave" recordkeeping system. Accordingly, the Agency has corrected this oversight by including storage facilities under the recordkeeping requirements of § 268.7. Besides the "generator-to-storage" scenario, this notification requirement also applies to a treatment, storage or disposal facility that sends a restricted waste (or treatment residue) off site to another treatment or storage facility. Note that this requirement is applicable to all restricted wastes, not only those affected by today's rulemaking.

EPA also proposed to amend the regulatory language of § 268.7(a)(3). This requirement concerns the case where a generator's restricted waste is eligible for land disposal because it is subject to an extension of the effective date or a "no migration" exemption (i.e., the waste may be land disposed, but will not necessarily meet the otherwise applicable treatment standards). In accordance with this provision, the generator must notify the disposal facility of the status of his waste. However, current regulatory language does not account for the possibility that the waste may not be sent directly to the land disposal facility, but rather to a treatment or storage facility. To avoid confusion in cases where the wastes are not shipped to a disposal facility, and to be consistent with other § 268.7 recordkeeping requirements, the Agency is amending § 268.7(a)(3), as proposed, to require that the notice be sent with each shipment of waste to the receiving facility.

Today's rule is adding a provision (see new § 268.7(a)(5)) to require generators to retain copies of data from testing the waste, treatment residual, or extract of the waste or treatment residual developed using the TCLP. The Agency believes that this addition to the regulations will establish consistency with the existing provisions requiring that data supporting decisions to restrict wastes based on knowledge of the wastes must be maintained in the generator's files. Furthermore, this action enhances the enforceability of the regulations.

Today's action also modifies the tracking system to include in §§ 268.7(a)(1), (a)(2), (a)(3), (a)(4), and (a)(5) provisions stating that generators and storers must retain copies of the notifications and certifications forwarded to treatment, storage, and disposal facilities and received from storage facilities. The Agency believes that these changes enhance the enforceability of the land disposal restrictions regulations and make generator and storage recordkeeping requirements consistent with the recordkeeping requirements of treatment and disposal facilities.

Today's final rule also modifies § 268.7(a) to provide for a limitation on the time period that records are required to be retained by generators. Under current regulations, owners and operators of facilities are required to maintain § 268.7 records for a finite period of time, i.e., until closure of the facility (§§ 264.73(b) and 265.73(b)). Previously, however, the regulatory language did not stipulate a period of time that generators needed to retain applicable records (i.e., all supporting data used to determine that a waste is restricted based solely on the generator's knowledge). As such, generators were required to maintain records for an indefinite period of time. In light of the additional information required to be maintained by generators under today's amendments to § 268.7 (i.e., copies of the § 268.7 notices, certifications, and all waste analysis data), the Agency believes that a finite time period may be a more appropriate burden on generators, while preserving the Agency's enforcement ability.

In the May 17, 1988 notice, the Agency proposed a 5-year limitation on the retention requirement for all records generators produce to comply with § 268.7 of the land disposal restrictions. EPA proposed (consistent with section 262.40 manifest requirements) that (a) the time period would begin on the date that the restricted waste is sent to on-site or off-site treatment, storage, or disposal, and (b) the retention requirement would be extended automatically during the course of any unresolved enforcement actions. EPA, however, did not propose to develop an exception reporting requirement like that required in the generator manifest provisions. The Agency recognized that the proposed retention period differed from § 262.40, which requires generators to maintain a copy of the manifest for a 3-year period, but considered the 5-year limit to be an appropriate compromise to imposing an additional exception reporting requirement. The Agency solicited comment on this approach.

Several commenters supported a record retention period of 3 years to be consistent with the generator recordkeeping requirements relating to manifests and waste analysis (see 40 CFR 262.40(a) and (c)). One commenter stated that the EPA would have ample opportunity to review these records within the 3-year period. Furthermore, it was indicated that a 5-year limit may lead to unnecessary confusion for both the regulated community and the regulators with respect to recordkeeping procedures.

The Agency disagrees with the commenters and is promulgating the 5-year generator record retention period

as proposed. EPA does not believe that such a retention period will lead to unnecessary confusion. Since such records are already required to be generated, the Agency is not imposing any additional requirement that generators affirmatively take action. This requirement simply provides that generators leave such records in their files for two more years rather than affirmatively taking action to destroy such records after three years. This 5-year time period is particularly important to the Agency's enforcement efforts because it allows EPA to obtain relevant records which would otherwise be lawfully destroyed after three years. Furthermore, the Agency believes that a 5-year record retention requirement is appropriate because it is consistent with the 5-year statute of limitations applicable to RCRA civil violations.

In addition, Agency data now indicate that § 268.7 notices are being included on manifests in few circumstances. Therefore, adopting such a requirement should not have a substantial impact on the generator manifest retention requirements.

As proposed, the record retention limit is extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator. For the purpose of this provision, an unresolved enforcement action includes, but is not limited to, the issuance of a Notice of Violation, a warning letter, or situations where a complaint has actually been filed.

The Agency notes that it expects the requirement on the generator to keep records of notifications and waste analysis data to be discontinued in 1994 (i.e., the latest date by which all listed or identified hazardous wastes will be subject to the treatment requirements of §§ 268.41, 268.42 and 268.43—assuming that certain wastes may be subject to a 2-year national capacity variance followed by two 1-year case by-case extensions under 40 CFR 268.5). At that time, EPA will, however, reevaluate the prevalent waste management practices to determine whether the recordkeeping requirement for generators is necessary and should be extended.

C. "Soft Hammer" Requirements

1. Applicability

RCRA 3004(g)(6) (42 U.S.C. 6924(g)(6)) provides that if EPA fails to set treatment standards for any wastes included in the schedule promulgated on May 28, 1986 (40 CFR 268.10–268.12, 51 FR 19300) by the statutory deadline:

> Such hazardous waste may be disposed of in a landfill or surface impoundment only if—
>
> (i) Such facility is in compliance with the requirements of subsection (o) which are applicable to new facilities (relating to minimum technological requirements); and
>
> (ii) Prior to such disposal, the generator has certified to the Administrator that such generator has investigated the availability of treatment capacity and has determined that the use of such landfill or surface impoundment is the only practical alternative to treatment currently available to the generator. (RCRA section 3004(g)(6)(A))

This so-called "soft hammer" applies until EPA sets treatment standards or until May 8, 1990. After May 8, 1990, all scheduled wastes (except those subject to capacity extensions) for which treatment standards have not been set will be prohibited from all methods of land disposal that have not been determined to be protective through the "no migration" process (40 CFR 268.6).

In today's final rule, the Agency is not setting treatment standards for all wastes covered by the statutory requirements. EPA thus is promulgating regulations implementing the "soft hammer" provisions of RCRA.

In the April 8 proposal, the Agency discussed the applicability of "soft hammer" provisions to wastes also subject to the California list prohibitions (52 FR 25760, July 8, 1987). In today's final rule, the Agency has maintained the interpretation discussed in the proposal. During the period in which the "soft hammer" provisions are in effect, those wastes which are currently subject to the California list requirements would remain so, and thus might be prohibited from land disposal even though they are also "soft hammer" wastes. Likewise, compliance with the California list requirements does not necessarily fulfill the requirements of the "soft hammer" provisions. In previous preambles, the Agency has stated that the more waste-specific treatment standards and effective dates will supersede the less waste-specific California list requirements. In this case, the Agency has not made determinations with respect to the specific "soft hammer" wastes, and such wastes must (at the least) be treated or otherwise comply with the applicable California list requirements. For a more detailed discussion of the relationship of the California list requirements to First Third wastes, refer to section III. E. of this preamble.

The Agency is somewhat changing the applicability of the "soft hammer" provisions from that presented in the April 8 proposal by moving certain "soft hammer" wastewater treatment residuals to the Third Third (i.e., § 268.12). The specific wastewater treatment residuals and the justification for this action is discussed in detail in section III. C. 3.

It is important to note that the "soft hammer" provisions of 40 CFR 268.8, including the demonstrations, certifications, and treatment requirements, are only applicable to those "soft hammer" wastes which (1) are not otherwise subject to California list treatment standards (e.g., halogenated organic compounds and polychlorinated biphenyls) (as opposed to California list statutory prohibitions or codified levels, e.g., liquid metal and cyanide-containing wastes), and (2) are to be disposed in landfills or surface impoundments. "Soft hammer" wastes managed by other methods of land disposal (e.g., land treatment, deep-well injection), or "soft hammer" wastes subject to California list treatment standards thus are not subject to the requirements of 40 CFR 268.8.

2. Interpretation of Specific Terms

In the statutory passage from RCRA section 3004(g)(6)(A) cited above, the terms "treatment" and "facility" are particularly important and were discussed in detail in the April 8 proposal. EPA received many comments regarding the interpretation of these terms, as well as the term "practical", as they relate to implementation of the "soft hammer".

a. *Treatment.* In the April 8 proposal, EPA solicited comment on the interpretation of "treatment" for the purposes of the "soft hammer". Many commenters stated that the Agency needed to define "treatment" in more concrete terms so that there would be a firm standard to serve as the basis for certification. (In fact, many owners and operators of disposal facilities stated that they would refuse to accept "soft hammer" wastes because of the uncertainty of possible enforcement actions due to the ambiguity involving the term "treatment".)

In spite of such comments, the Agency is not finalizing an interpretation of "treatment" that is much more definitive than in the April 8 proposal. Due to the complexity of available treatment technologies, the Agency is not able to make firm statements defining a hierarchy of treatment technologies for every "soft hammer" waste code, the availability of which should be investigated before a valid certification can be made regarding a particular waste code. By definition, the Agency has not made waste-specific determinations regarding "soft hammer" wastes, and therefore cannot make a specific interpretation of "treatment" for

each waste code (such an interpretation would be tantamount to a "soft hammer" treatment standard, which is a contradiction in terms). However, the Agency is able to offer a list of appropriate technologies to be considered as treatment for most of the F- and K-list "soft hammer" wastes (see section III. A. 8). In addition, EPA can list generic types of treatment for organic and inorganic wastes, in order of preference (i.e., which are best, next best, and so forth). However, as a preliminary matter, the Agency feels a discussion of the proposed approaches to interpreting "treatment" and comments received will be useful in understanding the difficulties encountered were one to take an alternative approach.

In the April 8 proposal, EPA expressed its belief that Congress intended that, during the period of the "soft hammer", only wastes treated to the most protective levels achievable by practically available technologies (if any) may be land disposed in landfills and surface impoundments (and that only the most protective of such units, i.e., units meeting the minimum technological requirements (MTRs) of section 3004(o), may be used). However, the Agency also stated that treatment is not required solely for the sake of treatment.

Having not made waste-specific determinations regarding the treatability of "soft hammer" wastes, the problem facing the Agency is to implement an enforceable approach to the "soft hammer" provisions by interpreting "treatment" such that it yields the most environmental benefit practically available, avoids treatment for the sake of treatment, and does not allow sham or *de minimis* treatment. An interpretation which is too stringent (i.e., an interpretation limiting "treatment" to BDAT-type treatment) could actually result in more untreated wastes being disposed in landfills and surface impoundments either because of the lack of such treatment capacity or because the treatment would possibly increase costs beyond a point that would be considered practical. Too lenient an interpretation (i.e., allowing the use of minimal treatment prior to disposal in a landfill or surface impoundment) could conceivably result in requiring treatment for the sake of treatment (an unnecessary burden on generators with little or no environmental benefit) or could actually encourage the use of sham or *de minimis* treatment where more protective treatment is practically available. The Agency does not believe this is what Congress intended.

EPA requested comment on an approach that would limit the scope of treatment technologies to those that yield a designated percent reduction in the toxicity or mobility of hazardous constituents, using a 20% reduction as an example. The Agency received mixed comments, some supporting and some opposing the approach. Some of those supporting the approach suggested limiting the percent reduction to at least 90%. In reviewing comments, the Agency realizes that this approach would fail to mitigate the ambiguities of "treatment". Many commenters expressed concerns in evaluating the percent reduction, especially where a waste or mixture of wastes contains both organics and inorganics (the reduction of organics could concentrate the inorganics). Another problem would be to specify the waste analysis method to be used to evaluate percent reduction. And finally, it is clear to the Agency that many generators lack the expertise to identify appropriate technologies yielding the designated percent reduction without possibly costly and time-consuming analyses. Thus, the Agency would be compelled to identify technologies that yield the designated percent reduction for all "soft hammer" wastes, which the Agency is unable to do. Therefore, EPA is not finalizing this approach to interpreting "treatment".

EPA also requested comment on an approach requiring that "soft hammer" wastes be treated to achieve meaningful reductions of waste toxicity or mobility and stating that sham or *de minimis* treatment cannot give rise to a valid certification. Here again, ambiguity regarding the term "meaningful" concerned many commenters. Also, this approach does not clearly state the Agency's preference for the use of practically available technologies to treat "soft hammer" wastes, providing the most environmental benefit. (Although several commenters indicated that Congress intended to allow "soft hammer" wastes to be disposed without an additional burden of treatment, allowing for whatever treatment has been previously used, the Agency strongly disagrees and believes that Congress certainly would prefer the best practically available treatment of "soft hammer" waste to less complete levels of treatment.)

In today's final rule, the Agency is interpreting "treatment" as processing which reduces the toxicity of the waste or the likelihood of migration of hazardous constituents from the waste. The Agency had attempted to provide some further detail to this broad interpretation by identifying waste management practices which EPA does not intend to require (or encourage) and by providing discussions in this preamble on the types of treatment the generator is expected to investigate.

The Agency emphasizes that it does not intend to require repetitive treatment by the same processes, such as re-incinerating ash derived from the incineration of the original waste. In many cases the Agency expects that the use of a single process to treat the waste, or quite possibly, one process for treating organics and a second process for treating inorganics, will satisfy the treatment requirements of § 268.8. EPA is not, however, absolutely limiting the treatment requirement to a single process because the appropriate treatment for some wastes may involve a standard treatment train of sequential processes, or the treatment residuals from one process may require a second treatment process. For example, use of steam stripping to treat wastewater may result in a concentrated stream that may require incineration before disposal (where the material cannot be recycled). Another example might be ash from incinerating an organic/metal-containing waste. In this case, further treatment (e.g., stabilization) might be required (depending on the concentration level of metals and the practical availability of stabilization). A final example is a waste containing metals and cyanides, which would require separate treatments for both types of constituents. The Agency will evaluate previous practices to determine whether such a train of multiple treatment steps is appropriate for a given waste.

As stated earlier, EPA is not requiring treatment solely for the sake of treatment. EPA believes appropriate technologies exist to treat "soft hammer" wastes, although these technologies may be determined not to be practically available. The Agency is not requiring, in the absence of practically available, appropriate technologies, that technologies which are not appropriate for a given waste be used. However, the appropriate technology which results in the most environmental benefit (i.e., in general, the greatest reduction in toxicity or mobility of hazardous constituents) must be used where practical and available.

EPA has attempted to provide some assistance to the generator on the types of treatment that should be investigated prior to making a certification under § 268.8. This assistance is presented in two ways. First, in section III.A.8. of this

preamble, EPA provided a list of technologies appropriate for treating specific F- and K-list "soft hammer" wastes, in order of preference, i.e., best to next-best and so forth. Because the Agency has not made a specific determination regarding the treatability of each waste, it cannot simply state that the most-preferred technology is BDAT and that each less-preferred technology yields a correspondingly less environmental benefit. However, in general, EPA will use this list of preferred technologies as a basic guide to evaluating whether the generator has investigated the technologies that yield the greater environmental benefit. Also, these appropriate technologies are listed by broad descriptions which EPA generally will not differentiate into more specific types of treatment. For example, "incineration" may mean liquid injection incineration, fluidized bed incineration, or rotary kiln incineration. Another example is "stabilization", which can include the use of silicates, lime/fly ash, cement, or cement kiln dust. Although EPA generally will not differentiate between the different specific treatment systems within the treatment category, the Agency *will* differentiate between the broad categories (i.e., the Agency may invalidate a certification for "stabilization" of organics if "incineration" is practically available, assuming incineration is the more-preferred treatment for the particular waste).

Second, the Agency is providing assistance in the form of a generic hierarchy of preferred treatment types (discussed later in this section). Where the generic hierarchy of preferred treatment types is used, the Agency will generally not differentiate between individual technologies within the generic treatment type to determine whether a different technology should be used. Rather, the Agency will evaluate whether a technology belonging to a more preferred generic treatment type is practically available. For example, "destruction" may mean thermal destruction or chemical destruction. In general, the Agency will not differentiate between the two; however, the Agency may invalidate a certification if a recovery process (a more-preferred generic treatment type) is practically available.

These lists of appropriate technologies and generic treatment types are not intended to be comprehensive, nor are they a complete catalog of the types of treatment that may be appropriate to consider in evaluating available treatment for a specific waste. There may indeed be other types of appropriate technologies available to the generator of which the Agency is unaware (e.g., innovative technologies which the Agency may not consider "demonstrated" or "available" for the purposes of BDAT). [It should also be noted that a more detailed consideration of the actual performance of the technologies may, in fact, reveal that EPA's assumed hierarchy is incorrect for any specific waste and that there may be specific waste streams where a higher-ranked appropriate technology does not provide the greater environmental benefit or is not appropriate for the waste stream. For example, a particular "organic" waste stream may contain an unusually high concentration of metals, such that incineration would not be considered appropriate.] As a practical matter, the lists of appropriate technologies and generic hierarchy of treatment types represent the minimum effort a generator should make in seeking treatment for his waste, serving as a basis for determining whether treatment is practically available. The Agency may require further justification in the demonstration if the certifier has not investigated the availability of the appropriate technologies listed for a specific waste.

Generically, the Agency generally favors recycling/recovery as the best method for treating a waste, eliminating or reducing the residual to be disposed. Where recycling is unavailable or inappropriate or ineffective, the Agency prefers technologies resulting in the destruction of hazardous constituents, where such destruction may be either thermal (i.e., incineration or burning) or chemical, especially for organics. Where neither recovery nor destruction is available or appropriate, immobilization (stabilization) is often effective, especially for inorganic constituents (Cf. H. Rep. No. 198, 98th Cong. 1st Sess. 31 (setting out a comparable hierarchy of preferred waste management alternatives)). EPA wishes to note that, given the results of the TSDR Survey (see section III. H.), the Agency believes that liquid incineration and stabilization are generally available (although the generator must determine whether such treatment is appropriate or practically available for his waste).

b. *Facility.* As proposed in the April 8 proposal, the Agency interprets the term "such facility" in RCRA section 3004(g)(6)(A) to refer to the individual landfill or surface impoundment unit. This interpretation results in the requirement that where "soft hammer" wastes (and treatment residues) are disposed in a landfill or surface impoundment, such unit must meet the minimum technological requirements (MTRs) of 3004(o) applicable to new units (i.e., double liners, leachate collection system, and groundwater monitoring).

The Agency received numerous comments on its proposed interpretation of "such facility". Most commenters opposed this restrictive use of the term and urged the Agency to interpret the term more broadly as referring to the entire facility, so that wastes could be disposed in any unit so long as any new, expanded or replacement units on the facility met the MTRs. The Agency does not agree with these comments and for reasons discussed in the preamble to the proposed rule (53 FR 11766) is finalizing the interpretation as proposed. To accept the interpretation urged by commenters would render section 3004(g)(6) meaningless; facilities are required to meet the requirements of section 3004(o) already by virtue of that provision. A further command to do so is unnecessary. As noted at proposal, the legislative history to this provision also strongly favors the Agency's reading. Moreover, these commenters ignore the remainder of section 3004(g)(6), which not only refers to "such facility" (referring back to landfills and impoundments), but also applies requirements that apply to new facilities, i.e., double liners and leachate collection systems.

EPA's interpretation is also consistent with the special concern that Congress has for surface impoundments and landfills as reflected in section 1002(b)(7) of RCRA:

> Certain classes of land disposal facilities are not capable of assuring long term containment of hazardous waste, * * * and land disposal, particularly landfill and surface impoundment, should be the least favored method for managing hazardous wastes;

Further, the Agency believes that the alternative of accepting the use of the word facility as applying to all units within the property boundary would not lead to the interpretation that the commenters wished, but rather to an even more restrictive result, requiring that the wastes only be disposed at facilities where every landfill and surface impoundment unit at the facility met the MTRs. This results from the reference in the statute to "* * * the requirements of subsection (o) which are applicable to new facilities (relating to minimum technological requirements)". At a new facility (using the property boundary definition of facility), all such units would be required to meet the MTRs. Although the literal language of

3004(g)(6) allows this reading, EPA believes the better interpretation is the one it is adopting.

c. *Practical.* EPA received numerous comments on the April 8, 1988 proposal regarding the "soft hammer" provision. Although the Agency did not specifically request comment on the term "practical", many commenters believed this term was crucial to the interpretation of the statute and expressed their views that Congress intended "practical" to refer to the use of economic considerations in determining whether a treatment technology is a "practical" alternative to land disposal.

In general, the Agency does not consider costs when making waste management determinations under RCRA (since EPA is not authorized to do so), but rather limits such considerations to technical feasibility. However, EPA agrees with the commenters' assertions that economic considerations were not specifically excluded by Congress under RCRA section 3004(g)(6) and that by using the term "practical", Congress also allowed for cost considerations in evaluating whether available treatment is a practical alternative to land disposal for the purpose of the "soft hammer" under 3004(g)(6).

Many commenters expressed their concerns that this interpretation may create inconsistencies and confusion regarding a generator's determinations whether or not treatment is "practical". For example, a generator may consider any increase in cost to be impractical and certify an untreated "soft hammer" waste for disposal when, in fact, cost effective treatment is available. Because this certification would be self-implementing and would be considered valid until EPA took action to invalidate it, the Agency believes a discussion of how it will evaluate demonstrations with regard to the term "practical" is necessary.

Without time for further comment, EPA cannot promulgate a strictly quantified interpretation of the term "practical". Indeed, as with the interpretation of "treatment", such a task is undoubtedly self-defeating. However, the Agency can indicate how it will evaluate demonstrations and certifications regarding whether a treatment technology is practically available.

First, EPA will evaluate demonstrations with a consideration of previous practices. If a generator's "soft hammer" wastes were treated in the past, the Agency would consider at least this type of treatment to be "practical" for that generator. (This assumes that the previous practice is currently allowable; for example, a previous practice of treatment in a surface impoundment that does not qualify for the treatment in surface impoundment exemption under § 268.4, is not allowable.) However, the generator must treat his waste by the *best* treatment (i.e., the treatment yielding the greatest environmental benefit) that is practically available. The Agency does not intend the "soft hammer" provisions to act as an excuse to discontinue current treatment practices (except where such practices are no longer allowable), nor does it intend to limit the scope of "treatment" to only previously conducted treatment.

Second, EPA is presenting a cost ratio that measures the costs of treatment relative to the baseline cost of shipment and disposal in a landfill or surface impoundment unit meeting the minimum technological requirements (MTRs) of 3004(o). The cost of shipment and disposal in an MTR unit is the baseline cost because this cost is incurred by both treated and untreated "soft hammer" wastes (assuming the wastes are disposed in a landfill or surface impoundment; as stated before, wastes disposed by other methods of land disposal are not subject to the demonstrations and certifications of § 268.8).

In general, given the ratio of:

$$\frac{\text{costs of treatment, shipment and disposal}}{\text{costs of shipment and disposal}}$$

EPA will ordinarily consider a ratio of 2.0 or greater not to be "practical". Similarly, a ratio of 1.5 or less will usually be considered "practical". Within the range of 1.5 to 2.0, EPA will generally consider treatment to be "practical" unless the certifier can demonstrate why this cost should be considered not "practical" (subject to judgement of individual circumstances). The Agency emphasizes that this cost ratio and consideration of "practical" is only a basic reference tool, and not a hard and fast rule. The generator may demonstrate that a cost ratio of less than 1.5 is not "practical"; and likewise, EPA may consider a cost ratio of greater than 2.0 to be "practical", especially where previous practices so indicate.

One anomalous situation could result if EPA relied solely upon this cost ratio. For example, Generator A has an on-site MTR unit, while Generator B (across the street from Generator A) must ship his "soft hammer" waste out of state to a commercial disposal facility. The costs of shipment and disposal for Generator A would be negligible, and thus, almost any cost of treatment would be considered to be not practical, given the ratio above. Conversely, Generator B's baseline costs would be much greater, and therefore could be required to consider many more treatment technologies as practical. In such cases, EPA will evaluate Generator A's certification and demonstration of practically available treatment technologies by methods other than the above cost ratio. EPA will use other considerations, such as knowledge of available technologies and relative financial status or size of the facility and evaluate such demonstrations and certifications on a case-by-case basis.

In addition, the Agency emphasizes that where treatment is demonstrated to be a practical alternative to land disposal of untreated wastes, such treatment must be used. For example, a generator whose on-site treatment process is not yet on-line may not disregard "practical" off-site treatment and continue to dispose of untreated "soft hammer" wastes until his treatment process is on-line. Such a generator must employ the off-site treatment. (Note.—As discussed later in section III.C.6. of this preamble, the storage prohibition of § 268.50 applies to "soft hammer" wastes not subject to a *valid* § 268.8 certification. Therefore, "soft hammer" wastes may only be stored "* * * for the purpose of the accumulation of such quantities of hazardous waste as are necessary to facilitate proper recovery, treatment or disposal".)

Furthermore, as stated earlier, the *best* practical *treatment* must be employed (given the list of appropriate technologies and the generic hierarchy of preferred treatment-types and determination of "practical"). This is not to be confused with the *most practical* (or cost-effective) treatment. Once all "practical" treatments have been identified, then the best treatment must be used.

EPA's interpretation of the term "practical" also responds to comments received requesting clarification of whether a generator must investigate treatment on a national or regional basis, or within an established area of, for example, 200 miles from the site. Given the Agency's interpretation of what constitutes "practical", this question becomes moot. The generator must investigate all practically available treatment, regardless of State or Regional boundaries, or any specific distance from the site.

As an alternative to the cost ratio, the Agency considered using a financial

ratio. Under this alternative, EPA would compare the incremental cost of treating a particular shipment of waste to a measure of the generator's financial strength, and determine that treatment is not practical where the ratio exceeded a specified percentage which the Agency believed would impose a significant hardship on the generator. For example, EPA would compare the incremental cost of treatment to the generator's net pre-tax profit for the waste generation period, and would consider a particular treatment to be not practical if the incremental cost exceeded X percent of net pre-tax profit.

The principal apparent advantage to using a financial ratio instead of a cost ratio is that it would tie the determination of whether a treatment is practical to the individual generator's ability to pay for the treatment. Thus the Agency could systematically avoid requiring a generator to incur undue financial hardship in seeking treatment. However, on further analysis, EPA rejected the use of a financial ratio for several reasons.

First, the use of any relatively simple financial ratio would tend to discourage waste minimization. Generators who produced relatively more waste per unit of product than similar generators in their industry would be more likely to exceed the ratio (all things being equal) and, therefore avoid the incremental treatment cost. Thus, this approach could result in rewarding inefficient generators for producing excessive amounts of waste; clearly contrary to the intent of Congress regarding waste minimization.

Second, the use of a financial ratio would pose serious implementation difficulties. For example, evaluating demonstrations for generators who produce wastes from diverse processes would require substantial effort on the part of the generator, EPA, and the States, to generate, coordinate, and substantiate the necessary data.

Third, a financial ratio would be difficult to enforce. In addition to the difficulties likely to be encountered using either the cost ratio or the financial ratio, such as verifying treatment cost data and generator diligence in pursuing treatment options, use of the financial ratio has the added difficulty of verifying the financial data submitted by the generator.

Finally, given the other considerations to be used in evaluating whether treatment is practical in addition to the cost ratio, the Agency believes the cost ratio is the more efficient method to evaluate practical treatment, in terms of time and resources. As illustrated in the example above, the cost ratio is not suited for every situation, and the Agency strongly emphasizes that the cost ratio is not to be the sole consideration in evaluating whether a particular treatment is "practical".

