**ENVIRONMENTAL PROTECTION AGENCY**

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

**[SWH-FRL-3364-2; OSW-FR-88-006]**

## Land Disposal Restrictions for First Third Scheduled Wastes

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

**ACTION:** Proposed rule.

**SUMMARY:** Pursuant to RCRA section 3004(g)(5), EPA is proposing to prohibit the land disposal of certain untreated hazardous wastes listed in 40 CFR 268.10 (the first one-third of the schedule of restricted hazardous wastes). Today's action proposes treatment standards and prohibition effective dates for these wastes. Today's action also reproposes the prohibition effective dates for certain "First Third" wastes that were the subject of a recent, related proposed rulemaking (53 FR 11742, April 8, 1988). EPA is proposing these changes based on data from the Agency's recently conducted survey of available alternative capacity at treatment, storage, disposal, and recycling facilities. In addition, the Agency is proposing to rescind the nationwide variance based on inadequate treatment capacity promulgated for hazardous wastes containing halogenated organic compounds (other than soils), and for F001–F005 spent solvent wastes generated by generators of 100–1000 kilograms of hazardous waste per month and solvent wastes resulting from Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) response actions or RCRA corrective actions.

In actions not involving First Third wastes (or not exclusively involving such wastes), EPA is proposing to amend the treatment standard for spent solvent methylene chloride in wastewaters from the pharmaceutical industry. Also, EPA is proposing to require all hazardous waste derived products that are used in a manner constituting disposal and whose placement on the land is exempt from regulation pursuant to 40 CFR 266.20(b) to meet any applicable treatment standard for each hazardous waste that they contain as a condition of retaining that exemption. With respect to California list wastes containing halogenated organic compounds (HOCs), the Agency is soliciting additional comment on an approach that would allow these wastes to be burned in industrial boilers and furnaces in accordance with applicable regulatory standards. Finally, EPA is making certain corrections to the April 8, 1988 proposed rule and is including regulatory language to § 268.30(a) that was inadvertently omitted from the April 8, 1988 proposal.

If these proposed actions are finalized, these First Third wastes can be land disposed after the applicable effective dates if the respective treatment standards are met or if disposal occurs in units that satisfy the statutory no migration standard (see 40 CFR 268.6).

**DATE:** Comments on this proposed rule must be submitted on or before June 16, 1988.

**ADDRESSES:** The public must send an original and two copies of their comments to EPA RCRA Docket (S–205) (WH–562), U.S. Environmental Protection Agency, 401 M Street, SW., Washington, DC 20460. Place the Docket Number F–88–LDR8–FFFFF on your comments. The OSW docket is located at EPA RCRA Docket (sub-basement), 401 M Street, SW., Washington, DC 20460. The docket is open from 9:00 to 4:00, Monday through Friday, except for Federal holidays. The public must make an appointment to review docket materials. Call (202) 475–9327 for appointments. The public may copy a maximum of 50 pages from any regulatory document at no cost. Additional copies cost $.20 per page.

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

For general information on specific aspects of this proposed rule, contact Stephen Weil, Lisa Faeth or William Fortune, Office of Solid Waste (WH 562B), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382–4770. For specific information on BDAT/treatment standards, contact Jim Berlow, Office of Solid Waste (WH–565), 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 (WH–565), U.S. Environmental Protection Agency, 401 M Street SW., Washington, DC 20460, (202) 382–7917.

**SUPPLEMENTARY INFORMATION:**

### Preamble Outline

## I. Background

### *A. The Statute*

The Hazardous and Solid Waste Amendments (HSWA), enacted on November 8, 1984, require the Agency to promulgate regulations that prohibit the land disposal of untreated hazardous wastes, except in land disposal units that satisfy the "no migration" standard contained in RCRA sections 3004 (d), (e) and (g). Specifically, the amendments include dates when particular groups of untreated 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 section 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 into deep injection wells of solvent- and dioxin-containing hazardous wastes and wastes referred to collectively as California list hazardous wastes (RCRA section 3004(f)(2), 42 U.S.C. 6924(f)(2)).

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.

Although these prohibitions normally take effect immediately, the Agency is authorized to grant national variances from statutory dates and case-by-case extensions of effective dates. The Administrator may grant a national variance from a statutory date and establish 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 grant a case-by-case extension of an effective date 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)).

In addition to restricting the land disposal of hazardous wastes, Congress also restricted the treatment and storage of hazardous wastes. The statute allows treatment of restricted wastes in surface impoundments which meet minimum technological requirements (certain exceptions are allowed). Treatment in

surface impoundments is permissible provided the treatment residues that do not meet the treatment standards, 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)). Storage of restricted wastes is prohibited 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)).

1. Scheduled Wastes

The amendments require 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 covered under section 3004(e). 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.

"Soft hammer" provisions specify that 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 continue to be disposed in a landfill or surface impoundment provided that (1) the unit is in compliance with minimum technological requirements and (2) prior to disposal, the generator has certified 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 the untreated waste 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 land disposal unless the waste is the subject of a successful "no migration" demonstration (RCRA section 3004(g)(6), 42 U.S.C. 6924(g)(6)).

*B. Regulatory Framework*

By way of preface, EPA notes that the following description of existing rules is for the readers' convenience, and is not intended to reopen any of these rules for public comment.

On November 7, 1986, EPA promulgated a final rule (51 FR 40572) establishing the regulatory framework for implementing the land disposal restrictions program. This rule also implemented the first phase of the program with regulations prohibiting the land disposal of solvent- and dioxin-containing wastes. Corrections to the November 7, 1986, rule were included in a June 4, 1987, **Federal Register** notice (52 FR 21010) to clarify the Agency's approach to regulating restricted wastes. Some changes to the framework were made in a July 8, 1987, final rule (52 FR 25760) that prohibited the land disposal of California list wastes.

1. Applicability

The land disposal restrictions apply prospectively to the affected wastes. In other words, hazardous wastes land disposed after the applicable effective dates are subject to the restrictions, but wastes land disposed prior to the effective dates are not required to be removed or exhumed for treatment. Similarly, only surface impoundments receiving restricted wastes after the applicable deadline are subject to the restrictions on treatment in surface impoundments contained in § 268.4 and 3005(j)(11). Also, the storage restrictions apply to wastes placed in storage after the effective dates. If, however, hazardous wastes subject to the land disposal restrictions are removed from either a storage or land disposal unit, or treated in surface impoundments after the applicable effective date, such wastes are subject to the restrictions and treatment standards.

For the purposes of the restrictions, land disposal includes, but is not limited to, placement in a landfill, surface impoundment, waste pile, injection well, land treatment facility, salt dome or salt bed formation, or underground mine or cave (RCRA section 3004(k)). The Agency also considers placement in a concrete vault or bunker intended for disposal purposes to be land disposal.

The provisions of the land disposal restrictions program apply to wastes produced by generators of greater than 1,000 kilograms of hazardous waste as well as small quantity generators of 100 to 1,000 kilograms of hazardous waste (or greater than 1 kilogram of acute hazardous waste) in a calendar month. However, wastes produced by small quantity generators of less than 100 kilograms of hazardous waste (or less than 1 kilogram of acute hazardous waste) per calendar month are conditionally exempt from RCRA, including the land disposal restrictions.

The land disposal restrictions apply to both interim status and permitted facilities. The requirements of the land disposal restrictions program supersede 40 CFR 270.4(a), which currently provides that compliance with a RCRA permit constitutes compliance with Subtitle C of RCRA. Therefore, even though the requirements may not be specified in the permit conditions, all permitted facilities are subject to the restrictions.

2. Treatment Standards

By each statutory deadline the Agency must establish the applicable treatment standards under 40 CFR Part 268 Subpart D for each restricted hazardous waste. After the applicable effective dates, restricted wastes may be land disposed in Subtitle C facilities if they meet the treatment standards. If EPA does not promulgate treatment standards by the statutory deadlines, such wastes are prohibited from land disposal with the exception of first-third and second-third ranked hazardous wastes. The first- and second-third wastes for which EPA has not promulgated treatment standards can continue to be disposed in landfills and surface impoundments, provided certain demonstrations are made, and provided these units meet the minimum technology requirements of section 3004(o), until May 8, 1990, or until EPA promulgates treatment standards, whichever is sooner. Other types of land disposal are not restricted until EPA promulgates treatment standards or until May 8, 1990, whichever is earlier.

A treatment standard is based on the performance of the best demonstrated available technology (BDAT) to treat the waste. EPA may establish treatment standards either as specific technologies or performance standards based on the performance of BDAT technologies. Compliance with performance standards may be monitored by measuring the

concentration level of the hazardous constituents (or in some circumstances, indicator pollutants) in the waste, treatment residual, or in the extract of the waste or treatment residual. When treatment standards are set as performance levels, the regulated community may use any technology not otherwise prohibited (such as impermissible dilution) to treat the waste to meet the treatment standard. Treaters thus are not limited to only those technologies considered in determining the treatment standard. However, when treatment standards are expressed as specific technologies, such technologies must be employed.

3. National Variances From the Effective Dates

The Agency has the authority to grant national variances from the statutory effective dates, not to exceed two years, if there is insufficient alternative protective treatment, recovery or disposal capacity for the wastes (RCRA section 3004(h)(2)). To make this determination EPA compares the nationally available alternative treatment, recovery, or protective disposal capacity at permitted and interim status facilities which will be in operation by the effective date with the quantity of restricted waste generated. If there is a significant shortage of such capacity nationwide, EPA will establish an alternative effective date based on the earliest date such capacity will be available.

4. Case-By-Case Extensions of the Effective Dates

The Agency will consider granting up to a 1-year extension (renewable only once) of a ban effective date on a case-by-case basis. The requirements outlined in 40 CFR 268.5 must be satisfied, including a demonstration that adequate alternative treatment, recovery, or disposal capacity for the petitioner's waste cannot reasonably be made available by the effective date due to circumstances beyond the applicant's control, and that the petitioner has entered into a binding contractual commitment to construct or otherwise provide such capacity.

5. "No Migration" Exemptions From the Restrictions

EPA has the authority to allow the land disposal of a restricted hazardous waste which does not meet the treatment standard provided that the petitioner demonstrates that there will be no migration of hazardous constituents from the disposal unit or injection zone for as long as the waste remains hazardous. 40 CFR 268.6. If a petition is granted, it can remain in effect for no longer than ten years for disposal in interim status land disposal units and for no longer than the term of the RCRA permit for disposal in permitted units. 40 CFR 268.6(h)

6. Variances From the Treatment Standards

EPA established the variance from the treatment standard to account for those wastes which are unable to be treated to meet the applicable treatment standards, even if well-designed and well-operated BDAT treatment systems are used. 40 CFR 268.44. Petitions must demonstrate (among other things) that the waste is significantly different from the wastes evaluated by EPA in establishing the treatment standard and the waste cannot be treated in compliance with the applicable treatment standard. This variance procedure could result in the establishment of a new treatability group and corresponding treatment standard that would apply to all wastes meeting the criteria of the new waste treatability group.

7. Exemption for Treatment in Surface Impoundments

Wastes that would otherwise be prohibited from one or more methods of land disposal may be treated in a surface impoundment that meets certain technological requirements (§ 268.4(a)(3)) as long as treatment residuals that do not meet the applicable treatment standard (or statutory prohibition levels where no treatment standards are established) are removed for subsequent management within one year of entry into the impoundment and are not placed into any other surface impoundment. The owner or operator of such an impoundment must certify to the Regional Administrator that the technical requirements have been met and must also submit a copy of the waste analysis plan that has been modified to provide for testing treatment residuals in accordance with § 268.4 requirements.

8. Storage of Prohibited Wastes

Storage of prohibited wastes is prohibited except where storage is solely for the purpose of accumulating sufficient quantities of wastes to facilitate proper treatment, recovery, or disposal. 40 CFR 268.50. A facility which stores a prohibited waste for more than one year bears the burden of proof that such storage is solely for this purpose. EPA bears the burden of proof if the Agency believes that storage of a restricted waste by a facility for up to one year is not necessary to facilitate proper treatment, recovery, or disposal.

## II. Summary of Today's Proposed Rule

### *A. Regulatory Approach*

On May 28, 1986, EPA published a notice in the **Federal Register** (51 FR 19300) promulgating a schedule for prohibiting the land disposal of hazardous wastes. This schedule is found in 40 CFR 268.10 for so-called "First Third" wastes, 40 CFR 268.11 for "Second Third" wastes, and 40 CFR 268.12 for "Third Third" wastes. In an April 8, 1988, **Federal Register** notice (53 FR 11742) EPA proposed treatment standards and effective dates for complying with the provisions of the land disposal restrictions program applicable to certain First Third wastes. In addition, the Agency proposed an interpretation of the "soft hammer" provisions of section 3004(g)(6) of RCRA, which allow disposal in a surface impoundment or landfill of first- and second-third scheduled wastes for which EPA has not established treatment standards by the statutory deadline. Today's notice proposes treatment standards and effective dates for additional First Third wastes not addressed in the April 8, 1988 proposal.

The proposed effective dates for prohibitions for these wastes are based on a determination of available alternative capacity derived from a recently conducted survey of treatment, storage, disposal, and recycling facilities. In addition, the Agency is revising its proposal regarding effective dates for the First Third wastes for which treatment standards were proposed in the April 8, 1988, **Federal Register** notice based on the new capacity data derived from this survey.

The two notices do not propose treatment standards and effective dates for all of the First Third wastes listed in 40 CFR 268.10. It was not possible to develop and analyze treatment data for all of the First Third wastes within the time limits imposed by the statute. EPA intends to promulgate regulations prohibiting the land disposal of the wastes having proposed standards and effective dates on August 8, 1988. All other wastes listed in 40 CFR 268.10 will be subject to the "soft hammer" provisions of RCRA section 3004(g)(6) (42 U.S.C. 6924 (g)(6)). The Agency's interpretation of these provisions will be codified in final form when EPA promulgates the First Third prohibitions as a final rule.

*B. Best Demonstrated Available Technologies (BDAT)*

This notice discusses the technologies the Agency considered in determining proposed treatment standards for First Third wastes addressed in this proposal. Since the standards are expressed as performance levels of treatment determined by performance of BDAT, any technology not otherwise prohibited (e.g., impermissible dilution) may be used to meet these concentration-based treatment standards. The model BDAT technologies on which these performance standards are based are summarized below.

For F006 and K046 nonwastewaters, the BDAT performance standard is based on stabilization; for F006 and K046 wastewaters, the standard is "No Land Disposal". For wastes K001 and K086 (solvent washes and sludges subcategory), the performance standard is based on incineration followed by stabilization of nonwastewater residuals and chromium reduction followed by chemical precipitation for wastewater residuals. BDAT for nonwastewater forms of K022 is based on fuel substitution followed by metals stabilization and metals precipitation of scrubber water. Fuel substitution or incineration is the basis for BDAT for K083. EPA is proposing rotary kiln incineration as the basis for BDAT for K087 and is soliciting information to support a conclusion that total recycling can be accomplished for some K087 subcategories. Proposed BDAT for K099 is based on chemical oxidation with chlorine. The performance achieved by incineration followed by metal stabilization of ash residues represents proposed treatment by BDAT for both K101 and K102. Treatment standards are based on thermal recovery for K106 nonwastewaters and sulfide precipitation followed by filtration for K106 wastewaters. "No Land Disposal" is the proposed BDAT treatment standard for K021, K025, K060, K044, K045, and K047.

EPA is also proposing to revise the performance standard for methylene chloride in F001–F005 wastewaters from the pharmaceutical industry to be based on steam stripping. This would change the actual performance standards for these wastewaters in § 268.41(a). Furthermore, EPA is soliciting 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 in accordance with applicable regulatory requirements.

BASIS FOR TREATMENT STANDARDS

[BDAT]

| Waste code | BDAT |
|---|---|
| F006: | |
| Nonwastewaters | Stabilization. |
| Wastewaters | ["No land disposal"]. |
| K001 | Rotary kiln incineration; stabilization (nonwastewater residuals); chemical precipitation (wastewater residuals). |
| K022: | |
| Nonwastewaters | Fuel substitution; metals stabilization; metals precipitation of scrubber water. |
| Wastewaters | ["No land disposal"]. |
| K046: | |
| Nonwastewaters | Stabilization. |
| Wastewaters | ["No land disposal"]. |
| K083 | Liquid injection incineration or fuel substitution. |
| K086 (solvent washes and sludges subcategory): | |
| Nonwastewaters | Incineration; stabilization of ash. |
| Wastewaters | Chromium reduction; chemical precipitation; filtration. |
| K087 | Rotary kiln incineration. |
| K099 | Chemical oxidation using chlorine. |
| K101 | Incineration; metal stabilization. |
| K102 | Incineration; metal stabilization. |
| K106: | |
| Nonwastewater | Thermal recovery. |
| Wastewaters | Sulfide precipitation; filtration. |
| K021 | ["No land disposal"]. |
| K025 | ["No land disposal"]. |
| K060 | ["No land disposal"]. |
| K044 | ["No land disposal"]. |
| K045 | ["No land disposal"]. |
| K047 | ["No land disposal"]. |

*C. Waste Analysis Requirements*

Today's proposed treatment standards are based on the concentration levels of the hazardous constituents in the waste/treatment residual, the extract of the waste/treatment residual developed using the TCLP, or both the total composition and the extract. Wastes for which destruction and/or removal technologies are BDAT would require a total composition analysis. These wastes are K001, K022, K086, K087, K099, K101, K102, K106, and methylene chloride in F001–F005 wastewaters from the pharmaceutical industry. Wastes for which stabilization technologies are BDAT would require an extract analysis. These wastes are F006 and K046. Proposed treatment standards for wastes requiring a total composition analysis are found in 40 CFR 268.43, and proposed treatment standards for wastes requiring an extract analysis are found in 40 CFR 268.41.

*D. National Variances from the Effective Date*

EPA is proposing to grant a two-year national variance from the August 8, 1988, effective date of the land disposal restrictions for K106 wastes. The Agency is not proposing to grant a variance to wastes F006, K001, K022, K046, K083, K086, K087, K099, K101 and K102. We are proposing (consistent with drafting in sections 268.30–268.32) that the proposed August 8, 1988, and August 8, 1990 effective dates be codified in § 268.33 of the proposed regulations.

In addition, today's action proposes to grant a two year variance from the applicable effective dates for certain contaminated soils that require solids incineration capacity. EPA is also proposing to change its proposed decision (addressed in the April 8, 1988 notice) to grant a variance from the effective date to wastes K016, K018, K019, K020, K024, K030, and K037. Based on new data, it appears that there is adequate treatment capacity for these wastes and therefore the prohibition effective date should be August 8, 1988.

Among the wastes for which EPA will not set treatment standards by August 8, 1988, are wastes K011, K013, and K014 resulting from production of acrylonitrile. Information received from the industry trade association states that currently, wastes K011 and K013 are all treated by filtering the wastes, underground injecting the filtrate into deep injection wells, and burning the separated suspended matter. The industry association also notes that the producers of the wastes intend to file "no migration" petitions for continued underground injection of these wastes.

The Agency is preparing procedures to evaluate "no migration" petitions for underground injection wells. If the petitions are granted, the waste could be injected into a "no migration" underground injection unit. If no (or insufficient) "no migration" petitions are granted, the Agency may not have sufficient time to set treatment standards for the K011 and K013 filtrate by May 8, 1990, the date these wastes will be absolutely prohibited from land disposal (except in "no migration" units).

EPA is developing treatment standards, which will be promulgated after August 8, 1988, for the separated suspended matter filtered from K011 and K013 wastes, and for K014 still bottoms; these wastes are currently being burned, thus resulting in a residue that will be land disposed, at least in some cases, in units that would not meet the "no migration" standard. These residues

must therefore meet BDAT standards before they are land disposed.

*E. Rescission of National Variances for Certain Solvents and California List Wastes*

The Agency is proposing today to rescind parts of the November 7, 1986, nationwide variances from the prohibition effective date granted for solvents and the July 8, 1987 variances granted for HOCs. The wastes which would be covered by this action are:

(a) Spent solvent wastes identified as EPA Hazardous Wastes 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.

Based on revised estimates of the treatment capacity available to treat these wastes, EPA has determined that sufficient capacity exists to incinerate or thermally combust these wastes. The revised capacity estimates are discussed in section III.E. of this proposal.

*F. Corrections to the April 8, 1988 Proposal (53 FR 11742)*

Today's proposal also makes certain corrections to the April 8, 1988 proposal (53 FR 11742). Specifically, these corrections address the following errors: (1) Neglecting to propose regulatory language reflecting the Agency's approach, as currently regulated by § 268.30(a)(3); (2) incorrectly identifying a hazardous constituent in K103 and K104 (2,4-dinitrophenol) as 2,3-dinitrophenol and stating incorrect levels for aniline, nitrobenzene, and phenol in the regulatory text; (3) incorrectly stating the total composition treatment standard for toluene in K015 waste (0.148 mg/l) as 1.00 mg/l; (4) incorrectly heading the wastewater treatment standard tables for K016 and K018 wastes as "nonwastewater", and the K051 tables in the preamble as "K050"; (5) incorrectly stating the hazardous constituent tetrachloroethene as tetrachloroethane in the preamble tables for K019 wastewaters and nonwastewaters and K020 nonwastewaters; (6) stating the incorrect treatment standard for hexachloroethane in K016 wastewater (preamble) and K030 wastewater (regulatory text); and (7) neglecting to include chlorobenzene in the preamble table for K019 nonwastewater.

## III. Regulatory Approach for the First Third Wastes

*A. Determination of Treatability Groups and Development of BDAT 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 similar industries from similar processes. EPA believes that such groupings can be made even with limited data because of the high likelihood that the waste characteristics which affect treatment performance will be similar for these different waste codes. For example, two codes pertaining to wastes from the production of veterinary pharmaceuticals (K101 and K102) were combined into a single treatability group.

2. Demonstrated Treatment Technologies

As discussed in EPA's promulgated methodology for determining BDAT (see November 7, 1986, 51 FR 40572), a technology is considered to be demonstrated for a particular waste if the technology currently is in commercial operation for treatment of that waste or a similar waste. For some of the First Third waste codes covered by today's proposal, EPA identified demonstrated technologies either through review of literature discussing current waste treatment practices or on the basis of information provided by specific facilities currently treating the waste or similar wastes.

In cases where the Agency did not identify any facilities currently treating wastes represented by a particular waste code, EPA identified demonstrated technologies in the following manner. The Agency first characterized each waste for those parameters which the Agency believes affect the selection of applicable treatment technologies (including recycling). EPA then compared these parameters to other wastes for which these technologies are demonstrated. If the parameters were similar, the Agency considered the technology also to be demonstrated for the waste of interest. For example, EPA considers rotary kiln incineration a demonstrated technology for many waste codes containing hazardous organic constituents, high total organic content, and high filterable solids, regardless of whether any facility is currently incinerating these wastes in a rotary kiln. The basis for this determination is data found in literature, as well as data generated by EPA confirming the use of rotary kiln incineration on wastes having the above characteristics. EPA's rationale for determining demonstrated technologies for each waste treatability group is explained in the section III.A.10. in this preamble which describes the waste-specific treatment standards.

3. Selection of Facilities for Engineering Visits and Sampling

In those instances where additional data were needed to supplement the Agency's current knowledge of treatment performance on the demonstrated technologies, EPA arranged engineering visits to facilities that treat wastes with a demonstrated technology that potentially could be the basis for the treatment standards. The purpose of the engineering visits was to confirm that candidates for sampling, in fact, met EPA's criteria of being well designed facilities and that the necessary sampling points were accessible. During the visit, EPA also would confirm that the facility appeared to be well operated, although the actual operation that occurs during sampling is the basis for EPA's decisions regarding whether the sampling data represented the performance of a properly operated treatment unit.

In general, the Agency considers a well designed facility to be one that contains all the unit operations necessary to treat the various hazardous constituents of the waste and any other nonhazardous materials in the waste that may adversely affect treatment performance. For example, a waste containing hazardous metals and a high concentration of oil and grease would require removal of potentially nonhazardous oil and grease in order to facilitate the subsequent removal of the hazardous metals by precipitation. EPA also places considerable emphasis on the levels of performance the system is designed to achieve in determining whether to sample a particular treatment facility, since the facility will seldom exceed the goals of its original design.

In addition to ensuring that a system is reasonably well designed, the engineering visit is designed to examine whether the facility has a measurable way of describing the operation of the treatment system during the time the

waste is being treated. For example, EPA may choose not to sample a continuous treatment system for which an important design parameter cannot be continuously recorded through the use of a strip chart. In continuous systems, such instrumentation is important in determining whether the treatment system was operating within the design requirements during the period in which the waste was being treated and the samples obtained.

In addition to the design and operation of the treatment system, EPA also bases its decision to sample a facility on whether the piping layout is such that all samples necessary to evaluate treatment performance can be collected. If piping is not suitable or cannot be easily modified, EPA would not perform a sampling visit.

In order to select potential sites for sampling, EPA has established a hierarchy for conducting its engineering visits. The hierarchy is (1) generators treating single wastes on-site; (2) generators treating multiple wastes together on-site; (3) commercial TSDFs; and (4) EPA in-house treatment. The basis of this hierarchy is founded on two major concepts: (1) EPA believes, to the extent possible, that it should try to develop treatment standards from data produced by treatment facilities handling only a single waste; and (2) facilities that routinely treat a specific waste have had the best opportunity to optimize design parameters. Although excellent treatment can occur at many facilities that are not high in this hierarchy, EPA has adopted this approach to avoid, when possible, ambiguities related to the mixing of wastes (particularly wastes from different treatability groups). Therefore, EPA prefers sampling from on-site treatment facilities where the waste of interest is treated alone or as a major component of the total waste handled. If such well designed on site facilities are not available, the Agency then looks to commercial treatment facilities where mixing of many wastes is generally practiced but where extensive optimization of treatment may still have occurred. If no suitable TSDF facilities are identified, EPA conducts in-house tests and optimizes the process itself on a more limited basis.

EPA used a number of data bases to determine if any generators were treating specific wastes on-site or if there were any commercial TSDFs treating this waste. EPA's documentation for locating on-site generating facilities and/or commercial TSDFs for each waste can be found in the Docket for today's rulemaking. Although EPA's data bases provided potential sites of treatment of individual wastes, the data bases provided no data that would preferentially support the selection of one facility for sampling over another. In cases where several treatment sites appear to fall into the same level of the hierarchy, EPA selected sites for visits strictly on the basis of what facility could be visited most expeditiously and later sampled if justified by the engineering visit.