The Agency realizes that not all generators of "soft hammer" wastes have the sophistication in waste management to know the relative costs of treatment, shipping and disposal for their wastes. However, the Agency believes the additional information needed to demonstrate the availability of practical treatment can be easily ascertained. Also, once the generator has investigated available technologies, EPA does not believe that waste management conditions (i.e., the appropriate technologies which are practical and available) initially certified to will change so drastically during the "soft hammer" period that a complete reevaluation of "practical" treatments will be required.

3. Certification Requirements

The Agency received many comments regarding the demonstration and certification required under § 268.8 to properly dispose of "soft hammer" wastes in a landfill or surface impoundment unit meeting the minimum technological requirements of RCRA section 3004(o). EPA is finalizing the certification requirements essentially as proposed in the April 8 proposal, with some changes made in view of the Agency's final interpretation of the terms "treatment", "facility", and "practical".

a. *Certification for Treated "Soft Hammer" Wastes.* Many commenters stated that residuals from treatment of "soft hammer" wastes should not require certification or subsequent management in MTR units. The Agency, however, disagrees with the commenters' reading of the statute and is today promulgating the proposed approach. As discussed in the April 8 proposal (53 FR 11767), the Agency believes the intent of Congress is to require certifications and management in MTR units for residuals from treatment of "soft hammer" wastes. The Agency has not set treatment standards for these wastes, and EPA does not believe that Congress intended for treated "soft hammer" wastes (especially where such treatment may be considered minimal relative to BDAT-type treatment) to be shielded from the requirements of 3004(g)(6) and treated the same as wastes meeting the stringent requirements for treatment under RCRA section 3004(m). It should also be noted that Congress equated treatment residuals and the underlying waste in section 3004(m)(2), so that prohibitions applicable to the waste being treated apply to the treatment residuals as well (unless, of course, the residuals satisfy the applicable treatment standard—not the case for "soft hammer" wastes). Therefore, the requirements of § 268.8 also apply to treatment residues of "soft hammer" wastes. (As discussed more fully below, however, EPA does believe it appropriate to reprioritize the schedule for prohibiting certain wastewater residues from treatment of "soft hammer" wastes. To this extent, EPA has, it believes, accommodated some of the principle concerns raised by commenters.)

Commenters raised one further issue concerning the relationship of the "soft hammer" provision's applicability to treatment residues, plus the restrictions on placing "soft hammer" wastes only in impoundments and landfills that meet minimum technology requirements. A number of companies use BDAT-type treatment to treat "soft hammer" wastes, and then further treat the resulting treatment residues in impoundments that do not satisfy minimum technology requirements. For example, a number of companies incinerate off-specification commercial chemical products which are in the first third of the schedule of listed wastes but for which EPA did not propose treatment standards, and generate scrubber water which is further polished in biological treatment ponds. Such ponds meet the requirements of section 3005(j)(3) and so need not be retrofitted as of November 8, 1988 but for the receipt of the scrubber water from treating a "soft hammer" waste.

This result is not in keeping with the fundamental policy of the land disposal restrictions statutory provisions: effective pretreatment of wastes followed by unprohibited disposal of the treatment residues. In addition, the thrust of the "soft hammer" provision itself is to make disposal of untreated wastes for which there is no treatment standard more difficult, but not necessarily to impose the same difficulties on residues from BDAT type treatment of those wastes.

Accordingly, EPA has decided to modify its proposal so that residues from substantial treatment of certain "soft hammer" wastes may be further treated in land disposal units that do not meet minimum technology requirements. EPA is accomplishing this by amending the schedule of prohibited wastes to indicate that wastewater (i.e., less than 1% total organic carbon (TOC) and less than 1% total suspended solids (TSS)) residues from the treatment of "soft

hammer" wastes by the following list of technologies, are to be included in the third third of scheduled wastes for which EPA is to develop treatment standards. The wastewater residues from treatment affected by this action are limited to those wastewater (less than 1% TOC and less than 1% TSS) residuals resulting from the well-designed and well operated treatment of "soft hammer" wastes by: metals recovery, metals precipitation, cyanide destruction, carbon adsorption, chemical oxidation, steam stripping, biodegradation, and incineration or other direct thermal destruction. There is strong policy justification for taking this step: persons who are substantially treating their wastes to levels that may satisfy ultimate treatment standards are not precluded from further treatment of these wastes in polishing or advanced biological treatment (i.e., sections 3005 (j)(3) and (j)(13) units) that are substantially protective of human health and the environment (although not equivalent to minimum technology impoundments from the standpoint of preventing migration from the unit). Furthermore, EPA does not believe that these types of treatment residuals are the types of highly contaminated wastes deserving of prioritization in the first third of the schedule (see RCRA section 3004(g)(2)).

EPA also has decided to amend the schedule so that leachate and contaminated ground water that are derived from disposal of a "soft hammer" waste, or that contain "soft hammer" wastes, are also in the third third of the schedule (and thus would not be considered to be prohibited wastes until May, 1990 or until EPA establishes treatment standards, whichever is sooner). As discussed in section III.A.4., EPA generally believes that contaminated leachate and ground water (which is basically ground water with the leachate in it) can be treated to meet the treatment standard for the waste from which they are derived or that they contain. Notwithstanding this, however, if there is no treatment standard for the leachate or contaminated ground water to meet, EPA does not believe it fair to impose the "soft hammer" standards on these wastes. These wastes may be highly diluted so that treatment in section 3005 (j)(3) and (j)(13) impoundments may be appropriate. Thus, for reasons of fairness and appropriateness, EPA has decided to amend the schedule in section 268.12 to include leachate and contaminated ground water that are either derived from or that contain "soft hammer" wastes.

The following examples illustrate application of the regulations:

1. Generator A incinerates waste U119, a First Third waste for which EPA has not established a treatment standard. Scrubber water from the incinerator is piped to an aggressive biological treatment impoundment which has a section 3005(j)(3) retrofit waiver which does not satisfy the equivalency standard in section 3004(o)(2).

The scrubber water from incinerating this "soft hammer" waste is not a prohibited waste because it is in the third third of scheduled wastes. Consequently, placement in the surface impoundment does not violate the land disposal prohibitions.

2. Generator B treats a "soft hammer" waste in a wastewater treatment system which consists of chemical precipitation, biological treatment (all conducted in tanks), and polishing in an impoundment which has obtained a section (j)(3) waiver but cannot demonstrate section 3004(o)(2) equivalence.

The wastewater residue is not prohibited for the same reason as in example 1.

3. Generator C generates a leachate which is derived from disposal of certain "soft hammer" wastes and certain First Third wastes for which EPA has established treatment standards. The leachate is piped to an impoundment which has obtained a section 3005(j)(13) variance but has not satisfied section 3004(o)(2) equivalence.

The leachate could not be placed in the impoundment unless it meets the treatment standards for the listed wastes from which it is derived (or the most stringent standard in the event of overlapping treatment standards for the same constituent). However, if the leachate is treated to meet treatment standards before placement in the impoundment, then the placement is legal because the treated leachate would no longer be prohibited (since it would then derive from disposal of "soft hammer" wastes—a Third Third waste—and would meet all applicable treatment standards for the prohibited wastes from which it is derived).

4. Generator D generates a "soft hammer" wastewater which is pumped directly into an on-site impoundment prior to discharge under an NPDES permit. The impoundment is subject to a retrofit waiver under section 3005(j)(13), but cannot demonstrate section 3004(o)(2) equivalence.

The "soft hammer" wastewater is prohibited from land disposal in the (j)(13) impoundment. In this example, there has been no treatment, and thus this wastewater is not a wastewater residue from treatment. Therefore, this wastewater is subject to the prohibitions in § 268.33(f) and precluded from disposal in a non-MTR impoundment.

Three final notes on this matter. EPA is reprioritizing only these selected wastewaters, rather than solids destined for landfill disposal, for a number of reasons. First, wastewaters can be treated further in surface impoundments but not in landfills. Thus, wastewaters could be treated further in non-minimum technology units; solids could not be. EPA thus does not wish to foreclose the possibility of further treatment of "soft hammer" wastewater residuals, leachate and contaminated ground water. There is no corresponding opportunity for treatment for solid residues. Second, most landfill units do meet the minimum technology standards at this time—and virtually all commercial landfill units receiving hazardous wastes do. Thus, the likelihood of residues from substantial treatment of "soft hammer" wastes going to non-minimum technology landfills is not great. In confirmation, EPA made inquiries and was not informed of any actual instances of such residues from treatment of "soft hammer" wastes going to non-minimum technology landfill units. Accordingly, EPA is only reprioritizing the schedule for the wastewaters discussed above. Third, this action does not affect the regulatory status of spent solvents, dioxins, or California list wastes contained in wastewater residues from treatment, leachate, or contaminated ground water. These wastes are not subject to the schedule pursuant to RCRA section 3004(g).

Finally, EPA is amending the schedule of prohibited wastes without notice and comment. EPA believes that the schedule is absolutely committed to its discretion, given that the schedule is not subject to judicial review (see RCRA section 3004(g)(3)). The schedule also arguably constitutes a rule of Agency procedure. In either case, opportunity for prior comment is not required when EPA promulgates or amends the schedule.

b. *Certification by Owners or Operators as Well as Generators.* Comments received from many owners or operators of treatment and disposal facilities expressed strong opposition to EPA's proposed approach to expand the statutory certification requirement applicable to generators to include certification by owners or operators.

Given the Agency's interpretation of "practical", EPA agrees with the commenters. The statute requires the

generator to make the determination whether alternative treatment is practically available. It is doubtful whether the owner or operator is able to determine whether a technology is "practical" for a generator. Also, because the Agency is requiring the generator to use the *best* practically available treatment (i.e., the treatment which yields the greatest environmental benefit), the generator must make the demonstration, whether treatment is practically available or not. Therefore, only the generator is required (and allowed) to make the demonstration and certification pertaining to the practical availability of treatment for his waste.

However, the owner or operator *must* certify that the generator's waste has been properly treated by the technology determined by the generator to be the best practically available treatment. This is consistent with the existing certification requirements under § 268.7(b) and will allow the Agency to track the waste from cradle-to-grave.

EPA emphasizes that it is not requiring an owner or operator to demonstrate that his treatment is the best practical treatment available. Rather, the generator must make this demonstration. However, the owner or operator *must* certify that he has properly treated the waste prior to disposal.

c. *Certification.* Having somewhat better defined the terms "treatment" and "practical", EPA is promulgating a less ambiguous approach to the "soft hammer" than was proposed. However, the basic approach is essentially the same.

Prior to disposal in a landfill or surface impoundment unit meeting the minimum technological requirements of 3004(o), a generator must demonstrate his good faith effort to treat his waste by the best practically available treatment technology(ies). The generator must determine which treatment technologies are practical and available, and choose the best treatment. (Where no treatment is practical or available, the generator may so demonstrate and certify.) To make this demonstration, the generator must provide a list of facilities and facility officials contacted, complete with addresses, telephone numbers and contact dates. The generator must document or otherwise explain his determination that the treatments are not practically available, or where treatments are available, must justify that he has chosen the best treatment that is practically available.

This demonstration and certification must be submitted to the Regional Administrator. The generator must also send the demonstration and certification (and notification) to the receiving facility with the initial waste shipment. Provided that the conditions affecting the certification do not change (i.e., the same demonstration remains applicable), only the certification and notification need be sent with each subsequent waste shipment. (Copies of the certifications and demonstrations for each subsequent waste shipment need not be sent to the Regional Administrator, provided the conditions of the original certification do not change.) The notification, demonstration and certification must also be kept on-site in the generator's records. Also, should the Regional Administrator invalidate his certification, the generator must immediately notify all facilities that have received his waste that the certification (and demonstration) is no longer valid, and must keep records of this communication.

In general, one treatment process will satisfy the requirement with the exceptions of typically-used treatment trains or a combination of technologies, each of which deals with an organic and inorganic component of the waste. The Agency again notes that it generally believes that liquid injection incineration (including burning in industrial furnaces) is available for organic constituents and stabilization technologies are available for inorganic constituents.

Where treatment is available, the generator must send the notification, demonstration and certification to the treatment facility. After proper treatment, the owner or operator must then certify that the waste has been treated by the best practically available treatment (as documented in the generator's demonstration) and send this certification (and notification) and the generator's demonstration with the initial waste shipment to the disposal facility (a demonstration is not required for subsequent shipments unless conditions change). The treatment facility must keep records of demonstrations and certifications (and notifications) received and forwarded to disposal (or other receiving) facilities. The owner or operator of a treatment facility is responsible for treating the waste as the generator indicates in the certification (or demonstration) sent for that particular waste shipment, and for recordkeeping.

The disposal facility may dispose of "soft hammer" wastes (whether treated or not) only in MTR units (including those, like most section 3005 (j)(2) and (j)(4) impoundments, which satisfy the section 3004(o)(2) equivalency standard) (assuming disposal is in a landfill or surface impoundment). The owner or operator of a disposal facility is responsible for ensuring that only "soft hammer" wastes (or residuals) subject to a certification pursuant to § 268.8 (and demonstration, for the initial waste shipment) are disposed in a landfill or surface impoundment unit, and that such unit meets the minimum technological requirements.

An owner or operator of a storage facility must keep copies of notifications, demonstrations and certifications of "soft hammer" wastes received and forwarded.

To implement this approach, the Agency is departing somewhat from the proposed § 268.8. Specifically, EPA is promulgating an additional certification for the generator for cases where practical treatment *is* available. This certification requires the generator to certify that, as indicated in his demonstration, he is sending his waste to be treated by the best practically available treatment for his waste. Also, EPA is adding a certification (similar to the 268.7(b) certification) for the owner or operator to certify that he has properly treated the generator's waste, as indicated in the demonstration.

4. Treatment of "Soft Hammer" Wastes in Surface Impoundments

As discussed in the April 8 proposal (53 FR 11768), "soft hammer" wastes treated in a surface impoundment subject to the exemption for treatment in § 268.4 would be required to be removed at least annually. The Agency proposed to allow that certification for disposal may be made without removal of the residuals provided that no further treatment is practically available. The demonstration and certification may be made at the time of placement in the impoundment for treatment.

Commenters generally supported this approach, citing the identical minimum technological requirements for units which can treat restricted wastes and units which can dispose of "soft hammer" wastes (and residuals) and the potential risk of damaging the impoundment liners during removal. Therefore, EPA is promulgating its proposed approach.

5. Retrofitting Variances

As proposed, today's final rule interprets the variance provisions of 3005(j)(11) to allow "soft hammer" wastes to be treated in surface impoundments that meet the minimum technological requirements of 3004(o) or have received variances under either 3005(j)(2) (one quarter mile from an underground source of drinking water and compliance with applicable ground

water monitoring requirements) or (j)(4) (located and designed to prevent migration of hazardous constituents to ground water or surface water). This result is logical since wastes not meeting treatment standards can also be treated in such impoundments (see section 3005(j)(11)). If there is no further treatment practically available, the residuals would not have to be removed annually, again paralleling the requirements for wastes for which treatment standards have been set and which are being treated in surface impoundments.

Although many commenters stated that the retrofit waivers granted under 3005 (j)(3) or (j)(13) should also be automatically recognized under the land disposal restrictions, the Agency disagrees. EPA believes that Congress would have included these waivers had it intended to do so. Such waivers simply do not automatically satisfy the equivalency standard in section 3004(o)(2), although they may on a unit-specific basis. Moreover, the absence of such exemptions in section 3005(j)(11) is highly suggestive. Even if EPA somehow construed the "soft hammer" provision to allow placement in non-equivalent section (j)(3) and (j)(13) impoundments, placement would still be prohibited under section 3005(j)(11). Therefore, "soft hammer" wastes cannot be treated in surface impoundments operating under retrofit waivers granted under the authority of 3005(j) (3) or (13), unless an equivalence demonstration has been made under 3004(o)(2). If this demonstration has been made, the surface impoundment has satisfied the requirements that would be applicable to new impoundments, and is not prohibited from receiving "soft hammer" wastes. (For a further discussion of these issues, see the April 8 proposal at 53 FR 11768.)

6. Storage Prohibition

As discussed in the April 8 proposal (53 FR 11770–11771), the Agency believes the storage prohibition in § 268.50 is applicable to all First Third wastes, including "soft hammer" wastes. The storage prohibition in RCRA section 3004(j) applies to wastes which are prohibited from "one or more methods of land disposal", and in RCRA section 3004(g)(6), "soft hammer" wastes are prohibited from disposal in a landfill or surface impoundment unit (unless subject to a valid certification).

EPA's proposed approach was that the storage prohibition would no longer apply to "soft hammer" wastes which are subject to a valid certification under § 268.8. No comments strongly opposing this approach were received, and therefore, the Agency is promulgating the approach as proposed. "Soft hammer" wastes thus are prohibited from storage under § 268.50, unless such wastes are subject to a valid certification under § 268.8 (see section III.C.3. for the significance of *valid* certification).

D. Disposal of Restricted Wastes Subject to an Extension of the Effective Date

In the April 8, 1988 proposal, EPA solicited comment on its intent to change the interpretation of RCRA section 3004(h)(4) that was originally promulgated in the November 7, 1986 final rule (51 FR 40572). The Agency's original interpretation provided that restricted wastes subject to an extension of the effective date which are disposed in a landfill or surface impoundment must be disposed in a "facility" in compliance with the minimum technological requirements of section 3004(o). EPA originally interpreted "facility" to refer to the area within the property boundary, encompassing all waste management units (both new and existing). Because the minimum technological requirements of section 3004(o) (double liner, leachate collection system, and groundwater monitoring) only apply to new, replacement, or lateral expansion landfill or surface impoundment units (and not to existing units), a waste subject to an extension of the effective date could be disposed at a "facility" provided all new, replacement, and lateral expansion landfill and surface impoundment units met the 3004(o) requirements. However, this interpretation had little actual impact on whether the restricted waste would be disposed in an individual "unit" that satisfied the 3004(o) requirements.

EPA has reevaluated its original interpretation and now believes that Congress intended the term "facility" to refer to "unit", which is consistent with the Agency's current interpretation of the term "facility" in RCRA section 3004(g)(6), referring to the disposal of First Third wastes for which no treatment standards have been established. Legislative history to section 3004(h)(4), in fact, states that Congress meant to prohibit disposal of restricted wastes subject to a capacity variance in all surface impoundments or landfills except those meeting minimum technological requirements applicable to new facilities. (See H.R. Conf. Rep. No. 1133, 98th Cong., 2d. Sess., 87). (This passage in the Conference Report actually refers to disposal of wastes subject to a case-by-case capacity variance under section 3004(h)(3), but EPA sees no basis for not applying it to section 3004(h)(4) as well.)

Although many commenters opposed this reinterpretation, the Agency believes the intent of Congress is clear. These commenters argued that the language of (h)(4) unambiguously applies to entire facilities and therefore that the Agency's existing interpretation is compelled. EPA disagrees. If anything, the literal language of the provisions compells the Agency's amended interpretation, because (h)(4) refers to "such facility", referring back to landfills and surface impoundments. Moreover, the reading the commenters urge makes the entire section (h)(4) into surplusage. Facilities must already be in compliance with the requirements of section 3004(o) by virtue of section 3004(o) itself. Thus, a waste subject to a capacity variance can only go to an entire facility that is complying with section 3004(o), and a command to do so (which is how the commenters would read (h)(4)) adds nothing to the law which is not already there. Congress clearly had something else in mind in promulgating section 3004(h)(4). The "soft hammer" provision of 3004(g)(6) throws light on congressional intent. This provision, as discussed previously, definitely requires "soft hammer" wastes to be disposed in minimum technology impoundments and landfills. EPA believes that Congress intended the same result for the other type of waste for which a prohibition effective date has passed but is being disposed without complying with treatment standards, namely wastes subject to a capacity variance. Finally, when one reads the unequivocal legislative history stating that wastes subject to a variance should only be disposed in minimum technology landfills and surface impoundments, it is clear to the Agency that not only is it the better reading of (h)(4) to apply to landfill and impoundment units, but that this reading probably is compelled.

However, the Agency does agree with commenters who asserted that EPA has some flexibility in setting the effective date of this new interpretation. Many commenters claimed that an August 8, 1988 effective date of the reinterpretation would disrupt their surface impoundment operations, which have been scheduled to comply with the November 8, 1988 deadline (in section 3005(j)(1)) for retrofitting surface impoundments (i.e., the date on which surface impoundments must cease to receive, store, or treat hazardous wastes unless the unit is in compliance with the minimum technological requirements of section 3004(o), or has received a waiver

from these requirements under RCRA section 3005(j) (2), (3), (4), or (13)). While the 3-month period involved is relatively short, the Agency does agree that this reinterpretation could disrupt surface impoundment operations by, in effect, moving the retrofitting deadline ahead without ample notice. Because it is not EPA's intent to unduly disrupt business operations where flexibility exists to do otherwise, the Agency has decided to make the new interpretation of RCRA section 3004(h)(4) effective on November 8, 1988. Since the interpretation of 3004(h)(4) is not a regulation establishing a prohibition from land disposal, it need not become effective immediately (see RCRA section 3004(h)(1)). However, given that the Agency believes its earlier interpretation to be wrong, that Congress intended that wastes subject to capacity variances to go to minimum technology landfills and impoundments, and that the period of business disruption for impoundments ceases on November 8, EPA believes that good cause exists to make this interpretation effective in three months rather than six (see RCRA section 3010(b)(3)).

E. Relationship to California List Prohibitions

As discussed in the July 8, 1987 California list final rule preamble (52 FR 25773), and as reflected in § 268.32(h) (i.e., the overlap of HOCs and other prohibited wastes), where the Agency makes a waste specific determination involving a California list waste, such determinations will supersede the California list treatment standards and effective dates. This principle also applies to the restrictions on the land disposal of First Third wastes. While it is clear that Agency-established treatment standards or effective dates for First Third wastes are more waste-specific than California list determinations, the applicability of the California list restrictions to "soft hammer" wastes and wastes granted a national capacity variance requires clarification.

1. "Soft Hammer" Wastes

As stated in the April 8 proposal, many of the First Third wastes are also subject to the California list prohibitions. Once treatment standards become effective for such First Third wastes, the California list prohibitions are superseded. However, since no treatment standards will have been promulgated for "soft hammer" wastes (i.e., no waste-specific determinations will have been made for these wastes), such wastes will remain subject to the California list prohibitions and treatment standards.

Because EPA does not believe that Congress intended for the statutory California list prohibitions to act as a shield from requirements promulgated under RCRA section 3004(g)(6), the "soft hammer" requirements will also apply. This includes the requirement that when such wastes (or treatment residues) are disposed in a landfill or surface impoundment only those landfill and surface impoundment units that comply with the minimum technological requirements of 3004(o) may be used. In other words, treatment to comply with the California list prohibitions does not necessarily satisfy the "soft hammer" requirements of 40 CFR 268.8 and, in fact, the California list prohibitions represent the minimum treatment required for such "soft hammer" wastes prior to land disposal—since such wastes are prohibited from land disposal at the statutory levels.

The Agency does, however, make a distinction between wastes which are subject to the statutory prohibitions of RCRA section 3004(d) (e.g., the metals and free cyanides) and wastes which are prohibited under 40 CFR 268.32 and for which EPA has promulgated treatment standards under Part 268 Subpart D (e.g., the liquid hazardous wastes containing halogenated organic compounds (HOCs) in concentrations greater than or equal to 1000 mg/l). For wastes which are subject to treatment standards (rather than the statutory prohibitions of 3004(d), or the codification of the statutory levels, such as dilute HOC wastewaters), EPA has made a determination regarding the best treatment for such wastes. The Agency believes that this determination (and subsequent treatment standard), even though it is not necessarily a waste specific determination, is more protective than the treatment requirement under the "soft hammer" provision of § 268.8. Conversely, for wastes which are subject to the statutory prohibitions of 3004(d), or which are subject to the statutory levels codified in 40 CFR 268.32, EPA has not made a determination regarding the best treatment for such wastes, and therefore, the waste management requirements under the "soft hammer" provision of § 268.8 may be more protective.

Therefore, where "soft hammer" wastes are subject to an applicable California list treatment standard under Part 268 Subpart D (i.e., the treatment standard is currently in effect), the "soft hammer" provisions of § 268.8 do not apply. Likewise, where "soft hammer" wastes are *not* subject to an Agency-established California list treatment standard under Subpart D (or the treatment standard is not yet effective) the "soft hammer" provisions of § 268.8 are applicable, with the minimum acceptable treatment for such wastes being treatment to comply with the statutory prohibitions under RCRA section 3004(d), or the codified statutory levels under § 268.32. Because the "soft hammer" provisions are only applicable to wastes that are disposed in landfills or surface impoundments, "soft hammer" wastes disposed by other methods clearly must comply with the California list prohibitions (which apply to all forms of disposal). This approach is consistent with the Agency's intent that where more than one regulatory requirement applies, the more stringent requirement governs.

EPA is providing the following list of P- and U-list "soft hammer" wastes which are potentially subject to the California list HOC treatment standard on November 8, 1988 (see section III.H. of this preamble for a discussion of the rescission of the previously granted national variance for HOCs) for the benefit of the regulated community. EPA notes that such wastes have the *potential* to be subject to the California list HOC treatment standards, depending upon the concentration levels of Part 268 Appendix III halogenated organics (52 FR 25791). After November 8, 1988, such wastes will not be considered "soft hammer" wastes (because they will have an applicable treatment standard) and will not be subject to the prohibitions in § 268.33(f) or the certification requirements of § 268.8. The wastes must be treated in accordance with § 268.32 until EPA promulgates more waste-specific treatment standards.

"Soft Hammer" Wastes Potentially Subject to the California List HOC Treatment Standard

K017—Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin
K021—Aqueous spent antimony catalyst waste from fluoromethanes production
K073—Chlorinated hydrocarbon waste from the purification step of the diaphragm cell process using graphite anodes in chlorine production
K085—Distillation of fractionation column bottoms from the production of chlorobenzenes
P004—Aldrin
P016—Bis-(chloromethyl) ether
P036—Dichlorophenylarsine

P037—Dieldrin
P050—Endosulfan
P058—Fluoracetic acid, sodium salt
P059—Heptachlor
P123—Toxaphene
U029—Methyl bromide
U036—Chlordane, technical
U037—Chlorobenzene
U041—n-Chloro-2,3-epoxypropane
U043—Vinyl chloride
U044—Chloroform
U046—Chloromethyl methyl ether
U061—DDT
U066—1,2-Dibromo-3-chloropropane
U067—Ethylene dibromide
U074—1,4-Dichloro-2-butene
U077—Ethane, 1,2-dichloro-
U078—1,1-Dichloroethylene
U129—Lindane
U130—Hexachlorocyclopentadiene
U158—4,4-Methylene-bis-(2-chloroaniline)
U185—Pentachloronitrobenzene
U192—Pronamide
U209—1,1,2,2-Tetrachloroethane
U210—Tetrachloroethylene
U211—Carbon tetrachloride
U226—Methylchloroform
U227—1,1,2-Trichloroethane
U228—Trichloroethylene
U237—Uracil mustard

The following examples illustrate the principles discussed above regarding overlap of California list and "soft hammer" wastes:

1. Generator A generates a corrosive waste which is also a commercial chemical product listed in § 268.10 (i.e., a First Third waste). EPA has not promulgated a treatment standard for this waste.

Generator A cannot dispose of the waste until it is treated so that it is no longer corrosive (or liquid) (see 40 CFR 268.32(a)(1), codifying the statutory prohibition level). The waste also is subject to the "soft hammer" provisions, so that further treatment may be required if the waste is destined for land disposal in an impoundment or landfill, and such units must comply with the minimum technological requirements of 3004(o).

2. Generator B generates a First Third waste for which no treatment standard has been promulgated that also contains greater than 1000 ppm HOCs, and that is not a wastewater.

In this case, the waste must be treated by the method specified for HOCs in § 268.42. Residues from such treatment would not be subject to the "soft hammer" provisions.

3. Generator C generates a First Third waste for which there is no treatment standard. He mixes this waste with a California list HOC waste that is subject to the treatment method specified in § 268.42.

The mixed waste must be treated by the method specified in § 268.42. Residues from such treatment remain subject to the "soft hammer" provisions (since one cannot automatically render the "soft hammer" provisions inapplicable by mixing a "soft hammer" waste with a waste for which a treatment standard is applicable; to allow this would create a counterproductive incentive. Moreover, the "soft hammer" portion of the mixture still has not met an applicable treatment standard.) However, if the "soft hammer" waste contains organic toxicants, the HOC treatment method undoubtedly constitutes "treatment" for the purposes of the "soft hammer" waste (although further treatment of ash for inorganic constituents may be needed, if practically available).

EPA is aware that the interpretive reading provided in this example means that all residues from treating mixtures of wastes subject to treatment standards and "soft hammer" wastes would have to be disposed in surface impoundments and landfills satisfying minimum technology requirements. There could be cases where it is technically desirable to commingle "soft hammer" wastes with prohibited wastes subject to a treatment standard. If a person desired to dispose of the residues in a non-minimum technology unit, however, he could only do so by segregating the "soft hammer" wastes for separate treatment. The Agency is not certain how often this situation might arise. Should it turn out to pose significant practical problems, EPA would consider redesignating such treatment residues as Third wastes provided all applicable treatment standards are satisfied and provided that the mode of treatment also is appropriate for the "soft hammer" waste.

2. Wastes Granted a National Variance

In the April 8 proposal, EPA solicited comment on its approach to the applicability of the California list prohibitions to First Third wastes for which treatment standards are promulgated, but which also receive a national variance due to insufficient treatment capacity. In setting the treatment standard, the Agency is making a more waste-specific determination (than the California list prohibitions); however, this determination is not effective until the variance ends. EPA proposed an approach where such First Third wastes would remain subject to the California list prohibitions during the period of the national variance.

For example, assume that a liquid metal-containing First Third waste has been granted a national variance because of inadequate capacity to treat the waste to the treatment standard, yet was not granted a variance under the less stringent (in terms of concentration levels of the metal) California list prohibitions that would otherwise be applicable. The Agency's proposed approach would require that, because capacity exists to treat the "California list" waste to allow for land disposal, the California list prohibitions still apply and the "First Third" waste would be required to comply with the California list prohibitions. The First Third treatment standard would then become applicable when the national variance expires.

EPA received no comments presenting a valid argument for not promulgating this approach, and thus, the Agency is finalizing the proposed approach. This approach is also consistent with the Agency's intent that where more than one regulatory requirement applies, the more stringent requirement governs.

F. Petitions To Allow Land Disposal of Prohibited Wastes

Under section 3004 (d), (e), and (f) of RCRA, owners and operators of land disposal units and deep injection wells may petition the Administrator for a variance from the prohibition on land disposal of untreated hazardous waste. To be considered for such a variance, the petitioner must 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."

On November 7, 1986 EPA promulgated regulations (51 FR 40572) that provide procedures for submittal of petitions to allow land disposal of waste prohibited under Subpart C of Part 268. The regulation (40 CFR 268.6) includes information that must be provided in a "no migration" demonstration, the criteria the demonstration must meet, and the Agency's review and approval procedures.

Today's final rule creates additional requirements at 40 CFR 268.6 for petitioners seeking to demonstrate "no migration" for land disposal units by adding new procedural and informational requirements, effective on the date of promulgation, to those already codified at 40 CFR 268.6. (Note: The Agency also has proposed substantive rules to implement the land disposal restrictions for waste disposed in deep injection wells (52 FR 32446, August 27, 1987). The reader should refer to this for a complete discussion of how the Agency intends to apply the "no

migration" standards to deep injection wells.) The additional requirements for land disposal units that EPA proposed (53 FR 11771) involve the following factors:

1. Compliance with other applicable laws;
2. Monitoring plans for land disposal units;
3. Changes in operating conditions from the ones described in the variance application; and
4. Detection of migration of hazardous constituents.

For today's final rule, these requirements remain largely unchanged from the proposal. The Agency received a number of comments regarding the additional requirements for "no migration" demonstrations promulgated in today's rule, as discussed below.

1. Other Applicable Federal, State, and Local Laws

Commenters both supported and opposed a provision that would require petitioners to include information demonstrating that units for which they seek a "no migration" variance comply with other applicable Federal, State, and local laws. Those objecting to this provision did so implicitly, by opposing any additional burdens or requirements on petitioners desiring to demonstrate "no migration" and receive a variance.

As EPA stated at proposal, this requirement is needed to reveal environmentally sensitive areas and endangered species which must be protected. Since all subtitle C facilities obviously must comply with all applicable laws, the Agency is not imposing any substantive burden, and indicating which other laws apply in the "no migration" petition serves the useful function indicated above and so justifies any incremental administrative burden.

2. Monitoring Plans

a. *Requirement for monitoring media of concern to verify compliance with "no migration" demonstration.* EPA proposed that petitioners monitor their units (unless monitoring is technically impractical or infeasible) to determine if the "no migration" standard has been satisfied. Commenters both supported and opposed different aspects of this provision. The Agency continues to believe its proposal to be simple common sense. Without continued monitoring of a unit to verify the demonstration that there will be no migration for as long as the waste remains hazardous, there is no way to confirm that the "no migration" standard is being met. Thus, EPA is requiring monitoring of the appropriate media at the unit boundary. Since a "no migration" unit is to prevent migration for as long as the waste remains hazardous, monitoring in theory could last in perpetuity. EPA believes as a practical matter that monitoring until the end of the post-closure care period in 40 CFR 264.117(a)(2) (i) and (ii) (or until the wastes are removed from the unit) should suffice. To preserve flexibility, however, the Administrator may specify an alternate monitoring period on a site specific basis.

Other commenters emphasized that monitoring should not be required in a generic fashion that would cause unnecessary monitoring at some units, with no site-specific flexibility. The Agency agrees. Petitioners should include information that clearly demonstrates why monitoring of any medium would be unnecessary.

Commenters also suggested that where Subpart F ground water monitoring already exists, additional ground water monitoring should not be necessary. EPA disagrees. Subpart F ground water monitoring is not measured at (or as near as possible to) the unit boundary, and so will not detect migration at the earliest practicable time, and therefore will not be sufficient for the purposes of "no migration" verification. The Agency believes that monitoring immediately at, or as near as possible to, the unit boundary must be performed to assure that there "will be no migration from the disposal unit."

b. *Exclusion from "no migration" where monitoring is "technically infeasible or impractical".* EPA proposed that monitoring would not be required for one or more media where owners or operators demonstrate that monitoring is technically infeasible or impracticable. Most comments received opposed this provision. Commenters believed that monitoring should be mandatory, and that no infeasibility exclusion exists under Part 264 monitoring requirements. Some commenters argued that if monitoring cannot be performed to verify "no migration", a variance should not be granted, because a demonstration cannot be made with a "reasonable degree of certainty" if monitoring is infeasible. Some commenters felt that predicting "no migration" based on modeling cannot replace the use of monitoring data to verify that migration is not occurring.

The Agency agrees in principle that, in most cases, monitoring of surface disposal units is required to verify a "no migration" demonstration and that modeling alone will not be sufficient for such units. The Agency recognizes, however, that monitoring immediately at the unit boundary sometimes will be difficult in certain locations or under unusual physical conditions at a site. In these cases, EPA would require monitoring (or modified monitoring) to be conducted as near as possible to the unit boundary without compromising the integrity of the unit.

3. Changes From Conditions Described in the Variance Application

This provision requires owners or operators to report to the Administrator any changes or planned changes in conditions at the unit and/or the environment around the unit that may affect conditions upon which the petition was approved. Most comments received concerning this provision supported minimizing reporting requirements for those cases where an owner or operator plans or observes changes to a "no migration" unit. Commenters favored immediate reporting only of those changes to the variance that are significant and affect the potential for migration of hazardous constituents from the unit. EPA agrees that minor and seasonal changes in parameters such as pH, conductivity, salinity, etc. do not warrant a report to the Agency. However, the Agency believes that where changes are planned or occur that would significantly depart from those conditions described in the variance and that would affect potential migration of hazardous constituents, the owner or operator should report them. In particular, proposed changes in the waste stream received, operating practices, or unit design and construction must be reported. In addition, unusual and significant changes in the environment, such as the water table or surface water flow, warrant reporting.

4. Detection of Hazardous Constituent Migration

This provision remains essentially unchanged from the proposal. It requires that if the owner or operator determines there is migration of hazardous constituents from the unit, he must immediately suspend receipt of prohibited waste and notify EPA within 10 days. The Agency is required to determine the appropriate action to be taken within 60 days from notification.

Certain commenters indicated that to avoid false positives, additional sampling to verify a release should be allowed before making a determination that migration has occurred. The Agency agrees. While some commenters objected that action should be taken immediately upon detection of a release, EPA believes that verification within the 10-day time period is reasonable. The

proposed 10-day notification period should provide ample time for the owner or operator to perform additional sampling to verify that waste constituent migration from a unit has occurred. Therefore, the Agency has decided to retain a 10-day notification period.

Commenters also objected to the proposed 60-day period, in which the Agency determines whether the owner or operator of a unit can continue to receive prohibited wastes and whether the "no migration" variance is to be revoked, as being too lengthy. EPA disagrees and believes that the 60-day period is needed to determine whether the termination of waste acceptance and the revocation of the "no migration" variance is appropriate. Furthermore, the 60-day time period is the maximum time for the Agency to decide; under circumstances that the Agency determines warrant a faster response, it will do so.

Some commenters also stated that where the release is temporary, or once it has been corrected, waste acceptance should be resumed. EPA disagrees. We instead concur with comments indicating that once a verified release has occurred at levels that would constitute migration, the "no migration" demonstration will have failed, and the unit will have violated the terms of the "no migration" variance. At this point, the "no migration" variance would be revoked for that unit. (Corrective action might also be required pursuant to section 3004(u) or 3008(h).)

G. Approach to Comparative Risk Assessment

1. Proposed Use of Risk Analyses

Within the regulatory framework for implementing the land disposal restrictions, the Agency has in the past considered certain criteria in the determination of "available" treatment technologies. Among the criteria formerly considered was whether application of a treatment technology poses greater risks to human health and the environment than those posed by direct land disposal of the waste. See 51 FR 40592–40593 (November 7, 1986).

The previous framework for determining Best Demonstrated Available Technologies employed a methodology that evaluated the analytical results of the comparative risk analyses to identify whether a treatment alternative was "available" to set 3004(m) treatment standards. Because of the strong statutory presumption against land disposal, particularly RCRA sections 1002(b)(7) and 1003(a)(6), the analysis required that a treatment technology must be clearly more risky than land disposal (beyond the level of uncertainty in the model) before it could be designated as unavailable. Although the Agency conducted comparative risk assessments in the development of regulations prohibiting land disposal of certain spent solvent and dioxin-containing hazardous wastes (November 7, 1986 final rule) and California list wastes (July 8, 1987 final rule), use of the analyses did not affect the determination as to whether a specific treatment technology was available.

In both proposals on First Third wastes (see 53 FR 11774, April 8, 1988 and 53 FR 17606, May 17, 1988), it was explained that the Agency had decided not to utilize the existing comparative risk assessment approach for this rulemaking and was reconsidering its future application in the determination of "available" treatment technologies. One of the primary concerns addressed in the proposals related to cases where the land disposal practice is found to be less risky than any of the treatment alternatives. In such a situation, the analysis would result in a determination that no treatment technologies are "available" for the purpose of setting treatment standards. Because land disposal is prohibited by the statute in many cases, this determination would mean that a generator could not treat and land dispose of such wastes, even though the treatment technologies in question may be in compliance with other regulatory standards that are deemed protective of human health and the environment and may provide substantial treatment.

In the April 8, 1988 and May 17, 1988 proposals, the Agency solicited comment on a risk analysis approach that would distinguish between the overall degree of risks posed by alternative treatment technologies. Under this proposed approach, the net risk posed by alternative practices would be considered in the identification of "best" treatment technologies.

2. Agency Response to Comments

A number of commenters submitted remarks pertaining to the utilization of some form of risk analysis process. Several of these commenters specifically addressed the proposed approach to comparative risk assessment, while most of the others made recommendations to EPA on risk comparisons between alternative treatment technologies.

Those who commented on the proposed approach, generally agreed that the comparative risk assessment should be modified to account for the anomalous results that could occur using the existing method. One commenter supported the Agency's decision in which the risks posed by direct land disposal and alternative treatment technologies would no longer be compared. This commenter asserted that EPA does not have the authority under RCRA to conduct such a comparison as a basis for establishing BDAT. Other commenters continued to support an approach that weighs the risks of treatment technologies against the risks of disposal of untreated wastes in the consideration of "available" treatments. One commenter argued that the existing comparative risk approach should be modified rather than discarded because it serves as a valuable tool where land disposal is less risky than some treatment alternatives but more risky than others. Another commenter stated that Congress could not have intended the EPA to choose a treatment method that presents more risks than land disposal.

As indicated in the November 7, 1986 final rule (see 51 FR 40593), EPA interprets section 3004(m) as directing the establishment of treatment standards which minimize the threat to the "environment" as applying to all media (i.e., air, land, and water). Because there is no language indicating that this term does not include all media, EPA does not believe that the section 3004(m) standard can be read to preclude comparative risk analyses. However, the development of 3004(m) standards, which substantially diminish toxicity or reduce the likelihood of migration of hazardous constituents, specifically apply to "levels or methods of *treatment*", and are not contingent upon a risk comparison of treatments to land disposal. Upon further consideration, the Agency believes that the existing risk analysis approach does not begin with a comparison of equally viable options since land disposal of untreated wastes is not a viable alternative management practice under RCRA (see also RCRA sections 1002(b)(7) and 1003(a)(6)). In view of this point and the concern noted earlier, the Agency has concluded that use of the risk analysis method previously employed provides minimal benefit as a decision tool. Thus, the Agency has chosen not to utilize the existing comparative risk assessment approach in developing this final rulemaking.

The majority of the commenters who addressed risk assessments urged the Agency to compare risks between alternative treatment technologies. Several commenters asserted that the

methodology for selecting BDAT should assess the achievement of alternative treatment technologies in reducing the release of hazardous constituents to environmental media. Other commenters urged the Agency to complete comparative risk assessments between specific technologies and the proposed BDAT with respect to only certain hazardous waste codes. The Agency agrees that comparative risk analyses between applicable technologies would likely provide useful information for identifying BDAT.

3. Future Use of Comparative Risk Assessment

In the proposed rulemakings (53 FR 11774, April 8, 1988; 53 FR 17606, May 17, 1988), EPA indicated that risk analyses may be conducted to distinguish between the overall degree of risk posed by alternative treatment technologies and to make determinations concerning the "best" technology based on net risk posed by the alternative practices. In light of the commenters' support, EPA is examining the feasibility of implementing such an approach under future land disposal restriction determinations. However, as a result of the time constraints of the statutory schedule, EPA is unable to develop and utilize such an approach for the waste codes addressed by today's final rulemaking. To the extent possible, additional details of an approach for comparing risks between alternative technologies will be included as part of a proposed rulemaking on land disposal prohibitions for "Second Third" wastes.

H. Determination of Alternative Capacity and Effective Dates for First Third Wastes, F001–F005 Spent Solvents, California List Halogenated Organic Compounds, and Contaminated Soil and Debris

As explained in the May 17, 1988 proposed rule, EPA developed a new data base for capacity analyses, comprised of information from responses to the National Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities (the TSDR Survey). EPA conducted the TSDR Survey during 1987 and early 1988 to obtain comprehensive data on hazardous waste management capacity and on volumes of hazardous waste being land disposed. The TSDR Survey was sent to all RCRA permitted or RCRA interim status facilities that have or plan to have treatment, disposal or recycling capabilities. The TSDR Survey was also sent to a statistical sample of facilities that have only storage. This new data base is the primary source of data for evaluation of capacity for this rule, with supplemental data used as needed. A complete description of the TSDR Survey data set and other supplemental data will be found in the *Background Document for First Third Wastes to Support 40 CFR Part 268 Land Disposal Restrictions First Third Waste Volume, Characteristics and Available Treatment Capacity,* referred to hereafter as the "Capacity Background Document".

On November 8, 1988 certain capacity variances promulgated in the Solvents and Dioxins final rule (51 FR 40572) expire and the wastes that had been covered by the extended effective date will be subject to the land disposal restrictions treatment standards. Also, as explained in section III. H. 4., the Agency is rescinding certain capacity variances promulgated in the California list final rule (52 FR 25760). Several commenters expressed concern that the increase in wastes requiring treatment capacity because of variance expirations and rescissions were not included in the capacity analyses for the proposed rule. The commenters argued that the volumes of these wastes reduce the capacity available for treatment of First Third wastes. However, the commenters were incorrect in this assertion; the volumes of wastes that were subject to capacity variances that are expiring or are being rescinded were included in the capacity analyses in the May 17 proposal. The capacity available for treating First Third wastes presented in the May 17 proposal, and in today's final rule, reflects only the amount of available capacity remaining after accounting for the treatment of wastes restricted from land disposal under the Solvents and Dioxins and the California list final rules.

1. Total Quantity of Land Disposed First Third Wastes

The capacity analyses for the First Third wastes for which EPA is promulgating treatment standards were performed using the new TSDR Survey data. EPA estimated the total quantities of First Third wastes that are land disposed annually based on the results of the TSDR Survey. The total waste quantities and the methods by which the wastes are stored, treated, and disposed are presented in Table 1 below. One method of land disposal, underground injection, is not included in the analyses. Underground injection has been addressed in separate rulemakings. Other methods of land disposal that are affected by today's rule, such as utilization of salt dome and salt bed formations and underground mines and caves, are not addressed in the capacity analyses because of insufficient data.

About 71 million gallons of First Third wastes are disposed of in surface impoundments annually. Ultimately, all of this waste will require alternative treatment capacity. Approximately 6 million gallons of First Third wastes are stored in surface impoundments annually. Stored wastes are eventually treated, recycled, or permanently disposed in other units. To avoid double counting, the volumes of wastes reported as being stored in surface impoundments were not included in the estimates of volumes requiring alternative treatment capacity. However, these wastes will eventually require alternative storage capacity because of the restrictions on placement of wastes into surface impoundments.

About 328 million gallons of First Third wastes are treated annually in surface impoundments that do not meet minimum technology requirements, or are residuals that have been removed from those surface impoundments that do meet minimum technology requirements. An additional 49 million gallons are stored in waste piles, 29 million gallons are treated in waste piles, and 378 million gallons are disposed in landfills and land treatment units.

TABLE 1.—TOTAL VOLUME OF LAND DISPOSED FIRST THIRD WASTES

[Million gallons/year]

Storage:	
Waste piles	49
Surface impoundments	6
Treatment:	
Waste piles	29
Surface impoundments	328
Disposal:	
Landfills	302
Land treatment	76
Surface impoundments	71
Total	861

Table 2 and Table 3 subdivide the total amount of land disposed First Third wastes into two categories: wastes for which treatment standards are being promulgated today, and wastes for which treatment standards are not being promulgated but which are subject to the "soft hammer" requirements. Wastes for which standards are being promulgated today are presented in Table 2 below.

TABLE 2.—VOLUME OF LAND DISPOSED FIRST THIRD WASTES FOR WHICH STANDARDS ARE BEING PROMULGATED

[Million gallons/year]

Storage:	
Waste piles	41
Surface impoundments	4
Treatment:	
Waste piles	27
Surface impoundments	320
Disposal:	
Landfills	274
Land treatment	76
Surface impoundments	70
Total	812

Table 3 presents the waste quantities and the method of land disposal for the First Third wastes for which treatment standards are not being promulgated, and which are subject to the "soft hammer" provisions. This category includes all of the First Third P and U wastes, as well as the following wastecodes: F007, F008, F009, F019, K011, K013, K014, K017, K031, K035, K046(partial), K069(partial), K073, K084, K085, K086, K101 (partial), K102 (partial), K106, and wastewaters from F006, K004, K008, K021, K022, K036, K046, K060, K061, K069 and K083.

TABLE 3.—VOLUME OF LAND DISPOSED FIRST THIRD WASTES FOR WHICH STANDARDS ARE NOT BEING PROMULGATED

[Million gallons/year]

Storage:	
Waste piles	8
Surface impoundments	2
Treatment:	
Waste piles	2
Surface impoundments	7
Disposal:	
Landfills	28
Land treatment	<1
Surface impoundments	1
Total	48

2. Required Alternative Capacity

The Agency assessed the requirements for alternative treatment capacity resulting from the promulgation of today's rule. EPA first characterized the volumes of First Third wastes for which treatment standards are being promulgated, since these wastes require alternative treatment. Waste streams were characterized on the basis of land disposal method, waste code, and physical/chemical form. Using this information, the Agency determined which treatment technologies are applicable to the waste volumes and placed the wastes into treatability groups. The volumes of alternative treatment capacity that would be required when owners or operators comply with the land disposal restrictions being promulgated was then determined. Based on this analysis, the Agency estimates that today's rule could affect about 812 million gallons of First Third wastes that are land disposed annually. Of this total, about 777 million gallons will require alternative treatment capacity, the remainder being stored. As explained elsewhere in this preamble, EPA is promulgating treatment standards expressed as concentration limits based on the performance of the Best Demonstrated Available Technology (BDAT). It is not a requirement that BDAT be used to achieve the concentration levels, but these technologies, as described in section III. A., were generally used as the basis for determining available capacity.

Several commenters expressed concern that the capacity required to treat "soft hammer" wastes was not considered in the capacity analyses, and because of this omission, the amount of available capacity would be less than was presented in the May 17 proposed rule. Since "soft hammer" wastes have no BDAT treatment standards, there is nothing upon which to base a capacity analysis. The Agency evaluated the characteristics and volumes of these wastes, and found that because of their physical form and comparatively small volume, they will not have a significant impact on available capacity. (See Table 3.) In addition, the "soft hammer" provisions require that wastes be treated where treatment is practically available (assuming such wastes are disposed in landfills or surface impoundments). If treatment is found not to be practically available, the wastes may be land disposed after appropriate certifications as to availability and practicality of treatment are made. In effect, the generators of "soft hammer" wastes will do waste-specific capacity analyses. If treatment capacity is in particularly short supply, generators can be expected to certify to the lack of practically available treatment and dispose with limited or no treatment. Thus, these wastes should not displace treatment capacity for other restricted wastes.

Also, several commenters said that the capacity for wastes generated at CERCLA response actions and RCRA corrective actions should be included in the analyses, since the number of response actions and corrective actions will be increasing and they could require much of the available capacity to treat large volumes of wastes. The Agency has determined that the greatest likelihood for a conflict of this type is for those wastes where BDAT is identified as solids/sludge incineration. The Agency has evaluated the potential demand for solids incineration capacity from CERCLA response actions and RCRA corrective actions. Although only gross estimates are available at this time, it is clear that this added increment of wastes would be in excess of the solids incineration capacity available. Therefore, a two-year national capacity variance has been granted to soil and debris from RCRA corrective actions and CERCLA response actions contaminated with wastes for which BDAT standards are based on incineration (see section III. H. 5. b.). Other types of treatment capacity (e.g., stabilization, wastewater treatment) appear to be available in amounts sufficient to accommodate other RCRA corrective action and CERCLA response action wastes. EPA plans to do a more quantitative accounting of these wastes for future land disposal restrictions rules as volume estimates become more precise.

Several commenters also argued that the quantities of wastes requiring alternative capacity are underestimated because they do not include "derived from" wastes. To the extent that "derived from" wastes were described in the TSDR survey, they are accounted for in the capacity estimates. However, if "derived from" wastes were misreported or were not included in the TSDR survey report, they may be underestimated. The Agency believes that most of the potential underreporting of "derived from" wastes was for landfill leachate. Large, commercial hazardous waste landfills can produce substantial quantities of leachate which, depending on the types and levels of contamination, may require further treatment. In response to comments raising potential capacity problems for treatment of leachate, the Agency contacted several large commercial hazardous waste landfill operators to determine how they now manage leachate. They indicated that most leachate is now sent to POTW's, to NPDES discharge or to underground injection. Since all of these practices can continue to be used, there does not appear to be a capacity constraint on disposal of leachate.

Commenters also raised questions about the ability to treat leachate derived from multiple waste streams to the appropriate treatment standards.

The Agency examined data on leachate submitted by large, commercial hazardous waste facilities and found that levels of hazardous constituents were generally well below those seen in industrial wastes. This indicates that wastewater treatment processes should provide sufficient treatment to allow leachate to meet the applicable standards. Since available wastewater treatment capacity far exceeds the demand, the Agency has concluded that there is no capacity constraint on treatment of leachate. (See section III. A. 4. for more discussions of the applicability of treatment standards to leachate.)

The volumes of First Third wastes that require alternative treatment/recycling capacity are presented in Table 4. This table includes only the quantities of wastes that require alternative commercial capacity; the volumes given do not include wastes that can be treated on-site by the generator. Several commenters argued that the Agency overestimated the amount of on-site capacity since there is no guarantee that on-site treatment will achieve the regulatory treatment standards. However, the Agency included only BDAT treatment in its assessment of both off site and on-site capacity. EPA develops BDAT such that any well-designed and well-operated treatment process should be capable of complying with the standards.

TABLE 4.—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR FIRST THIRD WASTES

[million gallons/year]

Waste code	Required capacity
F006	129.0
K001	3.7
K021	[1] 0.0
K022	0.1
K044	0.0
K045	0.0
K046	1.6
K047	0.0
K060	0.0
K083	0.1
K086	0.2
K087	1.4
K099	0.0
K101/102	0.1
K004	0.0
K008	0.0
K015	0.0
K016	0.3
K018	0.0
K019	0.1
K020	<0.1
K024	0.2
K030	<0.1
K036	0.0
K037	<0.1
K048	37.1
K049	32.6
K050	11.8
K051	78.1
K052	12.5
K061	83.1
K062	40.1
K069	0.0
K071	3.9
K103	0.1
K104	<0.1

[1] See section III. H. 3. i. for a discussion of wastes not requiring alternative treatment capacity.

3. Capacity Currently Available and Effective Dates

Table 5 below presents the volumes of First Third wastes that require alternative treatment capacity, arranged according to the technology description of the alternative treatment required. The amount of capacity that is available in each case is also presented.

It is important to note that some of these wastes, because of their actual physical form, cannot meet treatment standards simply by using the technology identified as BDAT. These wastes must be treated through several steps, called a treatment train. The Agency assumed that the residuals in such cases will be treated using alternative technologies prior to land disposal; therefore, the total volumes reported were assigned to appropriate technologies.

TABLE 5.—ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR FIRST THIRD WASTES

[Million Gallons/Year]

Technology	Available	Required
Incineration:		
Liquids	274	<1
Solid/Sludge	7	[1] 6–160
Solvent Extraction	1	[1] 0–154
Stabilization	495	231
High Temperature Metals Recovery	34	62
Wastewater Treatment:		
Chromium reduction, chemical precipitation, settling/ filtration	260	40
Carbon adsorption, chromium reduction, chemical precipitation, settling/filtration	12	1
Sludge Treatment:		
Acid leaching, chemical oxidation, sludge dewatering	0	4

[1] Both incineration and solvent extraction are alternative technologies for K048–K052. Thus, the alternative capacity required for First third wastes ranges from 6 to 160 million gallons/year for solid/sludge incineration, and 0 to 154 million gallons/year for solvent extraction.

a. *Liquid Incineration.* Treatment standards for K015, K083 and K086 wastes are based on liquid incineration. The Agency estimates that about one million gallons per year of these wastes require liquid incineration treatment capacity. Using the new TSDR survey data, the Agency evaluated commercial capacity and determined that there is approximately 274 million gallons available, ample capacity to treat these wastes. Thus, no capacity variance was granted for K015, K083, or K086 wastes.

b. *Solid/Sludge Incineration Capacity.* Treatment standards for K001, K016, K018, K019, K020, K022, K024, K030, K037, K087, K101 and K102 wastes are based on solid/sludge incineration. The Agency estimated that 6 million gallons per year of these wastes require solid/sludge incineration capacity. Using the new TSDR Survey data, the Agency evaluated commercial incineration capacity and determined that there was about 7 million gallons of solid/sludge incineration capacity available. Based upon this data, the Agency did not grant a capacity variance for these wastes.