A secondary consideration involved with the selection of technologies for testing was the need to develop data within an ambitious statutory deadline. When selecting technologies to test for performance, these deadlines required that EPA, in some cases, select demonstrated technologies for performance tests based on the Agency's technical judgement. This judgement considered the underlying principles of operation of the various technologies and any available data pertaining to the performance of these technologies on specific types of wastes. EPA's rationale for selecting a given technology is presented by treatability group in Section III.A.10. of this preamble.

4. Hazardous Constituents Considered and Selected for Regulation (BDAT List)

The target list of hazardous constituents to be regulated for all waste codes covered by today's rule is referred to by the Agency as the BDAT List. This BDAT List is derived from a composite of 396 compounds and/or classes of compounds that are presented in 40 CFR Part 261, Appendix VII and Appendix VIII. This composite number includes compounds selected by EPA as representatives of some of the classes. EPA then identified 175 of these 396 for which EPA could not perform an analysis of treatment performance due to one of three reasons: (1) EPA does not presently have an analytical method; (2) there are no analytical standards available for calibrating the instruments; or (3) the analytical method requires the use of an extraction solvent in which the compound would quickly dissociate (break down). The remaining 221 compounds comprise the BDAT List.

For certain treatability groups, the BDAT List was then shortened because it was unlikely that particular constituents would be present. EPA's rationale for shortening the BDAT List for a given waste code or waste treatability group is presented in the Sampling and Analysis Plan (SAP) developed for each Agency sampling visit. The SAP for each tested waste code can be found in the On-site Engineering Reports in the Docket for today's rulemaking.

The specific constituents that the Agency selected for regulation in each treatability group were, in general, those found in the untreated wastes at significant (i.e., treatable) concentrations. EPA does not propose to regulate constituents where data show that they would be effectively treated by use of BDAT and through the regulation of other constituents (i.e., treatment of the regulated constituent naturally results in treatment of other constituents). EPA's rationale for the selection of regulated constituents can be found in the BDAT background document for the treatability group (or waste code) in question.

In some cases, control of indicator pollutants or parameters serves as a means of assuring proper treatment performance. EPA has documented in the record when and why it has selected such indicator pollutants or parameters.

5. Compliance With Performance Standards

All of the treatment standards proposed in today's rule reflect performance achieved by the Best Demonstrated Available Technology (BDAT). As such, compliance with these standards only requires 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 a concentration level.

In today's rulemaking, EPA has used both total constituent concentration and TCLP analyses of the treated waste as a measure of technology performance. EPA's rationale for when each of these analytical tests is used is explained in the following discussion.

For all organic 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 destroy the various organic compounds. Accordingly, the best measure of performance would be the extent to which the various organic compounds have been destroyed or the total amount of constituent remaining after treatment.

**Note.**—EPA's land disposal restrictions for solvent waste codes F001–F005 (51 FR 40572)

uses the TCLP value as a measure of performance. At the time that EPA promulgated the treatment standards for F001–F005, 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.

For inorganic constituents, EPA is using either total constituent concentration, the TCLP, or in some cases, both, as the basis for treatment standards. EPA is using total constituent concentrations when the technology basis includes a metal recovery operation. The underlying principle of metal recovery is the reduction of the amount of metal in a waste by separating the metal for recovery; therefore, total constituent concentration in the treated residual is an important measure of performance for this technology. EPA also believes that it is important that any remaining metal in a treated residual waste not be in a state that is easily leachable; accordingly, EPA also is using the TCLP as a measure of performance. It is important to note that, for wastes where treatment standards are based on a metal recovery process, the waste has to meet both the total constituent concentration and the TCLP concentration prior to land disposal.

In cases where treatment standards for metals are not based on recovery techniques but rather on stabilization, EPA is using the TCLP as the measure of the treatment technology's performance. The Agency's rationale is that stabilization is not meant to reduce the concentration of metal in a waste but only to chemically and physically minimize the mobility of the metals in the waste. These are parameters measured by the TCLP protocol.

6. 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) and is not reopened for comment here. This section 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.

As a first step in the development of BDAT treatment standards, EPA 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 (i.e., total constituent analysis for incineration versus TCLP for stabilization) as discussed earlier. 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. As discussed earlier, the EPA field tests include data describing the operating conditions of the treatment unit during the time that treatment samples were collected.

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. In developing recovery data (also referred to as accuracy data), EPA would first analyze a waste for a constituent and then add a known amount of the same constituent (i.e., spike) to the waste material). The total amount recovered after spiking minus the initial concentration in the sample divided by the amount added is the recovery value.

After adjusting the data, EPA then averaged the performance values for the various treatment operations 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. EPA's decisions regarding selection of one technology over another that resulted from this methodology can be found in the "Identification of BDAT" sections that follow for each treatability group.

7. BDAT Treatment Standards for "Derived-From" and "Mixed" Wastes

a. *Applicability of BDAT to "Derived-From" Wastes from Treatment Trains Generating Multiple Residues.* In a number of instances in this proposed rule, the proposed BDAT consists of an operation or series of treatment operations which generate additional waste residues. For example, the proposed BDAT treatment 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 the following points:

(1) All of the residues from treating 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) (this point is discussed more fully in the subsection below). Consequently, all of the wastes generated in the course of treatment would be prohibited from land disposal unless they satisfy the treatment standard or meet one of the exceptions to the prohibition.

(2) The Agency's proposed treatment standards generally contain constituent concentrations for "wastewaters" and constituent concentrations for "nonwastewaters". The treatment standards apply to all of the wastes generated in treating the original prohibited waste. Thus, for example, all solids generated from treating K101 and K102 would typically have to meet the treatment standards for nonwastewaters and all wastewaters generated from treating these wastes would have to meet the treatment standards for wastewaters. (For the purposes of this rule, the Agency defines wastewaters as those wastes, mixed wastes, or derived-from wastes that contain less than 1% total organic carbon (TOC) and less than 1% filterable solids. Those wastes, mixed wastes or derived-from wastes that do not meet this definition are defined as 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.)

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 also will be able to be treated to meet these standards.

b. *Applicability of BDAT to Mixtures and Other "Derived-From" Residues.* There is a further question as to the applicability of the BDAT treatment levels to residues generated not from treating the waste (as discussed above), but generated instead from other types of management. Examples are

contaminated soil, or leachate that is derived from managing the waste. In these cases, the mixture is still 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 261.33(d)). The prohibition for the particular listed waste consequently applies to this type of waste.

The Agency believes that the majority of these types of residues can meet the treatment standards for the underlying listed wastes (with the possible exception of contaminated soil and debris for which the Agency is currently investigating whether it is appropriate to establish a separate treatability subcategorization). For the most part, these residues will be less concentrated than the original listed waste. By assuming that the values used to establish the treatment standard exhibit a lognormal distribution, the Agency is allowing for a reasonable amount of process variability in the generation and treatment of the waste. The waste also might be amenable to a relatively nonvariable form of treatment technology such as incineration. Finally, and perhaps most important, the rules contain a treatment variance procedure that allows a petitioner to demonstrate that its waste cannot be treated to the level specified in the rule (40 CFR 268.44(a). This provision provides a safety valve that allows persons with unusual waste matrices to demonstrate the appropriateness of a different standard. The Agency notes that to date it has not received any petitions under this provision (for example, for residues contaminated with a prohibited solvent waste), indicating, in the Agency's view, that the existing standards are generally achievable.

c. *Residues from Managing Listed Wastes, or that Contain Listed Wastes, are Covered by the Prohibitions for the Listed Waste.* In response to inquiries, EPA confirms its long-standing interpretation that residues (leachate, for example) that derive from treatment, storage, or disposal of wastes that were disposed before the effective date of the listing are nevertheless subject to the derived-from rule. These residues therefore could become subject to the land disposal ban 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. This result follows from direct application of the regulations and the statute.

First, hazardous waste listings are retroactive—that is, once a particular material is identified as a hazardous waste, all of that material, no matter when disposed, is a listed hazardous waste (albeit, not subject to Subtitle C regulations if in an inactive unit, and not subject to the land ban if disposed of before the ban effective date and not removed or exhumed thereafter). See CERCLA section 103(c) (owners of inactive sites that handled hazardous waste identified or listed by EPA, where the identification or listing occurred after the site was closed, must still notify EPA of their existence); 46 FR 22146, 22149 (April 15, 1981) (same); RCRA sections 3004(d)(3), 3004(e)(3), and 3020(b) (application of RCRA Subtitle C requirements to listed wastes and residues from CERCLA response actions, most of which involve wastes disposed of before the listing date); 50 FR 1994 (Jan. 14, 1985) (listing of dioxin-containing waste applies to waste and residues like contaminated soil, disposed before the listing effective date—and before the Subtitle C regulation effective date). Second, residues derived-from treating, storing, or disposing (including leaking—see, *e.g.* RCRA section 1004(3) and *United States* v. *Waste Industries, Inc.*, 743 F.2d 159, 164 (4th Cir. 1983)), of these wastes are also hazardous by virtue of the derived-from rule.

Thus, residues from managing First Third wastes, listed California list wastes, and spent solvents and dioxin wastes are all considered to be subject to the prohibitions for the underlying hazardous wastes. As explained above, this result stems directly from the derived-from rule in 40 CFR 261.3(c)(2), or in some cases because the waste is mixed with or otherwise contains the listed waste. The underlying principle stated in all of these provisions is that listed wastes remain hazardous until they are delisted.

Nor is there any argument that a residue from managing a listed waste is not considered to be the listed waste. For example, the Agency's historic practice in processing delisting petitions addressing mixed residuals has been to consider them to be the listed waste and to require that delisting petitioners address all constituents for which the original derived-from waste (or other mixed waste) was listed. The language in 40 CFR 260.22(b) states that mixtures or derived-from residues can be delisted provided a delisting petitioner makes the identical demonstration that a delisting petitioner would make for the underlying waste. These residues consequently are treated as the underlying listed waste for delisting purposes. The statute likewise takes this position, indicating that soil and debris that are contaminated with listed spent solvents or dioxin wastes are subject to the prohibition for these wastes even though these wastes are not the originally generated waste, but rather are a residual from the waste's management (RCRA section 3004(e)(3)). It is EPA's view that all such residues are covered by the existing prohibitions and by the treatment standards for the listed hazardous waste that these residues contain and from which they are derived.

8. Transfer of Treatment Standards

In today's notice, EPA is proposing some treatment standards that are not based on testing of the treatment technology of 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 for use in establishing treatment standards for untested wastes is valid technically in cases where the untested wastes are generated from similar industries or from similar processing steps. As explained earlier in this preamble, 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 only the industry is similar, 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 within a single industry can be treated to the same level of performance. First, EPA reviews the available waste characteristic data for identifying 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. A detailed discussion of each analysis, including how each parameter was selected for each waste, can be found in the background document for each 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.

9. No Land Disposal as the BDAT Treatment Standard

EPA is proposing "no land disposal" as BDAT for several of the First Third wastes. This standard is analogous to the no 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; (2) the waste is not currently being land disposed; or (3) the waste is no longer being generated.

An alternative to establishing no land disposal as BDAT would be to indicate that the BDAT treatment standard is a concentration level of "0" for all hazardous constituents. This appears to the Agency to be a less desirable way to proceed, given that the analytical limit of detection is always greater than zero. Given that technologies exist that make land disposal unnecessary, and that "0" really means the analytic detection limit and not truly zero, EPA thinks that specifying no land disposal as BDAT is a better way of expressing its intention.

The Agency notes that it could simply allow the statutory prohibition to take effect (at least by May 8, 1990, the date of the absolute statutory prohibition) to achieve the intended result of no land disposal. The drawback with this approach is that it allows no possibility of granting a variance from a treatment standard for those wastes that might not be amenable to the BDAT treatment technology. In the absence of a treatment standard, a facility would have to initially petition the Agency to establish a treatment standard for the waste, a more cumbersome and time-consuming process than applying for a variance under 40 CFR 268.44. This approach would also allow the waste to be land disposed until May 8, 1990, under the "soft hammer" of section 3004(g)(6) of RCRA. Accordingly, the Agency believes the best way to proceed is to establish "no land disposal" as the treatment standard.

EPA has recently learned that some F006, K022 and K083 wastewaters may be disposed through underground injection. If this is the case, the "No Land Disposal" standard proposed for these wastewaters would preclude continued injection of untreated wastewaters unless a no migration petition had been granted. The Agency intends to seek clarification of the circumstances in which these wastes are being injected underground in order to determine whether the "No Land Disposal" standard should be modified. The Agency thus seeks comment on the circumstances surrounding injection of F006, K022 and K083 wastes, and on the nature of the wastes being injected.

10. Waste Specific Treatment Standards

This section describes the development of BDAT treatment standards for all of the First Third treatability groups covered by today's rule. It includes tables showing the specific constituents regulated, as well as the treatment standards.

a. 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.

1. *Industry Affected and Waste Description.* The listed waste F006 is primarily generated by facilities in the electroplating or metal finishing industries. However, F006 is often generated by many industries where electroplating is a secondary operation. The Agency estimates that there are approximately 4,500 facilities that potentially generate F006. While this waste is generated in just about all portions of the United States, a large proportion of the facilities generating F006 are located in the Midwest, Northeast, and Southeast.

Electroplating has been broadly defined by the Agency to include electrodeposition of common and precious metals, anodizing, chemical conversion coating, electroless plating, immersion plating, chemical etching and milling, and printed circuit board manufacture (51 FR 43350). The overall process is usually conducted in a series of baths used for various operations such as degreasing, acid etching, prerinsing, passivation, electrodeposition, and/or product rinsing. These baths often generate wastewater streams containing metals, metal salts, acids, alkalis, and various bath control compounds. These wastewater streams are typically combined and treated to generate a precipitated, nonwastewater residual defined as F006. The treated wastewater is typically discharged to a POTW or to a surface water under a NPDES permit.

Untreated F006 wastes are typically aqueous sludges containing up to 60% by weight filterable solids comprised primarily of hydroxide or sulfide salts of the metals used in the electroplating process. Since at different plants, different combinations of metals are being plated and since a variety of rinse waters and bath solutions are mixed and treated in the wastewater treatment systems, concentrations of BDAT List metals can vary widely. Wastes identified as F006 are typically generated as sludges that, for the purposes of BDAT, are classified as nonwastewaters.

2. *Applicable/Demonstrated Treatment Technologies.* Because of the high water content of the waste, dewatering technologies such as vacuum filtration, plate and frame pressure filtration, and centrifugation have been identified as applicable technologies for reducing the water entrained in the waste. This generally will reduce the volume of solid residuals that require disposal. These technologies, however, are merely simple physical treatment technologies. The Agency does not believe that such technologies provide any significant treatment of the metals or cyanide contained in the sludge. Dewatering technologies are not designed to provide chemical binding of constituents. Thus, little reduction in leachability of metals and/or cyanide is achieved. However, dewatering can be considered an applicable technology when incorporated into a treatment train that includes wastewater treatment technologies such as chromium reduction, cyanide destruction, metals precipitation, settling, filtration (or centrifugation), and solidification.

The Agency has identified a few cases where metal recovery processes for F006 wastes have been performed. The concentrations and identity of metals in F006 wastes vary widely depending on the specific metals used in the plating process. The Agency has determined that while metal recovery processes are applicable technologies for some F006 wastes, at this time, it has not been able to define any particular subcategories of F006 wastes that would be amenable to

a particular recovery process. EPA is currently investigating F006 wastes that are now being recovered, in order to determine the waste characteristics that would define these subcategories. Specifically, EPA is investigating high temperature metals recovery for those F006 wastes that contain greater than 2.5% zinc. EPA solicits comments and data that can be evaluated for this purpose.

EPA has identified stabilization as an applicable technology for treatment of nonwastewater forms of F006. Stabilization is designed to chemically bind metal constituents of the waste into the microstructure of a cementitious matrix. The purpose of stabilization is to immobilize the metal constituents and thereby reduce their leaching potential. A variety of agents, including Portland cements, cement kiln dust, hydrated limes, quick lime, fly ash and other pozzolanic materials, have been demonstrated to act as binding agents for various types of wastes containing metals. Stabilization processes generate hardened solid residues that, for the purposes of BDAT, are classified as nonwastewaters. The Agency believes that these processes do not generate wastewater residuals. The Agency has data that indicate that this technology is both applicable and demonstrated for F006. EPA does not consider stabilization to be an applicable technology for the treatment of cyanide.

EPA has identified alkaline chlorination, wet air oxidation, ozonation, electrolytic oxidation, and other chemical oxidation as applicable technologies for the treatment of cyanide contained in F006 wastes. All of these technologies are designed to destroy cyanide by converting it to carbon dioxide and nitrogen gas. The Agency is currently investigating the use of these technologies for F006 wastes that contain treatable quantities of cyanide to establish that it is demonstrated for these wastes.

3. *Data Base.* The Agency has nine TCLP data points for nonwastewater F006 (sludges) treated at a commercial treatment, storage, and disposal facility using a stabilization technology. Cement kiln dust was used as the chemical binding agent. All of the data points appear to represent well-designed and well-operated treatment. These data points were used for the development of the BDAT treatment standards for the metal constituents.

The Agency has three TCLP data points for nonwastewater F006 (sludges) treated at a generator's facility using a stabilization technology. Analysis of the quality assurance information for this data was incomplete at the time of this proposal. Therefore, these data points were not used for the development of the BDAT treatment standards for the metal constituents. This data is presented in the background document for this waste.

4. *Identification of BDAT.* BDAT for nonwastewater F006 (sludges) was determined to be stabilization for the metal constituents. Data and information submitted by the commercial hazardous waste treatment industry indicates that this technology is being widely used throughout the United States. EPA has determined that this technology is both applicable and demonstrated for nonwastewater F006 sludges. The Agency currently has no data demonstrating any other treatment or recycling technology for metal constituents that would be applicable to all F006 wastes. Stabilization is judged to be available to treat the metal constituents of F006 wastes because (1) it is commercially available or can be purchased from the technology developer and (2) it provides a substantial reduction in the leaching potential of hazardous constituents.

BDAT for F006 wastes that also contain cyanide is stabilization of the metal constituents preceded by a pretreatment step to destroy the cyanide. The Agency is currently investigating the use of technologies such as alkaline chlorination, wet air oxidation, ozonation, electrolytic oxidation, and other chemical oxidation as applicable technologies for F006 wastes that contain treatable quantities of cyanide. EPA will confirm these technologies as BDAT when this data becomes available.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as F006 are listed in the tables at the end of this section. The Agency believes that regulating these constituents will ensure that other BDAT List constituents will be effectively treated by the technologies determined to be BDAT. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

Treatment standards for metal constituents are based on analyses of leachate from the TCLP for all wastes identified as nonwastewaters. The units of measure for all analyses of leachate are mg/l (or parts per million on a weight by volume basis).

(i) *Nonwastewaters.* For wastes identified as F006 nonwastewaters, EPA is proposing to regulate twelve constituents from the BDAT List as indicators of effective treatment of these wastes. Eleven of these are metal constituents including antimony, arsenic, barium, cadmium, total chromium, copper, lead, nickel, selenium, silver, and zinc. At the time of this proposal, the Agency has not completed its evaluation of waste characterization and treatment information for antimony, arsenic, barium, selenium and cyanide. Therefore, as noted above, the Agency is proposing to reserve BDAT standards for antimony, arsenic, barium, selenium and cyanide until this evaluation can be completed.

(ii) *Wastewaters.* F006 waste is a sludge consisting of precipitated residues generated following treatment of electroplating wastewaters. The treated wastewater is typically discharged to a POTW or to a surface water under a NPDES permit. No additional wastewater is typically generated during the stabilization of nonwastewater F006 sludges.

EPA recognizes that wastewater forms of F006 may be generated at a CERCLA site, during a corrective action at a RCRA facility, as a leachate from a landfill, or as a residual from a treatment process such as sludge dewatering or a process other than stabilization (one that can achieve the same performance). Since generation of these types of wastewaters may occur, the Agency is, therefore, proposing a "treatment standard" for F006 wastewaters of "No Land Disposal". By establishing this standard, a facility that generates and needs to treat a wastewater, can submit a petition to the Agency for a variance from this treatment standard. The Agency believes that few, if any, petitions for a variance will be submitted because facilities generally will discharge these wastewaters to a POTW or surface water under a NPDES permit. However, EPA solicits comments from any facility that believes that elimination of land disposal of these wastewaters is not feasible and that numerical treatment standards should be promulgated.

EPA has recently learned that some F006 wastewaters may be disposed through underground injection. If this is the case, the "No Land Disposal" standard would preclude continued injection of untreated wastewaters unless a no migration petition had been

granted. The Agency intends to seek clarification of the circumstances in which F006 wastewaters are being injected underground in order to determine whether the "No Land Disposal" standard should be modified. The Agency thus seeks comment on the circumstances surrounding injection of F006 wastewaters, and on the types of wastes being injected.

BDAT TREATMENT STANDARDS FOR F006

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Antimony | (1) | (2) |
| Arsenic | (1) | (2) |
| Barium | (1) | (2) |
| Cadmium | (1) | 0.066 |
| Chromium (Total) | (1) | 3.8 |
| Copper | (1) | 0.71 |
| Lead | (1) | 0.53 |
| Nickel | (1) | 0.31 |
| Selenium | (1) | (2) |
| Silver | (1) | 0.26 |
| Zinc | (1) | 0.086 |
| Cyanide | (2) | (2) |

[1] Not applicable.
[2] Reserved.

BDAT TREATMENT STANDARDS FOR F006

[Wastewaters]

| NO LAND DISPOSAL |
|---|

b. K001—Bottom sediment sludge from the treatment of wastewaters from wood preserving processes that use creosote and/or pentachlorophenol.

1. *Industry Affected and Waste Description.* The listed waste K001 is generated by facilities in the wood preserving industry. The Agency estimates that there are approximately 400 facilities that have wood preserving processes that could potentially generate K001 waste. While this waste can be generated in just about all portions of the United States, a large proportion of the facilities generating K001 are located in the Southeast, Northwest, and Central parts of the United States.

The preservation of wood using creosote and/or pentachlorophenol generates wastewaters containing hazardous constituents present in the preservatives. The treatment by any means (including simple settling) of these wastewaters generates the listed waste K001.

Untreated K001 sludges consist of approximately 35% soil, 20% water, and 25% total organics. The organic constituents present in the wastes include pentachlorophenol, creosote, phenolics, polynuclear aromatics, and some nonhalogenated volatiles. These wastes also contain less than 1% BDAT List metals. K001 wastes are characterized by their high filterable solids concentration and high organic content. These wastes are typically generated as sludges that, for the purposes of BDAT, are classified as nonwastewaters.

2. *Applicable/Demonstrated Treatment Technologies.* EPA has identified incineration in a rotary kiln followed by stabilization of the resultant incinerator ash as applicable technologies for treatment of all nonwastewater forms of K001. Rotary kiln incinerators are designed specifically to handle sludges, solids, tarry wastes, and containerized liquids that are difficult to atomize through a liquid injector. Many rotary kiln incinerators are also designed to simultaneously incinerate other liquid wastes or supplemental fuel. The purpose of incineration is to thermally destroy (oxidize) the organic constituents of a waste. The Agency recognizes that any technology such as a fluidized bed or multiple hearth incinerator that is designed for thermal destruction of sludges, solids, or tarry wastes is potentially applicable to these wastes. However, the Agency believes that the performance of rotary kiln incineration attains the performance achievable by other thermal destruction technologies that are well designed, well operated, and can handle sludges of this type. These incinerators generate ash residues that, for the purposes of BDAT, are classified as nonwastewaters. Scrubber waters from air pollution control devices are often generated and are classified as wastewaters. Both of these residues must meet the BDAT treatment standards prior to placement in land disposal units.

EPA has identified stabilization as an applicable technology for treatment of certain nonwastewater forms of K001. These include precipitated residues from the treatment of wastewaters (such as scrubber waters), as well as ash residues from incineration. Stabilization is designed to chemically bind metal constituents of the waste into the microstructure of a cementitious matrix. The purpose of stabilization is to immobilize the metal constituents and thereby reduce their leaching potential. A variety of agents, including Portland cements, cement kiln dust, hydrated limes, quick lime, fly ash and other pozzolanic materials, have been demonstrated to act as binding agents for various types of wastes containing metals. Stabilization processes generate hardened solid residues that, for the purposes of BDAT, are classified as nonwastewaters. The Agency believes that these processes do not generate wastewater residuals.

The Agency has also identified a wastewater treatment system as an applicable technology for removal of metals from wastewater residuals (such as scrubber waters) generated during treatment or handling of the nonwastewater forms of K001, followed by stabilization of the solid wastewater treatment residues. This 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.

EPA has not identified any facility currently performing incineration and metals (ash) stabilization of K001 on a commercial scale. However, EPA believes this technology is demonstrated for K001 in that it is being used to treat wastes similar to K001. EPA has confirmed this judgment by using a test facility to incinerate representative samples of K001 wastes.

3. *Data Base.* For K001 waste, the Agency tested rotary kiln incineration at two facilities. The Agency has nine data sets for incineration of K001 waste collected from two facilities representing both creosote waste and pentachlorophenol waste. Data collected during the testing of rotary kiln incineration technologies show that the treatment systems were well operated. The treatment residuals from rotary kiln incineration (ash and scrubber water) are expected to contain metals in treatable concentrations. The Agency has data for stabilization of metals in other incinerator ash and for chemical precipitation of BDAT List metals in wastewaters.

The Agency examined all available treatment data for stabilization of similar incinerator ash as well as chemical precipitation for similar wastewaters. These data were used to develop treatment standards for BDAT List metals in the treatment residuals.

4. *Identification of BDAT.* EPA has determined that the treatment train consisting of rotary kiln incineration followed by stabilization of nonwastewater residuals, and chemical

precipitation of metals for wastewater residuals from incineration, achieves a level of performance that represents treatment by BDAT. The Agency believes that these technologies are available to treat K001 because (1) these technologies are commercially available technologies and (2) incineration provides substantial reduction of organic hazardous constituents, stabilization reduces the leachability of metals in the nonwastewater residual, and chemical precipitation removes BDAT List metals from the wastewater residual.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as K001 are listed in the tables at the end of this section. The Agency believes that regulating these constituents will ensure that other BDAT List constituents will be effectively treated by the technologies determined to be BDAT. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

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 units of measure for all total constituent analyses are mg/kg (or parts per million on a weight by weight basis) for the nonwastewaters and mg/l (or parts per million on a weight by volume basis) for wastewaters. The units of measure for all analyses of leachate are mg/l (or parts per million on a weight by volume basis).