The Agency received a number of comments on the availability of incineration for K001 wastes. Commenters noted that some incineration facilities refused to take K001 wastes containing pentachlorophenol, while other facilities would accept only "true" K001 wastes, and not wastes which resemble, but are not, K001. Commenters also noted that substantial volumes of K001 wastes, as well as some soils contaminated with K001, will be generated when surface impoundments at wood preserving facilities are closed. Based on these factors, some commenters requested that a two-year national capacity variance be granted for K001 wastes.

An industry association submitted comments which included an informal survey conducted by one of its members of eight solids incineration facilities. According to these comments, three of the facilities would accept K001 waste for incineration without constraints on whether it was "true" K001 or K001-like waste. A fourth facility expected to receive a permit modification prior to August which would enable it to take K001, again without constraints. Two facilities said they would incinerate "true" K001 wastes. One facility would not accept K001 with pentachlorophenol. The final facility was not planning to continue incineration activities.

This information indicates that there is capacity available to incinerate "true" K001 wastes. The wastes which resemble, but are not, K001 are not subject to the treatment standards and, therefore, cannot be considered in capacity determinations. Finally, if a particular generator cannot find an incineration facility that can or will accept his waste, he may qualify for a case-by-case extension of the effective date (see 40 CFR 268.5).

It is possible that K001 wastes produced when old surface impoundments are closed could exceed the available commercial incineration capacity, particularly if the incineration was scheduled to occur within the next twelve months. However, a number of factors could affect the amount of K001 generated during closures, particularly closure plans which incorporate *in situ* treatment either as a final solution or as a volume reduction measure prior to removal of the waste. Also, as noted above, the generator can apply under § 268.5 for a case-by-case extension of the effective date where special circumstances pertain.

Soils and debris contaminated with K001 (and other First Third wastes requiring incineration) are being granted a two-year national capacity variance (see section III. H. 5.).

Based upon these factors, the Agency will not grant a capacity variance to K001 wastes.

c. *Solvent Extraction or Incineration.* Treatment standards for K048–K052 wastes are based on solvent extraction followed by stabilization of residuals or sludge incineration followed by stabilization of ash. The Agency estimates that about 154 million gallons per year of these wastes require either solvent extraction or sludge incineration capacity as a result of today's final rule. The Agency evaluated commercial capacity and determined that there is approximately 1 million gallons of solvent extraction capacity and 7 million gallons of sludge/solid incineration capacity available. (Approximately 6 million gallons of sludge/solid capacity will be needed for K001, K016, K019, K020, K022, K024, K030, K037, K087, K101, and K102 wastes.) Therefore, a 2-year national capacity variance from the effective date is being granted for these wastes.

d. *Stabilization.* Treatment standards for F006 and K046 wastes are based on stabilization. In addition, stabilization is required for treatment residuals from other wastes. (As discussed in section III. A. 7., the Agency is setting a treatment standard based on stabilization for non-explosive K046 wastes, while allowing the "soft hammer" to apply to explosive K046 wastes.) Because the Agency does not have data which allows it to determine the volume of waste associated with each type of K046, EPA has assumed the entire volume will require stabilization. The Agency estimates that about 148 million gallons per year of these wastes require stabilization capacity as a result of the treatment standards promulgated today.

Many commenters questioned the capacity analysis for F006, arguing that the evaluation of available stabilization capacity does not guarantee that it is capable of achieving the treatment standard. The standard is based on the performance of cement and pozzolanic-based stabilization. Although the TSDR Survey does contain data on other stabilization methods, only these two types of stabilization were included in the capacity analysis (i.e., only the types considered as BDAT). Furthermore, the methodology for determining BDAT includes factors that account for performance variability; therefore, the Agency is reasonably sure that the capacity included in this analysis is capable of achieving the treatment standard. The Agency evaluated commercial capacity and determined that there is approximately 495 million gallons of stabilization capacity available, more than enough to treat these wastes. No capacity variance is being granted for wastes for which treatment standards are based on stabilization.

e. *High Temperature Metals Recovery/Stabilization.* The treatment standard for K061 waste containing 15% or more total zinc (high zinc K061) is based on high temperature metals recovery. For wastes containing less than 15% zinc (low zinc K061) the standard is based on stabilization. Based on data received from commenters, approximately 75% of K061 waste contains 15% or more total zinc. Thus, an estimated 62 million gallons of high temperature metals recovery capacity is required but only 34 million gallons of capacity is available. Therefore, a two-year national capacity variance from the high temperature metals recovery standard has been granted to high zinc K061 wastes. As discussed in section III. A. 7., the Agency is setting an interim standard for high zinc K061 wastes based on stabilization. Consequently the entire volume of K061 waste will require stabilization capacity on an interim basis. Thus, the required stabilization capacity is 83 million gallons for K061 plus 148 million gallons for other wastes, for a total of 231 million gallons.

Using the new TSDR survey, the Agency has determined that there is enough stabilization capacity for K061 wastes and other waste codes and, therefore, no capacity variance is being granted for the two-year period during which the interim stabilization standard will be in effect.

f. *Wastewater Treatment.* Treatment standards for K062 waste are based on wastewater treatment (chromium reduction, chemical precipitation and filtration). The Agency estimates that less than 42 million gallons per year of this waste require various types of wastewater treatment as a result of the treatment standards promulgated today.

Using the new TSDR survey data, the Agency evaluated commercial capacity and determined that there is adequate capacity available for wastewater treatment. Therefore, no capacity variance is being granted for K062.

g. *Sludge Treatment.* Treatment standards for K071 waste are based on sludge treatment (acid leaching, chemical oxidation, and sulfide precipitation and filtration). The Agency estimates that about 4 million gallons per year of this waste requires sludge treatment as a result of the treatment standards promulgated today.

After analyzing the new TSDR Survey data, the Agency has determined that there is not enough treatment capacity commercially available to treat K071. Therefore, a 2-year national capacity variance is being granted for K071.

h. *Wastes for Which Treatment Standards are Based on Solvent Recovery or Solvent Extraction.* The treatment standards for K103 and K104 wastes are based on solvent recovery. BDAT for K103 is solvent extraction, followed by steam stripping, followed by carbon adsorption, followed by carbon regeneration. BDAT for K104 is solvent extraction followed by liquid incineration and followed by steam stripping, followed by carbon adsorption, followed by carbon regeneration.

Using the new TSDR Survey data, EPA determined that the only volumes of these wastes that require alternative commercial capacity are those "derived from" wastes not amenable to solvent recovery or solvent extraction because of their physical forms. Therefore, the Agency assumed that the K103 and K104 wastes requiring alternative treatment will undergo incineration, followed by stabilization of the ash. The Agency believes that this treatment can achieve the standard, and the volumes of K103 and K104 requiring alternative treatment have been included in the incineration and stabilization totals.

i. *Wastes Not Requiring Alternative Capacity.* After reviewing the new TSDR Survey, EPA determined that a number of First Third wastes do not require alternative capacity, even though treatment standards are being promulgated. These wastes are: K004, K008, K015, K018, K021, K036, K044, K045, K047, K060, K099, and some K069. Each of these is discussed below.

Treatment standards for K044, K045 and K047 wastes are based on open detonation, for which there is no capacity constraint. The Agency believes that when open detonation is properly conducted, the residuals are no longer reactive, nor do they exhibit any other characteristic. Other treatment methods which achieve the same results are also permissible. Therefore, K044, K045, and K047 do not require alternative commercial capacity and further analysis is not necessary.

Treatment standards for K099 waste are based on chlorine oxidation. The Agency determined that this waste is only being generated at one facility, and that the generator is able to treat the waste on-site. Therefore, no volumes were reported as requiring alternative commercial capacity and no further analysis is necessary.

Treatment standards for K015 waste are based on liquid incineration, and standards for K018 waste are based on solid/sludge incineration. After analyzing the new TSDR Survey data, the Agency determined that neither of these wastes was reported in the TSDR survey as being land disposed. Therefore, no alternative treatment capacity is required. It is possible that all of these wastes are being treated on-site and do not require commercial capacity. It is also possible that these wastes are not being land disposed, or if they are, they are land disposed by a method not covered in the TSDR Survey (underground mines) or not included in the proposed rule (deep well injection). Finally, the wastes may not have required alternative capacity in 1986, the reporting period covered by the TSDR Survey.

Treatment standards for non-calcium sulfate K069 waste are based on total recycle, meaning this waste cannot be land disposed. Available information shows that most K069 wastes currently being generated are being recycled and do not require alternative capacity. As discussed in section III. A. 7., some K069 wastes contain high levels of calcium sulfate. These wastes cannot be recycled. The Agency is not promulgating a treatment standard for calcium sulfate containing K069 wastes; these wastes will be subject to the "soft hammer" requirements.

The Agency proposed a treatment standard of "no land disposal" for K004, K008, K021, K025, K036, K060, K073 and K100 wastes and for wastewaters from F006, K022, K046, K061, K069, and K106, based on the belief that they are no longer being generated or are not being land disposed. Commenters noted that these wastes are being generated in the form of landfill leachate even though ongoing production processes may no longer produce the wastes. Also, these wastes may be present in contaminated ground water and, thus, may be generated during cleanup actions.

Because a "no land disposal" standard could hinder or preclude necessary and desirable collection and treatment of leachate and contaminated ground water, the Agency has not established standards for the wastewater components of the "no land disposal" wastes. In addition, the Agency is revising the schedule for the prohibition on land disposal and establishment of treatment standards (40 CFR 268.10) to move leachate from "soft hammer" wastes, contaminated ground water from "soft hammer" wastes, and certain "soft hammer" wastewater residues from treatment to the Third Third to avoid disruptive effects while standards are developed (see section III. C. 3. for further discussion).

For the non-wastewater forms of K004, K008, K021, K036, and K060 the "no land disposal" standard is being promulgated.

j. *Other Comments on Capacity Determinations.* Several commenters felt that available capacity for treating wastes in tank systems was underestimated because additional capacity could be brought on line quickly by vendors or put into service as on-site capacity. For example, one commenter disagreed with the variance provided to K071 waste because the BDAT technologies identified for K071 are simple chemical tank treatment processes (acid leaching, chemical oxidation, and sulfide precipitation), which could be supplied readily by vendors.

The Agency believes that because of the time necessary to construct such treatment systems and (in some cases) to satisfy permitting requirements, additional capacity cannot be brought on-line quickly and should therefore not be considered when analyzing available treatment capacity. In addition, as part of the TSDR Survey, facilities were asked to report any treatment processes planned to be operational (considering construction and permit time) by January 1992. Planned capacity reported in the TSDR Survey, and taken into consideration in the Agency's capacity determinations, did not indicate that additional capacity that would change the capacity determinations promulgated today would be available in the near future.

Some commenters believe that the Agency's capacity analysis overestimated the national capacity to incinerate solids and sludges. Commenters stated that the Agency did not consider all necessary factors when determining solid/sludge incineration capacity. Factors cited as not considered included material handling restrictions, downtime for maintenance, storage restrictions, and siting and permitting difficulties for future incineration units. One commenter felt that the Agency overestimated the volume of waste requiring solid/sludge incineration capacity because pretreatment and volume reduction were not considered. The same commenter also felt that the Agency underestimated solid/sludge treatment capacity because liquid incineration capacity could easily be converted for solid/sludge incineration.

The Agency based its latest incineration capacity determination on the 1987 TSDR Survey database. When completing the TSDR Survey, the facilities were asked to consider downtime for maintenance and other factors when reporting the treatment capacity for existing and future units. Therefore, such factors should be reflected in the estimates of available solid/sludge incineration capacity. In addition, the TSDR Survey did request information on plans to change the types of capacity available (e.g., liquid to solid/sludge incineration) and this information is included in the estimates. Therefore, EPA disagrees with both of these comments.

Commenters expressed concern because the Agency's determinations of required treatment capacity did not take into account the volumes of waste that will be removed from surface impoundments undergoing clean closure. Therefore, the commenters felt that the Agency underestimated the volume of wastes requiring alternative treatment.

This issue is discussed earlier in this section with respect to K001 wood preserving wastes. Some information was provided by commenters on the volumes of wastes currently in surface impoundments at their facilities; however, for the reasons set out in the earlier discussion of K001, the Agency believes that both the timing of closures and the amount of material which will actually require incineration are

uncertain at this time, and therefore cannot be used in the capacity decision.

The new TSDR data have implications for "soft hammer" certifications. A "soft hammer" certification for a waste amenable to treatment by a method for which ample capacity exists will be critically examined by EPA and is more likely to be invalidated. Examples are wastes amenable to liquid injection incineration or to stabilization.

4. Alternative Capacity and Effective Dates for Solvent Wastes and California List Wastes

Using the new TSDR data, EPA reevaluated waste volumes requiring alternative capacity because of the Solvents final rule (51 FR 40572) and the California list final rule (52 FR 25760). The new analyses indicated significant changes in waste management practices and capacity, notably, significant increases in incineration capacity. Consequently, some national capacity variances are no longer necessary. Capacity variances are no longer needed for F001–F005 solvents generated by small quantity generators (i.e., generators of 100–1000 kilograms of hazardous wastes per month), CERCLA response actions, and RCRA corrective actions addressed in §§ 268.30(a) (1) and (2), with the exception of solvent-contaminated soils. Also, capacity variances are no longer needed for California list HOCs, with the exception of HOC-contaminated soils. BDAT for these wastes is incineration, and the new data indicate significant increases in incineration capacity, assuring adequate capacity for these wastes.

The May 17 notice proposed to terminate these national capacity variances as of the date of promulgation of the final First Third rule. Based on comments received, some of which point out the short comment period on the May 17 proposal necessitated by the statutory deadline, the Agency has decided to allow the capacity variances for certain solvent wastes to expire and to terminate the California list HOCs variance on November 8, 1988. The Agency believes that the three-month delay will not result in any adverse environmental effects and will permit generators of California list wastes, for which the variance is being terminated eight months earlier than expected, to arrange for appropriate treatment and disposal of their wastes, if they have not done so already.

5. National Variances from the Effective Date for Contaminated Soil and Debris

a. *Legal Authority.* Under RCRA sections 3004 (d)(3) and (e)(3), Congress provided that the land disposal restrictions provisions for disposal of certain "contaminated soil" and "debris" from CERCLA 104 and 106 response actions and from RCRA corrective actions would not apply until 48 months from the enactment of HSWA. These provisions apply specifically to soil and debris contaminated with spent solvents, certain dioxin-containing wastes, and California list restricted hazardous wastes. November 8, 1988, therefore, is the applicable effective date established under RCRA sections 3004 (d)(3) and (e)(3) for CERCLA and RCRA corrective action contaminated soil and debris. Congress provided no such alternative statutory effective date for CERCLA and RCRA soil and debris contaminated with First Third (or Second Third) wastes. Thus, the statutory effective date for these wastes is the same as for any other hazardous waste which is included in the first one-third of the schedule—August 8, 1988. No commenter disagreed with this analysis. (See the May 17, 1988 proposed rule for a more detailed explanation of legal authority and other aspects of the proposed variance.)

An important factor in setting this later effective date for soil and debris from cleanup actions was Congress' evident acknowledgment that it would take extra time to develop treatment capacity for soils and debris contaminated with these wastes. Foreseeing this potential shortfall, Congress placed these wastes on an alternative schedule approximately the same as the one for the first group of wastes prohibited under section 3004(g). Restricted hazardous wastes are normally prohibited from land disposal as soon as the statutory deadline passes (RCRA section 3004(h)(1)). If, however, there is a lack of adequate alternative protective treatment, recovery, or disposal capacity to treat the wastes, the Agency may set an alternative effective date based on the earliest date on which such adequate capacity becomes available, not to exceed two years (RCRA section 3004(h)(2)).

b. *Soil and Debris Capacity Variance.* In today's rule, the Agency is granting a national capacity variance for certain contaminated soils for which BDAT is based on solids incineration.

A partial estimate of the amount of soil requiring solids incineration is shown below. These amounts represent the quantity of soils land disposed at RCRA facilities in 1986. The amount of soils generated by CERCLA response or RCRA corrective actions requiring solids incineration is not currently known.

- Solvent—26 million gal/yr.
- Dioxin—(none reported in 1986).
- California List HOCs (other than First Third wastes for which treatment standards were proposed)—4 million gal/yr.
- First Third (for which treatment standards were proposed)—12 million gal/yr.

EPA expects that all of the solids incineration capacity will be utilized as a result of other actions taken today, and therefore that there will be a lack of capacity for incineration of soils.

In the May 17, 1988 proposal, the Agency also requested comment on the advisability of applying the variance to debris contaminated with solvents, certain dioxins or HOCs above 1,000 ppm, as well as to debris contaminated with First Third wastes. Several commenters addressed this issue and all were in favor of including debris in the 2-year national capacity variances. The Agency agrees and, therefore, debris is included in the national variances along with contaminated soils generated from CERCLA response actions and RCRA corrective actions. Many commenters urged that the variance be broadened to apply to soils contaminated with solvent, dioxin and California list wastes other than those from CERCLA response and RCRA corrective actions. The Agency believes this to be precluded by the wording of the statute. See the May 17 proposed rule for a more detailed explanation.

The national capacity variance applies to soils and debris contaminated with spent F001–F005 solvents and F020–F023 and F026–F028 dioxins which result from a response action taken under CERCLA sections 104 or 106 or a RCRA corrective action. Soils and debris contaminated with California list HOC wastes which result from a response action taken under CERCLA sections 104 or 106 or RCRA corrective actions are also included in the variance. Such contaminated CERCLA and RCRA soils and debris are covered by the capacity variance until November 8, 1990—two years from the statutory effective date applicable to these wastes.

A national capacity variance is also being granted for soils and debris contaminated with certain First Third wastes for which the treatment standards are based on incineration; however, it is not limited exclusively to soils from CERCLA response and RCRA corrective actions. The variance applies to soils and debris contaminated with the following First Third wastes: K001, K015, K016, K018, K019, K020, K022, K024, K030, K037, K048–K052, K083, K086, K087, K101, K102, K103 and K104. Soils and debris contaminated with the specified First Third wastes receive a

variance that extends the effective date for the land disposal restrictions to August 8, 1990.

The effective dates for soil and debris established by today's final action have been summarized in the following table:

SUMMARY OF FINAL EFFECTIVE DATES

Restricted hazardous waste	Prohibition effective date in today's final rule
I. Solvent- and dioxin-containing soil and debris from CERCLA response or RCRA corrective actions	11-8-90
II. Soil and debris NOT from CERCLA response actions or RCRA corrective actions contaminated with less than 1% total solvents or certain dioxins	11-8-88
III. Soil and debris contaminated with California list HOCs from CERCLA response actions or RCRA corrective actions	11 8-90
IV. Soil and debris contaminated with California list HOCs NOT from CERCLA response actions or RCRA corrective actions	7-8-89
V. All soil and debris contaminated with First Third wastes for which treatment standards are based on incineration	8-8-90

The Agency acknowledges that granting a national capacity variance for contaminated soils is a policy choice. That is, EPA could have separated out some segment of CERCLA and RCRA corrective action soils for immediate prohibition instead of rescinding the variance for other HOC and solvent wastes requiring solids incineration. EPA did not pursue this course for several reasons. First, it would be difficult, if not impossible, to separate out a discrete segment of contaminated clean-up soils to fit the available treatment capacity. More importantly, the precise amount of CERCLA and RCRA corrective action soils to be generated over the next 24 months is not certain due to the unpredictable pace of clean-up actions, whereas the volume of other surface disposal wastes requiring solids incineration capacity is much better quantified. By rescinding variances for the wastes whose volume is better quantified, EPA is far more certain that the existing treatment capacity will actually be utilized. That is, EPA is not reserving scarce solids incineration capacity for contaminated soils that might never be generated, and is thus structuring these variances to make certain that scarce solids incineration capacity will actually be utilized.

With respect to soils contaminated with spent solvents, certain dioxins, and HOC wastes, only those that result from a response action taken under section 104 or 106 of CERCLA or a corrective action required under RCRA are included under this capacity variance. For all other soils contaminated with these wastes, an application for a case-by-case extension may be submitted if adequate alternative capacity cannot reasonably be made available by the applicable effective date.

c. *Definition of "Soil" and "Debris".* For the purpose of determining whether a contaminated material is subject to this national variance, some definition of the terms "soil" and "debris" is needed. Soil is defined as materials that are primarily geologic in origin such as silt, loam, or clay, and that are indigenous to the natural geological environment. In certain cases soils will be mixed with liquids, sludges or debris. The Agency solicited comment on appropriate methods for determining whether such mixtures should be considered a soil waste.

Several commenters addressed this issue; they generally favored the inclusion of such mixtures in the capacity variance. However, they did not offer practical methods for making a generally applicable determination on what these mixtures should be. Therefore, the Agency will make such determinations on a case-by-case basis. As proposed, however, soils do not include wastes withdrawn from active hazardous waste management units, such as impoundment dredgings. Such wastes are sludges, not soils, and EPA has evaluated the volume of these sludges in its capacity estimates (based on TSDR survey reports), and determined that sufficient capacity exists for these wastes.

The variance obviously does not apply to materials produced as a result of the deliberate addition of soil or dirt to a restricted hazardous waste. Such a practice is forbidden by the provisions of the dilution prohibition (40 CFR 268.3).

For the purpose of determining whether a contaminated material is subject to this national variance, debris is defined as materials that are primarily non-geologic in origin such as grass, trees, and shrubs, and man-made materials such as concrete, clothing, partially buried whole or crushed empty drums, capacitors, and other synthetic manufactured items. This may also include geologic materials identified as not indigenous to the natural geological environment at or near the site or identified as indigenous rocks exceeding a total size that, based on engineering judgement, will affect performance of available treatment technologies.

d. *Notes on Drafting of the Regulatory Language.* To implement these changes in the various capacity variances, EPA is amending the regulatory language in §§ 268.30 through 268.33. With respect to the solvent wastes covered in § 268.30, the Agency is adding a new § 268.30(c) dealing with contaminated soil and debris from CERCLA response and RCRA corrective actions. This provision replaces existing § 268.1(c)(3).

New § 268.30(b) groups all the solvent wastes having a November 8, 1988 prohibition effective date. As noted above, new § 268.30(c) sets forth the 1990 effective date for CERCLA response and RCRA corrective action contaminated soil and debris. Also added is language indicating that if these wastes are to be disposed in landfills or surface impoundments until the prohibition effective date, the landfill or impoundment unit must meet the section 3004(o) minimum technology requirements (see 53 FR 11769).

The Agency is making similar changes in §§ 268.31, 268.32, and 268.33 to reflect the revised effective dates. The language in § 268.33(c) indicates that the 1990 effective date applies to all soils contaminated with First Third wastes with treatment standards based on incineration.

I. Recyclable Materials Used in a Manner Constituting Disposal

In the May 17 proposal, EPA proposed to amend § 266.20 of the regulations to provide that hazardous waste-derived products that are recycled by being placed on the land must meet the applicable treatment standard for each waste that they contain as a condition for remaining exempt from all other hazardous waste regulation (53 FR 17605). The Agency reasoned that conditioning the existing regulatory exemption in this way would effectuate the land disposal restrictions statutory provisions by requiring that hazardous wastes comply with applicable treatment standards before they are recycled by being placed on the land. Most commenters supported this proposal, a number urging the Agency to end the regulatory exemption altogether. Persons producing fertilizers from waste K061, however, maintained that their fertilizers were safe to apply and were similar in composition to other zinc containing fertilizers not produced from hazardous wastes. They therefore urged the Agency to retain the regulatory exemption or to reclassify the fertilizers. Finally, a few commenters argued that hazardous secondary materials that are recycled by being placed on the land are

not wastes at all because they are not being "discarded".

EPA has decided to finalize the proposed rule with respect to hazardous waste derived products that are placed on the land, except that EPA is not taking any action with respect to fertilizers that use waste K061 as an ingredient (so that such fertilizers will remain exempt from regulation). EPA is conditioning the regulatory exemption for the reasons stated in the proposal, most particularly because the land disposal restrictions statutory provisions indicate that wastes are not to be placed on the land until they have been pretreated to meet the standards EPA established pursuant to section 3004(m). Where a waste-derived product is produced from more than one prohibited waste, the waste-derived product would have to meet the treatment standard for each hazardous waste that it contains, and if there are different treatment standards for common constituents, then the "product" would have to meet the most stringent of those standards.

EPA also solicited comment on an appropriate tracking system for hazardous waste-derived products to document that these materials meet the applicable treatment standards. Hazardous wastes sent to recycling facilities for ultimate use in waste-derived products that are to be placed on the land are already subject to regulation under section 268.7 (as well as the rest of subtitle C), and so persons shipping such wastes already must notify the recycler that the wastes are prohibited (§§ 268.7(a) and 266.21). EPA has decided, however, that once the recycler produces a waste-derived product that meets the treatment standard, the recycler is not required to notify the receiving facility that it (the receiving facility) is receiving a hazardous waste. The ultimate user of the hazardous waste-derived product is not a normal disposal facility, but rather operates as a commercial entity. As such, this entity is not a meaningful repository of a treatment facility's (i.e., the recycler's) certification and tracking documents prepared pursuant to § 268.7(b). Accordingly, EPA has decided that, instead of the recycler submitting information to the ultimate user, all of the § 268.7 information is to be submitted to the appropriate EPA Regional office or State authority. The only difference in reporting requirements would be that the recycling facility also keep records of the name and location of each entity receiving the hazardous waste-derived product. In this way, the appropriate regulatory authority will be on notice of the location of each shipment and that the shipment has met the applicable treatment standards for the hazardous wastes contained within the waste-derived product.

EPA has further determined that fertilizers produced from hazardous waste K061 should remain exempt from all regulation for the present time. For a further discussion of this determination, see section III. A. 7.

EPA also wishes to take this opportunity to clarify, in response to comment, that the underlying regulatory provision § 266.20, does not apply to materials, such as cement or aggregate, that are not produced from hazardous wastes. This is true even for cement or aggregate produced in a furnace that is powered in whole or in part by hazardous waste fuel. Section 266.20 applies when a process "use(s) hazardous wastes as ingredients" to produce a product that is then applied to the land (50 FR 628; January 4, 1985). To be covered by the rule, a product must "contain" the hazardous waste. Materials such as cement or aggregate that are produced from raw materials, but come from processes that may be fired by hazardous waste fuels, are consequently not covered by this provision. They do not use hazardous waste as ingredients. Section 266.20 thus applies when hazardous wastes are incorporated directly into a product which is to be applied to the land; hazardous wastes recycled in this way thus really are being disposed. There is no such direct link with disposal when hazardous wastes are used to power a process that may be producing a material that will be used on the land. Products produced in processes that use hazardous waste fuels thus are not covered by section 266.20 unless the process also uses hazardous wastes as ingredients in a product destined for land application.

Finally, EPA responds briefly to those commenters alleging that materials used in a manner constituting disposal are not being discarded and therefore are not solid wastes. As the Agency has explained many times, use constituting disposal involves as a practical matter the disposal of wastes. The wastes are being gotten rid of by placing them directly on the land (see e.g., 53 FR 521–22; January 8, 1988). The indications that Congress meant to control this recycling practice under RCRA are legion. [See RCRA section 3004(1) (use of hazardous waste as dust suppressant or for road treatment is prohibited); H.R. Rep. No. 198, 98th Cong. 1st Sess. at 46, 67–68 (hazardous waste-derived products that are placed on the land are to be the special object of EPA scrutiny under the Subtitle C program)]. To say that Congress did not intend to control these use constituting disposal situations under RCRA is to say that Congress had no intention of controlling such damage incidents as the Times Beach dioxin spreading incident where a group of communities were rendered uninhabitable as a result of use of a distillation bottoms mixed with used oil as a dust suppressant. No credible reading of the statute would authorize this type of conduct. Accordingly, EPA views all use constituting disposal recycling activities involving hazardous secondary materials as within its jurisdiction under RCRA subtitle C.

J. Reclamation of Indigenous Waste

In the proposed rules, the Agency indicated that where it was proposing treatment standards based on some type of metal recovery technology, it might not write treatment standards for the wastes generated by the metal recovery technology (for example, for the slag generated by resmelting hazardous waste K069, emission control dust/sludge from secondary lead smelting). (53 FR 11762). The Agency indicated that this result could follow from application of the so-called "indigenous" principle, which states that certain wastes destined for material recovery in industrial furnaces can be considered to be indigenous to those furnaces and so cease to be solid wastes at the point they are actually placed in the furnace. (53 FR 11753). The particular waste codes that might be affected by application of this principle are K061 and K069.

Although EPA has discussed this concept for some time, and most commenters have agreed that some type of indigenous principle is desirable and perhaps legally required, EPA has not fixed the precise scope of the concept. EPA proposed a definition in the May 6, 1987 rule dealing with emission standards for boilers and industrial furnaces, and plans shortly to repropose a somewhat different meaning for the term as part of a reproposal of the boiler and industrial furnace standards. This proposed revision would evaluate both the similarity of the process in which the waste was originally generated and the one in which it is being recovered, and would also evaluate the similarity of the waste from the standpoint of identity and concentration of Appendix VIII hazardous constituents, and the raw material that it is replacing.

Based on the information now before it, EPA believes that K061 and K069

wastes would be indigenous to metal recovery processes. K061 wastes are generated by the same type of furnace that recovers the K061 dust, furnaces from both the steel industry and the zinc smelting industry are part of the same generic SIC code 331, and the dusts are similar in composition to the virgin ores customarily smelted in zinc smelting furnaces. Not only are the zinc levels the same as found in virgin ores (15% minimum), the other toxic metals (lead and cadmium) are also present in zinc ores in comparable concentrations. Hazardous waste K069 is even more clearly indigenous to the secondary lead smelting process since it is generated directly by the secondary lead process and contains no toxic constituents not already present in the normal feed material to the secondary lead smelting furnace.

It therefore appears to the Agency that these two hazardous wastes would be considered to be indigenous to the respective metal recovery process under any of the definitions that EPA is considering. Because it appears at this time to be clear that under any ultimate regulatory regime these wastes would be indigenous, then the derived from rule would not apply to any of the wastes generated by the metal recovery process. Consequently, the treatment standards EPA is establishing today for K061 and K069 do not apply to wastes from the metal recovery processes because, by virtue of the indigenous principle, the derived from rule would not apply to these processes (i.e., the residuals from such processes would not be derived from a hazardous waste).

K. Nonrulemaking Procedures for Site-Specific Variances from the Treatment Standard

In the November 7, 1986 final rule (51 FR 40572), the Agency established a procedure for obtaining a variance from the applicable treatment standard (40 CFR 268.44). Use of this variance was envisioned in cases where restricted hazardous wastes differ significantly from the wastes evaluated in setting treatment standards and, as a result, cannot be treated to meet the applicable treatment levels or where the technology used to establish the treatment level is not appropriate to the waste. The request for this treatability variance must demonstrate, among other things, that the waste is significantly different from the wastes evaluated in establishing the treatment standard and cannot be treated in compliance with the applicable treatment standard. Prior to today's final rule, the section 268.44 variance procedures were available only through a rulemaking that would amend the regulatory treatment standards each time a variance was granted.

Today's final rule amends § 268.44 by adding procedures for requesting a site-specific variance from the treatment standard. As explained below, opportunity will be provided for public comment on site specific variances.

1. Background

On September 5, 1986, the Agency published a Notice of Availability of Data (51 FR 31783). The notice requested comments on whether EPA should have a variance from the generally applicable treatment standards, and the procedures under which such variances should be processed. Commenters generally supported allowing variances from the treatment standard. Furthermore, in the context of today's modification, some commenters, while recognizing EPA's authority to grant variances through rulemaking procedures, supported the use of nonrulemaking procedures. Because there was insufficient time to fully consider all issues relating to the variance procedure before the November 7, 1986 rule was promulgated, only a procedure for obtaining a variance from the treatment standard which required rulemaking was established (51 FR 40572); however, the Agency noted its intention to raise the nonrulemaking variance issue in the future.

The Agency requested comment on several modifications of the variance procedure in the December 11, 1986 California list land disposal restrictions proposal (51 FR 44729). Specifically, comment was requested on the advisability of allowing nonrulemaking procedures and on the applicability of such procedures. Comment was also requested on establishing a deadline for variance applications, on provisions for public comment, and on the criteria for granting nonrulemaking variances.

Nonrulemaking variance procedures were again presented for public comment in a Notice of Availability of Data published on August 12, 1987 (52 FR 30038). It was noted that the July 7, 1987 California list final rule (52 FR 25780) set forth a treatment method equivalency petition (40 CFR 268.42) that need not be processed through a formal rulemaking in cases where the relief sought would not have generic applicability and effect. In the August 12 Notice, EPA solicited further comment on the advisability of applying the same reasoning to the site-specific variance from the treatment standard so that formal rulemaking procedures are not mandated.

2. Major Comments

The Agency received several comments addressing various aspects of establishing a nonrulemaking procedure for site-specific variances from the treatment standard. The majority of commenters supported the establishment of nonrulemaking procedures; their arguments were based on the need for streamlined procedures so that variances may be reviewed in a timely manner. Several commenters suggested that a site-specific nonrulemaking variance could be included in the permitting process, thus offering an opportunity for public comment. One commenter cited the Supreme Court's decision in *Chemical Manufacturers Association* v. *NRDC*, 470 U.S. 116 (1985), as support for EPA's authority to use a streamlined variance procedure. On the other hand, two commenters expressed concerns about utilizing nonrulemaking procedures. One commented that EPA had the authority to grant variances from the treatment standard, but stated that all petitions must be subject to public review and comment before they are granted. The other commenter strongly opposed the Agency's proposed approach, arguing that nonrulemaking procedures violate RCRA sections 3004(m), 7004, and 7006.

3. Agency Response and Summary of Today's Approach

The Agency believes that nonrulemaking procedures for the variance from the treatment standard are not precluded by the statute in cases where such a determination is site-specific, having no generic applicability and effect. The Agency is taking this position for a number of reasons. First, since a generator-specific treatability variance would not be of general applicability and effect, such administrative action would not be a rule requiring utilization of the Administrative Procedure Act informal rulemaking procedures. Second, to the extent that section 3004(m) creates an independent requirement of rulemaking procedures, this requirement is satisfied by the initial rulemaking in which the BDAT treatment standard is established. In this regard, the Agency notes that there are numerous instances where a statute requires that a generally applicable standard be established by regulation, but that variances from that standard need not be established via rulemaking. Under RCRA, for example, EPA must use rulemaking to establish generally applicable standards for treatment, storage, and disposal facilities (RCRA section 3004(a)). EPA,

however, has also established variances from certain of these generally applicable requirements which can be granted by means other than rulemaking—for example, the variance from the secondary containment requirement for hazardous waste tanks is implemented by nonrulemaking procedures. (See § 264.193 (g) and (h)). Under the Clean Water Act, EPA is required to establish generally applicable effluent limitation guidelines and standards by regulation, but for years has had in place a fundamentally different factors variance from these standards that was implemented by nonrulemaking procedures. This Fundamentally Different Factors variance is now codified in the 1987 amendments to the Clean Water Act, section 301(n). In the land disposal restrictions rules themselves, EPA adopted nonrulemaking procedures for processing demonstrations of equivalency to a specified BDAT method. (See § 268.42(b)).

In fact, it appears that at least in RCRA, where Congress meant to preclude the Agency from using nonrulemaking procedures when granting variances, it said so explicitly. (See RCRA section 3001(f)) that mandates use of informal rulemaking procedures for processing delisting petitions.) In other contexts, most notably RCRA sections 3004(o)(2) and 3005(j) (2), (3), (4), and (13), Congress itself explicitly authorized nonrulemaking procedures for granting other types of variances. It thus appears to the Agency that the brief reference to "regulations" in section 3004(m)(1) does not preclude the use of nonrulemaking procedures to grant individual variances to an already promulgated treatment standard.

Therefore, today's final rule promulgates modifications to 40 CFR 268.44 that allow a site-specific variance from the treatment standard, having no generic applicability and effect, to be granted through nonrulemaking procedures. The Agency agrees as a matter of policy to allow opportunity for public notice and comment prior to granting a nonrulemaking variance from the treatment standard. Because circumstances under which one might apply for a site-specific variance vary, vehicles for public comment will be specified on a case-by-case basis.

The Agency received no requests for variances from the treatment standards promulgated in the solvents and dioxins final rule or the California list final rule. It is difficult to predict how many requests for variances from the treatment standard will be received as a result of today's final rule. Therefore, the Agency is not establishing a specific format for the variance or specifying vehicles for providing public comment at this time. Since the goal of granting site-specific variances from the treatment standard through nonrulemaking procedures is to streamline the process, the Agency will likely provide for public comment through existing public participation vehicles such as permit applications or modifications, CERCLA Remedial Investigation/Feasibility Study documents, or other relevant procedures as appropriate. In cases when there is no existing proceeding which provides the opportunity for public participation, EPA will provide opportunity for notice and comment through publication in local newspapers, by radio broadcast, or through other media, similar to the variance procedures already in place under § 260.33. If necessary, the Agency will issue guidance at a later date on the format for an application and will specify procedures for public comment.

The criteria by which a nonrulemaking site-specific variance from the treatment standard will be evaluated remain the same as those previously promulgated. The demonstration should be made that the waste is significantly different from the wastes evaluated in establishing the treatment standard and cannot be treated in compliance with the applicable treatment standard. On a site-specific basis, it may be possible to determine that BDAT treatment is inappropriate for a particular waste stream. For example, incineration of large volumes of contaminated soil under certain site-specific conditions may be found to be inappropriate treatment. Such an assertion should be supported by analytical data and treatability studies to the greatest extent possible. Each request for a variance from the treatment standard must include a statement signed by the authorized representative of the applicant certifying that the information is correct.

The applicant must apply to the Assistant Administrator for the Office of Solid Waste and Emergency Response, addressing the criteria contained in § 268.44. The authority for granting site-specific variances to the treatment standard may be delegated to the Regional Administrator in the future, at which time the application would be made to the Regional Administrator in the region where the applicant is located.

The Assistant Administrator (or Regional Administrator, if authority is delegated) will evaluate the application and issue a draft notice tentatively granting or denying the application. Notification of this tentative decision will be provided by newspaper advertisement or radio broadcast in the locality where the applicant is located. The Assistant Administrator (or Regional Administrator, if authority is delegated) will accept comment on the tentative decision, usually for 30 days. Public hearings may be held upon request or at his discretion. A final decision will be made after evaluation of comments.

L. Rationale for Immediate Effective Date

The regulations promulgated today will be effective immediately except where the Agency has specified a national variance or otherwise specified an alternative effective date. HSWA requires that today's regulations become effective on or before the August 8, 1988 effective date of the restrictions on the first one-third of the wastes scheduled pursuant to RCRA section 3004(g)(4)(A). If the Agency fails to promulgate regulations for any of these wastes by the statutory effective date, the restrictions on disposal of the waste in a landfill or surface impoundment, stipulated in section 3004(g)(6)(A) take effect automatically on August 8, 1988. If the Agency has not promulgated treatment standards for any scheduled waste by May 8, 1990, that waste is prohibited from all forms of land disposal unless a generator has been granted an extension of the effective date (either a national variance or a case-by-case extension) or a "no migration" finding has been made. Hence, August 8, 1988, is the latest date for EPA to promulgate regulations that will prevent the "soft hammer" in section 3004(g) from falling for all First Third wastes. Section 3004(h) requires that regulations established under sections 3004 (d), (e), (f), or (g) be effective immediately upon promulgation. Furthermore, section 3004(m) specifies that regulations setting treatment standards must have the same effective date as applicable regulations established under sections 3004 (d), (e), (f), or (g). For today's regulations which set treatment standards and are promulgated under section 3004(g), this date will be August 8, 1988. Since the statute clearly states that the regulations implementing section 3004(g) must go into effect on or before August 8, 1988, in order to prevent the "soft hammer" from falling, EPA finds that good cause exists under section 3010(b)(3) to have an immediate effective date. For the same reason, EPA finds that good cause also

exists under section 553(d)(3) of the Administrative Procedure Act; 5 U.S.C. section 553(d)(3), to waive the requirements that regulations be published at least 30 days before the effective date.

IV. Modifications to the Land Disposal Restrictions Framework

Today's final rule does two things. First, it promulgates the Agency's approach to restricting the land disposal of First Third wastes, presenting the conditions under which land disposal of these wastes may be continued. Second, it modifies the existing framework of the Land Disposal Restrictions Program, as first promulgated on November 7, 1986 (51 FR 40572) and subsequently modified in the July 8, 1987 California list final rule (52 FR 25760). Unless otherwise specified, these modifications will apply to all restricted wastes. This section of today's preamble summarizes these modifications and refers to more detailed discussions in other sections of this preamble.

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

The Agency is promulgating modifications to §§ 264.13 and 265.13 to reflect provisions for the treatment of "soft hammer" wastes in surface impoundments. The framework promulgated November 7, 1986 provided for an exemption allowing treatment of restricted wastes in section 3005(j)(11) surface impoundments, provided that residuals that do not meet the treatment standard are removed annually. As discussed in section III.C.4., this exemption is extended to allow for wastes subject to the "soft hammer" provisions (i.e., First Third wastes for which no treatment standard has been established). EPA is also making certain nonsubstantive modifications to make these sections more readable.

B. Operating Record (§§ 264.73 and 265.73)

The Agency is modifying §§ 264.73 and 265.73 to require retention of the § 268.8 demonstration and certification, i.e. the certifications applicable to "soft hammer" wastes. EPA is also requiring facilities to retain the new tracking notice required under § 268.7 for generators sending "soft hammer" wastes to receiving facilities, and for treatment facilities sending "soft hammer" wastes to a disposal facility. The "soft hammer" notice and certification is discussed further in sections III.B.2. and III.C.3. respectively.

C. Recyclable Materials Used in a Manner Constituting Disposal (§ 266.20)

The Agency is amending § 266.20 to require that hazardous waste-derived products whose placement on the land was previously exempt from Federal regulation must now meet the applicable Subpart D treatment standard (or 3004(d) prohibition levels) prior to such placement. EPA is, however, allowing for one exception to this requirement; namely, K061–derived fertilizers. See section III. I. for a discussion of the Agency's determination concerning this amendment.

D. Purpose, Scope, and Applicability (§ 268.1)

The Agency is modifying § 268.1 to include the "soft hammer" wastes in the applicability of the land disposal restrictions, and to allow the disposal of such wastes in landfill and surface impoundment units meeting the minimum technological requirements provided such wastes are the subject of a valid certification under § 268.8. EPA is also clarifying the applicability of Part 268 treatment standards to prohibited wastes generated from CERCLA response actions.

E. Treatment in Surface Impoundment Exemption (§ 268.4)

The modifications to the requirements of § 268.4 reflect the special conditions for allowing this exemption to apply to First Third wastes for which no treatment standards have been established. Certain nonsubstantive modifications have also been made to improve the readability of the section. The conditions relating to the disposal of "soft hammer" wastes are discussed in section III.C.4.

F. Case-by-Case Extensions (§ 268.5)

The modification to § 268.5 reflects the Agency's new interpretation of RCRA section 3004(h)(4), that wastes subject to a national or case by-case extension of the effective date, if disposed in a landfill or surface impoundment, must be disposed in a *unit* that meets the minimum technological requirements. EPA's earlier interpretation was that Congress intended such wastes to be disposed in a *facility* that meets the minimum technological requirements of 3004(o) (applicable only to new, replacement, or lateral expansion units). The discussion for this modification is found in section III.D.

G. "No Migration" Petitions (§ 268.6)

As discussed in section III.F., the Agency is modifying the existing requirements for petitioning EPA for a "no migration" exemption under § 268.6. This modification promulgates additional demonstrations required in a "no migration" petition, and certain other requirements on the owner or operator of a waste management unit that is subject to a "no migration" exemption.

H. Testing and Recordkeeping (§ 268.7)

The modifications to § 268.7 extend the notification and certification requirements to include the First Third wastes, including a new notification for "soft hammer" wastes. EPA is also applying the recordkeeping requirements of this section to treatment and storage facilities not previously included in the "cradle-to-grave" paper trail, including an additional change addressing wastes that may be land disposed under an extension, exemption, or variance. Also, a 5-year record retention period is being promulgated. The discussion for these proposed modifications is found in Section III. B.

Also, as discussed in section III.I., the Agency is modifying the tracking system to account for zinc-containing fertilizers which use K061 as an ingredient, which EPA has exempted from regulation.

Testing requirements for wastes in § 268.43 (i.e., wastes for which the treatment standards are expressed as concentration levels in the waste, rather than in the waste extract) are being promulgated. And finally, other nonsubstantive modifications are being made to improve the readability of this section.

I. Landfill and Surface Impoundment Disposal Restrictions (§ 268.8)

The Agency is promulgating a new section 268.8 which addresses the prohibition on disposal of First Third wastes for which treatment standards have not been established. An extensive discussion in section III.C. presents the Agency's approach to implementing RCRA section 3004(g)(6)(A), which is applicable to the disposal of such wastes in landfills and surface impoundments, and also promulgates EPA's approach to the type of information which must be supplied and certified prior to such disposal.

J. Identification of Wastes to Be Evaluated By May 8, 1990 (§ 268.12)

As discussed in Section III.C.3., the Agency is amending § 268.12 to move certain First Third wastewater residuals from treatment for which wastewater treatment standards have not been set into the Third Third. Similarly, the

Agency is also moving "soft hammer" leachate and ground water contaminated with "soft hammer" wastes into the Third Third. This action is taken due to the relatively low intrinsic hazard of these wastes and to avoid discouraging substantial treatment of "soft hammer" wastes.

Also, as discussed in section III.A.4., the Agency is moving one class of First Third wastes to the third third of the schedule—mixed hazardous/radioactive wastes. EPA emphasizes that this action only affects First Third wastes mixed with radioactive wastes. Waste mixtures containing spent solvents, dioxins and California list wastes are subject to the applicable land disposal restrictions.

K. Determination as to the Availability of the Two-Year Nationwide Variance for Solvent Wastes Which Contain Less Than 1% Total F001 F005 Solvent Constituents (§ 268.30)

In a June 4, 1987 technical correction notice 52 FR 21010) to the November 7, 1986 final rule prohibiting land disposal of certain spent solvent and dioxin-containing hazardous wastes, EPA promulgated an amendment to § 268.30(a)(3) reclarifying that solvent wastes that are prohibited in the hands of their initial generator—i.e., that are not subject to any applicable variance—cannot be permissibly land disposed until treated to meet the section 268.41 treatment standards. This principle applies to all residues from treatment (unless they are part of a different treatability group for which EPA has determined that no treatment capacity exists (see 52 FR 21012; June 4, 1987 and also 52 FR 22356–22357; June 11, 1987)). Because questions have been raised regarding the policy basis for the action, and because the underlying principle is an important one which warrants the fullest consideration, EPA reproposed amended § 268.30(a)(3) as part of the April 8 proposal (53 FR 11770).

EPA did not receive comment on this proposal and thus is promulgating the rule as proposed for the reasons stated in the April 8, proposal. In repromulgating regulatory language, the Agency never withdrew its existing regulation. The Agency notes, however, that its earlier actions on this issue were prospective only (see 52 FR 21010, stating that the revisions are effective on June 4, 1987). Thus, the June 4, 1987 revisions to § 268.30(a)(3) have no applicability to any certifications made before that date or to any treatment residues land disposed before that date (see 52 FR 21012, June 4, 1987 (item # 16); *id.* at 21017 (item # 62)).

L. Waste Specific Prohibitions (§§ 268.30, 268.31, 268.32, and 268.33)

Sections 268.30, 268.31, and 268.32 are being modified to reflect the reinterpertation of RCRA section 3004(h)(4), pertaining to the disposal of restricted wastes granted an extension of the effective date, as discussed in Section III.D. Also § 268.32 is changed to rescind the previously granted national variance for California list halogenated organic compounds. For a detailed discussion of this rescission, see Section III.H. Although EPA is republishing certain other language from these regulations, this is for the readers convenience and is not intended to reopen these provisions for judicial review (nor did EPA solicit or receive any comment on these provisions).

Section 268.33 promulgates the actual prohibitions on the land disposal of First Third wastes (wastes listed in § 268.10) for which EPA has established treatment standards, and also establishes effective dates based on the availability of capacity to treat these wastes. Section III.A. describes the development of these treatment standards, and section III.C. presents the capacity data and assumptions on which the effective dates are based. Section 268.33(f) promulgates the prohibitions placed on "soft hammer" wastes, as discussed in section III.C.

It should be noted that the schedules for wastes K019 and K025 (Second Third wastes listed in § 268.11) have been accelerated to include these wastes in the First Third. K100 (a Third Third waste listed in § 268.12) is also included in the First Third.

M. Treatment Standards (§§ 268.40, 268.41, 268.42, and 268.43)

Treatment standards, expressed as concentration levels in both the waste (§ 268.43, as expressed in a new Table CCW) and in a waste extract developed by using the TCLP (§ 268.42), are promulgated by amendments to Subpart D. The existing treatment standard as a specified method (incineration) for certain California list halogenated organic compounds is being modified to allow for burning in industrial boilers or furnaces (§ 268.42). Also, EPA is modifying the F001–F005 treatment standard for methylene chloride in wastewaters generated by the pharmaceutical industry. The new treatment standards are discussed in section III.A.

N. Variance from the Treatment Standard (§ 268.44)

Today's final rule promulgates modifications to 40 CFR 268.44 that allow a site-specific determination to grant a variance from the treatment standard having no generic applicability and effect to be made by nonrulemaking procedures. A detailed discussion of this approach is found in section III.K.

O. Storage Prohibition (§ 268.50)

Only a slight modification to the existing storage prohibition in § 268.50 is promulgated to account for the Agency's interpretation of RCRA section 3004(j), as applicable to "soft hammer" wastes which are the subject of a certification under § 268.8. This interpretation is presented in section III.C.6. of this notice.

V. 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 RCRA 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 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 for any facilities that the State was authorized to permit. When new, more stringent Federal requirements were promulgated or enacted, the State was obliged 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 nonauthorized 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 (d) through (k), and (m)). Therefore, it has been 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. Table 2 in § 271.1(j) is modified to indicate that this rule is a self implementing provision of HSWA for the Land Disposal Restrictions for the First Third of Scheduled Wastes.

B. Effect on State Authorizations

As noted above, EPA will implement today's rule in authorized States until their programs are modified to adopt these rules and the modification is approved by EPA. Because the rule is 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 HSWA interim authorization will expire on January 1, 1993 (see section 271.24(c)).

Section 271.21(e)(2) requires that States that have final authorization must modify their programs to reflect Federal program changes and must subsequently submit the modification to EPA for approval. State program modifications must be made by July 1, 1991, if only regulatory changes are necessary or July 1, 1992, if statutory changes are necessary. These deadlines can be extended in exceptional cases (see § 271.21(e)(3)).

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 as 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 regulations are not required to include standards equivalent to these standards in their applications. However, the State must modify its program by the deadlines set forth in § 271.21(c). 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.

The amendments being promulgated today need not affect the State's Underground Injection Control (UIC) primacy status. A State currently authorized to administer the UIC program under the Safe Drinking Water Act (SDWA) may continue to do so without seeking authority to administer these amendments. However, a State desiring to implement Part 148 and to receive authorization to grant exemptions from the land disposal restrictions must demonstrate that it has the requisite authority to administer sections 3004 (f) and (g) of RCRA. The conditions under which such authorization may take place are summarized in section C. A further discussion must be found in the July 15, 1985 final rule 50 FR 28728.

C. State Implementation

State implementation of today's rule is affected by the following four aspects of the framework established for the land disposal restrictions (51 FR 40572).

1. Under Part 268, Subpart C, EPA is promulgating land disposal restrictions for all generators, treaters, storers, and disposers of certain types of hazardous waste. In order to retain authorization, States must adopt the regulations under this Subpart since State requirements can be no less stringent than Federal requirements.

2. Also under Part 268, EPA is granting two-year national variances from the land disposal restrictions effective date for certain wastes, based on a lack of alternative treatment or recovery capacity. In addition, case-by-case extensions of the effective date may be granted for up to one year (renewable for one additional year) to specific applicants lacking adequate alternative capacity.

The Administrator of EPA is solely responsible for granting variances to the effective dates because capacity determinations must be made on a nationwide basis. In addition, RCRA section 3004(h)(3) specifies that the Administrator will grant or deny case-by-case extensions, after consulting the affected States, on the basis of national concerns; therefore, States cannot be authorized for this aspect of the program.

3. Under § 268.44, the Agency may grant waste-specific or site-specific variances from treatment standards in cases where it can be demonstrated that the treatment standard is inappropriate for the waste or the wastes cannot be treated to specified levels or treated by specified methods. The Agency is solely responsible for granting such variances since the result of such an action may be the establishment of new waste treatability groups applicable to all wastes meeting the new criteria. Therefore, this aspect of the program is not delegated to the States. Similarly, the authority to grant nonrulemaking variances is retained by the EPA.

4. Under § 268.6, EPA may grant petitions of specific duration to allow land disposal of certain hazardous wastes where it can be demonstrated that there will be no migration of hazardous constituents for as long as the waste remains hazardous. States which have the authority to impose restrictions may be authorized under RCRA section 3006 to grant petitions for exemptions from the restrictions. Decisions on site-specific petitions do not require the national perspective required to restrict wastes or grant extensions. However, the Agency is planning to propose an interpretation of the "no migration" language in the Federal Register for public comment. Because of the controversy surrounding the interpretation of the statutory language, and the potential for changes in policy, EPA will be handling "no migration" petitions at Headquarters, though the States may be authorized to grant these petitions in the future. The Agency expects to gain valuable experience and information from review of "no migration" petitions which may affect future land disposal restrictions rulemakings. In accordance with RCRA section 3004(i), EPA will publish notice of the Agency's final decision on petitions in the Federal Register.

VI. Effect of the Land Disposal Restrictions Program on Other Environmental Programs

A. Discharges Regulated Under the Clean Water Act

As a result of the land disposal restrictions program, some generators might switch from land disposal of restricted First Third wastes to discharge to publicly-owned treatment works (POTWs) in order to avoid

incurring the costs of alternative treatment. In shifting from land disposal to discharge to POTWs, an increase in human and environmental risks could occur. Also as a result of the land disposal restrictions, hazardous waste generators might illegally discharge their wastes to surface waters without treatment, which could cause damage to the local ecosystem and potentially pose health risks from direct exposure or bioaccumulation.

Some generators might treat their wastes prior to discharging to a POTW, but the treatment step itself could increase risks to the environment. For example, if incineration were the pretreatment step, metals and other hazardous constituents present in air scrubber waters could be discharged to surface waters. However, the amount of First Third waste shifted to POTWs would be limited by such factors as the physical form of the waste, the degree of pretreatment required prior to discharge, and State and local regulations.

B. Discharges Regulated Under the Marine Protection, Research, and Sanctuaries Act (MPRSA)

Management of some First Third wastes could be shifted from land disposal to ocean dumping and ocean based incineration. If the cost of ocean-based disposal plus transportation were lower than the cost of land based treatment, disposal, and transportation, this option could become an attractive alternative. In addition, ocean-based disposal could become attractive to the regulated community if land-based treatment were not available.

Although there may be economic incentives to manage restricted First Third wastes by ocean dumping and ocean-based incineration, both technologies require permits, which could be issued only if technical requirements (e.g., physical form and heating value) and MPRSA environmental criteria (e.g., constituent concentrations, toxicity, solubility, density, and persistence) were met. MPRSA requires that nine specific factors, including the availability and impacts of land based disposal alternatives, be considered before permits can be issued for ocean disposal.

C. Air Emissions Regulated under RCRA

Some treatment technologies applicable to First Third wastes could result in cross-media transfer of hazardous constituents to air. For example, incineration of metal-bearing wastes could result in metal emissions to air. Some constituents, such as chromium, can be more toxic if inhaled than if ingested. Therefore, it might be necessary to issue regulatory controls for some technologies to ensure they are operated properly.