The Agency has recently become aware that data exist that indicate the presence of trace levels of polychlorinated dibenzofurans and polychlorinated dibenzodioxins in some K001 wastes. At the time of this proposal, EPA has not completed its evaluation of these data and thus, defers its decision to regulate these constituents as indicators of BDAT performance until after this evaluation can be completed.

(i) *Nonwastewaters.* For wastes identified as K001 nonwastewaters, EPA is proposing to regulate six BDAT List organic constituents as indicators of effective incineration of these wastes. These include naphthalene, pentachlorophenol, phenanthrene, pyrene, toluene, and xylenes. EPA is also proposing to regulate three metal constituents, copper, lead and zinc, as indicators of effective stabilization of these wastes (based on data from the stabilization of the ash from incineration). EPA's proposed standard for pentachlorophenol is the result of a relatively high analytical quantitation limit observed for this particular K001 waste. EPA solicits data reflecting the quantitation limits attainable in other K001 wastes.

(ii) *Wastewaters.* For wastes identified as K001 wastewaters, EPA is proposing to regulate the same six BDAT List organic constituents as indicators of effective destruction of organics in the combustion unit, thus preventing accumulation of organics in scrubber waters. EPA is also proposing to regulate copper, lead and zinc as indicators of effective precipitation of metal constituents from these scrubber waters.

BDAT TREATMENT STANDARDS FOR K001

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Naphthalene | 7.98 | [1] |
| Pentachlorophenol | 36.75 | [1] |
| Phenanthrene | 7.98 | [1] |
| Pyrene | 7.28 | [1] |
| Toluene | 0.143 | [1] |
| Xylenes | 0.162 | [1] |
| Copper | [1] | 0.71 |
| Lead | [1] | 0.53 |
| Zinc | [1] | 0.086 |

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K001

[Wastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/l) | TCLP (mg/l) |
| Naphthalene | 0.148 | [1] |
| Pentachlorophenol | 0.875 | [1] |
| Phenanthrene | 0.148 | [1] |
| Pyrene | 0.140 | [1] |
| Toluene | 0.143 | [1] |
| Xylenes | 0.161 | [1] |
| Copper | 0.42 | [1] |
| Lead | 0.037 | [1] |
| Zinc | 1.0 | [1] |

[1] Not applicable.

c. K022—Distillation bottom tars from the production of phenol/acetone from cumene.

1. *Industry Affected and Waste Description.* The listed waste K022 is generated by facilities in the organic chemicals manufacturing industry. The Agency estimates that there are eight facilities that have this specific production process that could potentially generate K022 waste. These are located in the Eastern, Central, and Southern parts of the United States.

The cumene hydroperoxide process used in manufacturing acetone and phenol from cumene involves: (1) Oxidation of cumene to a concentrated cumene hydroperoxide; (2) acid cleavage of the hydroperoxide to phenol and acetone along with a variety of other products (e.g., cumylphenols, acetophenone, dimethylphenylcarbinol, and alpha methylstyrene); (3) neutralization of the cleaved products with sodium hydroxide or other suitable base or with ion-exchange resins; and (4) separation of the phenol and acetone using a series of distillation columns. The still bottoms from the distillation columns are RCRA waste K022.

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. K022 consists primarily of partially polymerized phenolics. Major constituents include acetophenone, phenol, and cumyl phenol. A total carbon content of approximately 82–93% makes the waste an excellent fuel substitute with a very high heat content reported as high as 35,300 BTU per pound. A low ash content and a low chlorine content are further indications of its usefulness as a fuel substitute. BDAT List organic constituents reported in significant concentrations are acetophenone, and phenol. Two other BDAT list constituents also were identified in the raw waste from one plant but were claimed as confidential business information. Wastes identified as K022 are typically generated as still bottoms that, for the purposes of BDAT, are classified as nonwastewaters.

2. *Applicable/Demonstrated Treatment Technologies.* EPA has identified fuel substitution and liquid injection incineration as applicable technologies for treatment of BDAT List

organics contained in nonwastewater K022 wastes. Fuel substitution involves the use of combustible organic wastes as substitutes for conventional fuels burned in high temperature industrial processes. In order for a waste to be a good candidate for a fuel substitute, the waste must have a reasonably high concentration of organic chemicals with sufficient heat content (BTU per pound). It must also have relatively low concentrations of noncombustible materials such as ash, water, metals, and chlorine. Fuel substitution, as a treatment process, has the same purpose as incineration; to thermally destroy (oxidize) the organic constituents of a waste. The Agency believes that burning of K022 in a well designed and well operated high temperature industrial boiler or kiln attains the performance achievable by other thermal destruction units such as liquid injection incinerators. These thermal destruction units often generate ash residues that, for the purposes of BDAT, are classified as nonwastewaters. Scrubber waters from air pollution control devices are not typically generated from the units using K022 as a fuel substitute. If they were generated, they would be classified as wastewaters. Both of these residues, if generated, must meet the BDAT treatment standards prior to placement in land disposal units.

EPA has identified stabilization as an applicable technology for treatment of BDAT List metals contained in the inorganic nonwastewater forms of K022. These include precipitated residues from the treatment of wastewaters (mixed with or derived from K022 wastes), as well as ash residues from incineration. Stabilization is designed to chemically bind metal constituents of the waste into the microstructure of a cementitious matrix. The purpose of stabilization is to immobilize the metal constituents and thereby reduce their leaching potential. A variety of agents, including Portland cements, cement kiln dust, hydrated limes, quick lime, fly ash and other pozzolanic materials, have been demonstrated to act as binding agents for various types of wastes containing metals. Stabilization processes generate hardened solid residues that, for the purposes of BDAT, are classified as nonwastewaters. The Agency believes that these processes do not generate wastewater residuals.

The Agency has determined that six of the eight facilities that generate K022 are subsequently using the waste as a fuel substitute. The Agency has data that indicate incineration can achieve treatment levels similar to these fuel substitution processes on wastes with similar waste characteristics. Therefore, the Agency has determined that both fuel substitution and incineration are demonstrated for K022 nonwastewaters.

3. *Data Base.* For waste code K022, the Agency has treatment data from two facilities using fuel substitution. EPA has twelve untreated and treated data points.

4. *Identification of BDAT.* EPA has determined that fuel substitution followed by metals (ash) stabilization and metals precipitation of scrubber water achieves a performance level that represents the best demonstrated available treatment technology (BDAT) for nonwastewater forms of K022. While no specific data are available on incineration of K022 in a rotary kiln, EPA believes that it would achieve the same level of performance as fuel substitution. This treatment system is judged to be available to treat K022 because (1) the treatment system is commercially available and (2) the system provides a substantial reduction in the concentration of BDAT List organic constituents in K022.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as K022 are listed in the tables at the end of this section. The Agency believes that regulating these constituents will ensure that other BDAT List constituents will be effectively treated by the technologies determined to be BDAT. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

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 units of measure for all total constituent analyses are mg/kg (or parts per million on a weight by weight basis) for the nonwastewaters and mg/l (or parts per million on a weight by volume basis) for wastewaters. The units of measure for all analyses of leachate are mg/l (or parts per million on a weight by volume basis).

(i) *Nonwastewaters.* For wastes identified as K022 nonwastewaters, EPA is proposing to regulate eight constituents from the BDAT List as indicators of effective treatment of these wastes. These include toluene, acetophenone, phenol, diphenylamine, diphenyl nitrosamine, sulfide, 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 proposal, the Agency has not completed its evaluation of waste characterization and treatment data for sulfide. Therefore, the Agency is proposing to reserve a standard for sulfide until this evaluation can be completed.

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. Therefore, the Agency is not proposing a treatment standard for TCDF. The Agency is currently reexamining the validity of the quantification of this analysis. K022 wastes do not typically have any chlorinated organics that could be the source or precursor of the TCDF. The Agency is investigating potential mechanisms for its formation due to the presence of other chlorinated organics in the wastes that were blended with the K022.

(ii) *Wastewaters.* No scrubber waters are typically generated during the use of nonwastewater K022 as a fuel substitute. No additional wastewater is typically generated during the stabilization of the resultant ash residues. EPA recognizes that wastewater forms of K022 may be generated at a CERCLA site, during a corrective action at a RCRA facility, as a leachate from a landfill, or as a residual from an incineration process that does generate a scrubber water. Since generation of these types of wastewaters may occur, the Agency is therefore, proposing a "treatment standard" for K022 wastewaters of "No Land Disposal". By establishing this standard, a facility that generates and needs to treat a wastewater, can submit a petition to the Agency for a variance from this treatment standard. The Agency believes that few petitions for a

variance will be submitted. However, EPA solicits comments from facilities that believe that land disposal of K022 wastewaters is unavoidable.

EPA has recently learned that some K022 wastewaters may be disposed through underground injection. If this is the case, the "No Land Disposal" standard would preclude continued injection of untreated wastewaters unless a no migration petition had been granted. The Agency intends to seek clarification of the circumstances in which K022 wastewaters are being injected underground in order to determine whether the "No Land Disposal" standard should be modified. The Agency thus seeks comment on the circumstances surrounding injection of K022 wastewaters, and on the types of wastes being injected.

BDAT TREATMENT STANDARD FOR K022

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Acetophenone | 19.0 | (1) |
| Phenol | 12.0 | (1) |
| Toluene | 0.034 | (1) |
| Sum of diphenylamine and diphenylnitrosamine | 13.0 | (1) |
| Sulfide | Reserved | (1) |
| Chromium (Total) | (1) | 3.4 |
| Nickel | (1) | 0.25 |

[1] Not applicable.

BDAT TREATMENT STANDARD FOR K022

[Wastewaters]

| [No land disposal] |
|---|

d. K046—Wastewater treatment sludges from the manufacturing, formulation, and loading of lead based initiating compounds.

1. *Industry Affected and Waste Description.* The listed waste K046 is generated by facilities in the explosives manufacturing industry. The Agency estimates that there are approximately 150 facilities that have processes that could potentially generate treatment sludges identified as K046. Approximately 35 of these are government owned military facilities. While these wastes are generated in just about all portions of the United States, a large proportion of the nonmilitary facilities are located in California, Utah, Missouri and Pennsylvania and the military facilities are located primarily in Tennessee, Wisconsin, Virginia and Illinois.

Wastewaters are produced during various stages in the manufacture and formulation of lead-based initiating compounds (ones that initiate other explosives) and during the fabrication of these compounds into finished products (such as ammunition). These wastewaters are contaminated with these initiating compounds and with other feedstock chemicals. The wastewater is treated by boiling and/or addition of caustic to decompose residual explosive material. A sludge is generated from this wastewater treatment and is identified as the listed waste K046.

K046 wastewater treatment "sludges" are typically generated as a fluid mixture consisting of approximately 95% by weight water and total organic carbon content of approximately 460 ppm. The primary BDAT List constituent in K046 is lead. Wastes identified as K046 are typically generated as sludges that, for the purposes of BDAT, are classified as nonwastewaters.

2. *Applicable/Demonstrated Treatment Technologies.* EPA has identified stabilization as an applicable technology for treatment of nonwastewater forms of K046. Stabilization is designed to chemically bind metal constituents of the waste into the microstructure of a cementitious matrix. The purpose of stabilization is to immobilize the metal constituents and thereby reduce their leaching potential. A variety of agents, including Portland cements, cement kiln dust, hydrated limes, quick lime, fly ash and other pozzolanic materials, have been demonstrated to act as binding agents for various types of wastes containing metals. Stabilization processes generate hardened solid residues that, for the purposes of BDAT, are classified as nonwastewaters. The Agency believes that these processes do not generate wastewater residuals.

EPA has not identified any facility currently performing stabilization of K046 on a commercial scale. EPA believes stabilization is demonstrated for K046, in that, it is being used to treat wastes that EPA believes have treatability characteristics similar to K046. EPA has confirmed this judgment by using a test facility to stabilize this waste.

3. *Data Base.* The Agency has ten data sets for K046 nonwastewaters. Data were collected by the EPA at a single test facility that employs stabilization using various binder materials. The ten data points for K046 waste were obtained using the Toxicity Characteristic Leaching Procedure and appear to represent proper design and operation. These data points were considered in the development of the treatment standards for K046.

4. *Identification of BDAT.* EPA has determined that the performance achieved by stabilization represents treatment by BDAT. The Agency performed an analysis of variance test for TCLP performance levels achieved by stabilization using three different binder materials: Portland cement, kiln dust, and lime/flyash. The results show that stabilization using Portland cement binder provides significantly better reduction with regard to the concentrations of metals in the leachate than the other two binder materials tested. Stabilization is judged to be available to treat K046 because (1) the treatment system is commercially available and (2) the system provides a substantial reduction in the leachable levels of BDAT List metals present in the K046 wastes.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as K046 are listed in the tables at the end of this section. The Agency believes that regulating these constituents will ensure that other BDAT List constituents will be effectively treated by the technologies determined to be BDAT. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

Treatment standards for metal constituents are based on analyses of leachate from the TCLP for all wastes identified as nonwastewaters. The units of measure for all analyses of leachate are mg/l (or parts per million on a weight by volume basis).

(i). *Nonwastewaters.* For wastes identified as K046 nonwastewaters, EPA is proposing to regulate only lead as an indicator of effective treatment of these wastes. The Agency is also proposing a treatment standard of "No Land Disposal" for K046 nonwastewaters that are explosive. If a K046 waste is explosive and remains explosive after treatment by solidification it should meet the same requirements as the explosive wastes identified as K044,

K045 and K047. The Agency specifically requests comments on this approach.

(ii) *Wastewaters.* No additional wastewater is typically generated during the stabilization of nonwastewater K046 sludges. EPA recognizes that wastewater forms of K046 may be generated at a CERCLA site, during a corrective action at a RCRA facility, as a leachate from a landfill, or as a residual from dewatering or a treatment process other than stabilization (one that can achieve the same performance). Since generation of these types of wastewaters may occur, the Agency is therefore, proposing a "treatment standard" for K046 wastewaters of "No Land Disposal". By establishing this standard, a facility that generates and needs to treat a wastewater, can submit a petition to the Agency for a variance from this treatment standard. The Agency believes that few, if any, petitions for a variance will be submitted because these wastewaters usually will be discharged to a POTW or to surface waters following treatment to meet NPDES requirements.

BDAT TREATMENT STANDARDS FOR K046

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Lead | (1) | 0.176 |

[1] Not applicable.

BDAT TREATMENT STANDARDS FOR K046

[Wastewaters and Explosive Nonwastewaters]

| No Land Disposal |
|---|

e. K083—Distillation bottoms from aniline production.

1. *Industry Affected and Waste Description.* The listed waste K083 is generated by facilities in the organic chemicals manufacturing industry. The Agency estimates that there are six facilities that have this specific production process that could potentially generate K083 waste.

Aniline is produced almost exclusively by the vapor-phase reduction of nitrobenzene in the presence of a copper catalyst. In a typical process, nitrobenzene is vaporized and fed with excess hydrogen into a reactor. The crude product mixture leaving the reactor consists primarily of aniline, water, hydrogen and some unreacted nitrobenzene. This mixture is condensed to separate the aniline/water mixture from the hydrogen gas stream. The two-phase aniline/water mixture is then separated in a decanter and the aniline phase is purified by a two-stage distillation process. The heavy ends from the distillation process is the listed waste K083.

Untreated K083 wastes are viscous organic liquids consisting of 45 to 85% by weight of a mixture of aniline, diphenylamine, nitrobenzene, phenylenediamine, and benzene. It also contains approximately 15 to 55% by weight of other unidentified organics. The BDAT List organic constituents of concern include aniline, phenylenediamine, diphenylamine, nitrobenzene and benzene. The heat content of the waste is approximately 13,500 BTU per pound. The total organic halogen content of K083 has been reported to range from 0.03 to 0.3% (as Chlorine). Copper is the only metal anticipated to be present and has been measured at 2.5 ppm.

2. *Applicable/Demonstrated Treatment Technology.* The Agency has identified liquid injection incineration and fuel substitution as applicable technologies for the nonwastewater forms of K083. These technologies have been selected due to the high heat (BTU) content, the low halogen content, the low metal content, and the fact that the waste can be handled as a liquid.

EPA has identified fuel substitution as an applicable technology for treatment of liquid forms of nonwastewater K083. Fuel substitution involves the use of combustible organic wastes as substitutes for conventional fuels burned in high temperature industrial processes. In order for a waste to be a good candidate for a fuel substitute, the waste must have reasonably high concentrations of organic chemicals in order to have sufficient heat content. It must also have relatively low concentrations of noncombustible materials such as ash, water, metals, and chlorine. Fuel substitution, as a treatment process, has the same purpose as incineration: to thermally destroy (oxidize) the organic constituents of a waste. The Agency believes that burning of K083 in a well designed and well operated high temperature industrial boiler or kiln attains the performance achievable by other thermal destruction units such as liquid incinerators. Ash residues and scrubber waters are not typically generated using these fuel substitution processes.

EPA has identified incineration in units with liquid injection as an applicable technology for treatment of nonwastewater forms of K083. Many incinerators are designed specifically to handle only liquid wastes, while others are designed to handle both liquids and solids (or sludges). The purpose of incineration is to thermally destroy (oxidize) the organic constituents of a waste. The Agency recognizes that any technology that is designed for thermal destruction of liquids is potentially applicable to these wastes. However, the Agency believes that the performance of liquid injection incinerators attains the performance achievable by other thermal destruction technologies that are well designed and well operated. While many liquid incinerators generate ash residues and scrubber water residues, the Agency believes that all of the facilities that currently incinerate K083 or use K083 as a fuel substitute are not generating either of these residue types.

Liquid injection incineration has been demonstrated on a commercial basis for the treatment of K083 at two of the facilities that generate K083. Fuel substitution in a steam boiler has been demonstrated on a commercial basis at one of the facilities that generates K083.

3. *Data Base.* The Agency visited one facility that employs liquid injection incineration as a treatment for the listed waste K083. According to plant personnel, no residual ash or scrubber wastewaters are generated from this treatment technology. The analyses of the ash content of untreated K083 confirmed that no ash could be detected below the limit of 0.01% by weight. This facility did not have a vent scrubber or other pollution control device on the liquid injection incinerator and, therefore, did not generate any scrubber water.

4. *Identification of BDAT.* EPA has determined that the performance achieved by liquid injection incineration or fuel substitution represents treatment by BDAT. EPA has determined that liquid injection incineration of K083 can be accomplished without generating any residuals, either ash or scrubber water. Therefore, the level of performance achieved by liquid injection incineration obviously cannot be improved upon. Liquid injection incineration has been demonstrated on a commercial basis. The Agency also believes this technology is available because: (1) This technology is commercially available or can be purchased from a proprietor and (2) this technology achieves substantial reduction of the hazardous organic constituents present in waste K083. Fuel substitution of K083 is also considered by the Agency to be BDAT. Fuel substitution has been demonstrated on a commercial basis.

5. *Regulated Constituents and Treatment Standards.* The Agency is proposing that, since no residuals are anticipated from the use of either BDAT technology, the BDAT "treatment standard" for wastes identified as K083 is "No Land Disposal". The Agency recognizes that the possibility exists that these wastes may be generated at a CERCLA site, during a corrective action at a RCRA facility, or from the use of a treatment technology that does produce a residual. By establishing the standard as "No Land Disposal", a facility that does generates a treatment residual, can submit a petition to the Agency for a variance from this treatment standard. The Agency believes that few petitions for a variance will be submitted.

EPA strongly urges facilities that have K083 wastes that they believe will generate a treatment residual, to comment on this rule. Specifically, comments should provide the following: (1) Reasons why the K083 waste generated at their site is believed to be different than the waste described in this preamble; (2) a description of the treatment technology currently being used to treat the K083 generated at their site; and (3) analytical data, including analyses for total constituents, on the residuals (either ash or scrubber water) that are generated by the treatment technology.

EPA has recently learned that some K083 wastewaters may be disposed through underground injection. If this is the case, the "No Land Disposal" standard would preclude continued injection of untreated wastewaters unless a no migration petition had been granted. The Agency intends to seek clarification of the circumstances in which K083 wastewaters are being injected underground in order to determine whether the "No Land Disposal" standard should be modified. The Agency thus seeks comment on the circumstances surrounding injection of K083 wastewaters, and on the types of wastes being injected.

BDAT TREATMENT STANDARDS FOR K083

[Nonwastewaters and Wastewaters]

| No Land Disposal |
|---|

f. K086—Solvent washes and sludges, caustic washes and sludges, or water washes and sludges from the cleaning tubs and equipment used in the formulation of ink from pigments, driers, soaps, and stabilizers containing chromium and lead.

1. *Industry Affected and Waste Description.* The listed waste K086 is generated by facilities in the ink formulation industry. The Agency estimates that there are approximately 460 facilities that formulate ink and may potentially generate K086 waste. While this waste can be generated in just about all portions of the United States, a large proportion of the facilities generating K086 are located in California, New Jersey, and in states surrounding the Great Lakes.

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. However, EPA is not establishing treatment standards at this time for the latter two subcategories. Thus, the discussion that follows relates only to the solvent washes subcategory. K086 solvent washes can also vary depending upon which solvent is used to clean the ink formulating equipment. The principal solvents used include 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 xylenes. It is important to note that some of these solvents also fall under the F001–F005 solvent listings. In such cases, the treatment standards for the F001–F005 wastes that were promulgated in November, 1986, are already in effect. It should be noted, however, that elsewhere in this notice, the Agency is proposing to modify one of the solvent standards. This change is not expected to impact the standards applicable to ink formulators.

For the purposes of investigating BDAT, the solvent washes subcategory is defined as those K086 wastes which are derived from processes which have used any of the following chemicals as a solvent: 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 solvent washes usually contain relatively high concentrations of the cleaning solvents used and low concentrations of solids. The solvent sludges contain relatively high concentrations of solids. This difference in solids content changes the applicability of the type of incineration unit or fuel substitution unit that would be necessary to destroy the organic constituents in the waste.

2. *Applicable/Demonstrated Treatment Technologies.* EPA has identified fuel substitution as an applicable technology for treatment of K086 solvent washes. Fuel substitution involves the use of combustible organic wastes as substitutes for conventional fuels burned in high temperature industrial processes. In order for a waste to be a good candidate for a fuel substitute, the waste must have a reasonably high concentration of organic chemicals in order to have sufficient heat content. It must also have relatively low concentrations of noncombustible materials such as ash, water, metals, and chlorine. Fuel substitution, as a treatment process, has the same purpose as incineration; to thermally destroy (oxidize) the organic constituents of a waste. The Agency believes that burning of K086 as a fuel in a well designed and well operated high temperature industrial boiler or kiln attains the performance achievable by other thermal destruction units such as liquid incinerators. Any treatment residues generated from the use of these fuel substitution processes must meet the BDAT treatment standards prior to placement in land disposal units.

Batch distillation and fractional distillation can be used to separate components having different boiling points. Distillation technologies can be used to recover solvents from the solvent washes subcategory. These technologies reduce the amount of material to be treated; nevertheless, the bottoms from this process would require treatment by incineration prior to land disposal.

EPA has identified incineration in units with liquid injection as an applicable technology for K086 solvent washes as well as incineration in a rotary kiln. Liquid injection incinerators are designed to only handle liquid wastes. Rotary kiln incinerators are designed specifically to handle sludges, solids, tarry wastes, and containerized liquids but, simultaneously can also incinerate injected liquid wastes. The purpose of all incineration is to thermally destroy (oxidize) the organic constituents of a waste. The Agency recognizes that any technology such as a fluidized bed or multiple hearth incinerator that is designed for thermal destruction is potentially applicable to these wastes. However, the Agency believes that the performance of liquid injection incinerators attains the performance achievable by other thermal destruction technologies that are well designed and well operated. For the purposes of BDAT, any solid ash residues are 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.

EPA has determined that the applicable technology for scrubber waters is a wastewater treatment system that includes a hexavalent chromium reduction step to convert any hexavalent chromium to the trivalent state and 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 K086 nonwastewaters.

EPA has identified stabilization as an applicable technology for treatment of K086 nonwastewater residues that do not meet the BDAT standards for K086. These include precipitated residues from the treatment of K086 scrubber waters, as well as ash residues which may be potentially generated from either incineration or fuel subtitution. Stabilization is designed to chemically bind metal constituents of the waste into the microstructure of a cementitious matrix. The purpose of stabilization is to immobilize the metal constituents and thereby reduce their leaching potential. A variety of agents, including Portland cements, cement kiln dust, hydrated limes, quick lime, fly ash and other pozzolanic materials, have been demonstrated to act as binding agents for various types of wastes containing metals. Stabilization processes generate hardened solid residues that, for the purposes of BDAT, are considered nonwastewaters. The Agency believes that the majority of these processes do not generate residuals that are considered wastewaters.

3. *Data Base.* The Agency's preference is for total recycling for the K086 solvent washes. However, residues from batch distillation are still bottoms that need additional treatment (i.e., incineration and stabilization) prior to land disposal. Therefore, the Agency tested incineration for treatment of the K086 solvent washes subcategory.

At an EPA testing facility, K086 wastes from the solvent washes subcategory were incinerated in a rotary kiln/liquid injection incinerator. The data were collected by EPA at its in-house facility. Operating data collected during the treatment test show that the facility was properly operated during the time that the waste was being treated. Treatment standards for the BDAT List metals are being transferred from wastewater metals treatment data for similar wastes that have been previously developed by the Agency.

4. *Identification of BDAT.* Incineration is demonstrated for treatment of BDAT List organics in K086 solvent washes. The resultant quench waters or scrubber waters are, for the purposes of BDAT, classified as wastewaters. Treatment for the removal of BDAT metals contained by these wastewaters will result in a sludge, which for the purposes of BDAT, are classified as nonwastewaters. Further details regarding BDAT development and data transfer are provided in the Background Document for this waste code.

Incineration of BDAT List organics contained in the solvent washes generated a scrubber water that contained BDAT List Metals. EPA does not have treatment data specifically for treatment of this scrubber water. The Agency does have performance data on a metal bearing wastewater judged to be similar to the K086 scrubber water. These data consist of eleven data points from one facility using chromium reduction followed by lime precipitation and sludge filtration. The BDAT List metals contained by the solid residual generated from this treatment system did not require further treatment because TCLP leachate concentrations were not found at treatable levels.

These technologies are judged to be available to treat these wastes because: (1) They are commercially available or can be purchased from a proprietor and (2) they provide substantial reduction of the concentration of hazardous constituents released into the environment.

5. *Regulated Constituents and Treatment Standards.* As noted above, the Agency is not, at this time, proposing treatment standards for K086 wastes in (1) the solvent sludges subcategory or (2) the caustic/water washes and sludges subcategory. Since no standards are being proposed for these subcategories, the "soft hammer" provisions apply.

For the purposes of proposing BDAT treatment standards, the solvent washes subcategory is defined as those K086 wastes which are derived from processes which have used any of the following chemicals as a solvent: 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. These solvents are chemicals on the BDAT List that are typically used in rinsing inks and could become K086 wastes.

The proposed regulated constituents and BDAT treatment standards for wastes identified as K086 in the solvent washes subcategory are listed in the tables at the end of this section. The Agency believes that regulating these constituents will ensure that other BDAT List constituents will be controlled by the technologies determined to be BDAT. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

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 units of measure for all total constituent analyses are mg/kg (or parts per million on a weight by weight basis) for the nonwastewaters and mg/1 (or parts per million on a weight by volume basis) for wastewaters. The units of measure for all analyses of leachate are mg/1 (or parts per million on a weight by volume basis).

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 present an incentive to simply switch to the use of other solvents. For this reason, EPA is proposing to regulate 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 solicits comments on this transfer of performance data. The

comments should provide data that document that the proposed BDAT treatment standards are not achievable.

For wastes identified as K086 nonwastewaters and wastewaters in the solvent washes subcategory, EPA is proposing to regulate seventeen organic constituents and two metal constituents from the BDAT List as indicators of effective treatment of these wastes. These include 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.

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) |
| n-Butyl alcohol | 0.37 | (1) |
| Ethyl acetate | 0.37 | (1) |
| Ethyl benzene | 0.031 | (1) |
| Methanol | 0.37 | (1) |
| Methyl isobutyl ketone | 0.37 | (1) |
| Methyl ethyl ketone | 0.37 | (1) |
| Methylene chloride | 0.037 | (1) |
| Toluene | 0.031 | (1) |
| 1,1,1-Trichloroethane | 0.044 | (1) |
| Trichloroethylene | 0.031 | (1) |
| Xylenes | 0.015 | (1) |
| bis(2-ethylhexyl)phthalate | 0.49 | (1) |
| Cyclohexanone | 0.49 | (1) |
| 1,2-Dichlorobenzene | 0.49 | (1) |
| Naphthalene | 0.49 | (1) |
| Nitrobenzene | 0.49 | (1) |
| Chromium (Total) | (1) | 0.094 |
| Lead | (1) | 0.37 |

[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) |
| n-Butyl alcohol | 0.031 | (1) |
| Ethyl acetate | 0.031 | (1) |
| Ethyl benzene | 0.015 | (1) |
| Methanol | 0.031 | (1) |
| Methyl isobutyl ketone | 0.031 | (1) |
| Methyl ethyl ketone | 0.031 | (1) |
| Methylene chloride | 0.031 | (1) |
| Toluene | 0.029 | (1) |
| 1,1,1-Trichloroethane | 0.031 | (1) |
| Trichloroethylene | 0.029 | (1) |
| Xylenes | 0.015 | (1) |
| bis(2-ethylhexyl)phthalate | 0.044 | (1) |

BDAT TREATMENT STANDARDS FOR K086—Continued

[Wastewaters; solvent washes subcategory]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/l) | TCLP (mg/l) |
| Cyclohexanone | 0.022 | (1) |
| 1,2-Dichlorobenzene | 0.044 | (1) |
| Naphthalene | 0.044 | (1) |
| Nitrobenzene | 0.044 | (1) |
| Chromium (Total) | 0.32 | (1) |
| Lead | 0.037 | (1) |

[1] Not applicable.

g. K087—Decanter tank tar sludge from coking operations.

1. *Industry Affected and Waste Description.* The listed waste K087 is generated by facilities in the coking industry. The Agency estimates that there are 36 facilities that have coking plants with decanter tanks and, therefore, could potentially generate K087 waste. The majority of these facilities are located in the Eastern United States.

In the production of coke, gases evolved from the coke ovens are collected and subsequently cooled. The condensates and any entrained particulates are channeled to a decanter tank where tar products and ammonia liquor are separated. The heavy residue (sludge) that settles to the bottom of the tank is K087 waste.

K087 waste generally contains from six to eleven percent water and 89 to 94 percent organic compounds, up to twenty percent of which are BDAT List semivolatile organics. The principal BDAT List metals present are arsenic, lead, copper, and zinc; the maximum concentrations for these metals measured in these wastes are 6, 85, 5, and 66 ppm, respectively. The waste, a viscous semisolid tar, has a heating value of approximately 15,000 Btu/lb.

2. *Applicable/Demonstrated Treatment Technologies.* EPA has identified fuel substitution and rotary kiln incineration as applicable technologies for treatment of K087 nonwastewaters. Fuel substitution involves the use of combustible organic wastes as substitutes for conventional fuels burned in high temperature industrial processes. In order for a waste to be a good candidate for a fuel substitute, the waste must have a reasonably high concentration of organic chemicals with sufficient heat content (BTU per pound). It must also have relatively low concentrations of noncombustible materials such as ash, water, metals, and chlorine. Fuel substitution, as a treatment process, has the same purpose as incineration; to thermally destroy (oxidize) the organic constituents of a waste. The Agency believes that burning of K087 in a well designed and well operated high temperature industrial furnace or kiln attains the performance achievable by other thermal destruction units such as rotary kiln incinerators. These thermal destruction units often generate ash residues that, for the purposes of BDAT, are classified as nonwastewaters. Scrubber waters, from air pollution control devices of units using K087 as a fuel substitute, generally contain less than 1% TOC and less than 1% filterable solids and, therefore, are classified as wastewaters for the purposes of BDAT. Both of these residues must meet the BDAT treatment standards prior to placement in land disposal units.

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. Treatment prior to reuse frequently involves mixing the waste with a flushing liquor, grinding in a ball mill, and mixing the milled material with coal. This K087/coal mixture is fed back to the coke ovens for coke production. Alternatively, the waste may be added to hot tar, ground in a ball mill, and packaged as a saleable product. At this time, however, EPA has little data available to define which K087 materials can be benefically recycled. Specific data were submitted by the American Iron and Steel Institute (AISI) to the EPA with respect to the practice of recycling K087 wastes (See Wednesday, May 6, 1987, FR 17019 and 17020). These data characterize the final products (e.g. coal tar and coke) that result from recycling of K087 and from processing that did not involve recycling. Only one data point from AISI characterized the raw K087 decanter tar sludge. Therefore, the Agency solicits comments and data to assist in definition of K087 wastes that can be recycled.

Wastewater residuals are generated by some of the technologies that are designated as applicable to the nonwastewater forms of K087. The applicable technology for these wastewaters is a wastewater treatment system that includes a chemical precipitation step to remove metals from solution and precipitate them as a solid residue and a filtration step to remove these solids. This wastewater treatment system results in a solid residue that generally contains greater than 1% filterable solids and is considered, for

the purposes of BDAT, a nonwastewater. This solid residue must conform with the treatment standards for nonwastewaters. As described below, further application of a stabilization process to this residue may be necessary in order to meet the BDAT standards for metals proposed for nonwastewaters.

EPA has identified stabilization as an applicable technology for treatment of BDAT List metals constituents in the nonwastewater K087 wastes identified as treatment residuals. These nonwastewaters include precipitated residues from the treatment of wastewaters forms of K087, and ash residues from incineration or fuel subtitution of K087, and any other nonwastewaters resulting from the "mixture" or "derived-from" rules. Stabilization is designed to chemically bind metal constituents of the waste into the microstructure of a cementitious matrix. The purpose of stabilization is to immobilize the metal constituents and thereby reduce their leaching potential. A variety of agents, including Portland cements, cement kiln dust, hydrated limes, quick lime, fly ash and other pozzolanic materials, have been demonstrated to act as binding agents for various types of wastes containing metals. Stabilization processes generate hardened solid residues that, for the purposes of BDAT, are classified as nonwastewaters. The Agency believes that these processes do not generate wastewater residuals.

All of the applicable technologies for BDAT List organics in K087 waste are demonstrated. Data submitted by industry indicate that recycling and fuel substitution are commonly practiced. EPA has identified seven facilities that use recycling and one facility that uses fuel substitution, and believes many other facilities also use these technologies. The Agency has identified one facility that has used rotary kiln incineration of K087 wastes and three generators that send their wastes offsite for multiple hearth incineration of their K087 wastes.

3. *Data Base.* For K087 nonwastewaters, the Agency has five treated data points (ash residues) showing treatment of BDAT List organics by rotary kiln incineration of K087 at an EPA test facility. Also, the Agency has stabilization performance data using lime and fly ash as binders from the treatment of wastes judged to have similar chemical and physical characteristics to K087 ash residues. These stabilization data demonstrate treatment for BDAT List metals.

For K087 wastewaters, the Agency has six treated data points showing the treatment of BDAT List organics by rotary kiln incineration. Also, the Agency has eleven data points showing the treatment of BDAT List metals by chemical precipitation followed by sludge filtration from the treatment of wastes judged to have similar chemical and physical characteristics to K087 scrubber waters.

4. *Identification of BDAT.* EPA is proposing rotary kiln incineration as BDAT for BDAT List organics. EPA is soliciting comments and data that support the fact that total recycling can be accomplished for some subcategory of K087. If EPA receives comments and data that support a determination that total recycling can be accomplished, then EPA will promulgate "No Land Disposal" as a BDAT treatment standard for that subgroup of K087 wastes. EPA has determined that rotary kiln incineration is demonstrated and available, based on its use treating BDAT List organics contained in K087 and on its use for wastes with chemical and physical characteristics similar to K087.

EPA has determined that stabilization of K087 ash is demonstrated for BDAT List metals contained in K087 ash based on a waste judged to have similar chemical and physical characteristics to K087 wastes. With regard to K087 wastewaters, EPA has identified chemical precipitation followed by sludge filtration is demonstrated and available, based on the performance treatment data from wastewaters judged to have similar chemical and physical characteristics to K087 wastewaters.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as K087 are listed in the tables at the end of this section. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

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 units of measure for all total constituent analyses are mg/kg (or parts per million on a weight by weight basis) for the nonwastewaters and mg/l (or parts per million on a weight by volume basis) for wastewaters. The units of measure for all analyses of leachate are mg/l (or parts per million on a weight by volume basis).

Standards for BDAT List organic constituents in K087 wastewaters are based on concentrations found in scrubber waters from rotary kiln incineration. Thermal destruction in a well-designed and well-operated unit results in levels that are at or near the detection limit. Standards for metal constituents in K087 nonwastewaters are based on the transfer of metals precipitation/removal data for treatment of wastewaters containing metals of similar concentrations. These levels are believed to represent performance of the best demonstrated available technologies for these constituents in this waste type.

Standards for BDAT organic constituents in K087 nonwastewaters are based on the concentration found in K087 ashes from rotary kiln incineration. For BDAT List metal constituents, however, EPA transferred stabilization performance data from a waste judged to have similar chemical and physical characteristics to K087 incinerator ashes.

For wastes identified as K087 nonwastewaters and wastewaters, EPA is proposing to regulate nine organic constituents and two metal constituents from the BDAT List as indicators of effective treatment of these wastes. These include acenaphthalene, benzene, chrysene, fluoranthene, indeno (1,2,3-cd) pyrene, naphthalene, phenanthrene, toluene, xylenes, lead, and zinc.

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) | 0.53 |
| Zinc | (1) | 0.086 |

[1] Not applicable.

BDAT TREATMENT STANDARD FOR K087

[Wastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Acenaphthalene | 0.028 | (1) |
| Benzene | .014 | (1) |
| Chrysene | .028 | (1) |
| Fluoranthene | .028 | (1) |
| Indeno (1,2,3-cd) pyrene | .028 | (1) |
| Naphthalene | .028 | (1) |
| Phenanthrene | .028 | (1) |
| Toluene | .008 | (1) |
| Xylenes | .014 | (1) |
| Lead | .037 | (1) |
| Zinc | 1.0 | (1) |

[1] Not applicable.

h. K099—Untreated wastewater from the production of 2,4-dichlorophenoxyacetic acid (2,4-D).

1. *Industry Affected and Waste Description.* The listed waste K099 is generated by facilities in the organic chemicals manufacturing industry (specifically pesticides). The Agency estimates that there is only one facility that produces 2,4-D and currently generates K099 waste.

The manufacturing process for 2,4-D includes the reaction of 2,4-dichlorophenol with chloroacetic acid in the presence of sodium hydroxide, hydrochloric acid and a catalyst. The 2,4-D is recovered using a solvent and is then water washed to form the final product. The wastewater generated from the recovery and water-wash processes is RCRA waste K099.

The listed waste K099 principally consists of water, 2,4-D and 2,4-dichlorophenol. The specific concentrations have been claimed by the facility as confidential; however, the organic content of the waste is less than one percent.

2. *Applicable/Demonstrated Treatment Technologies.* The treatment technologies that the Agency believes are applicable are chemical oxidation, 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. Oxidation is a treatment process that chemically destroys organics found in solution by reaction with an oxidizing agent such as oxygen, chlorine or hydrogen peroxide. Wet air oxidation is a treatment process that chemically destroys organics and some inorganics by reaction with molecular oxygen at elevated temperatures and pressures. Carbon adsorption is the adsorption of hazardous constituents (from a liquid or a gas) by surface attraction within the internal pores of the carbon granules. Biological treatment involves the use of naturally occurring, acclimated microorganisms to degrade organic contaminants in wastewater. Incineration technologies such as fluidized bed, rotary kiln, and liquid injection incineration, are destruction technologies that convert the waste to carbon dioxide, water, and other combustion products.

Of the applicable technologies, the Agency is aware of one facility using oxidation to treat K099. The Agency is not aware of any facility using wet air oxidation, carbon adsorption followed by incineration of the carbon, or biological treatment followed by incineration of the sludge to treat the waste. The Agency did not test these technologies on the waste.

3. *Data Base.* For waste code K099, the Agency has treatment data from one facility. At this facility, the Agency collected two treatment data sets for chemical oxidation of K099 waste using chlorine.

4. *Identification of BDAT.* The best demonstrated available treatment technology (BDAT) for K099 waste was determined to be chemical oxidation using chlorine. This treatment system shows substantial treatment for 2,4-dichlorophenoxyacetic acid (2,4-D). EPA believes that chemical oxidation with chlorine is demonstrated on K099. This treatment system is judged to be available to treat K099 because (1) the treatment system is commercially available and (2) the system provides a substantial reduction in the concentration of the BDAT List organic constituents present in the largest concentrations in K099.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as K099 are listed in the tables at the end of this section. The Agency believes that regulating these constituents will ensure that other BDAT List constituents will be effectively treated by the technologies determined to be BDAT. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

Treatment standards for all organic constituents are based on analyses of total constituent concentration. The units of measure for all total constituent analyses are mg/kg (or parts per million on a weight by weight basis) for the nonwastewaters and mg/l (or parts per million on a weight by volume basis) for wastewaters.

For wastes and treatment residues identified as K099 nonwastewaters or wastewaters, EPA is proposing to regulate seven organic constituents from the BDAT List as indicators of effective treatment of these wastes. These include 2,4-dichlorophenoxyacetic acid and six chlorinated dioxins and chlorinated dibenzofurans. The 1 ppb analytical detection limit for these constituents described in the final rule for dioxin-containing wastes (51 FR 40643) also is used here. This level represents the analytical limit of detection that can be routinely achieved.

EPA specifically requests 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 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 is specifically requesting 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.

BDAT TREATMENT STANDARDS FOR K099

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| 2,4-Dichlorophenoxyacetic acid | 0.15 | (1) |
| Hexachlorodibenzo-p-dioxins | 0.001 | (1) |
| Hexachlorodibenzofurans | 0.001 | (1) |
| Pentachlorodibenzo-p-dioxins | 0.001 | (1) |

BDAT TREATMENT STANDARDS FOR K099—Continued

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Pentachlorodibenzo-furans | 0.001 | (1) |
| Tetrachlorodibenzo-p-dioxins | 0.001 | (1) |
| Tetrachlorodibenzo-furans | 0.001 | (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 | 0.15 | (1) |
| Hexachlorodibenzo-p-dioxins | 0.001 | (1) |
| Hexachlorodibenzo-furans | 0.001 | (1) |
| Pentachlorodibenzo-p-dioxins | 0.001 | (1) |
| Pentachlorodibenzo-furans | 0.001 | (1) |
| Tetrachlorodibenzo-p-dioxins | 0.001 | (1) |
| Tetrachlorodibenzo-furans | 0.001 | (1) |

[1] Not applicable.

i. 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.

1. *Industry Affected and Waste Description.* The listed wastes K101 and K102 are generated by facilities in the veterinary pharmaceuticals manufacturing industry. The Agency estimates that there are only two facilities that have production processes that could potentially generate K101 or K102 wastes.

Wastewaters containing arsenic are generated in the manufacture of organo-arsenic veterinary pharmaceuticals. These wastewaters are combined with process area wash waters and are pumped into a treatment system that consists of chemical precipitation and resin adsorption. The resin column is regenerated by a backwash of acetone. The spent acetone solvent mixture is recovered in a distillation column. The distillation tar residues from the acetone recovery column constitute the listed K101 waste.

The manufacture of arsenic-containing pharmaceuticals requires the reaction of an organic compound with inorganic arsenic to form the organic arsenical product, and generates arsenic-containing solid wastes including K102 waste. The Agency has detailed process flow information concerning the manner in which K102 waste is generated. This information, however, has been claimed to be confidential business information (CBI).

K101 wastes are viscous organic still bottoms containing approximately 19% by weight ortho-nitroaniline and less than 1% arsenic. The heat content of these wastes is approximately 7,000 BTU per pound. K102 wastes consist primarily of spent activated carbon contaminated with approximately 300 parts per million of ortho-nitrophenol. BDAT List organic constituents identified as present in K102 include phenol and ortho-nitrophenol. BDAT List metal constituents identified as present in K101 and K102 include antimony, arsenic, barium, cadmium, total chromium, copper, lead, nickel, selenium, and zinc.

2. *Applicable/Demonstrated Treatment Technologies.* EPA has identified incineration in a rotary kiln as an applicable technology for treatment of nonwastewater forms of K101 identified as distillation tar residues and nonwastewater forms of K102 identified as activated carbon residues. Rotary kiln incinerators are designed specifically to handle sludges, solids, tarry wastes, and containerized liquids that are difficult to atomize through a liquid injector. Many rotary kiln incinerators are also designed to simultaneously incinerate other liquid wastes or supplemental fuel. The purpose of incineration is to thermally destroy (oxidize) the organic constituents of a waste. The Agency recognizes that any technology such as a fluidized bed or multiple hearth incinerator that is designed for thermal destruction of sludges, solids, or tarry wastes is potentially applicable to these wastes. However, the Agency believes that the performance of rotary kiln incineration attains the performance achievable by other thermal destruction technologies that are well designed and well operated. These incinerators generate ash residues that, for the purposes of BDAT, are classified as nonwastewaters. Scrubber waters from air pollution control devices are often generated and are classified as wastewaters. Both of these residues must meet the BDAT treatment standards prior to placement in land disposal units.

Wastewaters are generated as residuals by many of the incineration technologies that are designated as applicable to the nonwastewater forms of K101 and K102. EPA has determined that the applicable technology for these wastewaters is a wastewater treatment system that 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.

EPA has identified stabilization as an applicable technology for treatment of inorganic nonwastewater forms of K101 and K102. These include precipitated residues from the treatment of wastewaters, as well as ash residues from incineration. Stabilization is designed to chemically bind metal constituents of the waste into the microstructure of a cementitious matrix. The purpose of stabilization is to immobilize the metal constituents and thereby reduce their leaching potential. A variety of agents, including Portland cements, cement kiln dust, hydrated limes, quick lime, fly ash and other pozzolanic materials, have been demonstrated to act as binding agents for various types of wastes containing metals. Stabilization processes generate hardened solid residues that, for the purposes of BDAT, are classified as nonwastewaters. The Agency believes that these processes do not generate wastewater residuals.

EPA has not identified any facility currently performing incineration and metals (ash) stabilization of K101 or K102 on a commercial scale. However, EPA believes this technology is demonstrated for K101 and K102 in that it is being used to treat wastes similar to them in regard to parameters affecting treatment selection. EPA has confirmed this judgment by using a test facility to incinerate this waste.

3. *Data Base.* For waste code K101, the Agency has treatment data from one full-scale facility. The Agency has four data points of untreated K101 waste and three data points representing residual concentrations found in the ash from rotary kiln incineration. The Agency has

four scrubber water data points that represent destruction of organic compounds in the afterburner of the rotary kiln incinerator.

For waste code K102, the Agency has treatment data from one full-scale facility. The Agency has four data sets of K102 waste treated by rotary kiln incineration. The Agency has six scrubber water data points that represent destruction of organic compounds in the afterburner of the rotary kiln incinerator.

4. *Identification of BDAT.* EPA has determined that the performance achieved by incineration followed by metal stabilization of ash residues represents treatment by BDAT for both K101 and K102. Incineration followed by metal stabilization is judged to be available to treat these wastes because: (1) These technologies are commercially available and (2) they provide substantial reduction in the levels of organic constituents and substantial reduction in the mobility of metal constituents present in these wastes.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as K101 and K102 are listed in the tables at the end of this section. The Agency believes that regulating these constituents will ensure that other BDAT List constituents will be effectively treated by the technologies determined to be BDAT. EPA's rationale for selecting the regulated constituents is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

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 units of measure for all total constituent analyses are mg/kg (or parts per million on a weight by weight basis) for the nonwastewaters and mg/l (or parts per million on a weight by volume basis) for wastewaters. The units of measure for all analyses of leachate are mg/l (or parts per million on a weight by volume basis).

Standards for organic constituents are based on concentrations found in scrubber waters from thermal destruction units. Thermal destruction in a well designed and well operated unit results in levels that are at or near the detection limit. Standards for metal constituents are based on the transfer of metals precipitation/removal data for treatment of wastewaters that contain metals at similar concentrations. These levels are believed to represent performance of the best demonstrated available technologies for these constituents in this waste type.

(i) *Nonwastewaters.* For wastes identified as K101 and K102 nonwastewaters, EPA is proposing to regulate two specific organic constituents that are not included on the BDAT List but have been selected as indicators of effective incineration of these wastes. A standard for ortho-nitroaniline is proposed for K101 and a standard for ortho-nitrophenol is proposed for K102.

EPA is also proposing to regulate nine metal constituents including antimony, arsenic, barium, cadmium, total chromium, copper, lead, nickel, and zinc as indicators of effective stabilization of these wastes (based on stabilization of the ash from incineration). At the time of this proposal, the Agency has not completed its evaluation of waste characterization and treatment data for antimony, arsenic and barium. Therefore, the Agency is proposing to reserve standards for antimony, arsenic and barium until evaluation can be completed. The standards for the other metals are transferred from the treatment of wastes judged to have similar chemical and physical characteristics to K101 and K102 incinerator ashes.

(ii) *Wastewaters.* For wastes identified as K101 and K102 wastewaters, EPA is proposing to regulate two different organic constituents as indicators of effective incineration of these wastes. A standard for ortho-nitroaniline is proposed for K101 and a standard for ortho-nitrophenol is proposed for K102.

For wastes identified as K101 or K102 wastewaters, EPA is proposing to regulate five metal constituents from the BDAT List as indicators of effective treatment of these wastes. These include antimony, arsenic, cadmium, lead, and mercury. At the time of this proposal, the Agency has not completed its evaluation of waste characterization and treatment data for antimony. Therefore, the Agency is proposing to reserve a standard for antimony until evaluation can be completed.

BDAT TREATMENT STANDARDS FOR K101

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Ortho-Nitroaniline | 14.0 | [1] |
| Antimony | [1] | [2] |
| Arsenic | [1] | [2] |
| Barium | [1] | [2] |
| Cadmium | [1] | 0.066 |
| Chromium (Total) | [1] | 3.8 |
| Copper | [1] | 0.71 |
| Lead | [1] | 0.53 |
| Nickel | [1] | 0.31 |
| Zinc | [1] | 0.086 |

[1] Not applicable.
[2] Reserved.

BDAT TREATMENT STANDARDS FOR K101

[Wastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/l) | TCLP (mg/l) |
| Ortho-Nitroaniline | 0.266 | [1] |
| Antimony | [2] | [1] |
| Arsenic | 2.036 | [1] |
| Cadmium | 0.238 | [1] |
| Lead | 0.110 | [1] |
| Mercury | 0.027 | [1] |

[1] Not applicable
[2] Reserved.

BDAT TREATMENT STANDARDS FOR K102

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Ortho-Nitrophenol | 13.3 | [1] |
| Antimony | [1] | [2] |
| Arsenic | [1] | [2] |
| Barium | [1] | [2] |
| Cadmium | [1] | 0.066 |
| Chromium (Total) | [1] | 3.8 |
| Copper | [1] | 0.71 |
| Lead | [1] | 0.53 |
| Nickel | [1] | 0.31 |
| Zinc | [1] | 0.086 |

[1] Not applicable.
[2] Reserved.

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] |
| Antimony | [2] | [1] |
| Arsenic | 2.036 | [1] |

BDAT TREATMENT STANDARDS FOR K102—Continued

[Wastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/l) | TCLP (mg/l) |
| Cadmium | 0.238 | [1] |
| Lead | 0.110 | [1] |
| Mercury | 0.027 | [1] |

[1] Not applicable.
[2] Reserved.

j. K106—Wastewater treatment sludges from the mercury cell process in chlorine production.

1. *Industry Affected and Waste Description.* The listed waste K106 is generated by facilities in the inorganic chemicals industry (specifically chlorine manufacturing by the mercury cell process). The Agency estimates that there are 20 facilities that have specific production processes that could potentially generate K106 waste. While these facilities are distributed in just about all regions of the United States, a large proportion of them are located in the Southeast.

Chlorine is produced by the electrolytic decomposition of a saturated sodium chloride brine solution. One type of electrolytic cell uses mercury as an electrode. At such facilities, process wastewaters will contain soluble and elemental mercury. Treatment of this wastewater stream is performed using chemical precipitation of the mercury (primarily as sulfide) followed by sedimentation or filtration of the precipitates. These residuals are the listed waste K106.