The Agency has taken several steps to address this issue. EPA has initiated a program to address metal emissions from incinerators. It has also initiated two rule-makings under section 3004(n) to address air emissions from other sources. The first rule-making will address emissions from equipment such as pumps, valves, and vents from units processing concentrated organic waste streams. The second rule-making will address other sources of air emissions, such as tanks and waste transfer and handling.

VII. Regulatory Requirements

A. Regulatory Impact Analysis

1. Purpose

The Agency estimated the costs, economic impacts, and benefits of today's final rule. This analysis is required for "major" regulations as defined by Executive Order No. 12291. (See the discussion of E.O. No. 12291 below.) The Agency is also required under the Regulatory Flexibility Act to assess small business impacts resulting from the proposed rule. The cost and economic impact estimates serve, additionally, as measures of the practical capability of facilities to comply with the proposed rule.

The results indicate that today's final rule is a major rule. This section of the preamble discusses the results of the analysis of the final rule as detailed in the Regulatory Impact Analysis (RIA) for the final rule. The RIA is available in the public docket.

2. Executive Order No. 12291

Executive Order No. 12291 requires EPA to assess the effect of proposed Agency actions and alternatives during the development of regulations. Such an assessment consists of a quantification of the potential costs, economic impacts, and benefits 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 No. 12291 requires that regulatory agencies prepare a Regulatory Impact Analysis (RIA) for major rules. Major rules are defined as those likely to result in:

- An annual cost to the economy of $100 million or more; or
- A major increase in costs or prices for consumers or individual industries; or
- Significant adverse effects on competition, employment, investment, innovation, or international trade.

The Agency has prepared an RIA and has concluded that the final rule is a major rule with an annual cost to the economy of $907–962 million.

3. Basic Approach

EPA is proposing to set treatment standards for a subset of the First Third F and K wastes and to let "soft hammers" fall on the remaining First Third wastes. The "soft hammer" provisions place restrictions on the land disposal of First Third wastes for which no treatment standards have been set by August 8, 1988. The "soft hammer" provisions will be in effect until prohibitions on land disposal ("hard hammers") fall (on May 8, 1990) or for a shorter period if treatment standards are promulgated. The possible effects of prohibitions on land disposal of wastes and of later extensions of the effective date were not examined as part of this analysis. The "soft hammer" provisions are discussed in greater detail in section III. C. of this preamble.

EPA estimated the costs, benefits, and potential economic impacts of the final rule and of one major regulatory alternative to it. Only the impacts of the final rule are presented here; results for the regulatory alternative are discussed in the RIA.

Provisions of the final rule, as analyzed in the RIA, are as follows:

- Treatment standards are established for certain F and K wastes, and
- "Soft hammer" provisions apply to remaining First Third wastes.

Two "soft hammer" scenarios for the final rule were examined:

- Scenario 1: "soft hammers" fall on remaining First Third wastes and treatment capacity is assumed not to exist; therefore, these wastes may continue to be land disposed. Landfills and surface impoundments receiving "soft hammer" wastes must meet minimum technological requirements.
- Scenario 2: "soft hammers" fall on remaining First Third wastes and treatment capacity is assumed to exist; therefore, these wastes must meet "approximate treatment standards" (treatment that will reduce the mobility and toxicity of hazardous constituents), and the treatment residuals must be disposed of in units meeting minimum technological requirements (except where the residuals are exempt from regulation).

While neither scenario corresponds exactly to the proposed rule, it was

assumed that the two scenarios would establish upper and lower bounds on the effects of the final rule. It was assumed that the "soft hammer" requirements would not affect wastes managed in waste piles or in land treatment units, since the only requirement for facilities managing these wastes would be notification.

The effects of the final rule were estimated by comparing post-regulatory costs, benefits, and economic impacts with those resulting under baseline conditions (i.e., in the absence of the regulation). The baseline is defined to be continued land disposal of wastes in units meeting minimum technological requirements.

4. Methodology

a. *Determination of Affected Wastes and Facilities.* The first step in estimating the impacts of the rule was to determine which wastes and facilities would be affected by the rule. Based on waste characterization and volume data primarily from the 1986 "National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities" (the TSDR Survey), EPA identified affected wastes and facilities. (See Section III. H. for a discussion of this procedure.) The average quantity of waste contributed by generator facilities was based on EPA's "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA in 1981."

The population of wastes that would be affected by the rule may include some wastes from CERCLA responses or RCRA corrective actions; however, there are insufficient data at present to estimate these quantities. Also, underground injected wastes were excluded from this analysis since these wastes will be dealt with in the RIA for a separate rule.

The population of affected facilities includes:

- Hazardous waste treatment, storage, and disposal facilities with commercial management processes ("commercial TSDFs"), which charge a fee for hazardous waste management;
- TSDFs with only non-commercial processes ("non-commercial TSDFs"), which provide management services for wastes generated on-site or off-site by firms under the same ownership; and
- Large and small quantity generators ("generators"), which send their waste off-site to commercial TSDFs for management.

b. *Cost Methodology.* Once waste types, quantities, and baseline and post-regulatory management methods were known for the population of affected facilities, EPA developed estimates of baseline and post regulatory costs for the facilities. In estimating the costs, wastes at a facility that were amenable to co-management were grouped to identify economies of scale.

Baseline and post-regulatory costs include both on-site and off-site management costs. On-site management costs are comprised of two parts: operation and maintenance (O&M) costs and capital costs. O&M costs are incurred annually for operation and maintenance of waste treatment or disposal units. Capital costs include costs for construction and depreciable assets; these costs are restated as annual values by using a capital recovery factor based on a real interest rate of five percent. The annualized capital costs are added to yearly O&M costs to derive overall annual baseline or post-regulatory costs for facilities. By taking the difference between the annualized baseline and post-regulatory costs, annualized incremental costs for facilities were estimated.

Off-site management costs are based on commercial hazardous waste management prices. Shipping costs were included for wastes sent off-site.

c. *Economic Impact Methodology*—(1) *Non-Commercial TSDFs.* To assess economic impacts, EPA converted the before-tax incremental costs for facilities from the cost analysis to after-tax compliance costs. Compliance costs were then compared with facility financial information, organized by Standard Industrial Classification (SIC) code and facility size, to gauge impacts. (See Section C for references.)

Two ratios were used to identify facilities likely to experience adverse economic effects:

- Compliance cost divided by cost of production (the COP ratio), and
- Cash from operations divided by compliance cost (the CFO ratio).

These ratios bound possible effects on individual firms by looking at what would happen with complete pass-through of compliance costs to customers and with no pass-through of costs. The COP 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 CFO ratio represents the number of times that a facility's 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.

Once facilities experiencing adverse economic effects were identified using the two ratios, an analysis was performed to identify which of these facilities would be likely to close. Economic effects on individual facilities were examined assuming that product price increases of five percent were possible. Those facilities for which the CFO ratio was less than two were considered likely to close.

(2) *Commercial TSDFs.* For this group of facilities, the analysis of economic effects was qualitative. This analysis included an examination of the quantity of waste each facility received as a percentage of the wastes restricted by today's rule.

(3) *Generators.* EPA's analysis of the economic impacts of this rule on generators disposing of affected wastes off-site assumed that commercial TSDFs could entirely pass on to generators the costs of compliance (in the form of higher prices for waste management services). Because of data limitations, EPA used a different approach to estimate economic impacts for generators than it used for non-commercial TSDFs. This approach based compliance costs on average waste quantities shipped from generators to commercial facilities and then compared those compliance costs with average financial data for the generators in order to assess impacts. The same impact measures used to assess impacts on non-commercial TSDFs were used to gauge impacts on generators.

d. *Benefits Methodology.* The benefits of today's rule were evaluated by considering the reduction in human health risk that would result from using alternative treatment for First Third wastes rather than employing baseline land disposal practices. Human health risk is defined herein as the probability of injury, disease, or death over a given time (70 years) due to responses to doses of disease-causing agents. The human health risk posed by a waste management practice is a function of the toxicity of the chemical constituents in the waste stream and the extent of human exposure to the constituents. The likelihood of exposure is dictated by hydrogeologic and climatic settings at land disposal units and the fate and transport of chemical constituents in environmental media.

EPA estimated human health risk in four steps. The first step was to estimate the concentrations of each of the hazardous constituents of the waste stream in each of the three media (air,

surface water, and ground water) into which they might be released by a certain waste management technology. These estimates depend on the steady-state (i.e., continuous) release rates calculated for each technology, and on environmental fate and transport characteristics for constituents.

The next step was to estimate the total human intake, or dose, of each of the chemicals through inhalation of air or ingestion of ground water or surface water. A 65 kilogram person was assumed to be continuously exposed to contaminated media over a 70-year lifetime.

The Agency next calculated the risk to an individual from the dose derived in the previous step. For carcinogenic constituents within a wastestream, a dose-response curve was used to estimate the risk. For non-carcinogenic constituents, the exposure concentration was compared with the health-effects threshold to determine whether exposure above the threshold had occurred.

Finally, EPA estimated the population risk for carcinogenic and non-carcinogenic constituents within a wastestream. Population risk for carcinogenic constituents was determined by multiplying the average individual risk by the number of people in a given environment. Population risk for non-carcinogenic constituents was based on the number of persons exposed to concentrations exceeding the health-effects thresholds.

Benefits other than reduction in human health risk—such as resource damage avoided and corrective action costs avoided—were not quantified. Since these other benefits are likely to be significant, the benefits presented here are probably understated.

5. Results

a. *Population of Affected Facilities.* The number of facilities affected under Scenarios 1 and 2 for the final rule is very similar, as shown in Table 1. Most of the affected facilities are generators.

TABLE 1.—NUMBER OF AFFECTED FACILITIES

	Final rule	
	Scenario 1	Scenario 2
Commercial TSDFs	35	35
Non-Commercial TSDFs	102	102
Generators	1,593	1,568
Total	1,730	1,705

b. *Costs.* As shown in Table 2, the final rule is a major rule, with costs of $907–962 million per year.

TABLE 2.—COSTS OF THE FINAL RULE (ANNUALIZED INCREMENTAL COST IN MILLIONS OF 1987 DOLLARS)

	Final rule	
	Scenario I	Scenario 2
Treatment of Certain F and K Wastes	907	907
"Soft hammer" on Remaining First Third Wastes	0	55
Total	907	962

Most of the costs of the final rule are due to treatment of F and K wastes. The F and K wastes going to treatment are high-volume wastes; large portions of the wastes are managed in landfills, land treatment units, or treatment surface impoundments in the baseline and go to incineration and/or stabilization under the final rule. The ash from incineration often requires stabilization due to the ash's metal content; the scrubber effluent from incineration often requires wastewater treatment to remove metals.

The First Third wastes subject to the "soft hammer" provisions, on the other hand, are generated in relatively small quantities and therefore do not affect costs significantly. Their management under the final rule depends on which scenario is considered. Under Scenario 1, the wastes continue to be land disposed in units meeting minimum technological requirements. Under Scenario 2, the wastes are mostly incinerated; however, since the wastes are largely organic with little metal content, the ash from incineration generally does not require stabilization.

Under the final rule, the two "soft hammer" scenarios result in a significant difference in cost. Scenario 1—continued land disposal of "soft hammer" wastes—results in zero incremental cost over the baseline for "soft hammer" wastes. Scenario 2—treatment of "soft hammer" wastes under "approximate treatment standards"—results in an incremental cost of $55 million per year. The costs associated with the "soft hammer" would be incurred for less than two years, i.e., until hard hammers fell, treatment standards were established, or extensions to the effective date were granted.

[Note: The costs presented in this section were based on incineration as BDAT for K048–52. Costs based on solvent extraction as BDAT for these wastes could be significantly lower.]

c. *Economic Impacts.* Most of the significantly affected facilities under the final rule are generators, as shown in Table 3. More generators are affected under Scenario 2 than Scenario 1 due to the higher management costs for "soft hammer" wastes going to treatment.

TABLE 3.—NUMBER OF FACILITIES SIGNIFICANTLY AFFECTED BY THE FINAL RULE

	Final rule	
	Scenario 1	Scenario 2
Commercial TSDFs	(1)	(1)
Non-Commercial TSDFs	45	46
Generators	960	1,119
Total	1,005	1,165

[1] TSDFs with commercial processes were assumed to pass all compliance costs through to generators; therefore, the number of significantly affected facilities was not calculated.

SIC sector 29 (Petroleum Refining and Related Products) is the most significantly affected sector; SIC 29 generators and non-commercial TSDFs account for nearly 40 percent of overall compliance costs. The number of facilities likely to close, looking at all SIC sectors, would be 197 and 199 under Scenarios 1 and 2, respectively.

[Note: The economic impacts presented in this section were based on incineration as BDAT for K048–52. Economic impacts based on solvent extraction as BDAT for these wastes could be significantly smaller.]

d. *Benefits.* The reductions in carcinogenic and non-carcinogenic risk due to the final rule are shown in Tables 4 and 5.

TABLE 4.—REDUCTION IN CARCINOGENIC RISK (NUMBER OF CASES AVOIDED OVER A 70-YEAR EXPOSURE PERIOD)

	Final rule	
	Scenario I	Scenario 2
Treatment of F and K Wastes	295	295
"Soft hammer" on Remaining First Third Wastes	0	65
Total	295	360

TABLE 5.—REDUCTION IN NON-CARCINOGENIC RISK (REDUCTION IN NUMBER OF PERSONS EXPOSED TO A NON-CARCINOGEN AT A DOSE ABOVE ITS RfD)

	Final rule	
	Scenario I	Scenario 2
Treatment of F and K Wastes	414	414

TABLE 5.—REDUCTION IN NON-CARCINOGENIC RISK (REDUCTION IN NUMBER OF PERSONS EXPOSED TO A NON-CARCINOGEN AT A DOSE ABOVE ITS RFD)—Continued

	Final rule	
	Scenario 1	Scenario 2
"Soft hammer" on Remaining First Third Wastes	0	8
Total	414	422

The reduction in number of cancer cases due to the final rule is 295 and 360 for Scenarios 1 and 2, respectively. The largest reductions under both scenarios (150 cases) are treatment of K061 wastes (Emission Control Dust/Sludge from the Primary Production of Steel in Electric Furnaces). Restrictions on K048–K052 wastes (from the petroleum refining industry) result in a decrease of another 115 cancer cases.

The reduction in number of persons exposed to a non-carcinogen at a concentration above its RFD ranges from 414 under Scenario 1 to 422 under Scenario 2. In this case, much of the benefit under both scenarios is due to K048, K049, K061, and mixtures of these wastes, acting through ground water exposure.

Under both alternatives, the average carcinogenic risk to an individual in the population is reduced across all media by imposing land disposal restrictions. Most of this reduction in average individual risk is attributable to reduction in exposure to arsenic via ground water. [**Note.**—The benefits presented in this section were based on incineration as BDAT for K048–52. Benefits based on solvent extraction as BDAT for these wastes may be different.]

e. *Cost Effectiveness.* The cost effectiveness of the final rule is illustrated in Table 6. Compliance costs for the regulated community and human health risk reduction are the basis for the comparison; other potentially significant costs (e.g., Agency implementation costs) and benefits (e.g., natural resource damage avoided) were not estimated.

TABLE 6.—COST-EFFECTIVENESS OF FINAL RULE

	Final rule	
	Scenario 1	Scenario 2
Costs (Millions of 1987 Dollars per Year)	907	962

TABLE 6.—COST-EFFECTIVENESS OF FINAL RULE—Continued

	Final rule	
	Scenario 1	Scenario 2
Benefits (Reduction in Cancer Cases per Year)	4.2	5.1
Benefits (Reduction in Exposures to Non-Carcinogens at Concentrations above Threshold)	414	422
Cost Effectiveness (Millions of Dollars per Cancer Case Avoided)	215	190
Cost Effectiveness (Millions of Dollars per Non-Carcinogen Exposure Avoided)	2.2	2.3

B. Regulatory Flexibility Analysis

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, whenever an agency publishes a notice of rulemaking, it must prepare a Regulatory Flexibility Analysis (RFA) that describes the effect of the rule on small entities (i.e., small businesses, small organizations, and small governmental jurisdictions). An RFA is unnecessary, however, if the Agency's Administrator certifies that the rule will not have a significant economic effect on a substantial number of small entities. EPA believes that the final rule could potentially have a significant effect on a substantial number of small entities, and particularly generators who are small businesses. However, the Agency does not have sufficient data to distinguish small business generators from large business generators or to identify alternatives for small businesses. The Agency did receive extensive comments and some data on generators of F006, a substantial number of whom are small entities. Therefore, EPA has conducted a Regulatory Flexibility Analysis for facilities affected by the standards for F006 wastes.

When EPA proposed this rule, it concluded that there would not be a substantial impact on a significant number of small entities. Since the proposal, EPA has conducted additional analysis of small business impacts. That analysis indicated that six of the nine non-commercial TSDFs that are small businesses would be significantly impacted. EPA does not consider six significantly affected facilities a substantial number of affected facilities.

EPA's analysis of small business impacts did not address commercial TSDFs or generators. Without an evaluation of impacts on generators, which represent over 90 percent of all facilities that manage First Third wastes, no definitive conclusions can be drawn on the potential impacts to small businesses. It is reasonable to expect that, since 60–71 percent of generators overall are significantly affected, there may be substantial impact on small business generators. However, EPA has no data to support this premise due to the lack of information on which generators are small businesses.

In order to determine whether alternatives are available to minimize impacts on small businesses, it is necessary to identify those wastes generated by small business generators that are most likely affected by the final rule. Based on concerns expressed in the comments, it appears that the treatment standards for F006 wastes from electroplating operations could impact small business generators significantly. Therefore, the Agency has examined three alternatives to minimize the estimated impact on small businesses generating F006 wastes. The Agency recognizes that small businesses in other industries may also be affected significantly.

The first alternative considered was not to set treatment standards for F006, and to allow the "soft hammer" provisions to apply instead. Under this alternative, generators could continue to dispose untreated F006 wastes in landfills and impoundments until May 1990 provided appropriate treatment capacity was not practically available. However, if appropriate treatment was practically available, the generator would be obliged to obtain that treatment before land disposing the waste (assuming these wastes are disposed in landfills or impoundments). Because the treatment standards for F006 wastes were based on a widely available form of stabilization, it appears unlikely that small business generators could successfully demonstrate that appropriate treatment is not practical or is not available. (Note that part of the commenters concerns on F006 arose because a major waste treatment firm, whose stabilization data formed the basis for the proposed standard, later determined that the levels achieved in those tests could not be achieved routinely. However, this was determined to be true for only two of the constituents—zinc and copper; for other reasons, the Agency has deleted zinc and copper from the F006 standards. Therefore, stabilization as normally practiced by waste treatment and disposal firms should be capable of achieving the F006 standards. The firm which developed the original test data agrees with this conclusion.) Since this alternative only provides relief for small

business generators if treatment is not practically available, and it appears that appropriate treatment will be widely available for F006 wastes, this alternative will not be effective in providing relief to small business generators.

The second alternative considered was to set treatment standards, but to grant a two-year extension of the effective date based on lack of treatment capacity. While this alternative could provide relief to small entities for the two-year extension period, the Agency cannot legally grant this extension for reasons other than limited capacity. As noted above, stabilization capacity is widely available. The Agency's recently completed capacity analysis indicates that the amount of available stabilization capacity exceeds the amount needed for First Third wastes. Thus, the Agency cannot make the finding of insufficient capacity necessary to support an extension of the effective date.

The third alternative considered was to alter the treatment standards for F006 wastes. As noted, the Agency has deleted copper and zinc from the standards; this change should ensure that well-designed and well-operated stabilization will achieve the treatment standards. Any further change in the treatment standards would require a change in the BDAT upon which the standard is based. Alternative BDAT technologies that fulfill the mandate of the statute are likely to be more costly to the small business generators, rather than less. Less costly technologies, such as dewatering and sludge drying, do not fulfill the requirement that treatment achieve significant reductions in toxicity and mobility of hazardous constituents. Therefore, this alternative does not minimize impacts on small entities.

Based on this examination of the alternatives, the Agency has concluded that there are not practical and legally available alternatives to minimize possible impacts on small business generators of F006 wastes.

C. Paperwork Reduction Act

The information collection requirements in this rule have been approved by the Office of Management and Budget (OMB) under the *Paperwork Reduction Act*, 44 U.S.C. 3501 *et seq* and have been assigned OMB control Number 2050–0085. Reporting and recordkeeping burden on the public for this collection is estimated at 10,745 hours for the 19,679 respondents, with an average of 0.55 hours per response. These burden estimates include all aspects of the collection effort and may include time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, completing and reviewing the collection of information, etc.

If an interested party wishes to submit comments regarding any aspect of this collection of information, including suggestions for reducing the burden, or would like a copy of the information collection request (please reference ICR #1442), contact Rick Westlund, Information Policy Branch, PM–223, U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460 (202) 382–2745; and Marcus Peacock, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503. The final rule will respond to any OMB or public comments on the information collection requirements contained in this proposal.

D. Review of Supporting Documents

The primary source of information on current land disposal practices and industries affected by this rule was EPA's 1986 "National Survey of Hazardous Waste Treatment, Storage, Disposal and Recycling Facilities" (the TSDR Survey). The average quantity of waste contributed by generator facilities was obtained from EPA's "National Survey of Hazardous Waste Generators and Treatment, Storage, and Disposal Facilities Regulated Under RCRA in 1981" (April 1984).

Waste stream characterization data and engineering costs of waste management were based on the following EPA documents:

- "Characterization of Waste Streams Listed in 40 CFR Section 261 Waste Profiles," Vols. I and II (August 1985);
- "Characterization of Constituents from Selected Waste Streams Listed in 40 CFR Section 261," Vols I and II (August 1985);
- RCRA background and listing documents for 40 CFR Section 261;
- RCRA Section 3007 industry studies;
- "RCRA Risk-Cost Analysis Model, Appendix A: Waste Stream Data Base" (March 1984); and
- Source assessment documents for various industries.
- "1986–1987 Survey of Selected Firms in the Commercial Hazardous Waste Management Industry: Final Report" (March 1988).

Financial information for the economic impact analysis was obtained from the 1982 Census of Manufacturers and 1984 Annual Survey of Manufacturers. Producer price indices were used to restate 1984 dollars in 1987 terms.

VIII. Implementation of the Part 268 Land Disposal Restrictions Program

EPA has stated in earlier rules (see 51 FR 40572, November 7, 1986; 52 FR 21010, June 4, 1987; 52 FR 25760, July 8, 1987) that "restricted" wastes are subject to certain Part 268 requirements (e.g., the § 268.7 recordkeeping requirements and the § 268.3 dilution prohibitions) even if such wastes are subject to an exemption, extension, or variance making them eligible for land disposal. The Agency has become aware of some confusion in the regulated community regarding this point. The confusion seems to have been created through the interchanging use, by both the regulated community and, in some instances, by EPA, of the terms "restricted" and "prohibited". To eliminate this confusion, EPA clarified the distinction between "restricted" and "prohibited" wastes in the May 17 proposal (53 FR 17620). For the benefit of the regulated community, the Agency is repeating the clarification in today's rule.

"Restricted" wastes are those categories of hazardous wastes that are prohibited from land disposal either by regulation or statute (regardless of whether subcategories of such wastes are subject to a § 268.5 extension, § 268.6, "no migration" exemption, or national capacity variance, any of which makes them currently eligible for land disposal). In other words, a hazardous waste is "restricted" no later than the date of the deadline established in, or pursuant to, RCRA section 3004. Therefore, the F001–F005 solvent wastes and the F020–F023 and F026–F028 dioxin-containing wastes were "restricted" as of November 8, 1986, despite the fact that several subcategories of these wastes obtained 2-year national capacity variances allowing them to be land disposed until November 8, 1988. Similarly, California list wastes were "restricted" as of July 8, 1987, despite the fact that several subcategories of such wastes obtained 2-year national capacity variances allowing continued land disposal until July 8, 1989. Wastes contained in the schedule of thirds (51 FR 19300, May 28, 1986) are considered "restricted" no later than the dates specified in the schedule promulgated at 40 CFR 268.10, 268.11, and 268.12.

Generators must determine whether their wastes are "restricted" at the point of initial generation, i.e., when the waste is first considered a hazardous waste subject to RCRA regulation. To determine whether a hazardous waste is "restricted," generators need only

determine whether the waste belongs to a category of wastes that has been prohibited from land disposal by regulation or by the automatic "hammer" provisions of RCRA. "Prohibited" wastes are a subset of "restricted" wastes, i.e., they are those "restricted" wastes that are currently ineligible for land disposal. Therefore, a hazardous waste that is not "restricted" cannot be "prohibited" under RCRA section 3004. However, once a waste is considered "restricted", at least some of the Part 268 requirements apply.

The first Part 268 requirement applicable to "restricted" wastes is that generators must determine whether their waste currently is eligible for land disposal pursuant to the requirements of § 268.7. If the waste currently is not eligible for land disposal (i.e., the prohibition effective date has passed, the waste does not meet all applicable treatment standards or prohibition levels and no § 268.5 extensions, § 268.6 "no migration" exemption, or national capacity variances apply), then the waste currently is "prohibited" from land disposal as well as "restricted". If, however, the waste currently is eligible for land disposal (i.e., the prohibition effective date has passed but the waste meets the applicable treatment standards or prohibition levels or is subject to a § 268.5 extension, § 268.6 "no migration" exemption, or national capacity variance) then the waste is considered "restricted" but not currently "prohibited". All wastes that are "restricted" must comply with the § 268.3 dilution prohibition (assuming the wastes are land disposed or otherwise managed after the prohibition effective date), the § 268.7 waste analysis and recordkeeping requirements, and all other applicable Part 268 requirements.

As a result of the regulations promulgated today under Part 268, several options will be available to the generator or owner or operator of a treatment, storage, and disposal facility for the management of restricted hazardous wastes. This section helps the regulated community determine the appropriate waste management procedures. It provides references to the applicable 40 CFR Parts 264 and 265 requirements as well as Part 268 requirements for implementation of the various waste management options.

All the sequences in the generator's decision-making process must commence with a determination as to whether the hazardous waste is restricted in Part 268 Subpart C or RCRA section 3004(d). If the hazardous waste is not restricted, it cannot be subject to the land disposal restrictions of Part 268. It must nevertheless be managed in accordance with Parts 264 and 265.

The generator of a restricted waste must determine the appropriate treatment standards (if any) under Part 268 Subpart D (or prohibitions under RCRA section 3004(d)). The applicable treatment standards must be determined at the point of initial generation prior to any treatment. (Of course, if in the course of managing the waste a new treatability group is created, for example a scrubber water from the incineration of a nonwastewater, the treatment standard applicable to this new treatability group will apply.) At this time, he must determine the effective date of the applicable treatment standard under Part 268 Subpart C. EPA has the authority to delay the effective dates of the Part 268 treatment standards based on the unavailability of adequate national treatment capacity. Determinations as to the adequacy of treatment capacity are based on the quantity of waste generated and the availability of alternative treatment, recovery or disposal technologies. For these wastes where EPA has determined that alternative capacity is adequate, or has for whatever reason not established an alternate effective date, the treatment standards take effect immediately upon promulgation. The generator must use analysis of his waste (or waste extract, when applicable) or knowledge of his waste to make determinations as to whether his waste may go directly to land disposal or first must be treated (data supporting such knowledge and any waste analysis data must be kept on-site).

If the concentrations of the hazardous constituents in the waste (or waste extract, when applicable) are in compliance with the applicable treatment standards, the waste may go directly to land disposal. The generator must submit a notice and certification statement to the land disposal facility as required under § 268.7. The land disposal facility must verify the records of the generator in accordance with the facility's waste analysis plan. A generator that operates an on-site land disposal facility must put the information contained in the notice (except for the manifest number) in the operating record of the land disposal facility.

If the concentrations of the hazardous constituents in the waste (or waste extract, when applicable) exceeds the treatment standards, placement of the waste in land disposal units as of the effective date specified in Part 268 Subpart C is prohibited (unless the waste is subject to a case-by-case extension under § 268.5, or a "no-migration" exemption under § 268.6).