Untreated K106 wastes consist primarily of water (60%), mercury sulfide (3%), other metal sulfides (2%), and diatomaceous earth or other filter aid (35%). K106 wastes are sludges and, for the purposes of BDAT, are classified as nonwastewaters. Treatment of K106 results in the generation of solid residuals (nonwastewaters) and wastewaters.

2. *Applicable/Demonstrated Treatment Technologies.* The Agency has identified thermal recovery (retorting) as an applicable technology for nonwastewater K106. Retorting is a metal recovery process, whereby heat is added to volatilize the mercury from the waste. Elemental mercury is subsequently condensed as a reuseable material. The residual waste from retorting contains significantly lower concentrations of mercury. Retorting has been demonstrated on K106 at one facility. Retorting is also demonstrated on ores consisting primarily of mercury sulfides that the Agency believes have chemical and physical characteristics similar to K106 nonwastewaters. Thus, while EPA estimates that there are no facilities currently retorting K106, EPA has identified at least one facility that performs retorting of mercury ores that are comparable to the listed waste. Therefore, the Agency considers that retorting is a demonstrated technology for K106 nonwastewaters.

The Agency considered stabilization as an applicable technology and performed testing on nonwastewater K106. Analyses indicated that no significant reduction in leachability of mercury from the waste was achieved by the stabilization process. Therefore, the Agency concludes that stabilization is not a demonstrated technology for this waste.

The Agency has identified sulfide precipitation followed by filtration as an applicable technology for K106 wastewaters. EPA believes that K106 wastewaters have similar waste characteristics as wastewater generated from the treatment of K071 (brine purification muds from the mercury cell process in chlorine production, where separately prepurified brine is not used). Sulfide precipitation (followed by filtration) of mercury containing wastewaters is demonstrated at nineteen or more facilities. Therefore, the Agency believes that sulfide precipitation is both applicable and demonstrated for wastewaters generated from treatment of K106 nonwastewaters.

3. *Data Base.* The Agency has nine untreated and treated data points from EPA testing of one facility on treatment of K106 nonwastewaters by stabilization. Data collected during these tests show that these technologies were properly operated. These data indicated that no significant reduction in leachability was achieved. Therefore, the Agency concluded that stabilization should not be considered a demonstrated treatment technology for K106.

The Agency has five untreated and treated data points from a literature source on the treatment of K106 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. Therefore, EPA did not consider these in the development of the BDAT treatment standards.

The Agency has seven treated data points from the treatment of K106 by retorting. However, the K106 treated 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 a mercury sulfide sludge or residual. Therefore, these data were not considered in the development of the BDAT treatment standards.

As noted previously, the Agency also has data from the retorting of mercury sulfide ores. EPA believes that the similarities in chemical and physical composition of these ores and K106 nonwastewaters are sufficient to allow the transfer of the retorting performance data. These data were used for the development of the BDAT treatment standards for K106 nonwastewaters.

EPA does not have data on treatment of K106 wastewaters generated as part of the retorting operation. EPA believes that these wastewaters are similar in chemical and physical composition to wastewaters generated in treatment of K071 by acid leaching. Therefore, EPA has transferred these performance levels to K106 wastewaters. The data base for K071 wastewaters consists of three untreated and treated data points using sulfide precipitation followed by filtration. All of these data represent a well designed and well operated system and were used in the development of the BDAT standards for K106 wastewaters.

4. *Identification of BDAT.* EPA is proposing to set BDAT standards for K106 nonwastewaters based on the performance achieveable by the retorting of mercury sulfide ores. The Agency has determined that this technology is both demonstrated and available. EPA is proposing to set BDAT standards for K106 wastewaters based on sulfide precipitation followed by filtration. The Agency has determined that sulfide precipitation is demonstrated and available for wastewaters generated from treatment of K106 nonwastewaters (the sulfide residues must meet the standards for nonwastewaters). These technologies are judged to be available to treat these wastes because: (1) They are commercially available or can be purchased and (2) they provide a substantial reduction in the concentrations of hazardous constituents that have to be placed on the land.

The question of identifying BDAT for K106 also requires some discussion of several other EPA regulations relating specifically to burning hazardous wastes for materials recovery in industrial furnaces, and relating more generally to the issue of when secondary materials are RCRA solid wastes under such circumstances. The most significant issue presented is whether EPA may permissibly establish a BDAT treatment standard for the residual which results from retorting of this waste.

The initial question is whether wastewater treatment sludge from the mercury cell process is a RCRA solid and hazardous waste when it is sent to an industrial furnace for retorting. Under the Agency's existing regulations, this activity is classified as the type of recycling known as "reclamation" because it involves recovery of metals contained in the wastewater treatment sludge (see 40 CFR 261.1(c)(4)). Because the material is a listed sludge, it is therefore defined as a solid waste under 40 CFR 261.2(c)(3).

The Agency believes that this is an appropriate classification because a strong element of waste treatment would characterize this recycling activity (as noted, retorting of K106 is not currently practiced). Storage practices preceding reclamation of this waste also can involve direct placement on the land (for instance, in open waste piles), another indication that the wastewater treatment sludge is a waste. For a more detailed discussion see 50 FR 641 (January 4, 1985) which presents the decision factors to determine whether sludges and byproducts should be designated as solid wastes when they are to be reclaimed. EPA has recently proposed to codify these factors, with some modifications, in its regulations (53 FR 519 and 529, January 8, 1988).

The recent opinion of the District of Columbia Circuit Court of Appeals in *American Mining Congress v. EPA* (824 F. 2d 1177) does not change this analysis. The court stated that when a generator has a secondary material of no further use to him, which he discards by giving to another person for recycling, the material is a "discarded material" within the meaning of RCRA section 1004 (27). An example used in the opinion is used oil given by the original generator to a second person for recycling (824 F. 2d at n. 14). The wastewater treatment sludge is similarly discarded by the generator when it is no longer useful to the original generator, is given to another entity for recycling, and is not recycled in the original process or even in another chlorine and caustic soda process. Thus, it is not the type of in-process, undiscarded material used in on-going, continuous processes found in the *American Mining Congress* case to be an undiscarded material (see generally, 53 FR 519, 520–521, and 522–523, January 8, 1988).

It should be noted that even if the K106 waste was not deemed to be a waste when it is reclaimed in processes unrelated to chlorine production, EPA still could establish BDAT standards for K106 that is being disposed, or otherwise ensure that the waste is recycled by retorting rather than by being land disposed. For example, the Agency could simply prohibit land disposal of the waste and indicate that retorting is BDAT. The Agency also could let the statutory prohibition for the waste take effect, which (as a practical matter) would have the same result.

Since the Agency can require recycling as a BDAT standard, it must consider whether it has authority to set treatment standards for the residuals that result from retorting. The fact that K106 is a solid and hazardous waste when it is sent for retorting does not end the inquiry. The Agency has discussed in a number of preambles the question of whether a waste destined for material recovery in an industrial furnace continues to be a waste when it is actually fed into the furnace. The issue arises because industrial furnaces are normally used as essential components of industrial processes, and when they are actually burning secondary materials for material recovery can be involved in the very act of production, an activity normally beyond the Agency's RCRA authority (see 50 FR 630, January 4, 1985; 50 FR 49167, November 24, 1985; and 52 FR 16889–990, May 6, 1987). Accordingly, the Agency has stated that, even when secondary materials sent to be reclaimed in these devices are wastes before they are reclaimed, they cease to be wastes when they are actually placed in the industrial furnace for materials recovery. To retain authority over industrial furnaces where waste treatment is a driving element of the reclamation activity, the Agency has further stated that the secondary material being reclaimed in the industrial furnace must be "indigenous" to that furnace for it to cease being a waste. 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 the proposal in 52 FR 17034, May 6, 1987). The Agency suggested other possible alternatives in the May 6 proposal, including classifying wastes that contained insignificant concentrations of Appendix VIII constituents in the waste which are not normally found in the feed material to be indigenous.

The K106 sludges would not be considered indigenous, under the May 6 proposal, to the retort furnaces used as the basis for the proposed treatment standard. However, if an alternative such as classifying wastes that contained insignificant concentrations of other Appendix VIII constituents to be indigenous were finalized, the waste may not be considered indigenous. The Agency solicits comments on the similarities of the concentrations of other Appendix VIII constituents (other than mercury) that are present in both K106 and the mercury ores that are retorted in mining operations.

If such a determination of indigenous is made for K106, it would cease to be a solid waste when it is retorted. This would mean that the residuals produced by the furnace during the retorting of the sludge would no longer automatically be deemed to be a hazardous waste by virtue of the "derived-from" rule in 40 CFR 261.2(c), because it would no longer derive from treatment of a listed hazardous waste (the K106 waste would no longer be a hazardous waste at the moment of burning). Thus, the residual would be a hazardous waste only if it exhibited a characteristic of a hazardous waste. Depending upon the type of device doing the retorting, and the feed materials to that device, the residual might also presently be excluded from regulation as a waste from the mining, beneficiation, or processing of an ore or mineral (see 52 FR 17012, May 6, 1987). Under these circumstances, the Agency probably could not set treatment standards for the residual which does not exhibit a characteristic of hazardous waste, since the land disposal prohibitions apply only to "hazardous wastes". In addition, any prohibition for residuals exhibiting a characteristic of hazardous waste would take effect on May 8, 1990, as a third third-waste.

Thus, although the Agency has proposed treatment standards based on total and leachable mercury concentrations in the residual, EPA solicits comment on the issues with the view that EPA could establish either "total recycle" or "no land disposal" as the treatment standard for K106 should it determine not to set treatment standards for the residual.

5. *Regulated Constituents and Treatment Standards.* The proposed regulated constituents and BDAT treatment standards for wastes identified as K106 are listed in the tables at the end of this section. EPA is

proposing that mercury is the only constituent that needs to be regulated for wastes identified as K106. EPA's rationale for selecting mercury is presented in the BDAT Background Document for this waste code. Facilities must comply with these treatment standards prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden.

The treatment standards are based on analyses of total constituent concentration and leachate from the TCLP for all wastes identified as nonwastewaters and analyses of total constituent concentration for all wastes identified as wastewaters. The units of measure for total constituent analyses are mg/kg (or parts per million on a weight by weight basis) for the nonwastewaters and mg/l (or parts per million on a weight by volume basis) for wastewaters. The units of measure for analyses of leachate are mg/l (or parts per million on a weight by volume basis).

BDAT TREATMENT STANDARDS FOR K106

[Nonwastewaters]

| Constituent | Maximum for any single grab sample | |
|---|---|---|
| | Total composition (mg/kg) | TCLP (mg/l) |
| Mercury | 630 | 0.028 |

BDAT TREATMENT STANDARDS FOR K106

[Wastewaters]

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

[1] Not applicable.

k. Revision of BDAT Treatment Standard for Methylene Chloride in Wastewaters from the Pharmaceutical Industry Listed as F001, F002, F003, F004 and /or F005.

On November 7, 1986, EPA promulgated treatment standards for regulated constituents in F001–F005 spent solvent wastewaters and nonwastewaters. Since that time, EPA has collected additional data on steam stripping of methylene chloride in wastewaters at similar concentrations as those 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) specifically states that treatment standards are to be revised as appropriate. Therefore, in light of the new data collected, EPA is today reproposing the treatment standard for methylene chloride in F001–F005 wastewaters from the pharmaceutical industry. The treatment standards for all other hazardous constituents in F001–F005 wastewaters, and all hazardous constituents in F001–F005 nonwastewaters are not being reproposed and therefore remain as promulgated on November 7, 1986 (51 FR 40572). The Agency also is not reproposing the standard for methylene chloride in F001–F005 wastewaters other than those from the pharmaceutical manufacturing industry.

EPA established two separate waste treatability groups for wastewaters: Methylene chloride in F001–F005 wastewaters from the pharmaceuticals manufacturing industry and all other F001–F005 wastewaters containing methylene chloride. A BDAT treatment standard of 12.7 mg/1 was promulgated for methylene chloride in wastewaters in the pharmaceuticals manufacturing industry treatability group, based on the performance data for steam stripping. A BDAT treatment standard of 0.20 mg/1 was promulgated for all other F001–F005 wastewaters containing methylene chloride, based on performance data for biological treatment.

BDAT for methylene chloride in wastewaters from the pharmaceutical industry has been confirmed to be steam stripping. Data was obtained from the treatment of wastewaters with influent concentrations of methylene chloride that are similar to the influent concentrations in wastewaters from the pharmaceutical industry. The Agency has determined that the wastewaters that were tested, are in the same treatability group as the wastewaters from the pharmaceutical industry and is transferring the data and standards to the pharmaceutical industry.

The Agency is aware of at least two facilities that use steam stripping to treat methylene chloride in wastewater. EPA has determined that steam stripping is demonstrated to treat F001–F005. Steam stripping is judged to be available to treat these wastewaters because: (1) Steam stripping is commercially available or can be purchased and (2) steam stripping provides a substantial reduction in the concentration of methylene chloride in F001–F005 wastewaters from the pharmaceutical industry.

The revised BDAT treatment standard proposed for methylene chloride in wastewaters identified as F001, F002, F003, F004 and/or F005 from the pharmaceuticals industry is listed in the table at the end of this section. (Note that the proposed treatment standard is reflected in the regulations by amending § 268.41 by removing methylene chloride (from the pharmaceutical industry) and its corresponding concentration, and adding the revised treatment standard in § 268.43.) Facilities must comply with this treatment standard prior to placement of these wastes in land disposal units. Those wastes that as generated naturally meet these standards are not prohibited from disposal in these units. Dilution to achieve these treatment standards is forbidden. The treatment standard is based on analysis of total constituent concentration and is expressed in mg/l (or parts per million on a weight by volume basis).

The data and analyses used to develop this standard have been placed in the docket for today's proposed rule and are available as an addendum to the background document for the final rule for F001–F005 solvent wastes.

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 | [1] |

[1] Not applicable.

l. K021—Aqueous spent antimony catalyst waste from fluoromethanes production.

K025—Distillation bottoms from the production of nitrobenzene by the nitration of benzene.

K060 Ammonia still lime sludge from coking operations.

Based on available information, the Agency believes that these wastes are no longer generated, and therefore, are not currently being land disposed. EPA solicits comment to the contrary. The Agency is prohibiting land disposal of these wastes. This approach ensures that these wastes will not be land disposed in the future.

The proposed treatment standard for these wastes is "No Land Disposal," allowing for the possibility that these

wastes may be generated at a CERCLA site or during a corrective action at a RCRA facility and may require a variance from the treatment standard.

BDAT TREATMENT STANDARDS FOR K021, K025, AND K060

[Nonwastewaters and Wastewaters]

No Land Disposal.

m. 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.

EPA has determined that a proposed standard of "No Land Disposal" is appropriate for K044, K045, and K047 wastes. This determination is based on the fact that open burning and open detonation of reactive 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)).

EPA's listing of K044, K045, and K047 was based solely on the potential of these wastes to explode. The Agency does not have any data to suggest that any hazardous residuals are present following open burning or open detonation. However, EPA solicits comments providing data that show the presence of BDAT List constituents in treatable concentrations in residuals from managing these wastes in this manner.

In the absence of such data, EPA concludes that the current practices of open burning and open detonation provide complete destruction of the hazardous components of K044, K045, and K047 and subsequent land disposal of residuals is unnecessary. Therefore, EPA is proposing "No Land Disposal" as the requirement for these wastes. This standard is consistent with EPA's general approach in that the standard provides a significant reduction in the hazard presented by these wastes and is based on demonstrated and available technology.

EPA recognizes alternative technologies, such as incineration in specially designed units, is being investigated for wastes similar to K044, K045, and K047. By establishing a treatment standard of "No Land Disposal" rather than allowing the statutory bans to take effect, a petition for a variance from the standard can be submitted to the Agency for evaluation.

BDAT TREATMENT STANDARDS FOR K044, K045, AND K047

[Nonwastewaters and Wastewaters]

[No Land Disposal]

n. Wastes for Which EPA is Proposing No Treatment Standards (Including all Chemical Specific P and U Wastes).

F007—Spent cyanide plating bath solutions from electroplating operations.

F008—Plating bath sludges from the bottom of plating baths from the electroplating operations where cyanides are used in the process.

F009—Spent stripping and cleaning bath solutions from electroplating operations where cyanides are used in the process.

F019—Wastewater treatment sludges from the chemical conversion coating of aluminum.

K011—Bottom stream from the wastewater stripper in the production of acrylonitrile.

K013—Bottom stream from the acetonitrile column in the production of acrylonitrile.

K014—Bottoms from the acetonitrile purification column in the production of acrylonitrile.

K017—Heavy ends (still bottoms) from the purification column in the production of epichlorohydrin.

K031—By-product salts generated in the production of MSMA (monosodium methanearsenate) and cacodylic acid.

K035—Wastewater treatment sludges generated in the production of creosote.

K084—Wastewater treatment sludges generated during the production of veterinary pharmaceuticals from arsenic or organo-arsenic compounds.

K085—Distillation or fractionation column bottoms from the production of chlorobenzenes.

All remaining "First Third" wastes originally listed under § 261.33 (e) and (f) (i.e., those beginning with a "P" or "U").

The Agency has not completed its evaluation of BDAT for these wastes and is not proposing treatment standards at this time. Therefore, the Agency will not promulgate standards for these wastes by their statutory deadline of August 8, 1988. 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.

Wastes identified as K011, K013, and/or K014 are wastes generated from the production of acrylonitrile. Information supplied by industry trade associations indicate that many of the facilities are combining K011 and K013 and removing filterable solid materials prior to disposal of the filtrate in underground injection wells. The filtered K011 and K013 residues are often combined with K014 and incinerated in a hazardous waste incinerator. The Agency anticipates that many facilities will submit petitions for evaluation of "no migration" from these underground injection units into which filtrates of K011 and K013 are being injected. At this time, EPA has not completed its investigation of the incineration of the filtered residuals nor has it evaluated a "no migration" petition specific to these waste codes. EPA anticipates that it will establish treatment standards based on analysis of the performance of incineration or based on an extrapolation of data for wastes with similar physical and chemical characteristics. This investigation of K011, K013, and K014 will not be completed in time for proposal and promulgation by the statutory deadline of August 8, 1988. Therefore, until EPA promulgates treatment standards (and until May 8, 1990), the "soft hammer" provisions would apply to these wastes if they are placed in land disposal units.

Finally, 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 undoubtably exceed the statutory levels for wastes containing halogenated organics (HOC wastes). To the extent that these wastes are prohibited under the California List rule (52 FR 25773, July 8, 1987) or statutory provisions (RCRA section 3004(d)(2)) and also fall under the soft hammer, the California List prohibitions and treatment standards (if any) apply. Thus, for example, any prohibited HOC wastes that also are First Third "soft hammer" wastes would have to be incinerated before land disposal.

o. Burning in Industrial Boilers and Industrial Furnaces as BDAT for HOC's.

EPA has also decided to repropose for additional comment a notice that appeared in the May 6, 1987, proposed rule on boilers and industrial furnaces burning hazardous wastes. 52 FR 17021.

This proposal would have allowed burning in industrial boilers and furnaces to be considered BDAT for California List HOCs. Although most of the comments supported this approach, EPA is soliciting further comment. We note that this rule might become effective a short time before final permitting and interim status standards for emissions from these devices become effective (current schedules call for the boiler and industrial furnace rules to be promulgated early in 1989). EPA is tentatively prepared to accept this possibility 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 industrial furnaces have a commercial purpose which requires relatively efficient burning (see § 260.10 definitions of "boiler" and "industrial furnace" which require, for boilers, energy recovery efficiency of 60 percent and 75 percent export and utilization of recovered energy, and, for industrial furnaces, that the device be an integral part of a manufacturing process). 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. Section 266.31(b).

The rule as proposed would amend § 268.42(a)(2) to say that boilers and industrial furnaces burning in accordance with applicable regulatory standards could burn HOCs. When Part 266 standards exist for these devices, the devices thus must meet these standards. Until then, they would have to meet other applicable Federal, state, and local standards.

11. Requirement that Hazardous Waste Derived Products Used in a Manner Constituting Disposal Meet BDAT in Order to Remain Exempt from Regulation

Under the Agency's rules, hazardous secondary materials being used in a manner constituting disposal are defined as solid and hazardous wastes. 40 CFR 261.2(c)(1). Examples are use of hazardous waste as dust suppressants, road base material, or fertilizers. Products produced from hazardous secondary materials, which are placed on or applied to the land, are likewise defined as solid and hazardous wastes (assuming the waste-derived product remains hazardous, per the definitions in § 261.3). 40 CFR 261.2(c)(1)(B). If the hazardous waste component has "undergone a chemical reaction in the course of producing the product so as to become inseparable by physical means", then such waste-derived products used in a manner constituting disposal are not presently subject to federal regulation. 40 CFR 266.20(b). Commercial waste-derived fertilizers are likewise presently exempt from Federal Subtitle C regulation. The question we are addressing here—and also addressed in a more specific content for waste-derived fertilizers produced from waste K061 in the April 8, 1988 proposed rule—is whether waste-derived products whose placement on the land is presently exempt from Federal regulation should be allowed to be placed on the land if they don't meet the BDAT treatment standards for each prohibited hazardous waste that they contain.

The Agency is proposing to qualify the exemption from regulation for hazardous waste-derived products that are used in a manner constituting disposal (§ 266.20(b)) to provide that such waste-derived products must meet any (and all) applicable treatment standard(s) in Subpart D of Part 268 for the waste. The Agency believes that this approach is warranted for the following reasons.

First, this type of use constituting disposal consists of placing wastes directly on the land, a form of land disposal under section 3004(k). Under the land disposal prohibition program, untreated hazardous wastes are not to be placed directly on the land (i.e., land disposed) except in "no migration" units.

Second, the Agency (with few exceptions) has not evaluated whether the placement of hazardous waste-derived products on the land is safe. The Agency has merely deferred regulation while it studies the problem to determine an appropriate regulatory regime. See 50 FR 646–647 (January 4, 1985). Thus, continuation of the current exemption from regulation in § 266.20(b) appears to directly thwart the policy, and indeed the express command, of the land disposal prohibition statutory provisions. There is not even a countervailing environmental objective at stake since the Agency has no data demonstrating the safety of most of these practices. Indeed, the existing exemption in § 266.20(b) may create an incentive to avoid treatment (or to avoid BDAT-level treatment) and to utilize this form of disposal instead. It consequently appears to the Agency that all hazardous waste-derived products, in order to be exempt from regulation when they are placed on the land, should have to meet any applicable treatment standard for the waste established in Subpart D of Part 268. At that point, even though hazardous wastes were being placed on the land, they at least would be meeting the treatment standard required for all other wastes of the same type.

The Agency consequently solicits comment on whether the existing exemption in § 266.20(b) should be conditioned by requiring that any such waste-derived product meet applicable treatment standards. EPA notes further that if the Agency adopts this proposal, it would not necessarily be finding that further regulation of this type of use constituting disposal is unnecessary, or finding that use constituting disposal of waste-derived products that meet the treatment standard is necessarily safe. Disposal of hazardous waste would still be occurring in unregulated units. Rather, this type of placement on the land would at least be meeting the minimum statutory requirements in section 3004 (d), (e), (g) and (m).

In order to implement this type of requirement, the Agency would need to have some type of tracking scheme in place, and some means for persons producing waste-derived products to demonstrate that they are meeting the applicable treatment standard. Of course, hazardous wastes utilized to produce waste-derived products that are used in a manner constituting disposal are already subject to regulation until the waste-derived product is produced, and so are subject to § 268.7 tracking controls (as well as the other applicable Subtitle C requirements) until that point. The issues on which we are soliciting comment are how should the producer document that the waste-derived product meets BDAT—for instance, is there any reason not to follow the testing procedures in § 268.7(b)—and whether any further tracking to the ultimate user (as occurs normally under § 268.7(b) (1) and (2)) is needed.

Finally, the Agency reiterates that there does not appear to be any question that waste-derived products that are placed on the land are "solid wastes" under RCRA. Nothing in *American Mining Congress* v. *EPA*, 824 F. 1177 (D.C. Cir. 1987) is to the contrary. The hazardous wastes in the waste-derived product are being gotten rid of by disposing of them, and so are being discarded. See generally, 53 FR 521–522 (January 8, 1988), and underlying record materials.

The following examples show how the Agency envisions the proposal would operate.

1. A generator generates a listed wastewater treatment sludge which is prohibited from land disposal and for which the Agency has established treatment standards. The sludge is

combined with virgin materials in a way that causes the hazardous waste to undergo a chemical reaction so as not to be separable from the product matrix by physical means. The waste-derived product is then sold to the public as road base material.

Assuming that the activity is not sham recycling (i.e., that the listed hazardous waste and its hazardous constituents really contribute legitimately to the waste's use as road base material), then the waste-derived product would have to meet the BDAT standard for the listed hazardous waste or it could not legally be placed on the land. The generator of the product also would have to document that the waste-derived product meets the treatment standard.

2. An aggregate kiln burns a variety of prohibited hazardous wastes generated by other generators along with virgin materials to generate waste-derived aggregate, which is sold to the general public for direct placement on the land.

Assuming that the activity is not sham recycling (i.e., that the prohibited hazardous wastes and their hazardous constituents do contribute legitimately to producing aggregate), then the aggregate would have to meet the treatment standard for *each* prohibited hazardous waste that it contains. The kiln operator would also have to document that each batch meets these standards.

12. Corrections to the April 8, 1988 Proposal (53 FR 11742)

Although there were several typographical and editorial errors in the April 8, 1988 proposal, this preamble section addresses only the most pertinent.

First, on page 11770 of the April 8th proposal, the Agency discusses the availability of the 2-year nationwide variance for solvent wastes which contain less than one percent total F001–F005 solvent constituents. Although the Agency did not propose to change its approach from the existing regulation in § 268.30(a)(3), EPA stated that it was proposing regulatory language and soliciting comment on this approach. The Agency, however, inadvertently neglected to include the proposed regulatory language. Today's proposed regulatory language corrects this oversight by proposing the existing regulatory language, as discussed in the April 8th preamble.

Second, an error was made in identifying a hazardous constituent for K103 and K104 wastes in both the preamble and in the regulatory language. On pages 11758 and 11790 of the April 8 proposal, the treatment standard tables for nonwastewater and wastewater K103 and K104 list 2,3-dinitrophenol. The actual constituent, however, is 2,4-dinitrophenol, as stated in the background document for these wastes. Also, regarding the regulatory text for K103 and K104 nonwastewaters on page 11790, an error was made in stating the total composition levels for aniline, nitrobenzene, and phenol. The correct level, 5.44 mg/kg, is correctly stated in the preamble discussion on page 11758. Although the BDAT background document supports these corrections, anyone confused by this may submit further comment addressing the point.