An off-site treatment or storage facility must obtain a notice from the generator as required in § 268.7. This notice must be placed in the operating record. Generators that are also treatment facilities must keep the information contained in the notice (except for the manifest number) in the facility's operating record.

When shipping the treatment residual to an interim status or RCRA permitted land disposal facility, the treatment or storage facility must certify in accordance with § 268.7 that the treatment residue meets the applicable treatment standards and must also send a notice (§ 268.7) to the land disposal facility.

If the generator's waste is a restricted waste listed in § 268.10 (i.e., a First Third waste) where treatment standards have not been set, and such waste is land disposed off-site by methods other than landfills or surface impoundments, the generator must provide a notice in accordance with § 268.7. The off-site disposal facility is required to keep the generator's notice in its operating record, and is responsible for ensuring that the waste is not disposed in a landfill or surface impoundment. If the generator disposes on-site, the information contained in the notice (except for the manifest number) must be kept in the facility's operating record, and the generator must ensure that such waste is not disposed in a landfill or surface impoundment.

If the generator's waste is a restricted waste listed in § 268.10, where treatment standards have not been set, and are disposed in a landfill or surface impoundment, such waste may only be disposed in landfill or surface impoundment units that meet the minimum technological requirements of RCRA section 3004(o) (double liner, leachate collection system, and groundwater monitoring), or satisfy the section 3004(o)(2) equivalence standard. Prior to such disposal, the generator must certify to the Regional Administrator in accordance with § 268.8.

To make this certification, the generator must investigate practically available technologies appropriate for treating his waste (see sections III. A. 8. and III. C. of this preamble for guidance on appropriate technologies and on determining whether such technologies are practical). The generator must demonstrate that he has made this investigation, certifying that either no practically available technologies exist

for treating his waste, or that the best technology(ies) practically available has been contracted to treat the waste. Prior to treatment (if any) and disposal, the generator must send the demonstration and certification to the Regional Administrator, to the receiving facility, and also keep records on-site. Provided the conditions of the certification remain unchanged, demonstrations and certifications need not be sent again to the Regional Administrator. However, if changes do occur, the generator must submit a new demonstration and certification to the Regional Administrator. Should EPA notify the generator that his certification is invalidated, the generator is responsible for immediately notifying the facility(ies) receiving his waste of such action and must keep records of such communication on-site.

Where the generator demonstrates and certifies that no practically available treatment exists, the waste may be disposed in a landfill or surface impoundment meeting the minimum technological requirements. For off-site disposal, the demonstration and certification required in § 268.7, as well as the notice required in § 268.7 must be provided with the initial waste shipment. The § 268.8 demonstration need not be provided again as long as the conditions of the demonstration have not changed. Thereafter, only the notice required in § 268.7 and the certification required in § 268.8 must be provided with each waste shipment. If such waste is disposed on-site, the demonstration and certification required is § 268.8, as well as the notice (except for the manifest number) required in § 268.7 must be kept in the operating record.

If the generator's waste is a restricted waste listed in § 268.10 where no treatment standards has been set, and the waste goes off-site for treatment, the generator must send the demonstration (only for the initial shipment), and certification required in § 268.8 and the notice required in § 268.7. The treatment facility must keep a copy of the certification, demonstration (if applicable), and notice in its operating record. If treated on-site, the information contained in the notice (except for the manifest number) must be kept in the facility's operating record. After treatment, the residuals may be land disposed in a landfill or surface impoundment unit meeting the minimum technological requirements of section 3004(o). The owner or operator must certify that the treatment indicated in the generator's demonstration has been done, prior to disposal. For off-site disposal, with the initial waste shipment, the generator's demonstration, certification and notice must be sent to the disposal facility along with the owner operator's certification. Thereafter, only the generator's *and* owner or operator's certification and notice must be sent. For on-site disposal, the information contained in the notice (except the manifest number) as well as all certifications and demonstrations must be kept in the operating record. [Note: As discussed in section III. C. 3., certain wastewater residuals from treatment of First Third wastes for which EPA has not promulgated treatment standards, as well as leachate and contaminated ground water derived from the management of First Third wastes for which EPA has not promulgated treatment standards are not prohibited from land disposal until May 8, 1990 (by virtue of amending § 268.12, reprioritizing the schedule) or until treatment standards are established, whichever is sooner.]

IX. References

(1) U.S. EPA, "Regulatory Impact Analysis of Restrictions of the Land Disposal on First Third Wastes", August, 1988.

(2) U.S. EPA, "Regulatory Impact Analysis of Restrictions on Land Disposal of First Third Wastes, Appendices", August, 1988.

(3) U.S. EPA, "Alternative Waste Management Technology Cost Estimates for the First Third Land Disposal Restrictions", August, 1988.

(4) U.S. EPA, "Background Document for First Third Wastes to Support 40 CFR 268 Land Disposal Restrictions Final Rule, First Third Waste Volumes, Characteristics, and Required and Available Treatment Capacity", August 8, 1988.

(5) U.S. EPA, "Comment Response Background Document for the First Third Proposed Land Disposal Restrictions Rule", August 8, 1988.

(6) U.S. EPA, "Response to Capacity Related Comments Submitted on the First Third Proposed Land Disposal Restrictions Rule", August 8, 1988.

(7a) U.S. EPA, "Response to BDAT Related Comments Submitted on the First Third Proposed Land Disposal Restrictions Rule", Vol. I, August 8, 1988.

(7b) U.S. EPA, "Response to BDAT Related Comments Submitted on the First Third Proposed Land Disposal Restrictions Rule", Vol. II, August 8, 1988.

(7c) U.S. EPA, "Response to BDAT Related Comments Submitted on the First Third Proposed Land Disposal Restrictions Rule", Vol. III, August 8, 1988.

(8) U.S. EPA, "Guidance Document for Applicable and Demonstrated Technologies for First Third Waste Codes", EPA/530-SW-88-031P, August 8, 1988.

(9) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for F001-F005, Addendum", EPA/530-SW-88-031R, August 8, 1988.

(10) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for F006", EPA/530-SW-88-031L, August 8, 1988.

(11) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K001", EPA/530-SW-88-0310, August 8, 1988.

(12) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K015", EPA/530-SW-88-031A, August 8, 1988.

(13) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K016, K018, KO19, K020, K030", EPA/530-SW-88-031B, August 8, 1988.

(14) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K022", EPA/530-SW-88-031Q, August 8, 1988.

(15) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K024", EPA/530-SW-88-031H, August 8, 1988.

(16) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K037", EPA/530-SW-88-031I, August 8, 1988.

(17) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K046", EPA/530-SW-88-031J, August 8, 1988.

(18) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K048, K049, K050, K051, K052", EPA/530 SW 88 031C, August 8, 1988.

(19) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K061", EPA/530-SW-88-031D, August 8, 1988.

(20) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K062", EPA/530 SW 88 031E, August 8, 1988.

(21) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K071", EPA/530-SW-88-031F, August 8, 1988.

(22) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K086", EPA/530 SW-88 031N, August 8, 1988.

(23) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K087", EPA/530-SW-88-031M, August 8, 1988.

(24) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K101, K102", EPA/530-SW-88-031K, August 8, 1988.

(25) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K103, K104", EPA/530-SW-88-031G, August 8, 1988.

X. List of Subjects

40 CFR Parts 264 and 265

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

40 CFR Part 266

Energy, Hazardous waste, Petroleum, Recycling, Reporting and recordkeeping requirements

40 CFR Part 268

Hazardous waste, Reporting and recordkeeping requirements

40 CFR Part 271

Administrative practice and procedure, Confidential business information, Hazardous materials transportation, Hazardous waste, Indian lands, Intergovernmental relative, Penalties, Reporting and recordkeeping requirements, Water pollution control, Water supply

Dated: August 8, 1988.

Lee M. Thomas

Administrator.

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

I. In Part 264:

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

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

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

Subpart B—General Facility Standards

2. Section 264.13 is amended by revising paragraph (b)(7)(iii) 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 or which exhibit a characteristic of hazardous waste and either:

(A) Do not meet applicable treatment standards of Part 268, Subpart D; or

(B) Where no treatment standards have been established;

(1) Such residues are prohibited from land disposal under § 268.32 or RCRA section 3004(d); or

(2) Such residues are prohibited from land disposal under § 268.33(f).

* * * * *

Subpart E—Manifest System, Recordkeeping, and Reporting

3. In § 264.73 paragraphs (b) (10), (11), (12), (13) and (14) are revised and paragraphs (b) (15) and (16) are added to read as follows:

§ 264.73 Operating record.

* * * * *

(b) * * *

(10) Records of the quantities (and date of placement) for each shipment of hazardous waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to § 268.5, a petition pursuant to § 268.6, or a certification under § 268.8, and the applicable notice required by a generator under § 268.7(a);

(11) For an off-site treatment facility, a copy of the notice, and the certification and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 or § 268.8;

(12) For an on-site treatment facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under § 268.7 or § 268.8;

(13) For an off-site land disposal facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator of a treatment facility under § 268.7 and § 268.8, whichever is applicable; and

(14) For an on-site land disposal facility, the information contained in the notice required by the generator or owner or operator of a treatment facility under § 268.7, except for the manifest number, and the certification and demonstration if applicable, required under § 268.8, whichever is applicable.

(15) For an off-site storage facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator under § 268.7 or § 268.8; and

(16) For an on-site storage facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under § 268.7 or § 268.8.

* * * * *

II. In Part 265:

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

1. The authority citation for Part 265 is revised to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

Subpart B—General Facility Standards

2. Section 265.13 is amended by revising paragraph (b)(7)(iii) 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 or which exhibit a characteristic of hazardous waste and either:

(A) Do not meet applicable treatment standards of Part 268, Subpart D; or

(B) Where no treatment standards have been established;

(1) Such residues are prohibited from land disposal under § 268.32 or RCRA section 3004(d); or

(2) Such residues are prohibited from land disposal under § 268.33(f).

* * * * *

Subpart E—Manifest System, Recordkeeping, and Reporting

3. In § 265.73 paragraphs (b) (8), (9), (10), (11) and (12) are revised and paragraphs (b) (13) and (14) are added to read as follows:

§ 265.73 Operating record.

* * * * *

(b) * * *

(8) Records of the quantities (and date of placement) for each shipment of hazardous waste placed in land disposal units under an extension to the effective date of any land disposal restriction granted pursuant to § 268.5, monitoring data required pursuant to a petition under § 268.6, or a certification under § 268.8, and the applicable notice required by a generator under § 268.7(a).

(9) For an off-site treatment facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator under § 268.7 or § 268.8;

(10) For an on-site treatment facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator under § 268.7 or § 268.8;

(11) For an off-site land disposal facility, a copy of the notice, and the certification and demonstration if applicable, required by the generator or the owner or operator of a treatment facility under § 268.7 or § 268.8;

(12) For an on-site land disposal facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator of a treatment facility under § 268.7 or § 268.8.

(13) For an off-site storage facility, a copy of the notice, and the certification

and demonstration if applicable, required by the generator or the owner or operator under § 268.7 or § 268.8; and

(14) For an on-site storage facility, the information contained in the notice (except the manifest number), and the certification and demonstration if applicable, required by the generator or the owner or operator of a treatment facility under § 268.7 or § 268.8.

* * * * *

III. In Part 266:

PART 266—STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

1. The authority citation for Part 266 continues to read as follows:

Authority: 42 U.S.C. 6905, 6912(a), 6924, and 6934.

Subpart C—Recyclable Materials Used in a Manner Constituting Disposal

2. Section 266.20 paragraph (b) is revised to read as follows:

§ 266.20 Applicability.

* * * * *

(b) Products produced for the general public's use that are used in a manner that constitutes disposal and that contain recyclable materials are not presently subject to regulation if the recyclable materials have undergone a chemical reaction in the course of producing the products so as to become inseparable by physical means and if such products meet the applicable treatment standards in Subpart D of Part 268 (or applicable prohibition levels in § 268.32 or RCRA section 3004(d), where no treatment standards have been established) for each recyclable material (i.e., hazardous waste constituent) that they contain. However, zinc-containing fertilizers using hazardous waste K061 that are produced for the general public's use are not presently subject to regulation.

IV. In Part 268:

PART 268—LAND DISPOSAL RESTRICTIONS

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

Authority: 42 U.S.C. 6905, 6912(a), 6921, and 6924.

Subpart A—General

2. In § 268.1 paragraph (c)(3) is removed, paragraph (c)(4) is redesignated as paragraph (c)(3); paragraph (c)(5) is redesignated as paragraph (c)(4) and revised, and paragraphs (c)(5) and (d) are added to read as follows:

§ 268.1 Purpose, scope and applicability.

* * * * *

(c) * * *

(4) Where a farmer is disposing of waste pesticides in accordance with § 262.70;

(5) Prior to May 8, 1990, in a landfill or surface impoundment unit where all applicable persons are in compliance with the requirements of § 268.8, with respect to wastes that are not subject to the treatment standards set forth in Subpart D and not subject to the prohibitions in § 268.32 or RCRA § 3004(d).

(d) The requirements of this part shall not affect the availability of a waiver under section 121(d)(4) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA).

3. Section 268.4 is amended by revising paragraph (a)(2) to read as follows:

§ 268.4 Treatment surface impoundment exemption.

(a) * * *

(2) The following conditions are met:

(i) *Sampling and testing.* For wastes with treatment standards in Subpart D of this part and/or prohibition levels in Subpart C of this part or RCRA section 3004(d), the residues from treatment are analyzed, as specified in § 268.7 or § 268.32, to determine if they meet the applicable treatment standards or where no treatment standards have been established for the waste, the applicable prohibition levels. 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.

(ii) *Removal.* The following treatment residues (including any liquid waste) must be removed at least annually: residues which do not meet the treatment standards promulgated under Subpart D of this part; residues which do not meet the prohibition levels established under Subpart C of this part or imposed by statute (where no treatment standards have been established); residues which are from the treatment of wastes prohibited from land disposal under Subpart C of this part (where no treatment standards have been established and no prohibition levels apply); or residues from managing listed wastes which are not delisted under § 260.22 of this chapter. However, residues which are the subject of a valid certification under § 268.8 made no later than a year after placement of the wastes in an impoundment are not required to be removed annually. 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.

(iii) *Subsequent management.* Treatment residues may not be placed in any other surface impoundment for subsequent management unless the residues are the subject of a valid certification under § 268.8 which allows disposal in surface impoundments meeting the requirements of section 268.8(a).

(iv) *Recordkeeping.* The procedures and schedule for the sampling of impoundment contents, the analysis of test data, and the annual removal of residues which do not meet the treatment standards, or prohibition levels (where no treatment standards have been established), or which are from the treatment of wastes prohibited from land disposal under Subpart C (where no treatment standards have been established and no prohibition levels apply), must be specified in the facility's waste analysis plan as required under § 264.13 or § 265.13 of this chapter.

* * * * *

4. Section 268.5 is amended by revising paragraph (h)(2) to read as follows:

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

* * * * *

(h) * * *

(2) Such hazardous waste may be disposed in a landfill or surface impoundment unit only if such unit is in compliance with the following requirements:

* * * * *

5. Section 268.6 is amended by adding new paragraphs (a)(4) and (a)(5), by redesignating paragraph (c) as paragraph (d), (d) as (g), (e) as (h), (f) as (i), (g) as (j), (h) as (k), (i) as (1), (j) as (m), (k) as (n), and by adding new paragraphs (c), (e), and (f) to read as follows:

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

(a) * * *

(4) A monitoring plan that detects migration at the earliest practicable time;

(5) Sufficient information to assure the Administrator that the owner or operator of a land disposal unit receiving restricted waste(s) will comply with other applicable Federal, State, and local laws.

* * * * *

(c) Each petition referred to in paragraph (a) of this section must include the following:

(1) A monitoring plan that describes the monitoring program installed at and/or around the unit to verify continued compliance with the conditions of the variance. This monitoring plan must provide information on the monitoring of the unit and/or the environment around the unit. The following specific information must be included in the plan:

(i) The media monitored in the cases where monitoring of the environment around the unit is required;

(ii) The type of monitoring conducted at the unit, in the cases where monitoring of the unit is required;

(iii) The location of the monitoring stations;

(iv) The monitoring interval (frequency of monitoring at each station);

(v) The specific hazardous constituents to be monitored;

(vi) The implementation schedule for the monitoring program;

(vii) The equipment used at the monitoring stations;

(viii) The sampling and analytical techniques employed; and

(ix) The data recording/reporting procedures.

(2) Where applicable, the monitoring program described in paragraph (c)(1) of this section must be in place for a period of time specified by the Administrator, as part of his approval of the petition, prior to receipt of prohibited waste at the unit.

(3) The monitoring data collected according to the monitoring plan specified under paragraph (c)(1) of this section must be sent to the Administrator according to a format and schedule specified and approved in the monitoring plan, and

(4) A copy of the monitoring data collected under the monitoring plan specified under paragraph (c)(1) of this section must be kept on-site at the facility in the operating record.

(5) The monitoring program specified under paragraph (c)(1) of this section meet the following criteria:

(i) All sampling, testing, and analytical data must be approved by the Administrator and must provide data that is accurate and reproducible.

(ii) All estimation and monitoring techniques must be approved by the Administrator.

(iii) A quality assurance and quality control plan addressing all aspects of the monitoring program must be provided to and approved by the Administrator.

* * * * *

(e) After a petition has been approved, the owner or operator must report any changes in conditions at the unit and/or the environment around the unit that significantly depart from the conditions described in the variance and affect the potential for migration of hazardous constituents from the units as follows:

(1) If the owner or operator plans to make changes to the unit design, construction, or operation, such a change must be proposed, in writing, and the owner or operator must submit a demonstration to the Administrator at least 30 days prior to making the change. The Administrator will determine whether the proposed change invalidates the terms of the petition and will determine the appropriate response. Any change must be approved by the Administrator prior to being made.

(2) If the owner or operator discovers that a condition at the site which was modeled or predicted in the petition does not occur as predicted, this change must be reported, in writing, to the Administrator within 10 days of discovering the change. The Administrator will determine whether the reported change from the terms of the petition requires further action, which may include termination of waste acceptance and revocation of the petition, petition modifications, or other responses.

(f) If the owner or operator determines that there is migration of hazardous constituent(s) from the unit, the owner or operator must:

(1) Immediately suspend receipt of restricted waste at the unit, and

(2) Notify the Administrator, in writing, within 10 days of the determination that a release has occurred.

(3) Following receipt of the notification the Administrator will determine, within 60 days of receiving notification, whether the owner or operator can continue to receive prohibited waste in the unit and whether the variance is to be revoked. The Administrator shall also determine whether further examination of any migration is warranted under applicable provisions of Part 264 or Part 265.

* * * * *

6. Section 268.7 is amended by revising paragraph (a) introductory text, by revising paragraphs (a)(1) introductory text, (a)(2) introductory text, (a)(3), by redesignating paragraph (a)(4) as (a)(5) and revising it, by adding new paragraphs (a)(4) and (a)(6), by revising paragraph (b) introductory text, by redesignating paragraph (b)(1) as (b)(4) and (b)(2) as (b)(5), by adding new paragraphs (b)(1), (b)(2), (b)(3), (b)(6), (b)(7), and (b)(8), and by revising paragraph (c) to read as follows:

§ 268.7 Waste analysis and recordkeeping.

(a) Except as specified in § 268.32 or section 268.43 of the part, the generator must test his waste, or test 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 set forth in Subpart D of this part or exceeds the applicable prohibition levels set forth in § 268.32 or RCRA § 3004(d), with each shipment of waste the generator must notify the treatment or storage facility in writing of the appropriate treatment standards set forth in Subpart D of this part and any applicable prohibition levels set forth in § 268.32 or RCRA § 3004(d). The notice must include the following information:

* * * * *

(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 treatment, storage, or 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 prohibition levels set forth in § 268.32 or RCRA § 3004(d).

* * * * *

(3) If a generator's waste is subject to a case by-case extension under § 268.5, an exemption under § 268.6, or a nationwide variance under Subpart C, with each shipment of waste, he must submit a notice to the facility receiving his waste stating that the waste is not prohibited from land disposal. The notice must include the following information:

(i) EPA Hazardous Waste Number;

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

(iii) The manifest number associated with the shipment of waste;

(iv) Waste analysis data, where available; and

(v) The date the waste is subject to the prohibitions.

(4) If a generator determines that he is managing a waste that is subject to the prohibitions under § 268.33(f) of this part and is not subject to the prohibitions set forth in § 268.32 of this part, with each shipment of waste the generator must notify the treatment, storage, or disposal facility, in writing, of any applicable prohibitions set forth in § 268.33(f). The notice must include the following information:

(i) EPA Hazardous Waste Number;

(ii) The applicable prohibitions set forth in section 268.33(f);

(iii) The manifest number associated with the shipment of waste; and

(iv) Waste analysis data, where available.

(5) If a generator determines whether the waste is restricted based solely on his knowledge of the waste, all supporting data used to make this determination must be retained on-site in the generator's files. If a generator determines whether the waste is restricted based on testing this waste or an extract developed using the test method described in Appendix I of this part, all waste analysis data must be retained on-site in the generator's files.

(6) Generators must retain on-site a copy of all notices, certifications, demonstrations, waste analysis data, and other documentation produced pursuant to this section for at least five years from the date that the waste that is the subject of such documentation was last sent to on-site or off-site treatment, storage, or disposal. The five year record retention period is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

(b) Treatment facilities must test their wastes according to the frequency specified in their waste analysis plans as required by § 264.13 or § 265.13. Such testing must be performed as provided in paragraphs (b)(1), (b)(2) and (b)(3) of this section.

(1) 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.

(2) For wastes that are prohibited under § 268.32 of this part or RCRA section 3004(d) but 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.

(3) For wastes with treatment standards expressed as concentrations in the waste (§ 268.43), the owner or operator of the treatment facility must test the treatment residues (not an extract of such residues) to assure that the treatment residues meet the applicable treatment standards.

* * * * *

(6) If the waste or treatment residue will be further managed at a different treatment or storage facility, the treatment, storage or disposal facility sending the waste or treatment residue off-site must comply with the notice and certification requirements applicable to generators under this section.

(7) For wastes that are subject to the prohibitions under § 268.33(f) of this part and are not subject to the prohibitions set forth in § 268.32 of this part, with each shipment of such waste the owner or operator must notify any subsequent treatment, storage, or disposal facility, in writing, of any applicable prohibitions set forth in § 268.33(f). The notice must include the following information:

(i) EPA Hazardous Waste Number;

(ii) The applicable prohibitions set forth in section 268.33(f);

(iii) The manifest number associated with the shipment of waste; and

(iv) Waste analysis data, where available.

(8) Where the wastes are recyclable materials used in a manner constituting disposal subject to the provisions of § 266.20(b), the owner or operator of a treatment facility (the recycler) is not required to notify the receiving facility, pursuant to paragraph (b)(4) of this section. With each shipment of such wastes the owner or operator of the recycling facility must submit a certification described in paragraph (b)(5) of this section, and a notice which includes the information listed in paragraph (b)(4) of this section (except the manifest number) to the Regional Administrator, or his delegated representative. The recycling facility also must keep records of the name and location of each entity receiving the hazardous waste-derived product.

(c) The owner or operator of any land disposal facility disposing any waste subject to restrictions under this part must:

(1) Have copies of the notice and certifications specified in paragraph (a) or (b) of this section, and the certification specified in § 268.8 if applicable.

(2) 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 in 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.

(3) Where the owner or operator is disposing of any waste that is subject to the prohibitions under § 268.33(f) of this part but not subject to the prohibitions set forth in § 268.32, he must ensure that such waste is the subject of a certification according to the requirements of § 268.8 prior to disposal in a landfill or surface impoundment unit, and that such disposal is in accordance with the requirements of § 268.5(h)(2). The same requirement applies to any waste that is subject to the prohibitions under § 268.33(f) of this Part and also is subject to the statutory prohibitions in RCRA section 3004(d) or the codified prohibitions in § 268.32 of this Part.

* * * * *

7. Section 268.8 is added to read as follows:

§ 268.8 Landfill and surface impoundment disposal restrictions.

(a) Prior to May 8, 1990, wastes which are otherwise prohibited from land disposal under § 268.33(f) of this part may be disposed in a landfill or surface impoundment which is in compliance with the requirements of § 268.5(h)(2) provided that the requirements of this section are met.

(1) Prior to such disposal, the generator has made a good faith effort to locate and contract with treatment and recovery facilities practically available which provide the greatest environmental benefit.

(2) Such generator submits to the Regional Administrator a demonstration and certification that the requirements of paragraph (a)(1) of this section have been met. The demonstration must include a list of facilities and facility officials contacted, addresses, telephone numbers, and contact dates.

(i) If a generator determines that there is no practically available treatment for his waste, he must indicate so in his

demonstration, and provide a written discussion of why he was not able to obtain treatment or recovery for that waste. The generator must also provide the following certification:

I certify under penalty of law that the requirements of 40 CFR 268.8(a)(1) have been met and that disposal in a landfill or surface impoundment is the only practical alternative to treatment currently available. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(ii) If a generator determines that there are practically available treatments for his waste, he must contract to use the practically available technology that yields the greatest environmental benefit, as indicated in his demonstration. He must provide the following certification:

I certify under penalty of law that the requirements of 40 CFR 268.8(a)(1) have been met and that I have contracted to treat my waste (or will otherwise provide treatment) by the practically available technology which yields the greatest environmental benefit, as indicated in my demonstration. I believe that the information submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(3) Where the generator has determined that there is no practically available treatment for his waste prior to disposal, with the initial shipment of waste, such generator must submit a copy of the demonstration and the certification required in paragraph (a)(2)(A) of this section to the receiving facility. With each subsequent waste shipment, only the certification is required to be submitted provided that the conditions being certified remain unchanged. Such a generator must retain on-site a copy of the demonstration (if applicable) and certification required for each waste shipment for at least five years from the date that the waste that is the subject of such documentation was last sent to on-site or off-site disposal. The five-year record retention requirement is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

(4) Where the generator has determined that there is practically available treatment for his waste prior to disposal, with the initial shipment of waste, such generator must submit a copy of the demonstration and the certification required in paragraph (a)(2)(B) of this section to the receiving facility. With each subsequent waste shipment, only the certification is required to be submitted provided that the conditions being certified remain unchanged. Such a generator must retain on-site a copy of the demonstration (if applicable) and certification required for each waste shipment for at least five years from the date that the waste that is the subject of such documentation was last sent to on-site or off-site disposal. The five-year record retention requirement is automatically extended during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

(b) After receiving the demonstration and certification, the Regional Administrator may request any additional information which he deems necessary to evaluate the certification.

(1) A generator who has submitted a certification under this section must immediately notify the Regional Administrator when he has knowledge of any change in the conditions which formed the basis of his certification.

(2) If, after review of the certification, the Regional Administrator determines that practically available treatment exists where the generator has certified otherwise, or that there exists some other method of practically available treatment yielding greater environmental benefit than that which the generator has certified, the Regional Administrator may invalidate the certification.

(3) If the Regional Administrator invalidates a certification, the generator must immediately cease further shipments of the waste, and inform all facilities that received the waste of such invalidation and keep records of such communication on-site in his files.

(c) A treatment, recovery or storage facility receiving wastes subject to a valid certification must keep copies of the generator's demonstration (if applicable) and certification in his operating record.

(1) The owner or operator of a treatment or recovery facility must certify that he has treated the waste in accordance with the generator's demonstration. The following certification is required:

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 treatment as specified in the generator's demonstration. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

(2) The owner or operator of a treatment, recovery or storage facility must send a copy of the generator's demonstration (if applicable) and certification under § 268.8(a)(2), and certification under § 268.8(c)(1) (if applicable) to the facility receiving the waste or treatment residues.

(d) The owner or operator of a disposal facility must ensure that those wastes prohibited under § 263.33(f) are subject to a certification according to the requirements of this section prior to disposal in a landfill or surface impoundment, and that the units receiving such wastes must meet the minimum technological requirements of § 268.5(h)(2).

(e) Once the certification is received by the Regional Administrator, and provided that the wastes have been treated by the treatment (if any), determined by the generator to yield the greatest environmental benefit practically available, the wastes or treatment residuals may be disposed in a landfill or surface impoundment unit meeting the requirements of § 268.5(h)(2), unless otherwise prohibited by the Regional Administrator.

(Approved by the Office of Management and Budget under control number 2050–0085).

8. In § 268.12, the existing text is designated as paragraph (a) and paragraphs (b), (c) and (d) are added to read as follows:

§ 268.12 Identification of wastes to be evaluated by May 8, 1990.

* * * * *

(b) Wastewater residues (less than 1% total organic carbon and less than 1% suspended solids) resulting from the following well-designed and well-operated treatment methods for wastes listed in § 268.10 for which EPA has not promulgated wastewater treatment standards: metals recovery, metals precipitation, cyanide destruction, carbon adsorption, chemical oxidation, steam stripping, biodegradation, and incineration or other direct thermal destruction. The treatment standards applicable to wastes prohibited under §§ 268.30–268.33 of this part still apply.

(c) Leachate derived from the treatment, storage or disposal of wastes listed in § 268.10 for which EPA has not promulgated wastewater treatment standards, and contaminated ground water that contains such wastes. The treatment standards applicable to wastes prohibited under §§ 268.30–268.33 of this Part still apply.

(d) Hazardous wastes listed in § 268.10 which are mixed hazardous/radioactive wastes. The treatment standards applicable to wastes prohibited under §§ 268.30–268.32 of this part still apply.

SUBPART C—PROHIBITIONS ON LAND DISPOSAL

9. Section 268.30 is revised to read as follows:

§ 268.30 Waste specific prohibitions—Solvent wastes.

(a) Effective November 8, 1986, the spent solvent wastes specified in 40 CFR 261.31 as EPA Hazardous Waste Nos. F001, F002, F003, F004, and F005, are prohibited under this part from land disposal (except in an injection well) unless one or more of the following conditions apply:

(1) The generator of the solvent waste is a small quantity generator of 100–1000 kilograms of hazardous waste per month; or

(2) The solvent waste is generated from any response action taken under the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA) or any corrective action taken under the Resource Conservation and Recovery Act (RCRA), except where the waste is contaminated soil or debris; or

(3) The initial generator's solvent waste is a solventwater mixture, solvent-containing sludge or solid, or solventcontaminated soil (non-CERCLA or RCRA corrective action) containing less than 1 percent total F001–F005 solvent constituents listed in Table CCWE of § 268.41 of this part; or

(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.

(b) Effective November 8, 1988, the F001–F005 solvent wastes listed in paragraphs (a) (1), (2), (3), or (4) of this section are prohibited from land disposal.

(c) Effective November 8, 1990, the F001–F005 solvent wastes which are contaminated soil and debris resulting from a response action taken under section 104 or 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) or a corrective action required under subtitle C of the Resource Conservation and Recovery Act (RCRA) and the residues from treating these wastes are prohibited from land disposal. Between November 8, 1988, and November 8, 1990, these wastes may be disposed in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2).

(d) The requirements of paragraphs (a), (b), and (c) of this section do not apply if:

(1) The wastes meet the standards of Subpart D of this part; or

(2) 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; or

(3) Persons have been granted an extension to the effective date of a prohibition pursuant to § 268.5, with respect to those wastes and units covered by the extension.

10. Section 268.31 is revised to read as follows:

§ 268.31 Waste specific prohibitions—Dioxin-containing wastes.

(a) Effective November 8, 1988, the dioxin-containing wastes specified in 40 CFR 261.31 as EPA Hazardous Waste Nos. F020, F02l, F022, F023, F026, F027, and F028, are prohibited from land disposal unless the following condition applies:

(1) The F020–F023 and F026–F028 dioxin-containing waste is contaminated soil and debris resulting from a response action taken under section 104 or 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) or a corrective action taken under subtitle C of the Resource Conservation and Recovery Act (RCRA).

(b) Effective November 8, 1990, the F020–F023 and F026–F028 dioxin-containing wastes listed in paragraph (a)(1) of this section are prohibited from land disposal.

(c) Between November 8, 1988, and November 8, 1990, wastes included in paragraph (a)(1) of this section may be disposed in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2) and all other applicable requirements of Parts 264 and 265 of this chapter.

(d) The requirements of paragraphs (a) and (b) of this section do not apply if:

(1) The wastes meet the standards of Subpart D of this part; or

(2) 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; or

(3) 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.

11. In Section 268.32 paragraphs (d), (e), (f), (g), introductory text, and (h) are revised to read as follows:

§ 268.32 Waste specific prohibitions—California list wastes.

* * * * *

(d) The requirements of paragraphs (a) and (e) of this section do not apply until:

(1) July 8, 1989 where the wastes are contaminated soil or debris not resulting from a response action taken under section 104 or 106 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) or a corrective action taken under Subtitle C of the Resource Conservation and Recovery Act (RCRA). Between July 8, 1987 and July 8, 1989, the wastes may be disposed in a landfill or surface impoundment only if such disposal is in compliance with the requirements specified in § 268.5(h)(2).

(2) November 8, 1990 where the wastes are contaminated soil or debris resulting from a response action taken under section 104 or 106 of CERCLA or a corrective action taken under Subtitle C of RCRA. Between November 8, 1988, and November 8, 1990, the wastes may be disposed in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2).

(e) Effective November 8, 1988, 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/1 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 and are not wastes described in paragraph (d) of this section.

(f) Between July 8, 1987 and November 8, 1988, the wastes included in paragraphs (e)(1) and (e)(2) of this section may be disposed in a landfill or surface impoundment only if such disposal is in compliance with the requirements specified in § 268.5(h)(2).

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

* * * * *

(h) The prohibitions and effective dates specified in paragraphs (a)(3), (d),

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 specified HOC (such as a hazardous waste chlorinated solvent, see e.g., § 268.30(a)).

* * * * *

12. Section 268.33 is added to read as follows:

§ 268.33 Waste specific prohibitions—First Third Wastes

(a) Effective August 8, 1988, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. F006 (nonwastewater), K001, K004 (nonwastewater), K008 (nonwastewater), K015, K016, K018, K019, K020, K021 (nonwastewater), K022 (nonwastewater), K024, K025, K030, K036 (nonwastewater), K037, K044, K045, nonexplosive K046 (nonwastewater), K047, K060 (nonwastewater), K061 (nonwastewaters containing less than 15% zinc), K062, non $CaSO_4$ K069 (nonwastewaters), K083 (nonwastewaters), K086 (solvent washes), K087, K099, K100, K101, K102, K103, and K104 are prohibited from land disposal (except in an injection well).

(1) Effective August 8, 1988 and continuing until August 7, 1990, K061 wastes containing 15% zinc or greater are prohibited from land disposal pursuant to the treatment standards specified in § 268.41 applicable to K061 wastes that contain less than 15% zinc.

(b) Effective August 8, 1990, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K048, K049, K050, K051, K052, K061 (containing 15% zinc or greater), and K071 are prohibited from land disposal.

(c) Effective August 8, 1990, the wastes specified in 40 CFR 268.10 having a treatment standard in Subpart D of this part based on incineration and which are contaminated soil and debris are prohibited from land disposal.

(d) Between November 8, 1988 and August 8, 1990, wastes included in paragraphs (b) and (c) of this section may be disposed of in a landfill or surface impoundment only if such unit is in compliance with the requirements specified in § 268.5(h)(2).

(e) The requirements of paragraphs (a), (b), (c), and (d) of this section do not apply if:

(1) The wastes meet the applicable standards specified in Subpart D of this Part; or

(2) 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; or

(3) 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.

(f) Between August 8, 1988, and May 8, 1990, the wastes specified in § 268.10 for which treatment standards under Subpart D of this Part are not applicable, including those wastes which are subject to the statutory prohibitions of RCRA section 3004(d) or codified prohibitions under § 268.32 of this Part, but not including wastes subject to a treatment standard under § 268.42 of this Part, are prohibited from disposal in a landfill or surface impoundment unless the wastes are the subject of a valid demonstration and certification pursuant to § 268.8.

(g) To determine whether a hazardous waste listed in § 268.10 exceeds the applicable treatment standards specified in § 268.41 and § 268.43, the initial generator must test a representative sample of the waste extract or the entire waste depending on whether the treatment standards are expressed as concentrations in the waste extract or the waste. If the waste contains constituents in excess of the applicable Subpart D levels, the waste is prohibited from land disposal and all requirements of Part 268 are applicable, except as otherwise specified.

Subpart D—Treatment Standards

13. Section 268.40 is amended by revising paragraph (a) and adding a new paragraph (c) to read as follows:

§ 268.40 Applicability of treatment standards.

(a) A restricted waste identified in § 268.41 may be land disposed 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 Table CCWE for that waste.

* * * * *

(c) A restricted waste identified in § 268.43 may be land disposed only if the constituent concentrations in the waste or treatment residue of the waste do not exceed the value shown in Table CCW of § 268.43 for any hazardous constituent listed in Table CCW for that waste.

14. In Table CCWE in § 268.41(a), in the column headed " F001–F005 spent solvents," "methylene chloride (from the pharmaceutical industry)" and its corresponding concentrations is deleted, and the following subtables to Table CCWE are added in numerical order by EPA Hazardous Waste Number:

§ 268.41 Treatment standards expressed as concentrations in waste extract.

(a) * * *

TABLE CCWE—CONSTITUTENT CONCENTRATIONS IN WASTE EXTRACT

* * * * *

F008 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)
Cadmium	0.068
Chromium (Total)	5.2
Lead	.51
Nickel	.32
Silver	.072
Cyanides (Total)	Reserved

K001 nonwastewaters (see also Table in § 268.43)	Concentration (in mg/l)
Lead	0.51

K022 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)
Chromium (Total)	5.2
Nickel	0.32

K046 nonwastewaters (Nonreactive Subcategory)	Concentration (in mg/l)
Lead	0.16

K048, K049, K050, K051 and K052 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)
Arsenic	0.004
Chromium (Total)	1.7
Nickel	.048
Selenium	.025

K061 nonwastewaters (Low Zinc Subcategory—less than 15% total zinc)	Concentration (in mg/l)
Cadmium	0.14
Chromium (Total)	5.2
Lead	.24
Nickel	.32

K061 nonwastewaters (High Zinc Subcategory—15% or greater total zinc): effective until 8/8/90	Concentration (in mg/l)
Cadmium	0.14
Chromium (Total)	5.2
Lead	.24
Nickel	.32

K062 nonwastewaters	Concentration (in mg/l)
Chromium (Total)	0.094
Lead	.37

K071 nonwastewaters	Concentration (in mg/l)
Mercury	0.025

K086 nonwastewaters (Solvent Washes Subcategory) see also Table CCW in § 268.43)	Concentration (in mg/l)
Chromium (Total)	0.094
Lead	.37

K087 nonwastewaters (see also Table CCW in § 268.43)	Concentration (in mg/l)
Lead	0.51

K101 and K102 nonwastewaters (Low Arsenic Subcategory—less than 1% Total Arsenic) (see also Table CCW in § 268.43)	Concentration (in mg/l)
Cadmium	0.066
Chromium (Total)	5.2
Lead	.51
Nickel	.32

15. In § 268.42 paragraph (a)(2) is revised to read as follows:

§ 268.42 Treatment standards expressed as specified technologies.

(a) * * *

(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, or in boilers or industrial furnaces burning in accordance with applicable regulatory standards. 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 solventfor which a treatment standard is established under § 268.41(a)).

* * * * *

16. Section 268.43 is amended by adding paragraphs (a) and (b) and Table CCW to read as follows:

§ 268.43 Treatment standards expressed as waste concentrations.

(a) Table CCW identifies the restricted wastes and the concentrations of their associated hazardous constituents which may not be exceeded by the waste or treatment residual (not an extract of such waste or residual) for the allowable land disposal of such waste or residual.

TABLE CCW—CONSTITUENT CONCENTRATIONS IN WASTES

F001, F002, F003, F004 and F005 wastewaters (Pharmaceutical Industry)	Concentration (in mg/l)
Methylene chloride	0.44

F006 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Cyanides (Total)	Reserved

K001 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Naphthalene	8.0
Pentachlorophenol	37
Phenanthrene	8.0
Pyrene	7.3
Toluene	.14
Xylenes	.16

K001 wastewaters	Concentration (in mg/l)
Naphthalene	0.15
Pentachlorophenol	.88
Phenanthrene	.15
Pyrene	.14
Toluene	.14
Xylenes	.16
Lead	.037

K015 wastewaters	Concentration (in mg/l)
Anthracene	1.0
Benzal chloride	.28
Benzo (b and/or k) fluoranthene	.29
Phenanthrene	.27
Toluene	.15
Chromium (Total)	.32
Nickel	.44

K016 nonwastewaters	Concentration (in mg/kg)
Hexachlorobenzene	28
Hexachlorobutadiene	5.6
Hexachlorocyclopentadiene	5.6
Hexachloroethane	28
Tetrachloroethene	6.0

K016 wastewaters	Concentration (in mg/l)
Hexachlorobenzene	0.033
Hexachlorobutadiene	.007
Hexachlorocyclopentadiene	.007
Hexachloroethane	.033
Tetrachloroethene	.007

K018 nonwastewaters	Concentration (in mg/kg)
Chloroethane	6.0
1,1-Dichloroethane	6.0
1,2-Dichloroethane	6.0
Hexachlorobenzene	28
Hexachlorobutadiene	5.6
Hexachloroethane	28
Pentachloroethane	5.6
1,1,1-Trichloroethane	6.0

K018 wastewaters	Concentration (in mg/l)
Chloroethane	0.007
Chloromethane	.007
1,1-Dichloroethane	.007
1,2-Dichloroethane	.007
Hexachlorobenzene	.033
Hexachlorobutadiene	.007
Pentachloroethane	.007
1,1,1-Trichloroethane	.007

K019 nonwastewaters	Concentration (in mg/kg)
Bis(2-chloroethyl)ether	5.6
Chlorobenzene	6.0
Chloroform	6.0
1,2-Dichloroethane	6.0
Hexachloroethane	28
Naphthalene	5.6
Phenanthrene	5.6
Tetrachloroethene	6.0
1,2,4-Trichlorobenzene	19
1,1,1-Trichloroethane	6.0

K019 wastewaters	Concentration (in mg/l)
Bis(2-chloroethyl)ether	0.007
Chlorobenzene	.006
Chloroform	.007
p-Dichlorobenzene	.008
1,2-Dichloroethane	.007
Fluorene	.007
Hexachloroethane	.033
Naphthalene	.007
Phenanthrene	.007
1,2,4,5-Tetrachlorobenzene	.017
Tetrachloroethene	.007
1,2,4-Trichlorobenzene	.023
1,1,1-Trichloroethane	.007

K020 nonwastewaters	Concentration (in mg/kg)
1,2-Dichloroethane	6.0
1,1,2,2-Tetrachloroethane	5.6

K020 nonwastewaters	Concentration (in mg/kg)
Tetrachloroethene	6.0

K020 wastewaters	Concentration (in mg/1)
1,2-Dichloroethane	0.007
1,1,2,2-Tetrachloroethane	.007
Tetrachloroethene	.007

K022 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Acetophenone	19
Sum of Diphenylamine and Diphenylnitrosamine	13
Phenol	12
Toluene	0.034

K024 nonwastewaters	Concentration (in mg/kg)
Phthalic acid	28

K024 wastewaters	Concentration (in mg/1)
Phthalic acid	0.54

K030 nonwastewaters	Concentration (in mg/kg)
Hexachlorobutadiene	5.6
Hexachloroethane	28
Hexachloropropene	19
Pentachlorobenzene	28
Pentachloroethane	5.6
1,2,4,5-Tetrachlorobenzene	14
Tetrachloroethene	6.0
1,2,4-Trichlorobenzene	19

K030 wastewaters	Concentration (in mg/1)
o-Dichlorobenzene	0.008
p-Dichlorobenzene	.008
Hexachlorobutadiene	.007
Hexachloroethane	.033
Pentachloroethane	.007
1,2,4,5-Tetrachlorobenzene	.017
Tetrachloroethene	.007
1,2,4-Trichlorobenzene	.023

K037 nonwastewaters	Concentration (in mg/kg)
Disulfoton	0.1
Toluene	28

K037 wastewaters	Concentration (in mg/1)
Disulfoton	0.003
Toluene	.028

K048 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Benzene	9.5
Benzo(a)pyrene	.84
Bis(2-ethylhexyl)phthalate	37
Chrysene	2.2
Di-n-butyl phthalate	4.2
Ethylbenzene	67
Naphthalene	[Reserved]
Phenanthrene	7.7
Phenol	2.7
Pyrene	2.0
Toluene	9.5
Xylenes	[Reserved]
Cyanides (Total)	1.8

K048 wastewaters	Concentration (in mg/1)
Benzene	0.011
Benzo(a)pyrene	.047
Bis(2-ethylhexyl)phthalate	.043
Chrysene	.043
Di-n-butyl phthalate	.060
Ethylbenzene	.011
Fluorene	.050
Naphthalene	.033
Phenanthrene	.039
Phenol	.047
Pyrene	.045
Toluene	.011
Xylenes	.011
Chromium (Total)	.20
Lead	0.37

K049 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Anthracene	6.2
Benzene	9.5
Benzo(a)pyrene	0.84
Bis(2-ethylhexyl)phthalate	37
Chrysene	2.2
Ethylbenzene	67
Naphthalene	[Reserved]
Phenanthrene	7.7
Phenol	2.7
Pyrene	2.0
Toluene	9.5
Xylenes	[Reserved]
Cyanides (Total)	1.8

K049 wastewaters	Concentration (in mg/1)
Anthracene	0.039
Benzene	.011
Benzo(a)pyrene	.047
Bis(2-ethylhexyl)phthalate	.043
Carbon disulfide	.011
Chrysene	.043
2,4-Dimethylphenol	.033
Ethylbenzene	.011
Naphthalene	.033
Phenanthrene	.039

K049 wastewaters	Concentration (in mg/1)
Phenol	.047
Pyrene	.045
Toluene	.011
Xylenes	.011
Chromium (Total)	.20
Lead	.037

K050 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Benzo(a)pyrene	0.84
Phenol	2.7
Cyanides (Total)	1.8

K050 wastewaters	Concentration (in mg/1)
Benzo(a)pyrene	0.047
Phenol	.047
Chromium (Total)	.20
Lead	.037

K051 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Anthracene	6.2
Benzene	9.5
Benzo(a)anthracene	1.4
Benzo(a)pyrene	.84
Bis(2-ethylhexyl)phthalate	37
Chrysene	2.2
Di-n-butyl phthalate	4.2
Ethylbenzene	67
Naphthalene	[Reserved]
Phenanthrene	7.7
Phenol	2.7
Pyrene	2.0
Toluene	9.5
Xylenes	[Reserved]
Cyanides (Total)	1.8

K051 wastewaters	Concentration (in mg/1)
Acenaphthene	0.050
Anthracene	.039
Benzene	.011
Benzo(a)anthracene	.043
Benzo(a)pyrene	.047
Bis(2-ethylhexyl) phthalate	.043
Chrysene	.043
Di-n-butyl phthalate	.060
Ethylbenzene	.011
Fluorene	.050
Naphthalene	.033
Phenanthrene	.039
Phenol	.047
Pyrene	.045
Toluene	.011
Xylenes	.011
Chromium (Total)	.20
Lead	.037

K052 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Benzene	9.5
Benzo(a)pyrene	0.84
o-Cresol	2.2
p-Cresol	0.90
Ethylbenzene	67
Naphthalene	[Reserved]
Phenanthrene	7.7
Phenol	2.7
Toluene	9.5
Xylenes	[Reserved]
Cyanides (Total)	1.8

K052 wastewaters	Concentration (in mg/l)
Benzene	0.011
Benzo(a)pyrene	.047
o-Cresol	.011
p-Cresol	.011
2,4-Dimethylphenol	.033
Ethylbenzene	.011
Naphthalene	.033
Phenanthrene	.039
Phenol	.047
Toluene	.011
Xylenes	.011
Chromium (Total)	.20
Lead	.037

K062 wastewaters	Concentration (in mg/l)
Chromium (Total)	0.32
Lead	.04
Nickel	.44

K071 wastewaters	Concentration (in mg/l)
Mercury	0.030

K086 nonwastewaters—Solvent Washes Subcategory (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Acetone	0.37
bis(2-ethylhexyl) phthalate	.49
n-Butyl alcohol	.37
Cyclohexanone	.49
1,2-Dichlorobenzene	.49
Ethyl acetate	.37
Ethyl benzene	.031
Methanol	.37
Methylene chloride	.037
Methyl ethyl ketone	.37
Methyl isobutyl ketone	.37
Naphthalene	.49
Nitrobenzene	.49
Toluene	.031
1,1,1,-Trichloroethane	.044
Trichloroethylene	.031
Xylenes	.015

K086 wastewaters—Solvent Washes Subcategory	Concentration (in mg/l)
Acetone	0.015
bis(2-ethylhexyl)phthalate	.044
n-Butyl alcohol	.031
Cyclohexanone	.022
1,2-Dichlorobenzene	.044
Ethyl acetate	.031
Ethyl benzene	.015
Methanol	.031
Methylene chloride	.031
Methyl ethyl ketone	.031
Methyl isobutyl ketone	.031
Naphthalene	.044
Nitrobenzene	.044
Toluene	.029
1,1,1,-Trichloroethane	.031
Trichloroethylene	.029
Xylenes	.015
Chromium (Total)	.32
Lead	.037

K087 nonwastewaters (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Acenaphthalene	3.4
Benzene	.071
Chrysene	3.4
Fluoranthene	3.4
Indeno (1,2,3-cd) pyrene	3.4
Naphthalene	3.4
Phenanthrene	3.4
Toluene	.65
Xylenes	.070

K087 wastewaters	Concentration (in mg/l)
Acenaphthalene	0.028
Benzene	.014
Chrysene	.028
Fluoranthene	.028
Indeno (1,2,3-cd) pyrene	.028
Naphthalene	.028
Phenanthrene	.028
Toluene	.008
Xylenes	.014
Lead	.037

K099 nonwastewaters	Concentration (in mg/kg)
2,4-Dichlorophenoxyacetic acid	1.0
Hexachlorodibenzo-p-dioxins	.001
Hexachlorodibenzofurans	.001
Pentachlorodibenzo-p-dioxins	.001
Pentachlorodibenzofurans	.001
Tetrachlorodibenzo-p-dioxins	.001
Tetrachlorodibenzofurans	.001

K099 wastewaters	Concentration (in mg/l)
2,4-Dichlorophenoxyacetic acid	1.0
Hexachlorodibenzo-p-dioxins	.001
Hexachlorodibenzofurans	.001
Pentachlorodibenzo-p-dioxins	.001
Pentachlorodibenzofurans	.001
Tetrachlorodibenzo-p-dioxins	.001
Tetrachlorodibenzofurans	.001

K101 nonwastewaters (Low Arsenic Subcategory—less than 1% total arsenic) (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Ortho-Nitroaniline	14

K101 wastewaters	Concentration (in mg/l)
Ortho-Nitroaniline	0.27
Arsenic	2.0
Cadmium	.24
Lead	.11
Mercury	.027

K102 nonwastewaters (Low Arsenic Subcategory—less than 1% total arsenic) (see also Table CCWE in § 268.41)	Concentration (in mg/kg)
Ortho Nitrophenol	13

K102 wastewaters	Concentration (in mg/l)
Ortho-Nitrophenol	0.028
Arsenic	2.0
Cadmium	.24
Lead	.11
Mercury	.027

K103 nonwastewaters	Concentration (in mg/kg)
Aniline	5.6
Benzene	6.0
2,4-Dinitrophenol	5.6
Nitrobenzene	5.6
Phenol	5.6

K103 wastewaters	Concentration (in mg/l)
Aniline	4.5
Benzene	.15
2,4-Dinitrophenol	.61
Nitrobenzene	.073
Phenol	1.4

K104 nonwastewaters	Concentration (in mg/kg)
Aniline	5.6
Benzene	6.0
2,4-Dinitrophenol	5.6
Nitrobenzene	5.6
Phenol	5.6
Cyanides (Total)	1.8

K104 wastewaters	Concentration (in mg/l)
Aniline	4.5
Benzene	.15
2,4-Dinitrophenol	.61

K104 wastewaters	Concentration (in mg/l)
Nitrobenzene	.073
Phenol	1.4
Cyanides (Total)	2.7

No Land Disposal for:

K004 Nonwastewaters [Based on No Generation]
K008 Nonwastewaters [Based on No Generation]
K015 Nonwastewaters [Based on No Ash]
K021 Nonwastewaters [Based on No Generation]
K025 Nonwastewaters [Based on No Generation]
K036 Nonwastewaters [Based on No Generation]
K044 [Based on Reactivity]
K045 [Based on Reactivity]
K047 [Based on Reactivity]
K060 Nonwastewaters [Based on No Generation]
K061 Nonwastewaters—High Zinc Subcategory (greater than or equal to 15% total zinc) [Based on Recycling]: effective 8/8/90
K069 Nonwastewaters—Non-Calcium Sulfate Subcategory [Based on Recycling]
K083 Nonwastewaters—No Ash Subcategory (less than 0.01% total ash) [Based on No Ash]
K100 Nonwastewaters [Based on No Generation]

(b) When wastes with differing treatment standards for a constituent of concern are combined for purposes of treatment, the treatment residue must meet the lowest treatment standard for the constituent of concern.

17. In § 268.44, paragraphs (h) through (l) are added to read as follows:

§ 268.44 Variance from a treatment standard.

* * * * *

(h) Where the treatment standard is expressed as a concentration in a waste or waste extract and a waste generated under conditions specific to only one site cannot be treated to the specified level, or where the treatment technology is not appropriate to the waste, the generator or treatment facility may apply to the Assistant Administrator of the Office of Solid Waste and Emergency Response, or his delegated representative, for a site-specific variance from a treatment standard. The applicant for a site-specific variance must demonstrate that because the physical or chemical properties of the waste differs significantly from the waste analyzed in developing the treatment standard, the waste cannot be treated to specified levels or by the specified methods.

(i) Each application for a site-specific variance from a treatment standard must include the information in § 260.20(b)(1)–(4);

(j) After receiving an application for a site-specific variance from a treatment standard, the Assistant Administrator, or his delegated representative, may request any additional information or samples which may be required to evaluate the application.

(k) A generator, treatment facility, or disposal facility that is managing a waste covered by a site-specific variance from a treatment standard must comply with the waste analysis requirements for restricted wastes found under § 268.7.

(l) During the application review process, the applicant for a site-specific variance must comply with all restrictions on land disposal under this part once the effective date for the waste has been reached.

Subpart E—Prohibitions on Storage

18. Section 268.50 is amended by revising paragraph (d) to read as follows:

§ 268.50 Prohibitions on storage of restricted wastes.

* * * * *

(d) The prohibition in paragraph (a) of this section does not apply to waste which are the subject of an approved petition under § 268.6, a nationwide variance under Subpart C of this part, an approved case-by-case extension under § 268.5, or a valid certification under § 268.8.

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V. In Part 271:

PART 271—REQUIREMENTS FOR AUTHORIZATION OF STATE HAZARDOUS WASTE PROGRAMS

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

Authority: 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 promulgation in the **Federal Register**:

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

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

Promulgation date	Title of regulation	**Federal Register** reference	Effective date
* * *	* * *	* *	
[Insert date of promulgation of final rule in the **Federal Register**].	Land disposal restrictions for First Third wastes.	53 FR [Insert **Federal Register** page numbers]	Aug. 8, 1988.
* * *	* * *	* *	

3. Section 271.1(j) is amended by adding the date of publication and the **Federal Register** page numbers to the following entry in Table 2.

§ 271.1 Purpose and scope.

* * * * *

(j) * * *

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

Effective date	Self-implementing provision	RCRA citation	Federal Register reference
•	•	•	•
August 8, 1988.....	Land disposal restrictions on 1/3 of listed wastes.	3004(g)(6)(A).....	[Insert date of publication] 53 FR [insert Federal Register page numbers]
•	•	•	•

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