Third, on pages 11763 and 11791 of the April 8 proposal, the concentration level for toluene in K015 waste is stated incorrectly. The tables in the preamble and regulatory language for K015 list the total composition level for toluene as 1.00 mg/l. The actual value, as stated in and supported by the background documents is 0.148 mg/l. Even though the treatment standard is stated correctly in the background document, anyone confused by the April 8 preamble may submit comment on the toluene treatment standard up until the date for comment on this proposed rule.

Fourth, on page 11789 of the April 8 proposal, an error was made in the headings for the treatment standard tables for K016 and K018 wastes (the "wastewater" tables are incorrectly labeled as second "nonwastewater" tables). These tables are correctly labeled in the preamble discussion on page 11756. Also, on page 11762 the second and third tables in the first column are incorrectly labeled K050 wastes. These tables actually present the treatment standards for K051 wastes, as is correctly stated in the regulatory language. The Agency will accept further comment on this issue from anyone confused by these corrections.

Fifth, the tables for K019 wastewater and nonwastewater, and K020 nonwastewater on page 11756 incorrectly state the hazardous constituent tetrachloroethene as tetrachloroethane. The constituent is, however, correctly stated in the regulatory language.

Sixth, in the preamble for K016 wastewater on page 11756 and in the regulatory text for K030 wastewater on page 11790, the total composition treatment standard for hexachloroethane is incorrect. The correct treatment standard is 0.033 mg/l, as supported by the background document. EPA will accept comment on these corrections from anyone confused by the change throughout the comment period on this proposed rule.

Finally, EPA neglected to include a hazardous constituent in the preamble table for K019 nonwastewaters on page 11756. This constituent, chlorobenzene (with a total composition treatment standard of 5.66 mg/kg), is correctly included in the regulatory text and is supported by the background document.

*B. Determination and Measurement of Applicable Treatment Standards*

1. Relationship to Restrictions on California List Wastes

Certain First Third wastes having proposed treatment standards and prohibition effective dates are also California list wastes. The California list covers a broad group of corrosive wastes and specific metal-, cyanide-, and halogenated organic-containing wastes, for which EPA has promulgated treatment standards and/or effective dates in the July 8, 1987 rule (52 FR 25760). Once the standards and dates proposed today are finalized, they supersede the applicable California list waste treatment standards and effective dates. Under 40 CFR 268.32(h) this interpretation, pursuant to which a waste-specific determination supplants a California list waste determination, has been applied to solvent- and dioxin-containing wastes which have treatment standards and effective dates and are California list wastes.

The April 8, 1988, rule (53 FR 11742) proposed a reading different from that stated above for First Third wastes which have waste-specific treatment standards and are also California list wastes, but for which, due to a significant shortage of alternative capacity, the Agency grants a national variance from the effective date. EPA solicited comment on an approach where, for these wastes, the applicable California list waste treatment standards and effective dates would remain in effect, superseding the waste-specific determinations for the duration of the variance. This rule also proposed that First Third wastes for which the Agency has not set treatment standards and effective dates by August 8, 1988 (wastes covered by the "soft hammer" requirements), are subject to any applicable California list waste treatment standards and effective dates. Comments addressing these proposed interpretations are also requested here.

*C. Proposed Approach To Comparative Risk Assessment*

Within the regulatory framework established for implementing the land disposal restrictions, EPA included certain criteria in the determination of

"available" treatment technologies. One criterion required that treatment technologies not present greater total risks than land disposal waste management practices. See 51 FR 40592–40593 (November 7, 1986). 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), the analyses did not affect the determinations that treatment was available.

Upon further consideration of the existing comparative risk analysis, the Agency has decided not to utilize comparative risk assessment in this rulemaking because it is problematic. In cases where the land disposal practice could be found to be less risky than any of the treatment alternatives, the analysis could lead to anomalous results. For example, in situations where the comparative risk analysis indicated that land disposal was the least risky alternative available, there would be no specified treatment technology for the wastes. At the same time, land disposal would be prohibited by statute. Thus, the generator could not treat or land dispose the wastes, even though treatment could be conducted pursuant to other regulatory standards that assure protection of human health and the environment.

A second anomaly is that unless EPA actually specifies a treatment method as the treatment standard—normally an undesirable option (see 51 FR 44725, December 11, 1986)—the regulated community may still use treatment technologies identified as riskier than land disposal to comply with the treatment standards. In this respect, the comparative risk assessments would not deter the use of treatment found to present greater total risk.

In light of these considerations, EPA has not used the existing comparative risk assessment approach in this proposal and is reconsidering its application as a decision tool in future rulemakings in the determination of "available" treatment technologies. In the future the Agency may conduct risk analyses 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 the April 8, 1988 proposal the Agency solicited comment on this new approach.

*D. Determination of Alternative Capacity and Effective Dates for First Third Wastes*

1. Capacity Data Base and Methodology

EPA has developed a new data base for capacity analyses. This data base is 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. One major objective of the survey was 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. (See the *Background Document for First Third Wastes to Support 40 CFR Part 268 Land Disposal Restrictions, Part II.*, referred to hereafter as the "Capacity Background Document," for a complete description of the TSDR Survey data set and other supplemental data.)

The general approach for capacity analyses for this rule is similar to that used for the past land disposal restrictions rules, but the new data set provides for more comprehensive analyses. Major changes in the capacity methodology include an analysis of volumes being treated in surface impoundments that meet the minimum technology requirements, an analysis of planned closure of surface impoundments through replacement with tanks, and an analysis of the sequences of management processes that minimizes the possibility of double counting. (See the Capacity Background Document for a detailed description of the capacity data set and methodology.)

2. Capacity Analysis of First Third Wastes, Solvent Wastes, California List Wastes, and Soil and Debris

The following discussion presents EPA's capacity analyses for the First Third wastes for which EPA is proposing treatment standards. These analyses were performed using the new TSDR Survey data. EPA is also presenting updated capacity analyses for the wastes addressed in the Proposed First Third Rule on April 8, 1988 (53 FR 11742). The Agency explained in this recent notice that the new TSDR Survey data would be used to reassess available treatment capacity for those wastes as soon as it was available (see 53 FR 11742).

Section III.E briefly covers new capacity analyses of waste volumes requiring alternative capacity pursuant to the Solvents Rule (51 FR 40572) and the California List Rule (52 FR 25760). Section III.F presents our analysis of soil and debris wastes. These waste volumes are not included in the analyses of the First Third wastes. However, it is important to note that the discussion of capacity available for treating First Third wastes does reflect only the amount of available capacity remaining after accounting for the treatment of wastes restricted from land disposal under the Solvents Rule and HOCs under the California List Rule.

a. *Total Quantity of Land Disposed First Third Wastes.* EPA has estimated the total quantities of all of the scheduled First Third wastes that are land disposed annually based on the results of the TSDR Survey. These waste quantities, and the methods by which the wastes are stored, treated, and disposed, are presented in the table below. Underground injection, one method of land disposal, is not included, but will be addressed in a separate rulemaking. Other methods of land disposal that are affected by today's proposal (e.g., utilization of salt dome and salt bed formations and underground mines and caves) are not addressed in the capacity analyses because of insufficient data.

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

[Million gallons/year]

| | |
|---|---|
| Storage: | |
| Waste piles | 48 |
| Surface impoundments | 6 |
| Treatment: | |
| Waste piles | 29 |
| Surface impoundments | 612 |
| Disposal: | |
| Landfills | 303 |
| Land treatment | 77 |
| Surface impoundments | 78 |
| Total | 1,153 |

About 78 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. Since storage means a temporary containment of waste, EPA has assumed that stored wastes are eventually treated, recycled or permanently disposed of in other units. To avoid double counting (i.e., counting

them once when they are stored and then again when they are finally disposed of) of such wastes, the volumes of wastes reported as being stored in surface impoundments were not included in the estimates of volumes requiring alternative treatment capacity. However, the Agency recognizes that these wastes will eventually require alternative storage capacity because of the restrictions on placement of wastes into surface impoundments.

In addition to the wastes stored and disposed in surface impoundments, about 612 million gallons of First Third wastes are treated annually in surface impoundments that do not meet the minimum technology standards or are residuals that have been removed from those surface impoundments that do meet the minimum technology standards. Additionally, about 48 million gallons were stored in waste piles, 29 million gallons were treated in waste piles, and 380 million gallons were disposed of by landfill and land treatment.

The Agency has also estimated the quantities of land disposed First Third wastes for which treatment standards are being proposed today and for which standards were proposed on April 8, 1988.

WASTE CODES—STANDARDS BEING PROPOSED TODAY

| | | | | | |
|---|---|---|---|---|---|
| F006 | K001 | K021 | K022 | K025 [1] | |
| K044 | K045 | K046 | K047 | K060 | K083 |
| K086 | K087 | K099 | K101 | K102 | K106 |

[1] K025—originally a Second Third waste (51 FR 19300, May 28, 1986), but treatment standards are being proposed today.

WASTE CODES—STANDARDS PROPOSED APRIL 8, 1988

| | | | | | |
|---|---|---|---|---|---|
| K004 | K008 | K015 | K016 | K018 | K019 [1] |
| K020 | K024 | K030 | K036 | K037 | K048 |
| K049 | K050 | K051 | K052 | K061 | K062 |
| K069 | K071 | K073 | K100 [1] | K103 | K104 |

[1] K019—originally a Second Third waste. K100—originally a Third waste. Treatment standards were proposed on April 8, 1988.

Waste quantities for these codes and the method by which they are disposed are presented in the table below.

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

[Million gallons per year]

| | |
|---|---|
| Storage: | |
| Waste piles | 40 |
| Surface impoundments | 4 |
| Treatment: | |
| Waste piles | 27 |
| Surface impoundments | 321 |
| Disposal: | |
| Landfills | 286 |
| Land treatment | 77 |
| Surface impoundments | 78 |
| Total | 833 |

In addition to the quantities presented above, the Agency also has estimated the amount of land disposed First Third wastes for which treatment standards are not being proposed before August 8, 1988. This group of wastes is subject to the "soft hammer" provisions and includes all of the First Third P and U wastes as well as the following F and K wastes:

| | | | | | |
|---|---|---|---|---|---|
| F007 | F008 | F009 | F019 | K011 | K013 |
| K014 | K017 | K031 | K035 | K084 | K085 |

Waste quantities for these codes and the method by which they are land disposed are presented in the table below.

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

[Million gallons per year]

| | |
|---|---|
| Storage: | |
| Waste piles | 8 |
| Surface impoundments | 2 |
| Treatment: | |
| Waste piles | 2 |
| Surface impoundments | 291 |
| Disposal: | |
| Landfills | 17 |
| Land treatment | <1 |
| Surface impoundments | <1 |
| Total | 320 |

b. *Required Alternative Capacity.* In order to complete our capacity analyses, EPA had to assess the requirements for alternative treatment capacity that would result from the promulgation of today's proposed rule. EPA first characterized the volumes of First Third wastes for which treatment standards are being proposed, since these wastes will 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 then determined which treatment technologies are applicable to the waste volumes and placed the wastes into treatability groups (groups of wastes for which proposed treatment standards are based on the same technology). Finally, EPA determined the volumes of alternative treatment capacity that would be required when owners/operators comply with the land disposal restrictions being proposed today.

Based on this analysis, the Agency estimates that today's proposed rule could potentially affect about 833 million gallons of First Third wastes that are land disposed annually. Of this total, about 789 million gallons will require alternative treatment capacity (the remainder is stored). As explained elsewhere in this preamble, EPA is proposing treatment standards that are expressed as concentration limits and is identifying the technology basis of the standards (the Best Demonstrated Available Technology or BDAT). EPA is not requiring that the specified treatment technologies be used to comply with the standards, but these

technologies, as described below (Section III.D.3), were generally used as the basis for determining available capacity.

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.

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

[Million gallons/year]

| Waste code | Required capacity |
|---|---|
| F006 | 126.9 |
| K001 | 2.4 |
| K021 | [1] 0.0 |
| K022 | 0.1 |
| K025 | 0.0 |
| 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 |
| K106 | 0.4 |

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

TABLE 5.—REQUIRED ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR FIRST THIRD WASTES PROPOSED APRIL 8, 1988

[Million gallons/year]

| Waste code | Required capacity |
|---|---|
| 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 | 31.7 |
| K050 | 11.5 |
| K051 | 78.0 |
| K052 | 12.3 |
| K061 | 82.8 |
| K062 | 40.3 |
| K069 | 0.0 |
| K071 | 3.9 |
| K073 | 0.0 |
| K100 | 0.0 |
| K103 | 0.1 |
| K104 | <0.1 |

See Section III D.3 for a discussion of wastes not requiring alternative treatment capacity.

3. Capacity Currently Available and Effective Dates

The table below also presents the volumes of First Third wastes that require alternative treatment capacity, but, in this case, the volumes are given according to the technology description of the type of alternative treatment required. This table also presents the amount of capacity that is available in each case.

It is important to note that the volumes given for each treatability group represent figures derived by summing volumes reported as land disposed in the TSDR Survey for each waste code. Some of these wastes, because of their actual physical form, cannot meet treatment standards simply by using the technology designated as BDAT (e.g., a waste in the form of a sludge cannot undergo liquid injection incineration, even though this may have been identified as BDAT for a particular waste code). These wastes must be treated through several steps, called a treatment train (in the example given, the sludge would require de-watering and possibly other types of treatment before the residuals could undergo incineration). EPA has assumed that the residuals in such cases will be treated using alternative technologies prior to land disposal and, therefore, EPA has assigned the total volumes reported to appropriate technologies. See the Capacity Background Document for a complete description of the alternative treatment technologies and treatment trains that were included in the analysis.

TABLE 6.—ALTERNATIVE COMMERCIAL TREATMENT/RECYCLING CAPACITY FOR FIRST THIRD WASTES

[Million gallons per year]

| Technology | Available | Required |
|---|---|---|
| Incineration: | | |
| Liquids | 246 | <1 |
| Solid/sludge | 7 | [1] 157 (5) |
| Stabilization | 427 | 145 |
| Mercury, retorting | 0 | <1 |
| High temperature metals recovery | 34 | 83 |
| Wastewater treatment: | | |
| Cyanide oxidation, chemical precipitation, settling/filtration | 164 | <1 |
| Chromium reduction, chemical precipitation, settling/filtration | 195 | 41 |
| Carbon adsorption, chromium reduction, chemical precipitation, settling/filtration | 12 | 1 |
| Sludge treatment: | | |
| Acid leaching, chemical oxidation, sludge dewatering | 0 | 4 |

[1] Numbers in parentheses denote the volume of waste that still requires alternative capacity when K048–K052 wastes are not included in the analyses (as explained, a capacity variance is being proposed for K048–K052).

*Liquid Incineration.* EPA estimates that about one million gallons per year of First Third wastes would require liquid incineration treatment as a result of the treatment standards proposed today and on April 8, 1988. Treatment standards for the wastes K015, K083 and K086 are based on liquid incineration. Using the new TSDR survey data, the Agency has evaluated commercial capacity and has determined that there is ample capacity available to treat these wastes (approximately 246 million gallons). Thus, EPA does not propose to grant a capacity variance for K015, K083, or K086 wastes.

*Solid/Sludge Incineration Capacity.* EPA estimates that about 157 million gallons per year of First Third wastes would require solid/sludge incineration capacity as a result of the treatment standards proposed today and on April 8, 1988. Treatment standards for the wastes K001, K016, K019, K020, K022, K024, K030, K037, K048–K052, K087, K101 and K102 are based on solid/sludge incineration.

Using the new TSDR Survey data, the Agency has evaluated commercial capacity and has determined that there is only about 7 million gallons of solid/sludge incineration capacity available. Therefore, EPA proposes to grant a two-year national capacity variance from the effective date for the wastes K048–K052. The total volume for these wastes dominates the analysis. If they are granted a variance, all of the remaining

wastes in this treatability group may be treated.

As explained previously, contaminated soil and debris wastes are not included in this section of the preamble, but are discussed in section III.F. However, note that this discussion of incineration capacity demonstrates that there is insufficient commercially available treatment capacity for certain contaminated soils that would require solids incineration to comply with the land disposal restriction standards.

*Stabilization.* EPA estimates that about 145 million gallons per year of First Third wastes would require stabilization capacity as a result of the treatment standards proposed today and on April 8, 1988. Treatment standards for the wastes F006 and K046 are based on stabilization.

Using the new TSDR survey data, the Agency has evaluated commercial capacity and has determined that there is more than enough capacity available to treat these wastes (approximately 427 million gallons). Therefore, the Agency does not propose to grant a capacity variance to wastes for which treatment standards are based on stabilization.

*Mercury Retorting and High Temperature Metals Recovery.* EPA estimates that less than one million gallons of First Third wastes would require mercury retorting and about 83 million gallons would require high temperature metals recovery capacity per year as a result of the treatment standards proposed today and on April 8, 1988. Treatment standards for the wastes K061 and K106 are based on high temperature metals recovery and mercury retorting, respectively.

Using the new TSDR survey data, the Agency has evaluated commercial capacity and has determined that there is not enough capacity available to treat K061 or K106. Therefore, EPA proposes to grant a 2-year national capacity variance from the ban effective date for these wastes.

*Wastewater Treatment.* EPA estimates that less than 43 million gallons per year of First Third waste would require various types of wastewater treatment as a result of the treatment standards proposed today and on April 8, 1988. (See Table 6 for descriptions of the various types of wastewater treatment.) Treatment standards for the waste K062 are based on wastewater treatment (chromium reduction, chemical precipitation and filtration).

Using the new TSDR survey data, the Agency has evaluated commercial capacity and has determined that there is adequate capacity available for wastewater treatment. Therefore, the Agency does not propose to grant a capacity variance for K062.

*Sludge Treatment.* EPA estimates that about four million gallons per year of First Third wastes would require sludge treatment as a result of the treatment standards proposed today and on April 8, 1988. Treatment standards for the waste K071 are based on sludge treatment (acid leaching, chemical oxidation, and sulfide precipitation and filtration).

After analyzing the new TSDR Survey data, the Agency has determined that there is not enough treatment capacity commercially available to treat K071. Therefore, EPA proposes to grant a 2-year national capacity variance from the ban effective date to K071.

*Wastes for Which Treatment Standards Are Based on Solvent Recovery or Solvent Extraction.* Proposed treatment standards for the wastes K103 and K104 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 has determined that the only volumes of these wastes that require alternative commercial capacity are those not amenable to solvent recovery or solvent extraction because of their physical forms. Therefore, the Agency has assumed that the K103 and K104 wastes requiring alternative treatment will undergo incineration, followed by stabilization of the ash. Again, 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 presented in Table 6.

*Wastes Not Requiring Alternative Capacity.* After reviewing the new TSDR Survey, EPA has determined that many First Third wastes do not require alternative capacity, even though treatment standards are being proposed. These wastes are: K021, K025, K044, K045, K047, K060, K099, K004, K008, K015, K018, K036, K069, K073, and K100. Each of these is discussed below.

Proposed treatment standards for K044, K045 and K047 wastes are based on open detonation, for which there is no capacity constraint provided the residuals are not hazardous. The Agency believes that when open detonation is properly conducted, no reactive residues remain and the residuals exhibit no other characteristic. Therefore, no K044, K045, or K047 would require alternative commercial capacity and no further analysis is necessary.

Proposed treatment standards for the First Third waste K099 are based on chlorine oxidation. The Agency has 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.

Proposed treatment standards for the First Third waste K015 are based on liquid incineration and standards for waste K018 are based on solid/sludge incineration. However, after analyzing the new TSDR Survey data EPA has determined that neither of these wastes requires alternative treatment capacity. There are several possible explanations for this. First, it is possible that all of these wastes now being generated are being treated on-site, and do not require commercial capacity. Second, it is possible that these wastes are simply not being land disposed or are being land disposed by a method either not covered in the TSDR Survey or not included in the proposed rule (e.g., the wastes may be land disposed in an underground mine or may be deep-well injected). Finally, the waste may not have required alternative capacity in 1986, the reporting date covered by the TSDR Survey.

Proposed treatment standards for the First Third waste K069 are based on total recycle; this waste cannot be land disposed. Available information shows that all K069 wastes currently being generated are now being recycled and that no land disposal is occurring. Thus, this waste does not require alternative capacity.

The Agency has determined that several First Third wastes are no longer being generated. The treatment standards for these wastes are "no land disposal." These wastes are: K021, K025, K060, K004, K008, K036, K073, and K100. Since none of these wastes were reported as being land disposed in the TSDR Survey, no further capacity analysis was required.

Finally, EPA notes that these new TSDR data have implications for soft hammer certifications. EPA will be very skeptical about and will probably invalidate any soft hammer certification for a waste amenable to treatment by a treatment method for which ample capacity is now known to exist. Examples are any waste amenable to liquid injection incineration or to stabilization.

*E. Alternative Capacity and Effective Dates for Solvent Wastes and California List Wastes*

Using the new capacity data, EPA has reevaluated waste volumes requiring alternative capacity because of the Solvents Rule (51 FR 40572) and the California List HOC rule (52 FR 25760). As described above, the new analysis indicated significant changes in waste management practices and capacity, including significant increases in incineration capacity. Consequently, some national capacity variances are no longer necessary. Specifically, capacity variances are no longer needed for: (1) Solvents (F001–F005) generated by small quantity generators, CERCLA response action and RCRA corrective action sites addressed in § 268.30(a) (1) and (2) (except solvent contaminated soils) and for (2) California List HOCs (except HOC soils). The BDAT treatment for these wastes is incineration, and the new capacity data indicate significant increases in incineration capacity, assuring adequate capacity for these wastes (See Table 6).

*F. National Variance From the Effective Date for Contaminated Soils*

1. Legal Authority

Under RCRA sections 3004 (d)(3) and (e)(3), Congress provided that the land disposal restriction 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 3004 subsections (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.

EPA has considered carefully the argument that the statutory effective date for solvent, dioxin, and HOC contaminated soils and debris from CERCLA response action and RCRA corrective actions cannot be extended because the national effective date for the underlying hazardous waste already has been extended for the maximum two years. EPA does not find this argument persuasive. First, sections 3004 (d)(3) and (e)(3) appear to establish a November 8, 1988 effective date for a particular category of wastes, namely contaminated soil and debris from CERCLA response actions and RCRA corrective actions. Section 3004(h)(2) then gives the Agency the authority to extend effective dates that otherwise would apply under subsection (d) or (e) for up to two years. The scheme, in fact, is similar to that for solvent, dioxin and California list wastes land disposed by underground injection, which are prohibited from land disposal on August 8, 1988 (RCRA section 3004(f)), which effective date likewise may be extended due to a lack of protective alternative capacity for up to two years.

Second, it is logical that Congress would have intended a later effective date for these wastes. An extra measure of environmental protection and accountability is afforded for these wastes due to the CERCLA and RCRA corrective action processes. These processes provide a documented connection with a regulatory process. Such a connection is not present for normal disposal of restricted wastes, and thus makes less pressing the need for an immediate prohibition effective date. Most important, however, is Congress' evident acknowledgment that it would take extra time to develop treatment capacity for soils and debris at the cleanup sites 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)).

2. Summary of the Proposed Agency Action

In today's action, the Agency is proposing to grant a national capacity variance for certain contaminated soils that require solids incineration capacity. This variance applies to the following specific categories of soils contaminated with the following wastes: (a) Soils contaminated with spent solvent (F001–F005) and dioxin-containing (F020–23 and F026–28) wastes (restricted under section 3004(e)) from a response action taken under CERCLA section 104 or 106 or a RCRA corrective action; (b) soils contaminated with California list HOC wastes (under 3004(d)) from a response action taken under CERCLA section 104 or 106 or RCRA corrective actions; and (c) soils contaminated with certain First Third wastes for which the proposed treatment standards are based on incineration. (This final capacity variance does not apply exclusively to soils from CERCLA response and RCRA corrective actions. This is because there is no statutory distinction as to effective date between CERCLA/RCRA 3004(g) soils and all other soils as there is for 3004 (d) and (e) soils.) The applicable First Third wastes include K015, K016, K018, K019, K020, K024, K030, K037, and K048–K052 wastes addressed in the April 8, 1988 proposed rule (53 FR 11742), and K001, K083, K087, K101 and K102 wastes addressed in this proposal. Today's action proposes a 2-year national capacity variance from the applicable statutory effective date for these wastes. As such, the soils contaminated with the specified First Third wastes would receive a variance that extends the effective date for the land disposal restrictions to August 8, 1990. On the other hand, CERCLA and RCRA soils contaminated with spent solvent, certain listed dioxin-containing wastes and California list HOC wastes would be covered by the capacity variance until November 8, 1990—two years from the end of the statutory effective date applicable to these wastes. The following chart summarizes the Agency's proposal:

SUMMARY OF CURRENT AND PROPOSED EFFECTIVE DATES

| Restricted hazardous waste | Current prohibition effective date | Proposed prohibition effective date |
|---|---|---|
| I. Solvent and dioxin-containing soil and debris: | | |
| a. Soil from CERCLA or RCRA corrective actions contaminated with section 3004(e) solvent or dioxin hazardous waste..... | 11–8–88 | 11–8–90 |
| b. Debris from CERCLA or RCRA corrective actions contaminated with section 3004(e) solvent or dioxin hazardous waste..... | 11–8–88 | No change.[1] |

SUMMARY OF CURRENT AND PROPOSED EFFECTIVE DATES—Continued

| Restricted hazardous waste | Current prohibition effective date | Proposed prohibition effective date |
|---|---|---|
| c. Soil NOT from CERCLA or RCRA corrective actions contaminated with section 3004(e) solvent or dioxin hazardous waste..... | 11-8-88 | No change. |
| II. Soil and debris contaminated with California list HOC containing hazardous wastes: | | |
| a. Soil from CERCLA or RCRA corrective actions.... | 7-8-89 | 11-8-90 |
| b. Debris from CERCLA or RCRA corrective actions.... | 7-8-89 | No change.[1] |
| c. Soil NOT from CERCLA or RCRA corrective actions.... | 7-8-89 | No change.[1] |
| III. Soil and debris contaminated with First Third wastes: | | |
| a. Soil from CERCLA or RCRA corrective actions for which BDAT is based on incineration..... | 8-8-88 | 8-8-90 |
| b. Debris from CERCLA or RCRA corrective actions.... | 8-8-88 | No change.[1] |
| c. Soil NOT from CERCLA or RCRA corrective actions for which BDAT is based on incineration..... | 8-8-88 | 8-8-90 |

[1] However, see section F.4. of todays preamble.

With respect to soils contaminated with spent solvent and dioxin-containing wastes, only those that result from a response action taken under section 104 or 106 of CERCLA or a corrective action required under RCRA would be 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. (See section 3004(h)(3).) Similarly, the proposed variance does not apply to California list HOC contaminated soils except those resulting from a CERCLA 104 or 106 response action or RCRA corrective action. Note that even though today's action proposes to rescind parts of the July 8, 1987 variances granted for HOCs, the existing capacity variance remains in place until July 8, 1989 for California list HOC contaminated soils. Furthermore, the proposed variance does not apply to soils contaminated with First Third waste for which treatment standards have not been established (i.e., those wastes subject to the "soft hammer" provisions). As a general matter, EPA is not proposing capacity variances for *any* soft hammer wastes. This is because the soft hammer itself provides a mechanism for ascertaining availability of treatment capacity (for wastes whose intended disposition is a landfill or impoundment), by placing the burden of investigating and certifying on the person managing the prohibited waste.

3. The Facts Justifying a National Capacity Variance for These Soils

Soils require rotary kiln incineration to meet BDAT standards. As mentioned in the section on capacity determinations (specifically III.D.4.), the evaluation of commercial rotary kiln incineration capacity required for solids incineration, shows that there is only about 2 million gallons of available commercial capacity (i.e., available after the effective dates for the non-soil solvents wastes, the non-soil California list HOC wastes and non-soil First Third wastes).

The amount of soil estimated to require solids incineration is shown below (These amounts represent the quantity of soils handled by commercial treatment facilities in 1986. Note, that the amount of soils requiring solids incineration that are generated by CERCLA response or RCRA corrective actions is not currently known.):

- Solvent—12 million gal/yr.
- Dioxin—(none reported in 1986)
- California List HOC's (other than First Third wastes for which treatment standards have been proposed)—4 million gal/yr.
- First Third (for which treatment standards have been proposed)—10 million gal/yr.

Thus, all of the solids incineration capacity would be utilized as a result of other actions taken today, and there will be a lack of capacity for soils incineration.

EPA acknowledges that in proposing a national capacity variance for contaminated soils, it is making a policy choice. That is, instead of proposing to rescind the variance for other HOC and solvent wastes requiring solids incineration, and not proposing a variance for certain First Third wastes requiring this type of treatment, EPA instead could try and carve out some segment of CERCLA and RCRA corrective action soils for immediate prohibition (leaving in place, or proposing a variance for these other waste). EPA is not pursuing this course for several reasons. First, it would be hard, if not impossible, to carve 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 amount of the other surface disposal wastes discussed above that require solids incineration capacity is much better quantified. By rescinding, or not proposing, 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 will not be reserving scarce solids incineration capacity for contaminated soils that might never be generated. EPA thus is structuring these proposed variances to make certain that scarce solids incineration capacity will actually be utilized.

This is not to say that EPA will invariably allocate treatment capacity to prohibited wastes whose generation rate is qualified. For example, if the Agency were required to allocate between corrective action/response wastes and wastes presently disposed of in underground injection wells or surface units other than impoundments and landfills, the Agency might choose to allocate the capacity to the corrective action/response wastes, given that they are customarily generated at sites actually posing a risk. EPA plans to discuss this point further in regulations dealing with First Third wastes that are injected into underground wells.

4. Request for Comment on Variance for Contaminated Debris

EPA is not proposing to grant a capacity variance for contaminated debris. Debris encompasses so many different types of materials—many of them highly out of-the-ordinary—that generic determinations as to type of treatment needed, and amount generated, are difficult.

EPA, however, solicits comment on whether a variance for contaminated debris should be granted. Such a variance would apply to all debris from CERCLA response actions and RCRA corrective actions which is contaminated with solvents, certain dioxins or HOCs above 1,000 ppm. It would also apply to debris contaminated with first third wastes whose treatment standard is based on incineration. Although it is difficult to pinpoint exactly how much debris will be generated, much of it will be solids (see 51 FR 40577, November 7, 1986)

defining "debris" to include "wood, stumps, clothing, equipment, building materials, storage containers, and liners"). The treatment standard for these solids will be based on incineration, and as noted above, EPA has allotted available solids incineration capacity for wastes other than soils and debris. Put another way, if there is not enough solids incineration capacity to accommodate contaminated soils, there also is not enough solids incineration capacity to accommodate both contaminated soils plus contaminated debris. In addition, Congress linked contaminated soils and debris when it established a different effective date for these wastes in sections 3004 (d)(3) and (e)(3). EPA thus solicits comment on extending the scope of the variance to include contaminated debris.

5. No Proposed Variance for Other Contaminated Soils

EPA is not proposing a national capacity variance for any of the following hazardous wastes: (a) Soils contaminated with solvents or dioxins which do not result from CERCLA response actions or RCRA corrective actions; and (b) soils contaminated with wastes whose treatment standard is not based on incineration. (See chart: Summary of Current and Proposed Effective Dates). With respect to soils that are not generated in the course of CERCLA or RCRA clean up activities, the applicable statutory effective date of November 8, 1986 has already passed and cannot be extended further (any person who manages such wastes may, however, submit an application for a case-by-case extension to the effective date). With respect to contaminated soils not requiring incineration to achieve the treatment standard, there is ample treatment capacity (for example, stabilization) so that a capacity variance is not warranted.

6. Definition of "Soil"

For the purpose of determining whether a contaminated material is subject to this national variance, some definition of the term "soil" 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 is soliciting comment with respect to appropriate methods for determining whether such mixtures should be considered a soil waste. Soils ordinarily do not include any wastes withdrawn from hazardous waste management units, however, such as impoundment dredgings. EPA has calculated that treatment capacity exists for these wastes, and in addition, they are sludges, not soils. In addition, contaminated soils would ordinarily have to result from some type of cleanup activity not associated with a hazardous waste management unit currently subject to regulations under Parts 264 and 265.

The Agency also notes that the proposed variance obviously would 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).

7. Notes on Drafting of the Regulatory Language

To implement these changes in the various capacity variances, EPA is proposing to amend regulatory language in §§ 268.30–268.33. With respect to the solvent wastes covered in § 268.30, the Agency is proposing to add a new § 268.30(a)(4) dealing with contaminated soil and debris from CERCLA response and RCRA corrective actions. This provision would replace existing § 268.1(c)(3). New § 268.30(a)(5)–(7) would then indicate that certain residues from treating solvent wastes also would have prohibition effective dates other then November 7, 1986. (Incidentally, we note that the final changes in new § 268.30(a)(5) refers by cross-reference to treatment residues that have less than 1 percent solvent (treatment residues in the (a)(3) treatability group) but not to contaminated soils; this is because the contaminated soils in proposed § 268.30(a)(4) would never be generated as residues from treating another restricted solvent waste).

New § 268.30(b) would then group all the solvent wastes having a November 8, 1988 prohibition effective date (the <1% wastes in § 268.30(a)(3), the treatment residues in proposed § 268.30(a)(5), and CERCLA response and RCRA corrective action debris, and residues from treating the debris). New § 268.30(c) would group the wastes having an earlier effective date: i.e., Small Quantity Generator, CERCLA response and RCRA corrective action non-soil and debris wastes and residues from their treatment. New § 268.30(d) would set forth the 1990 effective date for CERCLA response and RCRA corrective action wastes. We also have added language indicating that if these wastes are to be disposed in landfills or impoundments until the prohibition effective date then the landfill or impoundment unit must meet the section 3004(o) minimum technology requirements. (See 53 FR 11769 (April 8, 1988)).

The Agency is proposing to make similar changes in §§ 268.31, 268.32, and 268.33 (this last provision still is proposed form) to reflect the proposed, revised effective dates. The language in § 268.33(c) would indicate that the 1990 effective date would apply to all soils contaminated with First Third wastes where the treatment standard for the waste is based on incineration. Appendix II of Part 268 will list the technology basis for treatment standards, and so provide a ready means of ascertaining which standards are based on incineration.

## IV. Modifications to the Land Disposal Restrictions Framework and to Proposed Soft Hammer Provisions

### *A. Applicability (40 CFR 268.1)*

The Agency is proposing to add a new § 268.1(d) to clarify that the Part 268 standards do not apply invariably to prohibited wastes generated from CERCLA response actions. Rather, such wastes could be subject to one or more of the waivers from otherwise applicable standards, which waivers are contained in CERCLA section 121(d)(4)(A)–(F). The same is true, of course, of all other RCRA provisions, but EPA believes it particularly important to mention this with respect to Part 268 because there are regulatory provisions that deal explicitly with prohibited wastes from CERCLA response actions (see e.g. proposed §§ 268.30(a)(4) and 268.30(c)).

### *B. Recordkeeping (40 CFR 268.7)*

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 records of the notices 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. The April 8, 1988, notice (53 FR 11742) proposed to modify the tracking system by having storage facilities maintain files of the notices and certifications sent by generators and treatment facilities. This proposal also developed a similar tracking system for wastes subject to the "soft hammer" provisions which would require generators and treatment, storage, and disposal facilities to keep records of the notices and 40 CFR 268.8 demonstrations and certifications.

Today's notice proposes to further modify the tracking system to include in

40 CFR 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 will enhance the enforceability of the land disposal restrictions regulations and will make generator and storage recordkeeping requirements consistent with the recordkeeping requirements of treatment and disposal facilities.

Today EPA is also proposing an additional amendment to 40 CFR 268.7(a)(3) specifying 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 notify treatment and storage facilities receiving the wastes, a change that supplements, and is consistent with, the existing requirement to notify disposal facilities. In addition, the Agency is proposing that generators must retain records of this notification.

EPA is also proposing to add 40 CFR 268.7(a)(5) to require generators to retain records 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 appears to enhance the enforceability of the regulations. EPA is requesting comment on the proposed recordkeeping changes explained in this section of the preamble.

EPA is also proposing to modify § 268.7(a) to provide for a limitation on the time period that records are required to be retained by generators. Although the current regulations require owners and operators of facilities to maintain § 268.7 records for a finite period of time, *i.e.*, until closure of the facility (see §§ 264.73(b) and 265.73(b)), the regulations currently provide that generators must maintain, for an *indefinite* period of time, all supporting data used to determine that a waste is restricted based solely on the generator's knowledge. *See* existing § 268.7(a)(4) (proposed to be redesignated as § 268.7(a)(5) in today's notice). In light of the indefinite time period stated in this existing requirement and today's proposal to require generators to maintain additional information (*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. Therefore, EPA is today proposing a 5-year limitation on the retention requirement for all records generators produce to comply with § 268.7 of the land disposal restrictions.

Similar to the generator manifest retention requirements in § 262.40, EPA is proposing that the 5-year time period would begin on the date that the restricted waste is sent to on-site or off-site treatment, storage, or disposal. Also similar to the § 262.40 manifest provision, the 5-year retention requirement would be extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

Unlike the generator manifest requirements in § 262.42, which provide that generators must submit an Exception Report to EPA if they have not received a signed copy of the manifest from the designated owner or operator within 45 days from when the waste is accepted by the initial transporter, EPA is not proposing to create an exception reporting requirement for § 268.7 generator records. The Agency believes that an additional exception reporting requirement would be an undue burden on generators. Instead, EPA believes that requiring generators to retain for a 5-year period the § 268.7 records they produce is a more reasonable requirement, and that this would be adequate to support the Agency's enforcement program. The Agency recognizes that the proposed 5-year limit is unlike § 262.40, which requires generators to maintain a copy of the manifest for a 3-year period (subject to the automatic extension mentioned above). EPA believes that a 5-year limit is an appropriate compromise to imposing an additional exception reporting requirement, particularly in light of the additional concerns Congress has expressed regarding the proper management of wastes that are prohibited from land disposal. However, the Agency also solicits comment on the need for a 5-year limit versus the usual 3-year limit.

EPA also recognizes that the proposed 5-year retention requirement may, as a practical matter, result in a *de facto* change in the manifest retention requirement from three years to five years because many generators are putting the § 268.7 notices and certifications directly onto their manifests. The Agency does not intend to discourage the practice of putting this § 268.7 documentation on the manifest to the extent that such practices comply with State requirements. However, EPA is requesting comment on the generator record retention requirement proposed in today's notice, including comment on whether a finite period should be specified and, if so, whether five years or some other time period is appropriate.

### *C. National Variance for Spent Solvent Waste Residues (40 CFR 268.30)*

EPA is also proposing to make a minor correction to 40 CFR 268.30(b) which will cross-reference rule language in the July 8, 1987, regulations (52 FR 25760). Under this rule the Agency added 40 CFR 268.30(a)(4) stating that residues from treating the wastes described in section 40 CFR 268.30(a) (1), (2), and (3) are eligible for a two-year variance from the effective date of the restrictions. EPA omitted, inadvertently, to cross-reference paragraph (a)(4) in 40 CFR 268.30(b). We are proposing to correct the omission in this rule. EPA is not soliciting further comment on 40 CFR 268.30(a)(4) or any other provision in 40 CFR 268.30(a) which does not address the rescission of the variance for solvent-containing wastes (with the exception of § 268.30(a)(3) on which EPA has solicited comment; see 53 FR 11770).

EPA is proposing the following minor changes to the provisions implementing the section 3004(g)(6) soft hammer, which EPA proposed on April 8, 1988.

### *D. Section 268.8(a)(3)*

EPA is proposing a small change in the language of proposed § 268.8(a)(3), proposed at 53 FR 11788. The language should refer to landfills and surface impoundments rather than all land disposal facilities, since the soft hammer, which proposed § 268.8(a)(3) implements, restricts disposal only to landfills and surface impoundments.

### *E. Section 268.8(b)(2)*

We are proposing language identical to that proposed on April 8, except that we would delete the final clause which would allow the Regional Administrator to require a given method of treatment upon invalidating a certification. The soft hammer does not appear to allow EPA to affirmatively specify a type of treatment.

### *F. Section 268.8(c)*

We are also proposing a change in proposed § 268.8(c) to indicate more clearly that prohibited soft hammer

wastes can be disposed of in impoundments or landfills until the occurrence of the first of three events: (1) The certification is invalidated; (2) EPA establishes a treatment standard; or (3) the hard hammer falls.

*G. Section 268.33(g)*

We are proposing modified language to clarify a generator's testing obligations when a treatment standard specifies concentration levels in the total waste versus the waste extract, and also proposing to delete the final three words ("in this section") since this reference was overly restrictive (omitting reference to no migration variances or treatability variances, to maintain only two of the omissions).

**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 sections 3008, 3013, and 7003 of RCRA, 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 proposed pursuant to sections 3004 (d) through (k), and (m), of RCRA (42 U.S.C. 6924 (d) through (k), and (m)). Therefore, it will be 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. When this rule is promulgated, Table 2 in 40 CFR 271.1(j) will be modified also to indicate that this rule is a self-implementing provision of HSWA.

*B. Effect on State Authorizations*

As noted above, EPA will implement today's proposal 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 40 CFR 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 proposal. These State regulations have not been assessed against the Federal regulations being proposed 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 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 may be approved without including equivalent standards. However, once authorized, a State must modify its program to include standards substantially equivalent or equivalent to EPA's within the time periods discussed above.

The amendments being proposed 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) could continue to do so without seeking authority to administer these amendments. However, a State which wished to implement Part 148 and receive authorization to grant exemptions from the land disposal restrictions would have to demonstrate that it had the requisite authority to administer section 3004 (f) and (g) of RCRA. The conditions under which such an authorization may take place are summarized below and are discussed in 50 FR 28728, *et seq.*, July 15, 1985.

*C. State Implementation*

The following four aspects of the framework established in the November 7, 1986, rule (51 FR 40572) affect State implementation of today's proposal and impact State actions on the regulated community:

1. Under Part 268, Subpart C, EPA is proposing 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 proposing to grant and rescind two-year national variances from the effective dates of the land disposal restrictions based on an analysis of available alternative treatment, recovery, or disposal capacity. Under § 268.5, case-by-case extensions of up to one year (renewable for one additional year) may be granted for specific applicants lacking adequate capacity.

The Administrator of EPA is solely responsible for granting variances to the effective dates because these determinations must be made on a national basis. In addition, it is clear that RCRA section 3004(h)(3) intends for the Administrator to grant case-by-case extensions after consulting the affected States, on the basis of national concerns which only the Administrator can evaluate. Therefore, States cannot be

authorized for this aspect of the program.

3. Under § 268.44, the Agency may grant waste-specific variances from treatment standards in cases where it can be demonstrated that the physical and/or chemical properties of the wastes differ significantly from wastes analyzed in developing the treatment standards, and 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 will be the establishment of new waste treatability groups. All wastes meeting the criteria of these new waste treatability groups will also be subject to the variances, and thus, granting such variances has national impacts. Therefore, this aspect of the program is not delegated to the States.

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**.

States are free to impose their own disposal restrictions if such actions are more stringent or broader in scope than the actions of Federal programs (RCRA section 3009 and 40 CFR 271.1(i)). Where States impose such restrictions, the broader and more stringent State restrictions govern.

## 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 the Clean Air Act*

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 programs under section 3004(n) to address air emissions from other sources. The first program will address fugitive emissions from equipment such as pumps, valves, and vents from units processing concentrated organic waste streams. The second program 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, benefits, and economic impacts of today's proposed rule. These estimates are required for "major" regulations as defined by Executive Order 12291. 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 supplementary proposed rule is not a major rule. (However, in combination with the previous proposal (April 8, 1988; 53 FR 11742), the rule is a major rule.) This section of the preamble discusses the results of the analyses of the proposed rule as detailed in the draft Regulatory Impact Analysis (RIA) for the proposed rule. The draft RIA is available in the public docket.

The analyses presented in this section and in the draft RIA do not fully reflect the current status of the proposed rule. Certain wastes were included in the RIA, but due to the additional time required to set treatment standards for the wastes, were not part of the proposed rule. In addition, treatment

standards were set in the proposed rule for certain wastes which did not appear in the database used for the RIA and which were therefore not analyzed. These discrepancies will be addressed in the RIA for the First Third final rule.

2. Executive Order No. 12291

Executive Order 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 benefits and costs of the rule, as well as a description of any beneficial or adverse effects that cannot be quantified in monetary terms. In addition, Executive Order 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 supplementary proposed rule is not a major rule. The annual cost to the economy of the supplementary proposed rule would be approximately $36 million. (However, in combination with the previous proposal (April 8, 1988, 53 FR 11742), the rule would be a major rule with an annual cost of $717–732 million.)

3. Basic Approach

EPA is proposing to set treatment standards for a subset of the First Third F and K wastes. The effects of the proposed rule were estimated by comparison of post-regulatory costs, benefits, and economic impacts with those resulting under baseline conditions. The baseline is defined to be continued land disposal of wastes in units meeting minimum technological requirements.

4. Methodology

a. *Determination of Affected Population and Waste Management Practices.* The first step in determining the populations of affected wastes and facilities was to characterize waste streams based on available characterization reports and professional judgement. (See Section C for references.) This characterization data was matched with information on waste quantities and management practices from the 1981 RIA Mail Survey and the 1984 Small Quantity Generator Survey to determine the waste streams and facilities potentially affected by the proposed rule. Waste quantities and numbers of facilities from each survey were scaled up, by means of weighting factors, to represent the national population of wastes and facilities.

Next, it was necessary to adjust the affected waste and facility populations by considering the cost of compliance with regulations which have taken effect since the 1981 RIA Mail Survey was conducted. In particular, EPA adjusted reported waste management practices to reflect compliance with the provisions of 40 CFR Part 264, which apply to permitted treatment, storage, and disposal facilities. In making this adjustment, the Agency assumed that facilities would elect the least costly methods of compliance.

This adjustment defines not only baseline management practices and costs associated with them, but also the number of facilities and wastes streams in the affected population. For example, for some facilities, the costs of land disposing certain wastes may have been driven so high by the minimum technological requirements that other management modes became less expensive. EPA assumes that these facilities no longer land dispose these wastes and that these wastes are no longer part of the population of wastes that may be affected by any restrictions on land disposal.

Finally, it was necessary to consider the overlap between First Third wastes and California list, solvent, and dioxin wastes. A number of First Third wastes are California list wastes, and a few First Third mixed wastes contain solvents and dioxins. To isolate the impacts of this proposed rule, it was necessary to "net out" the costs, economic impacts, and benefits stemming from treatment standards established under other rules; in some cases this resulted in waste streams and facilities being dropped from the affected population for this rule.

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

The population of affected facilities may include:

- Commercial hazardous waste treatment, storage, and disposal facilities (commercial TSDFs), which charge a fee for hazardous waste disposal;
- Non-commercial TSDFs, which provide disposal services for wastes generated on-site or off-site by their parent firms;
- Generators, which send their waste off-site to commercial TSDFs for disposal; and
- Small quantity generators (SQGs), which send their waste off-site to commercial TSDFs.

b. *Cost Methodology.* Once waste quantity, type and method of treatment were known for the population of affected facilities, EPA developed estimates of costs of compliance for individual facilities, based on cost estimates for surveyed facilities representing the affected population. EPA estimated baseline and compliance waste management costs using engineering judgment. Wastes amendable to similar types of treatment were grouped to identify economies of scale available through co-treatment and disposal.

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

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

c. *Economic Impact Methodology*—(1) *Non-Commercial TSDFs and SQGs.* EPA assessed economic impacts on non-commercial TSDFs and SQGs in several steps. First, the Agency employed a

general screening analysis to compare facility-specific incremental costs to financial information for firms, disaggregated by Standard Industrial Classification (SIC) and number of employees per facility. (See Section C for references.) This comparison was based on two ratios, which were used to identify facilities likely to experience adverse economic effects. The first is a ratio of individual facility compliance costs to costs of production. This ratio represents the percent product price increase for facility output that occurs if the entire compliance cost—accompanied by facility profit—is passed through to customers in the form of higher prices. A change exceeding five percent is considered to imply a substantial adverse economic effect on a facility. The second is a coverage ratio relating cash from operations to costs of compliance. This ratio represents the number of times that facility gross margin covers the regulatory compliance cost if the facility fully absorbs the cost. For this ratio, a value of less than 20 is considered to represent a significant adverse effect. The coverage ratio is the more stringent of the two ratios, but exceeding the critical level in either one suggests that facility is likely to be significantly affected. These ratios bound possible effects on individual firms.

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

(2) *Commercial TSDFs.* For this group of facilities, there exists no Census SIC from which to draw financial information. Two SICs which might be used as proxies, 4953 and 4959, do not distinguish between financial data for hazardous waste treatment firms and for firms managing municipal and solid wastes. Consequently, the analysis of economic effects on commercial facilities was qualitative. This analysis included an examination of the quantity of waste each facility received from the waste group restricted by today's rule. EPA also examined the ability of each facility to provide the additional treatment required once these restrictions were promulgated, and thus to retain or expand that portion of its business generated by restricted wastes.

(3) *Generators.* EPA's analysis of the economic effects of this rule on generators disposing of large quantities of affected wastes off-site assumed that commercial facilities could entirely pass on to them the costs of compliance with this regulation in the form of higher prices for waste management services. Because of data limitations in the RIA Mail Survey, EPA did not develop plant-specific waste characterizations, treatment methods, and compliance costs for generators, as it did for TSDFs. The analysis of the economic effects of today's proposed rule on this group used RIA Mail Survey data to develop model plants generating average waste quantities. This allowed EPA to assess possible effects on generating plants.

d. *Benefits Methodology.* The benefits of today's proposed 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 management practices. Due to time and budget constraints, the benefits from human health risk reduction were analyzed qualitatively. Estimates of risk reduction from previous RIAs were used for certain wastes in this RIA where there was correspondence between the wastes in terms of waste codes, physical forms, baseline and alternative management practices, and quantities.

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 previous RIAs 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 and ingestion of ground water, surface water, and contaminated fish. 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. EPA estimated the relationship of dose to effect (using a "dose-response" curve developed based on toxicity data) and weighted the effect according to severity.

Finally, EPA estimated the population risk by multiplying the average individual risk by the number of people in a given environment. The whole process described above was repeated 2,000 times, using different population sizes and environmental settings drawn from representative distributions, to generate a population risk distribution for each waste-technology combination. The mean of the distribution for the baseline disposal technology was compared with the mean of the distribution for an alternative treatment technology to derive the net benefit of the land disposal restrictions for that waste stream. Risks were not discounted.

Benefits other than reduction in human health risk—such as resource damage avoided and corrective action costs avoided—were not quantified. As a result, the benefits of the land disposal restrictions for First Third wastes are likely to be understated.

5. Results

a. *Population of Affected Facilities.* Most of the affected facilities were generators. Of 138 affected facilities, 95 were generators, 23 were non-commercial TSDFs, and 20 were commercial TSDFs. No SQGs were affected.

b. *Costs.* The annualized incremental cost of the supplemental proposed rule is approximately $36 million, making the rule a minor rule. (However, in combination with the previous proposal (April 8, 1988; 53 FR 11742), the rule would be a major rule with an annual cost of $717–732 million.) Most of the cost of the rule is associated with the treatment of K086 and K087 wastes.

Most of the waste affected by the proposed rule was land disposed in the baseline (as opposed to being stored or treated in surface impoundments or treated under California list land disposal restrictions); the post-regulatory practice for most of the waste was incineration. All of the waste stored in surface impoundments in the baseline dropped out of the analysis because storage in tanks was found to be less expensive than retrofitting surface

impoundments to meet Part 264 requirements. Nearly all of the waste treated in surface impoundments dropped out of the analysis, since treatment was less costly than compliance with Part 264 requirements. The small quantity of dredged material from these impoundments requiring treatment caused these costs to be low.

c. *Economic Impacts.* Twenty-six facilities would be significantly impacted by the proposed rule. Of these, 21 are generators and 5 are non-commercial TSDFs. Commercial TSDFs were assumed to pass all compliance costs through to generators; therefore, the number of significantly affected commercial facilities was not calculated.

The significantly impacted non-commercial TSDFs are from the Chemicals and Allied Products industry and the Primary metals industry (SICs 28 and 33, respectively). Significantly impacted generators are from the Primary Metals industry (SIC 33), Fabricated Metals industry (SIC 34), and Transportation Equipment industry (SIC 34). Commercial TSDFs fall primarily into the Electric, Gas, and Sanitary Services sector (SIC 49); those facilities specializing in land disposal services could be adversely affected.

d. *Benefits.* Quantitative estimates of human health risk reduction, derived from previous RIAs, were available for four of the 19 waste streams included in the cost analysis. These four waste streams represent approximately 25 percent of the total waste volume included in the cost analysis. The total benefits for these four waste streams are a reduction of 20 cases of adverse health effects over 70 years, or an annual reduction of 0.29 cases. All of these benefits are due to one K087 waste stream.

Benefits for another six waste streams were assessed qualitatively and found to be low or zero. Data for assessing the benefits of the remaining nine waste streams were not available.

### *B. Regulatory Flexibility Analysis*

Pursuant to the Regulatory Flexibility Act, 5 U.S.C. 601 *et seq.*, whenever an agency is required to publish a notice of rulemaking for a proposed rule, it must prepare and make available for public comment 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). This analysis 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 evaluated the economic effect of the proposed rule on small entities, here defined as concerns employing fewer than 50 persons. Because of data limitations, this small business analysis excluded generators of large quantities of First Third wastes. The small business population therefore included only two groups: All non-commercial TSDFs employing fewer than 50 persons and all SQGs which were also small businesses.

According to EPA's guidelines for conducting an RFA, if over 20 percent of the population of small businesses, small organizations, or small government jurisdictions is likely to experience financial distress based on the costs of the rule, then the agency is required to consider that the rule will have a significant effect on a substantial number of small entities and to perform a formal RFA. EPA has examined the proposed rule's potential effects on small entities as required by the Regulatory Flexibility Act. Only small businesses were identified as being affected by the proposed rule, and fewer than 20 percent of the small businesses were significantly affected based on the EPA guidelines. EPA has therefore concluded that today's proposed rule will not have a significant effect on a substantial number of small entities. As a result of this finding, EPA has not prepared a formal RFA in support of the rule. More detailed information on small business impacts is available in the RIA for this rule.

### *C. Paperwork Reduction Act*

The information collection requirements in this proposed rule have been submitted for approval to the Office of Management and Budget (OMB) under the Paperwork Reduction Act, 44 U.S.C. 3501 et seq. An Information Collection Request document has been prepared by EPA (ICR No. 1447) and a copy may be obtained from Rick Westlund, Information Policy Branch, EPA, 401 M Street SW. (PM-223), Washington, DC 20460 or by calling (202) 382-2745. Submit comments on these requirements to EPA and: Office of Information and Regulatory Affairs, OMB, 726 Jackson Place NW., Washington, DC 20503 marked "Attention: Desk Officer for EPA." The final rule will respond to any OMB or public comments on the information collection requirements.

### *D. Review of Supporting Documents*

The primary source of information on current land disposal practices and industries affected by this rule was EPA's "National Survey of Hazardous Waste Generators and Treatment, Storage and Disposal Facilities Regulated under RCRA in 1981" (the RIA Mail Survey) (April 1984). EPA's "National Small Quantity Hazardous Waste Generator Survey" (February 1985) was the major source of data on small quantity generators.

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 Part 261 Waste Profiles," Vols. I and II (August 1985);
- "Characterization of Constituents from Selected Waste Streams Listed in 40 CFR Part 261," Vols. I and II (August 1985);
- RCRA background and listing documents for 40 CFR Part 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. 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.

### *E. Rescission of National Variance for Certain Solvent and California List Wastes*

EPA is proposing to rescind parts of the variances granted under the November 7, 1986 and July 8, 1987 rules. Specifically, variances would be rescinded for small quantity generator (SQG) solvent wastes; non-wastewater HOCs with concentrations greater than 1,000 mg/l; and solid HOCs with concentrations greater than 1,000 mg/kg (except HOC soils). Rescission of these variances would have two impacts. First, affected waste generators would have to comply with waste treatment standards at an earlier date. In the case of SQG solvents, rescission of the variance would cause post-regulatory costs to be incurred in August 1988 rather than in November 1988. In the case of California list HOCs, rescission of the variance would cause post-regulatory costs to be incurred in August 1988 rather than in July 1989. The movement of the post-regulatory costs forward in time would result in only minor increases in overall post-regulatory costs (approximately five percent of pre-rescission post-regulatory costs for the wastes affected). (Refer to the background materials on the rescission of land disposal restriction variances for a discussion of the

methodology and results of the rescission analysis.)

The second impact of the rescission would be to prohibit wastes from land disposal at an earlier date. This would result in short-term benefits to human health and the environment to the extent that alternative treatment is less risky than land disposal.

## VIII. Implementation of the Land Disposal Restrictions Program

The generator or owner/operator of a treatment, storage, and disposal facility must follow the waste management procedures specified in 40 CFR Part 268 which are applicable to the restricted hazardous wastes subject to the provisions in today's proposal. These wastes are listed in Subpart C of Part 268. The corresponding treatment standards and effective dates are found in Part 268 Subpart D. After the applicable effective date, a generator of a waste must determine, at the point of initial generation, if the waste meets the treatment standard. This determination can be made based on knowledge or analysis of the hazardous constituents in the waste, treatment residual, or extract of the waste or treatment residual. Data supporting a determination based on knowledge must be kept in the generator's files.

A waste which meets the treatment standard or is the subject of a national variance, case-by-case extension, or "no migration" exemption can be land disposed. The generator must satisfy the notification and certification requirements of 40 CFR 268.7(a) (2) and (3). The land disposal facility is required by 40 CFR 268.7(c) to keep a record of the notice and certification and verify that the treatment standard was met by testing according to the frequency specified in the facility's waste analysis plan.

A waste which does not meet the treatment standard can be land disposed after adequate treatment. The generator must notify the treatment facility in accordance with 40 CFR 268.7(a)(1). The treatment facility must maintain a record of the notification and test the treated wastes according to the frequency specified in the facility's waste analysis plan. For treated wastes which meet the standard the treatment facility must provide the notice and certification required under 40 CFR 268.7(b) (1) and (2) to the land disposal facility. For treated wastes which do not meet the standard the treatment facility must comply with the notice requirements of 40 CFR 268.7(a)(1) if the waste will be managed at a different treatment facility.

In the April 8, 1988, rule (53 FR 11742) EPA solicited comment on modifications to 40 CFR 268.7 which would enable the Agency to track, from generator to treatment and/or disposal facility, the management of restricted hazardous wastes subject to the "soft hammer" provisions. For today's proposal these are wastes listed in 40 CFR 268.10 which do not have treatment standards proposed in this notice or the April 8, 1988 notice. Comments pertaining to the proposed demonstration, certification, and notification requirements for these wastes should be addressed to the April 8, 1988 notice.

Although 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 is clarifying the distinction between "restricted" and "prohibited" wastes in today's notice.

"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 wastes 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 wastes 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" exemptions, 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.

## IX. References

*Background Documents*

(1) U.S. EPA, "Background Document for First Third Wastes to Support 40 CFR Part 268 Land Disposal Restrictions Proposed rule First-Third Waste Volume, Characteristics, and Required and Available Treatment Capacity—Part II." U.S. EPA, OSW, Washington, DC 1987.

(2) U.S. EPA, "National Survey of Hazardous Waste Treatment, Storage, Disposal, and Recycling Facilities." U.S. EPA, OSW, Washington, DC, 1987.
(3) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K046", Volume 11, U.S. EPA, OSW, Washington, DC, May 1988.
(4) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K101, K102," Volume 12, U.S. EPA, OSW, Washington, DC, May 1988.
(5) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for F006", Volume 13, U.S. EPA, OSW Washington, DC, May 1988.
(6) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K087" Volume 14, U.S. EPA, OSW, Washington, DC, May 1988.
(7) U.S. EPA "Best Demonstrated Available Technology (BDAT) Background Document for K086", Volume 15, U.S. EPA, OSW Washington, DC, May 1988.
(8) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K001", Volume 16, U.S. EPA, OSW, Washington, DC, May 1988.
(9) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K106", Volume 17, U.S. EPA, OSW, Washington, DC, May 1988.
(10) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K022", Volume 18, U.S. EPA, OSW, Washington, DC, May 1988.
(11) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for F002", Volume 19, U.S. EPA, OSW, Washington, DC
(12) U.S. EPA, "Best Demonstrated Available Technology (BDAT) Background Document for K099", Volume 20, U.S. EPA, OSW, Washington, DC, May 1988.

*Regulatory Impact Analysis*

(13) U.S. EPA, "Regulatory Impact Analysis of Proposed Restrictions on Land Disposal of First-Third Wastes." U.S. EPA, OSW, Washington, DC 1987.

### X. List of Subjects in 40 CFR Part 264, 265, 266, and 268

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

Date: May 9, 1988.

**Lee Thomas,**

*Administrator.*

For the reasons set out in the preamble, Title 40, Chapter I, Subchapter I of the CFR is proposed to be amended as follows:

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

I. In Part 264:

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

**Authority:** 42 U.S.C. 6905, 6912(a), 6924, and 6925.

### Subpart E—Manifest System, Recordkeeping, and Reporting

2. In § 264.73 paragraphs (b) (11) and (12) are revised and paragraphs (b) (15) and (16) are added to read as follows:

**§ 264.73 Operating record.**

* * * * *

(b) * * *

(11) For an off-site treatment facility, a copy of the notice, certification, and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 and § 268.8;

(12) For an on-site treatment facility, the information contained in the notice (except the manifest number), certification, and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 and § 268.8;

* * * * *

(15) For an off-site storage facility, a copy of the notice, certification, and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 and § 268.8; and

(16) For an on-site storage facility, the information contained in the notice (except the manifest number), certification, and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 and § 268.8.

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

II. In Part 265:

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

**Authority:** 42 U.S.C. 6905, 6912(a), 6924, 6925, and 6935.

2. In § 265.73 paragraphs (b) (9) and (10) are revised and paragraphs (b) (13) and (14) are added to read as follows:

**§ 265.73 Operating record.**

* * * * *

(b) * * *

(9) For an off-site treatment facility, a copy of the notice, certification, and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 and § 268.8;

(10) For an on-site treatment facility, the information contained in the notice (except the manifest number), certification, and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 and § 268.8;

* * * * *

(13) For an off-site storage facility, a copy of the notice, certification, and demonstration, if applicable, required by the generator or the owner or operator under § 268.7 and § 268.8; and

(14) For an on-site storage facility, the information contained in the notice (except the manifest number), certification, and demonstration, if applicable, required by the generator or the owner or operator of a treatment facility under § 268.7 and § 268.8.

## PART 266 STANDARDS FOR THE MANAGEMENT OF SPECIFIC HAZARDOUS WASTES AND SPECIFIC TYPES OF HAZARDOUS WASTE MANAGEMENT FACILITIES

III. In Part 266:

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. In § 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 (or prohibition levels in Subpart C where no treatment standards have been established) of Part 268 for each recyclable material (i.e. hazardous waste constituent) that they contain. Commercial fertilizers that are produced for the general public's use that contain recyclable materials also are not presently subject to regulation provided that such fertilizers meet the applicable treatment standards in Subpart D (or prohibition levels in Subpart C where no treatment standards have been established) of Part 268 for each

recyclable material (i.e. hazardous waste constituent) that they contain.

## PART 268—LAND DISPOSAL RESTRICTIONS

IV. In Part 268:

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, paragraphs (c)(4), (c)(5), and proposed paragraph (c)(6) are redesignated and revised as paragraphs (c)(3), (c)(4), and (c)(5), and paragraph (d) is added to read as follows:

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

* * * * *

(c) * * *

(3) Where the waste is generated by small quantity generators of less than 100 kilograms of non-acute hazardous waste or less than 1 kilogram acute hazardous waste per month, as defined in § 261.5 of this chapter;

(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 Subpart D treatment standards and not subject to the prohibitions in § 268.32 or RCRA section 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 268.7 is amended by revising paragraphs (a)(1) introductory text, (a)(2) introductory text, (a)(3), and (a)(4), and by adding paragraph (a)(5) to read as follows:

**§ 268.7 Waste analysis and recordkeeping.**

(a) * * *

(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 in RCRA section 3004(d), with each shipment of waste the generator must notify the treatment facility 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 in RCRA section 3004(d). The generator must retain a copy of the notice for at least five years from the date that the waste was last sent to off-site treatment or storage. The retention is extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator. 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 in RCRA section 3004(d). The generator must retain a copy of the notice and certification for at least five years from the date that the waste was last sent to off-site disposal or storage. The retention is extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

* * * * *

(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 generator must retain a copy of the notice for at least five years from the date that the waste was last sent to off-site treatment, storage, or disposal. The retention is extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator. The notice must include the following information:

(i) EPA Hazardous Waste Number;

(ii) The corresponding treatment standard;

(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(e) 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(e). The generator must retain a copy of the notice for at least five years from the date that the waste was last sent to off-site treatment, storage, or disposal. The retention is extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator. The notice must include the following information:

(i) EPA Hazardous Waste Number;

(ii) The applicable prohibitions set forth in § 268.33(e);

(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 for at least five years from the date that the waste was last sent to off-site treatment, storage, or disposal. If a generator determines whether the waste is restricted based on testing his 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 for at least five years from the date that the waste was last sent to off-site treatment, storage, or disposal. The retention is extended automatically during the course of any unresolved enforcement action regarding the regulated activity or as requested by the Administrator.

* * * * *

4. Proposed § 268.8 is revised 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(e) 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 person seeking to dispose such wastes (i.e., the generator or owner or operator) has made a good faith effort to locate and contract with treatment and recovery facilities currently available.

(2) Such generator or owner or operator 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, contact dates, and an explanation of why no treatment is practically available. The following certification is required:

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.

(3) With the initial shipment of waste, such generator or owner or operator must submit a copy of the demonstration and the certification required in paragraph (a)(2) of this section to the landfill or surface impoundment disposal facility. For each subsequent waste shipment to the same disposal facility, only the certification is required to be submitted provided that the conditions being certified remain unchanged. Such generator or owner or operator must retain copies of the demonstration (if applicable) and certification required for each waste shipment on-site. The generator must retain a copy of the demonstration and certification for at least five years from the date that the waste was last sent to off-site treatment, storage, or disposal. The retention is extended automatically 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) Any person 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 treatment (or further treatment) that yields reductions in toxicity is practically and currently available, or that some other method of treatment yields greater reductions in toxicity of the waste or residual or greater reductions in the likelihood of migration of hazardous constituents from the waste or residual, the Regional Administrator may invalidate the certification.

(c) Once the certification is made, wastes may be disposed of in a landfill or surface impoundment (unless the Regional Administrator invalidates the certification) until treatment standards are set forth in Subpart D of this part or until May 8, 1990, whichever is earlier.

## Subpart C—Prohibitions on Land Disposal

5. 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 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 not subject to the provisions of this chapter until November 8, 1988; or

(3) The initial generator's solvent waste is a solvent-water mixture, solvent-containing sludge or solid, or solvent-contaminated 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.

(4) The solvent waste is 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 required under Subtitle C of the Resource Conservation and Recovery Act (RCRA); or

(5) The solvent waste is a residue from treating a waste described in paragraph (a)(3) of this section; or the solvent waste is a residue from treating a waste not described in paragraphs (a)(1), (a)(2), (a)(3), or (a)(4) 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; or

(6) The solvent waste is a residue from treating a waste described in paragraphs (a)(1) and (a)(2) of this section; or

(7) The solvent waste is a residue from treating a waste described in paragraph (a)(4 of this section.

(b) Effective November 8, 1988, the F001–F005 solvent wastes listed in paragraphs (a)(3) and (a)(5) of this section are prohibited from land disposal. Between August 8, 1988, and November 8, 1988, wastes included in paragraphs (a)(3) and (a)(5) 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).

(c) Effective August 8, 1988, the F001–F005 solvent wastes listed in paragraphs (a)(1), (a)(2), and (a)(6) of this section are prohibited from land disposal.

(d) Effective November 8, 1990, the F001–F005 solvent wastes which are contaminated soil 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 of 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 F001–F005 solvent wastes which are contaminated 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.

(f) The requirements of paragraphs (a), (b), (c), (d), and (e) 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.

6. 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, F021, 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 required 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 August 8, 1988, and November 8, 1988, wastes included in paragraph (a) 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) and all other applicable requirements of Parts 264 and 265 of this chapter. Between November 8, 1988, and November 8, 1990, wastes included in paragraph (a)(1) of this section maybe disposed of 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.

7. In § 268.32 paragraph (e)(2) is removed, paragraphs (a)(3), (d), (e)(1), (f), (g) introductory text, and (h) are revised to read as follows:

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

(a) * * *

(3) Hazardous wastes containing halogenated organic compounds in total concentration greater than or equal to 1,000 mg/kg and not listed in paragraphs (d) and (e) of this section.

* * * * *

(d) The requirements of paragraph (a) of this section do not apply until November 8, 1988, where the wastes are contaminated soil or debris resulting from a response action taken under section 104 or 106 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) or a corrective action required under Subtitle C of the Resource Conservation and Recovery Act (RCRA) unless the following condition applies:

(1) The hazardous waste contains halogenated organic compounds in total concentration greater than or equal to 1,000 mg/kg and is contaminated soil 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). Effective November 8, 1990, these wastes are prohibited from land disposal. Between November 8, 1988, and November 8, 1990, the wastes 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) * * *

(1) Hazardous wastes containing HOCs in total concentration greater than or equal to 1,000 mg/kg and which are contaminated soil not 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).

(f) Between August 8, 1988, and July 8, 1989, wastes included in paragraph (e)(1) 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).

(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), (d)(1), and (e)(1) 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)).

* * * * *

8. Proposed § 268.33 is revised 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, K001, K004, K008, K015, K016, K018, K019, K020, K021, K022, K024, K025, K030, K036, K037, K044, K045, K046, K047, K060, K062, K069, K073, K083, K086, K087, K099, K100, K101, K102, K103, and K104 are prohibited from land disposal.

(b) Effective August 8, 1990, the wastes specified in 40 CFR 261.32 as EPA Hazardous Waste Nos. K048, K049, K050, K051, K052, K061, K071, and K106 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 are prohibited from land disposal.

(d) Between August 8, 1988, and August 8, 1990, for wastes described in paragraphs (b) and (c) of this section, disposal in a landfill or surface impoundment is allowed 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 or which do not exceed the prohibition levels in § 268.32 or in RCRA section 3004(d) can be disposed of in a landfill or surface impoundment provided 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

9. In § 268.41(a), in the F001–F005 spent solvents table, Methylene chloride (from the pharmaceutical industry) and its corresponding concentrations is removed, and the following subtables are added to read as follows:

**§ 268.41 Treatment standards expressed as concentrations in waste extract.**

(a) * * *

TABLE CCWE.—CONSTITUENT CONCENTRATIONS IN WASTE EXTRACT

* * * * *

| F006 nonwastewaters (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Antimony | (1) |
| Arsenic | (1) |
| Barium | (1) |
| Cadmium | 0.066 |
| Chromium (total) | 3.8 |
| Copper | 0.71 |
| Lead | 0.53 |
| Nickel | 0.31 |
| Selenium | (1) |
| Silver | 0.26 |
| Zinc | 0.086 |
| Cyanide | (1) |

[1] Reserved.

| K001 nonwastewaters (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Copper | 0.71 |
| Lead | 0.53 |
| Zinc | 0.086 |

| K022 nonwastewaters (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Chromium (total) | 3.8 |
| Nickel | 0.31 |

| K046 nonwastewaters | Concentration (in mg/l) |
|---|---|
| Lead | 0.176 |

| K086 nonwastewaters (solvent washes) (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Chromium (total) | 0.094 |
| Lead | 0.37 |

| K087 nonwastewaters (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Lead | 0.53 |
| Zinc | 0.086 |

| K101 nonwastewaters (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Antimony | (1) |
| Arsenic | (1) |
| Barium | (1) |
| Cadmium | 0.066 |
| Chromium (total) | 3.8 |
| Copper | 0.71 |
| Lead | 0.53 |
| Nickel | 0.31 |
| Zinc | 0.086 |

[1] Reserved.

| K102 nonwastewaters (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Antimony | (1) |
| Arsenic | (1) |
| Barium | (1) |
| Cadmium | 0.066 |
| Chromium (total) | 3.8 |
| Copper | 0.71 |
| Lead | 0.53 |
| Nickel | 0.31 |
| Zinc | 0.086 |

[1] Reserved.

| K106 nonwastewaters (see also table CCW in § 268.43) | Concentration (in mg/l) |
|---|---|
| Mercury | 0.028 |

* * * * *

10. 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 solvent for which a treatment standard is established under § 268.41(a)).

* * * * *

11. In § 268.43 the following subtables are added to the table in proposed paragraph (a) to read as follows:

**§ 268.43 Treatment standards expressed as waste concentrations.**

(a) * * *

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) |
|---|---|
| Cyanide | Reserved. |

| K001 nonwastewaters (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Naphthalene | 7.98 |
| Pentachlorophenol | 36.75 |
| Phenanthrene | 7.98 |
| Pyrene | 7.28 |
| Toluene | 0.143 |
| Xylenes | 0.162 |

| K001 wastewaters | Concentration (in mg/l) |
|---|---|
| Naphthalene | 0.148 |
| Pentachlorophenol | 0.875 |
| Phenanthrene | 0.148 |
| Pyrene | 0.140 |
| Toluene | 0.143 |
| Xylenes | 0.161 |
| Copper | 0.42 |
| Lead | 0.037 |
| Zinc | 1.0 |

| K022 nonwastewaters (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Acetophenone | 19.0 |
| Phenol | 12.0 |
| Toluene | 0.034 |
| Sum of Diphenylamine and Diphenylnitrosamine. | 13.0 |
| Sulfide | Reserved. |

| K086 nonwastewaters (Solvent Washes) (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Acetone | 0.37 |
| n-Butyl alcohol | 0.37 |
| Ethyl acetate | 0.37 |
| Ethyl benzene | 0.031 |
| Methanol | 0.37 |
| Methyl isobutyl ketone | 0.37 |
| Methyl ethyl ketone | 0.37 |
| Methylene chloride | 0.037 |
| Toluene | 0.031 |
| 1,1,1-Trichloroethane | 0.044 |
| Trichloroethylene | 0.031 |
| Xylenes | 0.015 |
| bis(2-ethylhexyl)phthalate | 0.49 |
| Cyclohexanone | 0.49 |
| 1,2-Dichlorobenzene | 0.49 |
| Naphthalene | 0.49 |

| K086 nonwastewaters (Solvent Washes) (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Nitrobenzene | 0.49 |

| K086 wastewaters (Solvent Washes) | Concentration (in mg/l) |
|---|---|
| Acetone | 0.015 |
| n-Butyl alcohol | 0.031 |
| Ethyl acetate | 0.031 |
| Ethyl benzene | 0.015 |
| Methanol | 0.031 |
| Methyl isobutyl ketone | 0.031 |
| Methyl ethyl ketone | 0.031 |
| Methylene chloride | 0.031 |
| Toluene | 0.029 |
| 1,1,1-Trichloroethane | 0.031 |
| Trichloroethylene | 0.029 |
| Xylenes | 0.015 |
| bis(2-ethylhexyl)phthalate | 0.044 |
| Cyclohexanone | 0.022 |
| 1,2-Dichlorobenzene | 0.044 |
| Naphthalene | 0.044 |
| Nitrobenzene | 0.044 |
| Chromium (total) | 0.32 |
| Lead | 0.037 |

| K087 nonwastewaters (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Acenaphthalene | 3.4 |
| Benzene | 0.071 |
| Chrysene | 3.4 |
| Fluoranthene | 3.4 |
| Indeno (1,2,3-cd) pyrene | 3.4 |
| Naphthalene | 3.4 |
| Phenanthrene | 3.4 |
| Toluene | 0.65 |
| Xylenes | 0.070 |

| K087 wastewaters | Concentration (in mg/l) |
|---|---|
| Acenaphthalene | 0.028 |
| Benzene | 0.014 |
| Chrysene | 0.028 |
| Fluoranthene | 0.028 |
| Indeno (1,2,3-cd) pyrene | 0.028 |
| Naphthalene | 0.028 |
| Phenanthrene | 0.028 |
| Toluene | 0.008 |
| Xylenes | 0.014 |
| Lead | 0.037 |
| Zinc | 1.0 |

| K099 nonwastewaters | Concentration (in mg/kg) |
|---|---|
| 2,4-Dichlorophenoxyacetic acid | 0.15 |
| Hexachlorodibenzo-p-dioxins | 0.001 |
| Hexachlorodibenzofurans | 0.001 |
| Pentachlorodibenzo-p-dioxins | 0.001 |
| Pentachlorodibenzofurans | 0.001 |
| Tetrachlorodibenzo-p-dioxins | 0.001 |
| Tetrachlorodibenzofurans | 0.001 |

| K099 wastewaters | Concentration (in mg/l) |
|---|---|
| 2,4-Dichlorophenoxyacetic acid | 0.15 |
| Hexachlorodibenzo-p-dioxins | 0.001 |
| Hexachlorodibenzofurans | 0.001 |
| Pentachlorodibenzo-p-dioxins | 0.001 |
| Pentachlorodibenzofurans | 0.001 |
| Tetrachlorodibenzo-p-dioxins | 0.001 |
| Tetrachlorodibenzofurans | 0.001 |

| K101 nonwastewaters (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Ortho-Nitroaniline | 14.0 |

| K101 wastewaters | Concentration (in mg/l) |
|---|---|
| Ortho-Nitroaniline | 0.266 |
| Antimony | Reserved. |
| Arsenic | 2.036 |
| Cadmium | 0.238 |
| Lead | 0.110 |
| Mercury | 0.027 |

| K102 nonwastewaters (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Ortho-Nitrophenol | 13.3 |

| K102 wastewaters | Concentration (in mg/l) |
|---|---|
| Ortho-Nitrophenol | 0.028 |
| Antimony | Reserved. |
| Arsenic | 2.036 |
| Cadmium | 0.238 |
| Lead | 0.110 |
| Mercury | 0.027 |

| K106 nonwastewaters (see also Table CCWE in § 268.41) | Concentration (in mg/kg) |
|---|---|
| Mercury | 630 |

| K106 wastewaters | Concentration (in mg/l) |
|---|---|
| Mercury | 0.030 |

| | |
|---|---|
| No Land Disposal for: | F006 wastewaters. |
| | K022 wastewaters |
| | K046 wastewaters |
| | K083 |
| | K021 |
| | K025 |
| | K060 |
| | K044 |
| | K045 |
| | K046 explosive nonwastewaters. |
| | K047 |

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[FR Doc. 88-10874 Filed 5-16-88; 8:45 am]
BILLING CODE 6560-50-M